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Spectrographic analyses of insoluble-residue samples, Joplin 1° x 2° quadrangle, Missouri and Kansas: Drill hole nos. 116, 117, and 118

By

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INTRODUCTION

Geochemical studies of the Joplin 1° x 2° quadrangle, Missouri and Kansas, were begun in 1983 as part of a multidisciplinary study of the quadrangle by the U.S. Geological Survey, the Missouri Division of Geology and Land Survey, and the Kansas Geological Survey. The purpose of the study was to assess the mineral resource potential of the area by integrated geologic, geochemical, and geophysical studies.

The geochemical work has been directed at the characterization of the sedimentary rocks in the quadrangle through spectrographic analyses of dilute-hydrochloric-acid insoluble-residue samples of whole rock from widely-spaced drill holes. Drill holes have been selected for study from the sample libraries of the Missouri Division of Geology and Land Survey (MGLS) and the Kansas Geological Survey (KGS). None of the holes are company confidential and none intersect economically significant mineralized ground.

The analytical results for drill hole no. 116 (#28302 - MGLS), drill hole no. 117 (#28617, #25045 - MGLS), and drill hole no. 118 (#279103 - MGLS) are given in this report. Drill hole no. 116 is located in sec. 4, T. 29 N., R. 33 W. in Jasper County, Missouri; drill hole no. 117 is located in sec. 17, T. 30 N., R. 33 W. in Jasper County, Missouri; drill hole no. 118 is located in sec. 21, T. 31 N., R. 32 W. in Barton County, Missouri (fig. 1). Data for the insoluble-residue samples from drill holes 116, 117, and 118 are listed in tables 1, 2, and 3 respectively. Well name, well number, township, range, and county allow for identification and location of files at the Missouri Division of Geology and Land Survey.

PREPARATION AND ANALYSIS OF SAMPLES

Insoluble residues were prepared by dissolving approximately 80 grams of crushed carbonate rock in repeated applications of 1:5 hydrochloric acid until the carbonate was removed. The samples were then filtered and dried overnight at 50 °C.

The samples were pulverized to minus 140 mesh (0.105 mm) in a vertical grinder equipped with ceramic plates. Some insoluble-residue samples contained only a few milligrams of material, and these were hand ground with an agate mortar and pestle. A hand magnet was passed over the insoluble-residue samples before grinding to remove filings or chips of drill bit that might have been present.

Each sample was analyzed semiquantitatively for 31 elements using a six-step D.C.-arc optical-emission spectrographic method (Grimes and Marranzino, 1968).

The semiquantitative spectrographic values are reported as six steps per order of magnitude (1, 0.7, 0.5, 0.3, 0.2, and 0.15) and are approximate geometric midpoints of the concentration ranges. The precision is shown to be within one adjoining reporting interval on each side of the reported value 83 percent of the time and within two adjoining intervals on each side of the reported value 96 percent of the time (Motooka and Grimes, 1976).

The visual lower limits of determination for the 31 elements that were determined spectrographically for this report are as follows:

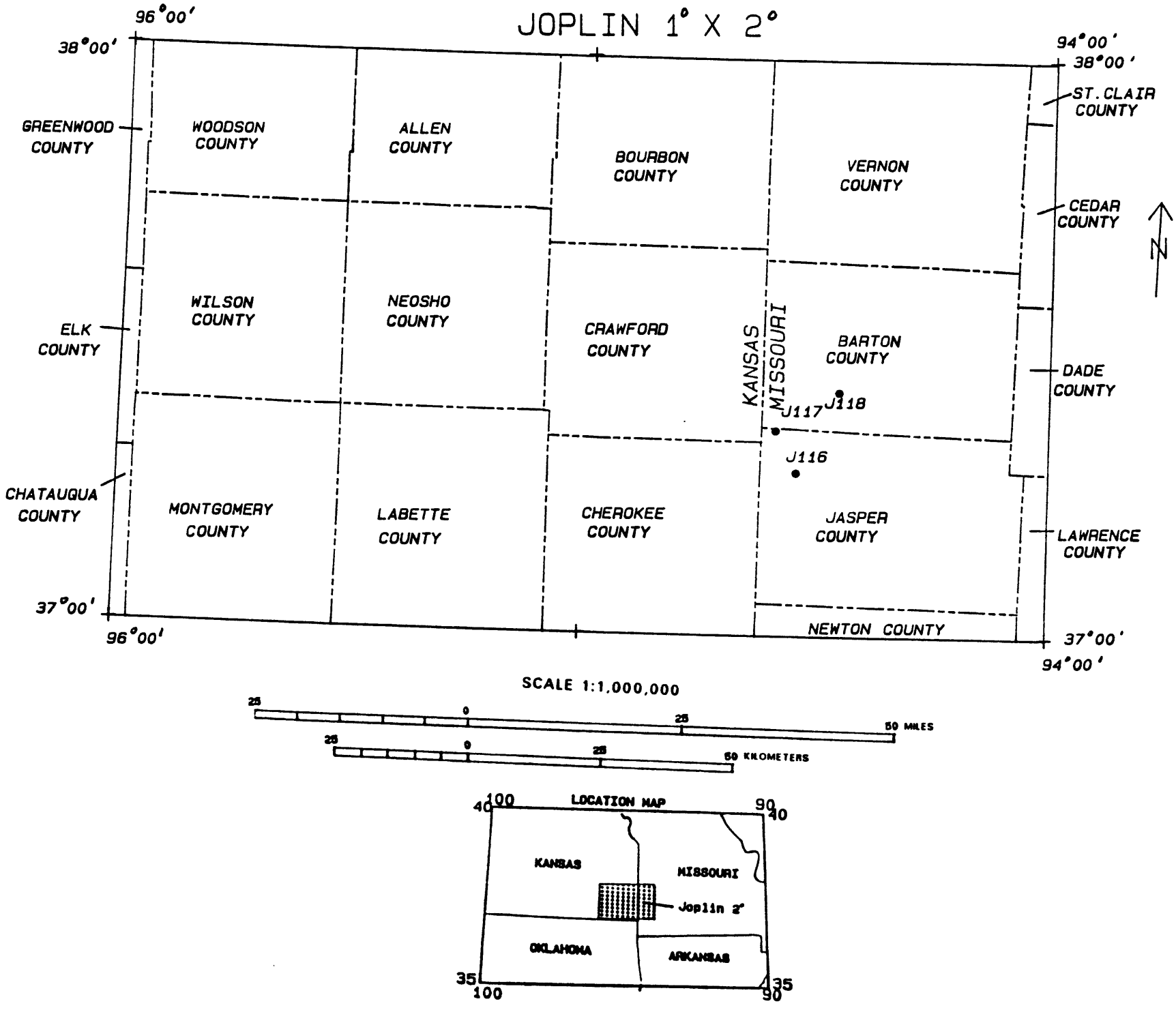

Figure 1. Locations of drill holes 116, 117, and 118, Joplin 1° x 2° quadrangle, Missouri and Kansas.

For those given in percent:

Calcium	0.05
Iron	0.05
Magnesium	0.02
Titanium	0.002

For those given in ppm:

Antimony	100	Molybdenum	5
Arsenic	200	Nickel	5
Barium	20	Niobium	20
Beryllium	1	Scandium	5
Bismuth	10	Silver	0.5
Boron	10	Strontium	100
Cadmium	20	Thorium	100
Chromium	10	Tin	10
Cobalt	5	Tungsten	50
Copper	5	Vanadium	10
Gold	10	Yttrium	10
Lanthanum	20	Zinc	200
Lead	10	Zirconium	10
Manganese	10		

DESCRIPTION OF DATA TABLES

Each sample is identified by an eight-character code beginning with the letter J, signifying Joplin. The next three digits signify the USGS drill-hole number. The last four digits identify the depth of the sample from the drill-hole collar. Most samples are composites of approximate 10-foot intervals, dependent upon the original sample intervals and upon the amount of sample material available for analysis.

The stratigraphic unit of the sample is identified by a coded number in the last column of tables 1 through 3. The code and formation names are as follows:

Code	Formation
40	Mississippian Undifferentiated
65	Cotter Dolomite
66	Jefferson City Dolomite
67	Roubidoux Formation
68	Gasconade Dolomite
69	Gunter Sandstone Member
70	Jefferson City and Cotter Dolomite
71	Davis Shale
81	Emminence
82	Potosi
83	Derby / Doerun

EXPLANATION OF DATA

The columns in tables 1 through 3 have headings of sample, elements, and formation. The letter S over the columns signifies emission-spectrographic data.

Iron, magnesium, calcium, and titanium are reported in weight percent (%); all other elements are in parts per million. Other symbols shown on the tables are:

N = Not detected at the limit of determination;
< = Detected, but below the limit of determination shown; and
> = Greater than the limit of determination shown.

Because of the formatting used in the computer program that produced tables 1-3, some of the elements listed in these tables (Fe, Mg, Ca, Ti, Ag, and Be) may carry one or more nonsignificant zeros to the right of the significant digits. The analyst did not determine these elements to the accuracy suggested by the extra zeros.

RASS

Upon completion of all analytical work, the information from the samples is entered into a computer-based file called RASS (Rock Analysis Storage System). This RASS file contains both descriptive geological information and analytical data. Any or all of this information may be retrieved and placed in a standard form (STATPAC) for computerized statistical manipulation or publication (VanTrump and Miesch, 1977).

ACKNOWLEDGMENTS

The authors wish to thank the Missouri Division of Geology and Land Survey--Dr. Wallace B. Howe, former Director, and Dr. J. Hadley Williams, Director, and their staffs for making these drill-hole samples available from their sample libraries.

REFERENCES

Grimes, D.J., and Marranzino, A.P., 1968, Direct-current arc and alternating-current spark emission spectrographic field methods for the semiquantitative analysis of geologic materials: U.S. Geological Survey Circular 591, 6 p.

Motooka, J.M., and Grimes, D.J., 1976, Analytical precision of one-sixth order semiquantitative spectrographic analyses: U.S. Geological Survey Circular 738, 25 p.

VanTrump, George, Jr., and Miesch, A.T., 1977, The U.S. Geological Survey RASS-STATPAC system for management and statistical reduction of geochemical data: Computers and Geosciences, v. 3, p. 475-488.

TABLE 1--SPECTROGRAPHIC ANALYSES OF INSOLUBLE-RESIDUE SAMPLES FROM DRILL HOLE NO. 116, JOPLIN 1 x 2 QUADRANGLE, MISSOURI AND KANSAS.

[N, not detected; <, detected but below the limit of determination shown; >, determined to be greater than the value shown.]

Sample	Latitude	Longitude	Fe-pct. s	Mg-pct. s	Ca-pct. s	Ti-pct. s	Mn-ppm s	Ag-ppm s	As-ppm s	Au-ppm s
J1160080	37 17 43	94 31 56	.30	.02	.70	.010	N	N	N	N
J1160100	37 17 43	94 31 56	.15	<.02	.70	.003	N	N	N	N
J1160120	37 17 43	94 31 56	.30	<.02	.20	.005	N	N	N	N
J1160135	37 17 43	94 31 56	.10	<.02	1.50	<.002	N	N	N	N
J1160160	37 17 43	94 31 56	.20	<.02	1.50	.002	N	N	N	N
J1160180	37 17 43	94 31 56	.20	<.02	N	.003	N	N	N	N
J1160200	37 17 43	94 31 56	.10	.02	.10	.020	N	N	N	N
J1160220	37 17 43	94 31 56	.70	.02	.10	.015	<10	N	N	N
J1160240	37 17 43	94 31 56	.10	.02	.20	.010	N	N	N	N
J1160260	37 17 43	94 31 56	.15	<.02	.50	.010	N	N	N	N
J1160280	37 17 43	94 31 56	.50	.05	.30	.020	N	N	N	N
J1160300	37 17 43	94 31 56	10.00	.02	.15	.015	<10	N	N	N
J1160320	37 17 43	94 31 56	1.50	.02	.70	.010	N	N	N	N
J1160335	37 17 43	94 31 56	5.00	.70	.20	.200	50	N	N	N
J1160350	37 17 43	94 31 56	2.00	1.50	.30	.300	30	N	N	N
J1160360	37 17 43	94 31 56	20.00	.07	N	.100	20	<.5	N	N
J1160380	37 17 43	94 31 56	1.00	1.00	.70	.150	N	N	N	N
J1160400	37 17 43	94 31 56	.50	.50	.20	.100	N	N	N	N
J1160425	37 17 43	94 31 56	5.00	1.00	.05	.300	<10	N	N	N
J1160440	37 17 43	94 31 56	.15	.05	.05	.010	N	N	N	N
J1160460	37 17 43	94 31 56	.50	.30	.30	.030	N	N	N	N
J1160480	37 17 43	94 31 56	1.50	.02	<.05	.015	<10	N	N	N
J1160500	37 17 43	94 31 56	.50	.30	.15	.050	N	N	N	N
J1160520	37 17 43	94 31 56	.15	.30	.30	.030	N	N	N	N
J1160540	37 17 43	94 31 56	1.50	.50	.15	.100	N	N	N	N
J1160560	37 17 43	94 31 56	.30	.10	.05	.010	N	N	N	N
J1160585	37 17 43	94 31 56	.10	.03	<.05	.015	N	N	N	N
J1160595	37 17 43	94 31 56	.05	.02	.05	N	N	N	N	N
J1160620	37 17 43	94 31 56	.70	.02	<.05	.010	N	N	N	N
J1160640	37 17 43	94 31 56	1.50	.10	<.05	.070	N	N	N	N
J1160660	37 17 43	94 31 56	.50	.10	.07	.020	N	N	N	N
J1160680	37 17 43	94 31 56	.30	.03	.05	.015	N	N	N	N
J1160700	37 17 43	94 31 56	.10	.10	.07	.020	N	N	N	N
J1160720	37 17 43	94 31 56	.20	.02	<.05	.015	N	N	N	N
J1160740	37 17 43	94 31 56	.05	.05	.05	.015	N	N	N	N
J1160755	37 17 43	94 31 56	<.05	<.02	N	.003	N	N	N	N
J1160775	37 17 43	94 31 56	.30	.20	<.05	.100	N	N	N	N
J1160790	37 17 43	94 31 56	2.00	1.00	.05	.200	<10	N	N	N
J1160805	37 17 43	94 31 56	.05	.10	.15	.010	N	N	N	N
J1160820	37 17 43	94 31 56	<.05	<.02	N	.002	N	N	N	N
J1160840	37 17 43	94 31 56	.50	<.02	N	.007	<10	N	N	N
J1160860	37 17 43	94 31 56	15.00	.10	<.05	.020	N	N	N	N
J1160880	37 17 43	94 31 56	.70	.07	.07	.010	N	N	N	N
J1160900	37 17 43	94 31 56	.10	.05	.05	.005	N	N	N	N
J1160920	37 17 43	94 31 56	3.00	1.50	.07	.500	<10	<.5	N	N

TABLE 1--SPECTROGRAPHIC ANALYSES OF INSOLUBLE-RESIDUE SAMPLES FROM DRILL HOLE NO. 116, JOPLIN 1 x 2 QUADRANGLE, MISSOURI AND KANSAS.--Continued

Sample	B-ppm s	Ba-ppm s	Be-ppm s	Bi-ppm s	Cd-ppm s	Co-ppm s	Cr-ppm s	Cu-ppm s	La-ppm s	Mo-ppm s	Nb-ppm s	Ni-ppm s
J1160080	15	30	N	N	N	N	N	N	N	N	N	<5
J1160100	15	50	N	N	N	N	N	N	N	N	N	<5
J1160120	15	20	N	N	N	N	N	N	N	N	N	<5
J1160135	20	<20	N	N	N	N	N	N	N	N	N	N
J1160160	30	20	N	N	N	N	N	N	N	N	N	<5
J1160180	30	50	N	N	N	N	N	7	N	N	N	<5
J1160200	20	30	N	N	N	N	N	N	N	N	N	<5
J1160220	20	30	N	N	N	N	N	<5	N	N	N	10
J1160240	15	30	N	N	N	<5	N	N	N	N	N	15
J1160260	15	50	N	N	N	N	N	N	N	N	N	15
J1160280	20	50	N	N	N	<5	N	N	N	N	N	50
J1160300	15	30	N	N	N	5	<10	15	N	N	N	100
J1160320	15	50	N	N	N	10	N	20	N	N	N	100
J1160335	70	5,000	1.5	N	N	15	20	20	20	N	N	70
J1160350	100	200	3.0	N	N	10	100	20	30	N	N	50
J1160360	10	300	<1.0	N	N	10	10	50	N	N	N	50
J1160380	20	300	N	N	N	N	N	5	N	N	N	<5
J1160400	30	200	N	N	N	N	N	<5	N	N	N	<5
J1160425	70	150	2.0	N	N	5	20	70	N	<5	N	20
J1160440	15	20	N	N	N	N	N	N	N	N	N	<5
J1160460	20	70	N	N	N	<5	N	<5	N	N	N	10
J1160480	10	<20	N	N	N	<5	N	7	N	N	N	7
J1160500	20	70	N	N	N	N	N	5	N	N	N	<5
J1160520	15	100	N	N	N	N	N	5	N	N	N	<5
J1160540	20	70	<1.0	N	N	<5	10	15	N	N	N	10
J1160560	15	30	N	N	N	N	N	<5	N	N	N	<5
J1160585	10	<20	N	N	N	N	N	N	N	N	N	<5
J1160595	15	30	N	N	N	N	N	N	N	N	N	5
J1160620	10	20	N	N	N	N	N	<5	N	N	N	<5
J1160640	20	70	N	N	N	<5	<10	7	N	<5	N	10
J1160660	30	70	N	N	N	N	<10	5	N	N	N	5
J1160680	20	30	N	N	N	N	N	<5	N	N	N	<5
J1160700	15	70	N	N	N	N	<10	<5	N	N	N	<5
J1160720	10	20	N	N	N	N	N	<5	N	N	N	<5
J1160740	10	30	N	N	N	N	N	<5	N	N	N	N
J1160755	N	30	N	N	N	N	N	N	N	N	N	N
J1160775	15	50	N	N	N	N	<10	5	N	<5	N	<5
J1160790	50	100	1.0	N	N	<5	50	20	N	<5	N	10
J1160805	N	N	N	N	N	N	N	<5	N	N	N	N
J1160820	<10	<20	N	N	N	N	N	<5	N	N	N	N
J1160840	N	30	N	N	N	N	N	5	N	N	N	N
J1160860	10	<20	<1.0	N	N	N	N	10	N	N	N	5
J1160880	10	20	N	N	N	N	N	7	N	N	N	<5
J1160900	15	20	N	N	N	N	N	<5	N	N	N	N
J1160920	70	200	2.0	N	N	10	100	20	N	<5	N	70

TABLE 1--SPECTROGRAPHIC ANALYSES OF INSOLUBLE-RESIDUE SAMPLES FROM DRILL HOLE NO. 116, JOPLIN 1 x 2 QUADRANGLE, MISSOURI AND KANSAS.--Continued

Sample	Pb-ppm s	Sb-ppm s	Sc-ppm s	Sn-ppm s	Sr-ppm s	V-ppm s	W-ppm s	Y-ppm s	Zn-ppm s	Zr-ppm s	Th-ppm s	Form #
J1160080	N	N	N	N	N	N	N	N	N	N	N	40
J1160100	N	N	N	N	N	N	N	N	N	N	N	40
J1160120	N	N	N	N	N	<10	N	N	N	<10	N	40
J1160135	N	N	N	N	N	<10	N	N	N	N	N	40
J1160160	N	N	N	N	N	<10	N	N	N	N	N	40
J1160180	N	N	N	N	N	<10	N	N	N	N	N	40
J1160200	N	N	N	N	N	<10	N	N	N	10	N	40
J1160220	N	N	N	N	N	10	N	N	<200	<10	N	40
J1160240	N	N	N	N	N	<10	N	N	<200	N	N	40
J1160260	N	N	N	N	N	<10	N	N	<200	<10	N	40
J1160280	N	N	N	N	N	10	N	N	N	10	N	40
J1160300	N	N	N	N	N	10	N	N	N	10	N	40
J1160320	N	N	N	N	N	<10	N	N	N	<10	N	40
J1160335	10	N	5	N	N	50	N	15	N	150	N	40
J1160350	<10	N	7	N	N	70	N	20	N	200	N	40
J1160360	<10	N	N	N	N	15	N	N	200	50	N	40
J1160380	<10	N	N	N	N	15	N	N	N	200	N	65
J1160400	N	N	N	N	N	15	N	N	N	150	N	65
J1160425	30	N	<5	N	N	50	N	N	N	100	N	65
J1160440	N	N	N	N	N	N	N	N	N	N	N	66
J1160460	N	N	N	N	N	<10	N	N	N	15	N	66
J1160480	N	N	N	N	N	N	N	N	N	<10	N	66
J1160500	N	N	N	N	N	10	N	N	N	20	N	66
J1160520	N	N	N	N	N	<10	N	N	N	70	N	66
J1160540	10	N	N	N	N	15	N	N	N	30	N	66
J1160560	N	N	N	N	N	N	N	N	N	N	N	66
J1160585	N	N	N	N	N	N	N	N	N	<10	N	66
J1160595	N	N	N	N	N	N	N	N	N	N	N	67
J1160620	N	N	N	N	N	N	N	N	N	N	N	67
J1160640	<10	N	N	N	N	10	N	N	N	15	N	67
J1160660	N	N	N	N	150	<10	N	N	N	<10	N	67
J1160680	N	N	N	N	N	<10	N	N	N	N	N	67
J1160700	N	N	N	N	N	10	N	N	N	10	N	67
J1160720	N	N	N	N	N	N	N	N	N	<10	N	67
J1160740	N	N	N	N	300	N	<50	N	N	10	N	67
J1160755	N	N	N	N	N	N	N	N	N	50	N	67
J1160775	N	N	N	N	N	10	N	N	N	50	N	67
J1160790	10	N	<5	N	N	50	N	N	N	70	N	67
J1160805	N	N	N	N	N	N	N	N	N	10	N	68
J1160820	N	N	N	N	N	N	N	N	N	<10	N	68
J1160840	N	N	N	N	N	N	N	N	N	20	N	68
J1160860	N	N	N	N	N	15	N	N	<200	10	N	68
J1160880	N	N	N	N	N	N	N	N	N	50	N	68
J1160900	N	N	N	N	N	N	N	N	N	N	N	68
J1160920	30	N	5	N	N	150	N	N	N	100	N	68

TABLE 1--SPECTROGRAPHIC ANALYSES OF INSOLUBLE-RESIDUE SAMPLES FROM DRILL HOLE NO. 116, JOPLIN 1 x 2 QUADRANGLE, MISSOURI AND KANSAS.--Continued

Sample	Latitude	Longitude	Fe-pct. s	Mg-pct. s	Ca-pct. s	Ti-pct. s	Mn-ppm s	Ag-ppm s	As-ppm s	Au-ppm s
J1160940	37 17 43	94 31 56	1.50	.70	.15	.300	10	N	N	N
J1160960	37 17 43	94 31 56	.20	.02	.10	.010	N	N	N	N
J1160980	37 17 43	94 31 56	<.05	.02	<.05	<.002	N	N	N	N
J1161000	37 17 43	94 31 56	<.05	<.02	<.05	<.002	N	N	N	N
J1161020	37 17 43	94 31 56	.10	.50	.50	.003	N	N	N	N
J1161040	37 17 43	94 31 56	1.00	.20	.10	.200	N	N	N	N
J1161060	37 17 43	94 31 56	2.00	.07	<.05	.030	N	N	N	N
J1161085	37 17 43	94 31 56	2.00	.07	.05	.015	N	N	N	N
J1161095	37 17 43	94 31 56	.05	.02	N	.010	N	N	N	N
J1161120	37 17 43	94 31 56	1.00	.30	N	.150	<10	N	N	N
J1161140	37 17 43	94 31 56	5.00	.07	<.05	.015	N	<.5	N	N
J1161180	37 17 43	94 31 56	5.00	1.50	.05	.300	20	<.5	N	N
J1161200	37 17 43	94 31 56	.50	.05	<.05	.015	N	N	N	N
J1161225	37 17 43	94 31 56	10.00	.15	N	.100	10	<.5	N	N

TABLE 1--SPECTROGRAPHIC ANALYSES OF INSOLUBLE-RESIDUE SAMPLES FROM DRILL HOLE NO. 116, JOPLIN 1 x 2 QUADRANGLE, MISSOURI AND KANSAS.--Continued

Sample	B-ppm s	Ba-ppm s	Be-ppm s	Bi-ppm s	Cd-ppm s	Co-ppm s	Cr-ppm s	Cu-ppm s	La-ppm s	Mo-ppm s	Nb-ppm s	Ni-ppm s
J1160940	30	150	1.0	N	N	<5	70	15	N	5	N	7
J1160960	<10	50	N	N	N	N	N	<5	N	N	N	<5
J1160980	10	30	N	N	N	N	N	<5	N	N	N	N
J1161000	N	300	N	N	N	N	N	N	N	N	N	N
J1161020	10	20	N	N	N	N	N	<5	N	N	N	N
J1161040	30	300	<1.0	N	N	<5	<10	5	<20	N	N	5
J1161060	20	50	N	N	N	<5	N	15	N	5	N	10
J1161085	10	20	N	N	N	<5	N	10	N	<5	N	10
J1161095	N	50	N	N	N	N	N	N	N	N	N	N
J1161120	50	100	1.5	N	N	N	10	10	N	10	N	<5
J1161140	10	20	N	N	N	<5	N	50	N	<5	N	15
J1161180	100	2,000	3.0	N	N	5	70	30	20	70	N	20
J1161200	10	5,000	N	N	N	N	N	5	N	N	N	<5
J1161225	20	50	<1.0	N	N	<5	10	20	N	7	N	15

TABLE 1--SPECTROGRAPHIC ANALYSES OF INSOLUBLE-RESIDUE SAMPLES FROM DRILL HOLE NO. 116, JOPLIN 1 x 2 QUADRANGLE, MISSOURI AND KANSAS.--Continued

Sample	Pb-ppm s	Sb-ppm s	Sc-ppm s	Sn-ppm s	Sr-ppm s	V-ppm s	W-ppm s	Y-ppm s	Zn-ppm s	Zr-ppm s	Th-ppm s	Form #
J1160940	<10	N	<5	N	N	150	N	N	N	100	N	68
J1160960	N	N	N	N	N	N	N	N	N	N	N	68
J1160980	N	N	N	N	N	N	N	N	N	N	N	68
J1161000	N	N	N	N	N	N	N	N	N	N	N	68
J1161020	N	N	N	N	N	N	N	N	N	N	N	68
J1161040	N	N	N	N	N	10	N	<10	N	200	N	68
J1161060	N	N	N	N	N	15	N	N	N	15	N	68
J1161085	N	N	N	N	N	<10	N	N	N	<10	N	68
J1161095	N	N	N	N	N	N	N	N	N	<10	N	69
J1161120	30	N	N	N	N	70	N	N	N	70	N	81
J1161140	<10	N	N	N	N	<10	N	N	N	<10	N	81
J1161180	15	N	<5	N	N	50	N	10	N	200	N	81
J1161200	N	N	N	N	N	15	N	N	N	<10	N	81
J1161225	20	N	N	N	N	20	N	N	N	20	N	81

TABLE 2--SPECTROGRAPHIC ANALYSES OF INSOLUBLE-RESIDUE SAMPLES FROM DRILL HOLE NO. 117, JOPLIN 1 x 2 QUADRANGLE, MISSOURI AND KANSAS.

[N, not detected; <, detected but below the limit of determination shown; >, determined to be greater than the value shown.]

Sample	Latitude	Longitude	Fe-pct. s	Mg-pct. s	Ca-pct. s	Ti-pct. s	Mn-ppm s	Ag-ppm s	As-ppm s	Au-ppm s
J1170120	37 21 15	94 35 11	5.00	.50	.30	.100	30	N	N	N
J1170125	37 21 15	94 35 11	2.00	1.00	.20	.500	10	N	N	N
J1170140	37 21 15	94 35 11	1.50	.10	.20	.050	10	N	N	N
J1170165	37 21 15	94 35 11	1.00	.20	.10	.200	<10	N	N	N
J1170180	37 21 15	94 35 11	.50	.02	.50	.015	N	N	N	N
J1170200	37 21 15	94 35 11	.50	.10	.70	.070	N	N	N	N
J1170220	37 21 15	94 35 11	1.00	.20	.30	.100	N	N	N	N
J1170240	37 21 15	94 35 11	.10	<.02	.15	<.002	N	N	N	N
J1170245	37 21 15	94 35 11	.15	<.02	.20	<.002	N	N	N	N
J1170260	37 21 15	94 35 11	.05	<.02	.05	<.002	N	N	N	N
J1170270	37 21 15	94 35 11	.05	.02	<.05	.002	N	N	N	N
J1170290	37 21 15	94 35 11	.20	<.02	.15	.002	N	N	N	N
J1170310	37 21 15	94 35 11	.20	<.02	.20	.005	N	N	N	N
J1170330	37 21 15	94 35 11	.20	.02	.30	.015	<10	N	N	N
J1170350	37 21 15	94 35 11	.10	.02	.15	.007	N	N	N	N
J1170375	37 21 15	94 35 11	.20	.03	.20	.015	<10	N	N	N
J1170390	37 21 15	94 35 11	.15	.02	.50	.010	N	N	N	N
J1170415	37 21 15	94 35 11	.70	.10	.30	.030	N	N	N	N
J1170435	37 21 15	94 35 11	10.00	3.00	2.00	1.000	70	N	N	N
J1170445	37 21 15	94 35 11	10.00	1.00	.30	.200	100	N	N	N
J1170460	37 21 15	94 35 11	5.00	.50	.05	.050	70	N	N	N
J1170480	37 21 15	94 35 11	.70	.20	.07	.020	N	N	N	N
J1170495	37 21 15	94 35 11	1.50	.15	.10	.015	N	N	N	N
J1170510	37 21 15	94 35 11	2.00	1.50	1.50	.100	10	N	N	N
J1170530	37 21 15	94 35 11	.50	.30	.10	.010	N	N	N	N
J1170550	37 21 15	94 35 11	.30	.20	.07	.007	N	N	N	N
J1170570	37 21 15	94 35 11	.50	.50	.30	.015	N	N	N	N
J1170590	37 21 15	94 35 11	.50	.20	.20	.007	<10	N	N	N
J1170610	37 21 15	94 35 11	.50	.10	.10	.010	10	N	N	N
J1170630	37 21 15	94 35 11	.20	.02	<.05	<.002	N	N	N	N
J1170650	37 21 15	94 35 11	1.00	.03	<.05	.007	<10	N	N	N
J1170670	37 21 15	94 35 11	1.00	.07	.10	.007	10	N	N	N
J1170690	37 21 15	94 35 11	.70	.50	.20	.010	<10	N	N	N
J1170705	37 21 15	94 35 11	.50	.20	.15	.015	N	N	N	N
J1170720	37 21 15	94 35 11	.10	.02	<.05	<.002	N	N	N	N
J1170740	37 21 15	94 35 11	.50	.07	.05	.002	N	N	N	N
J1170760	37 21 15	94 35 11	.70	.10	.10	.007	N	N	<200	N
J1170780	37 21 15	94 35 11	.10	<.02	N	.002	N	N	N	N
J1170800	37 21 15	94 35 11	.05	<.02	N	.005	<10	N	N	N
J1170820	37 21 15	94 35 11	.05	N	N	<.002	N	N	N	N
J1170840	37 21 15	94 35 11	.10	<.02	<.05	.003	<10	N	N	N
J1170860	37 21 15	94 35 11	<.05	<.02	N	<.002	N	N	N	N
J1170870	37 21 15	94 35 11	<.05	<.02	N	<.002	N	N	N	N
J1170880	37 21 15	94 35 11	.10	<.02	N	N	N	N	N	N
J1170900	37 21 15	94 35 11	.30	.03	.05	<.002	<10	N	N	N

TABLE 2--SPECTROGRAPHIC ANALYSES OF INSOLUBLE-RESIDUE SAMPLES FROM DRILL HOLE NO. 117, JOPLIN 1 x 2 QUADRANGLE, MISSOURI AND KANSAS.--Continued

Sample	B-ppm s	Ba-ppm s	Be-ppm s	Bi-ppm s	Cd-ppm s	Co-ppm s	Cr-ppm s	Cu-ppm s	La-ppm s	Mo-ppm s	Nb-ppm s	Ni-ppm s
J1170120	50	70	<1.0	N	N	10	30	10	20	N	N	50
J1170125	100	100	N	N	N	7	100	10	N	N	<20	10
J1170140	30	30	<1.0	N	N	5	10	5	N	N	N	20
J1170165	70	50	<1.0	N	N	<5	50	10	N	N	<20	10
J1170180	30	20	N	N	N	N	10	<5	N	N	N	<5
J1170200	30	20	N	N	N	N	20	5	N	N	N	5
J1170220	50	30	<1.0	N	N	N	30	5	N	N	N	7
J1170240	30	<20	N	N	N	N	N	N	N	N	N	N
J1170245	50	<20	N	N	N	N	N	N	N	N	N	N
J1170260	50	20	N	N	N	N	N	N	N	N	N	N
J1170270	30	<20	N	N	N	N	N	<5	N	N	N	N
J1170290	30	<20	N	N	N	N	<10	N	N	N	N	<5
J1170310	30	<20	N	N	N	N	N	N	N	N	N	5
J1170330	30	20	N	N	N	N	<10	N	N	N	N	<5
J1170350	20	<20	N	N	N	N	N	N	N	N	N	<5
J1170375	20	20	N	N	N	N	<10	<5	N	N	N	7
J1170390	15	<20	N	N	N	N	N	<5	N	N	N	5
J1170415	20	30	N	N	N	N	N	<5	N	N	N	5
J1170435	200	200	1.0	N	N	30	150	50	20	N	20	70
J1170445	100	50	2.0	N	N	30	70	70	N	N	<20	100
J1170460	50	300	<1.0	N	N	7	70	50	N	N	N	50
J1170480	20	50	N	N	N	N	N	5	N	N	N	N
J1170495	20	30	N	N	N	<5	N	20	N	N	N	10
J1170510	30	150	<1.0	N	N	<5	20	15	N	N	N	10
J1170530	50	50	N	N	N	N	<10	<5	N	N	N	<5
J1170550	30	20	N	N	N	N	N	<5	N	N	N	<5
J1170570	30	20	N	N	N	N	N	5	N	N	N	<5
J1170590	30	50	N	N	N	N	<10	<5	N	N	N	<5
J1170610	50	20	N	N	N	N	<10	<5	N	N	N	<5
J1170630	30	200	N	N	N	N	N	N	N	N	N	N
J1170650	50	<20	N	N	<20	N	<10	7	N	N	N	<5
J1170670	30	30	N	N	N	N	N	70	N	N	N	5
J1170690	50	20	N	N	N	N	N	5	N	N	N	5
J1170705	50	50	N	N	N	N	<10	<5	N	N	N	<5
J1170720	20	20	N	N	N	N	<10	N	N	N	N	N
J1170740	20	30	N	N	N	N	10	<5	N	N	N	<5
J1170760	70	200	N	N	70	N	10	150	N	N	N	<5
J1170780	<10	<20	N	N	N	N	20	N	N	<5	N	N
J1170800	10	<20	N	N	N	N	10	N	N	N	N	N
J1170820	N	N	N	N	N	N	N	N	N	N	N	N
J1170840	10	<20	N	N	N	N	<10	N	N	N	N	N
J1170860	<10	<20	N	N	N	N	<10	N	N	N	N	N
J1170870	<10	20	N	N	N	N	N	N	N	N	N	N
J1170880	<10	N	N	N	N	N	<10	N	N	N	N	N
J1170900	10	30	N	N	N	N	N	<5	N	N	N	<5

TABLE 2--SPECTROGRAPHIC ANALYSES OF INSOLUBLE-RESIDUE SAMPLES FROM DRILL HOLE NO. 117, JOPLIN 1 x 2 QUADRANGLE, MISSOURI AND KANSAS.--Continued

Sample	Pb-ppm s	Sb-ppm s	Sc-ppm s	Sn-ppm s	Sr-ppm s	V-ppm s	W-ppm s	Y-ppm s	Zn-ppm s	Zr-ppm s	Th-ppm s	Form #
J1170120	N	N	5	N	N	15	N	20	N	70	N	40
J1170125	<10	N	5	N	N	100	N	15	N	200	N	40
J1170140	N	N	N	N	N	10	<50	N	N	10	N	40
J1170165	N	N	5	N	N	50	<50	10	N	100	N	40
J1170180	N	N	N	N	N	<10	N	N	N	10	N	40
J1170200	N	N	N	N	N	15	N	<10	<200	70	N	40
J1170220	N	N	N	N	N	20	N	10	N	50	N	40
J1170240	N	N	N	N	N	N	N	N	N	N	N	40
J1170245	N	N	N	N	N	N	N	N	N	N	N	40
J1170260	N	N	N	N	N	N	N	N	N	N	N	40
J1170270	N	N	N	N	N	N	N	N	N	N	N	40
J1170290	N	N	N	N	N	N	N	N	N	N	N	40
J1170310	N	N	N	N	N	<10	N	N	N	<10	N	40
J1170330	N	N	N	N	N	10	N	N	N	10	N	40
J1170350	N	N	N	N	N	<10	N	N	N	N	N	40
J1170375	N	N	N	N	N	<10	N	N	N	N	N	40
J1170390	N	N	N	N	N	10	N	N	N	N	N	40
J1170415	N	N	N	N	N	<10	N	N	N	30	N	40
J1170435	10	N	10	N	N	150	N	30	N	300	N	40
J1170445	20	N	5	N	N	150	N	10	<200	70	N	40
J1170460	N	N	<5	N	N	70	N	N	N	20	N	65
J1170480	N	N	N	N	N	10	N	N	N	15	N	65
J1170495	N	N	N	N	N	<10	N	N	N	<10	N	65
J1170510	10	N	<5	N	N	30	N	N	N	100	N	66
J1170530	N	N	N	N	N	N	N	N	N	<10	N	66
J1170550	N	N	N	N	N	N	N	N	N	N	N	66
J1170570	N	N	N	N	N	<10	N	N	N	<10	N	66
J1170590	N	N	N	N	N	N	N	N	N	N	N	66
J1170610	N	N	N	N	N	N	N	N	N	N	N	66
J1170630	N	N	N	N	N	N	N	N	N	N	N	66
J1170650	N	N	N	N	N	N	N	N	3,000	N	N	66
J1170670	N	N	N	N	N	N	N	N	N	N	N	66
J1170690	N	N	N	N	N	N	N	N	N	N	N	66
J1170705	N	N	N	N	N	N	N	N	N	<10	N	66
J1170720	N	N	N	N	N	N	N	N	N	N	N	67
J1170740	N	N	N	N	N	N	N	N	N	N	N	67
J1170760	N	N	N	N	N	N	N	N	5,000	20	N	67
J1170780	N	N	N	N	N	N	N	N	N	<10	N	67
J1170800	N	N	N	N	N	N	N	N	N	30	N	67
J1170820	N	N	N	N	N	N	N	N	N	N	N	67
J1170840	N	N	N	N	N	N	N	N	N	20	N	67
J1170860	N	N	N	N	N	N	N	N	N	N	N	67
J1170870	N	N	N	N	N	N	N	N	N	10	N	67
J1170880	N	N	N	N	N	N	N	N	N	N	N	68
J1170900	N	N	N	N	N	N	N	N	N	<10	N	68

TABLE 2--SPECTROGRAPHIC ANALYSES OF INSOLUBLE-RESIDUE SAMPLES FROM DRILL HOLE NO. 117, JOPLIN 1 x 2 QUADRANGLE, MISSOURI AND KANSAS.--Continued

Sample	Latitude	Longitude	Fe-pct. s	Mg-pct. s	Ca-pct. s	Ti-pct. s	Mn-ppm s	Ag-ppm s	As-ppm s	Au-ppm s
J1170920	37 21 15	94 35 11	.30	.05	.05	.020	10	N	N	N
J1170935	37 21 15	94 35 11	.20	.02	<.05	.007	<10	N	N	N
J1170950	37 21 15	94 35 11	.10	.02	<.05	<.002	N	N	N	N
J1170970	37 21 15	94 35 11	.15	.02	<.05	.002	N	N	N	N
J1171080	37 21 15	94 35 11	.50	.10	.10	.010	N	N	N	N
J1171090	37 21 15	94 35 11	1.50	.03	<.05	.010	30	N	N	N
J1171100	37 21 15	94 35 11	2.00	.10	.05	.020	50	N	N	N
J1171120	37 21 15	94 35 11	1.00	.03	<.05	.015	N	N	N	N
J1171145	37 21 15	94 35 11	.50	.20	<.05	.020	N	N	N	N
J1171160	37 21 15	94 35 11	5.00	2.00	.05	.200	20	N	N	N
J1171180	37 21 15	94 35 11	3.00	1.50	.10	.200	15	N	N	N
J1171200	37 21 15	94 35 11	5.00	.70	<.05	.100	<10	<.5	N	N
J1171220	37 21 15	94 35 11	10.00	1.00	.05	.200	20	.5	N	N
J1171240	37 21 15	94 35 11	10.00	1.00	.05	.150	20	<.5	<200	N
J1171260	37 21 15	94 35 11	5.00	.10	.07	.010	15	N	N	N
J1171270	37 21 15	94 35 11	3.00	.10	.05	.010	<10	N	N	N
J1171280	37 21 15	94 35 11	5.00	.50	.20	.100	10	<.5	N	N
J1171300	37 21 15	94 35 11	3.00	.15	.10	.007	15	<.5	N	N
J1171320	37 21 15	94 35 11	2.00	.07	.05	.020	10	N	N	N
J1171340	37 21 15	94 35 11	5.00	.10	.05	.015	10	N	N	N
J1171350	37 21 15	94 35 11	3.00	.15	.15	.015	10	N	N	N
J1171370	37 21 15	94 35 11	7.00	2.00	.30	.500	30	<.5	N	N
J1171390	37 21 15	94 35 11	7.00	1.50	.30	.300	20	N	N	N
J1171410	37 21 15	94 35 11	10.00	2.00	.50	.500	30	N	N	N
J1171430	37 21 15	94 35 11	5.00	1.50	.30	.300	15	N	N	N
J1171440	37 21 15	94 35 11	3.00	1.50	.50	.200	20	N	N	N
J1171450	37 21 15	94 35 11	5.00	1.50	.50	.300	30	N	N	N
J1171460	37 21 15	94 35 11	2.00	.70	.10	.200	10	N	N	N
J1171470	37 21 15	94 35 11	3.00	1.00	.20	.500	20	N	N	N
J1171480	37 21 15	94 35 11	2.00	1.00	.20	.500	20	N	N	N

TABLE 2--SPECTROGRAPHIC ANALYSES OF INSOLUBLE-RESIDUE SAMPLES FROM DRILL HOLE NO. 117, JOPLIN 1 x 2 QUADRANGLE, MISSOURI AND KANSAS.--Continued

Sample	B-ppm s	Ba-ppm s	Be-ppm s	Bi-ppm s	Cd-ppm s	Co-ppm s	Cr-ppm s	Cu-ppm s	La-ppm s	Mo-ppm s	Nb-ppm s	Ni-ppm s
J1170920	15	50	N	N	N	N	30	<5	N	N	N	<5
J1170935	20	30	N	N	N	N	50	<5	N	<5	N	N
J1170950	20	<20	N	N	N	N	<10	N	N	<5	N	N
J1170970	20	<20	N	N	N	N	20	N	N	<5	N	N
J1171080	20	30	N	N	N	N	N	<5	N	N	N	<5
J1171090	20	20	N	N	N	<5	N	15	N	N	N	7
J1171100	50	30	N	N	N	<5	<10	20	N	<5	N	7
J1171120	15	<20	N	N	N	N	N	5	N	N	N	<5
J1171145	20	30	<1.0	N	N	N	N	10	N	N	N	N
J1171160	200	30	2.0	N	N	7	50	20	N	10	N	20
J1171180	150	200	1.5	N	N	5	50	20	N	<5	N	15
J1171200	70	<20	2.0	N	N	10	20	50	N	<5	N	30
J1171220	100	50	2.0	N	N	20	50	100	N	10	<20	70
J1171240	100	30	2.0	N	N	30	70	100	N	20	N	100
J1171260	50	20	N	N	N	5	10	30	N	<5	N	20
J1171270	30	<20	N	N	N	<5	10	20	N	<5	N	15
J1171280	50	50	<1.0	N	N	5	20	50	N	5	N	30
J1171300	50	150	<1.0	N	N	<5	N	50	N	N	N	20
J1171320	50	<20	N	N	N	7	N	20	N	<5	N	30
J1171340	70	30	N	N	N	10	N	20	N	10	N	50
J1171350	70	200	N	N	N	15	N	20	N	<5	N	50
J1171370	100	500	2.0	N	N	15	50	50	150	7	<20	30
J1171390	70	300	<1.0	N	N	10	20	30	70	5	<20	30
J1171410	70	700	1.0	N	N	7	30	20	100	5	20	15
J1171430	70	500	N	N	N	5	10	15	50	<5	N	7
J1171440	100	700	<1.0	N	N	<5	15	10	30	N	<20	5
J1171450	150	1,000	1.0	N	N	5	20	15	50	<5	<20	7
J1171460	50	500	<1.0	N	N	<5	N	7	<20	N	N	<5
J1171470	70	1,000	1.0	N	N	<5	20	10	30	N	<20	<5
J1171480	100	700	3.0	N	N	<5	15	10	20	N	<20	<5

TABLE 2--SPECTROGRAPHIC ANALYSES OF INSOLUBLE-RESIDUE SAMPLES FROM DRILL HOLE NO. 117, JOPLIN 1 x 2 QUADRANGLE, MISSOURI AND KANSAS.--Continued

Sample	Pb-ppm s	Sb-ppm s	Sc-ppm s	Sn-ppm s	Sr-ppm s	V-ppm s	W-ppm s	Y-ppm s	Zn-ppm s	Zr-ppm s	Th-ppm s	Form #
J1170920	N	N	N	N	N	N	N	N	N	<10	N	68
J1170935	N	N	N	N	N	N	N	N	N	N	N	68
J1170950	N	N	N	N	N	N	N	N	N	N	N	68
J1170970	N	N	N	N	N	N	N	N	N	N	N	68
J1171080	N	N	N	N	N	<10	N	N	N	70	N	68
J1171090	N	N	N	N	N	<10	N	N	N	N	N	68
J1171100	N	N	N	N	N	10	N	N	200	10	N	68
J1171120	N	N	N	N	N	N	N	N	N	10	N	69
J1171145	N	N	N	N	N	10	N	N	N	50	N	69
J1171160	20	N	5	N	N	100	N	N	N	70	N	81
J1171180	<10	N	<5	N	N	100	N	N	<200	100	N	81
J1171200	50	N	N	N	N	30	N	N	N	50	N	81
J1171220	100	N	<5	N	N	100	N	N	<200	70	N	81
J1171240	50	N	<5	N	N	50	N	N	N	50	N	81
J1171260	10	N	N	N	N	N	N	N	N	N	N	81
J1171270	<10	N	N	N	N	<10	N	N	N	20	N	81
J1171280	20	N	N	N	N	20	N	N	N	30	N	82
J1171300	10	N	N	N	N	N	N	N	N	N	N	82
J1171320	<10	N	N	N	N	N	N	N	N	N	N	82
J1171340	10	N	N	N	N	N	N	N	N	<10	N	82
J1171350	20	N	N	N	N	N	N	N	N	10	N	82
J1171370	50	N	5	N	100	50	N	15	N	200	N	83
J1171390	70	N	<5	N	<100	30	N	20	N	200	N	83
J1171410	50	N	5	N	100	50	N	30	N	300	N	83
J1171430	30	N	<5	N	N	30	N	30	N	200	N	83
J1171440	15	N	<5	N	<100	30	N	30	N	200	N	83
J1171450	20	N	<5	N	150	30	N	50	N	300	N	83
J1171460	10	N	N	N	N	20	N	20	N	200	N	83
J1171470	15	N	5	N	100	30	N	30	N	200	N	71
J1171480	20	N	5	N	<100	30	N	30	N	300	N	71

TABLE 3--SPECTROGRAPHIC ANALYSES OF INSOLUBLE-RESIDUE SAMPLES FROM DRILL HOLE NO. 118, JOPLIN 1 x 2 QUADRANGLE, MISSOURI AND KANSAS.

[N, not detected; <, detected but below the limit of determination shown; >, determined to be greater than the value shown.]

Sample	Latitude	Longitude	Fe-pct. s	Mg-pct. s	Ca-pct. s	Ti-pct. s	Mn-ppm s	Ag-ppm s	As-ppm s	Au-ppm s
J1180155	37 25 21	94 25 16	10.00	.50	.07	.500	100	<.5	N	N
J1180170	37 25 21	94 25 16	2.00	.20	.10	.150	30	N	N	N
J1180190	37 25 21	94 25 16	1.50	.02	<.05	.020	<10	N	N	N
J1180210	37 25 21	94 25 16	1.00	.02	.10	.050	10	N	N	N
J1180230	37 25 21	94 25 16	.50	.03	.15	.010	<10	N	N	N
J1180250	37 25 21	94 25 16	.50	<.02	.10	.007	N	N	N	N
J1180270	37 25 21	94 25 16	2.00	.20	.30	.050	15	N	N	N
J1180290	37 25 21	94 25 16	.70	.02	<.05	.010	N	N	N	N
J1180310	37 25 21	94 25 16	.70	.02	.05	.007	10	N	N	N
J1180330	37 25 21	94 25 16	.50	<.02	<.05	.005	N	N	N	N
J1180350	37 25 21	94 25 16	.20	.05	.05	.002	N	N	N	N
J1180370	37 25 21	94 25 16	.05	.03	.10	.007	N	N	N	N
J1180390	37 25 21	94 25 16	.05	.05	.70	.007	N	N	N	N
J1180410	37 25 21	94 25 16	.30	.03	.30	.010	<10	N	N	N
J1180430	37 25 21	94 25 16	.10	.05	2.00	.007	N	N	N	N
J1180450	37 25 21	94 25 16	.10	.30	3.00	.007	<10	N	N	N
J1180470	37 25 21	94 25 16	1.50	.70	.30	.700	<10	N	N	N
J1180490	37 25 21	94 25 16	5.00	3.00	1.50	1.000	70	N	N	N
J1180510	37 25 21	94 25 16	5.00	2.00	.70	.500	20	N	N	N
J1180530	37 25 21	94 25 16	1.50	.30	2.00	.070	100	N	N	N
J1180550	37 25 21	94 25 16	.30	.20	1.00	.050	<10	N	N	N
J1180570	37 25 21	94 25 16	.50	.50	1.00	.030	10	N	N	N
J1180590	37 25 21	94 25 16	.70	.50	.30	.100	N	N	N	N
J1180610	37 25 21	94 25 16	1.00	.10	.20	.030	N	N	N	N
J1180630	37 25 21	94 25 16	.70	.20	1.50	.030	N	N	N	N
J1180650	37 25 21	94 25 16	.70	.10	.15	.050	N	N	N	N
J1180670	37 25 21	94 25 16	.70	.50	.10	.070	N	N	N	N
J1180690	37 25 21	94 25 16	3.00	.70	2.00	.050	N	N	N	N
J1180710	37 25 21	94 25 16	1.00	1.00	2.00	.150	10	N	N	N
J1180730	37 25 21	94 25 16	1.50	3.00	7.00	.300	20	N	N	N
J1180750	37 25 21	94 25 16	1.00	.50	.50	.100	N	N	N	N
J1180770	37 25 21	94 25 16	.70	.50	.50	.070	N	N	N	N
J1180790	37 25 21	94 25 16	.15	.05	N	.010	N	N	N	N
J1180810	37 25 21	94 25 16	.10	.05	N	.020	N	N	N	N
J1180830	37 25 21	94 25 16	.15	.05	N	.015	N	N	N	N
J1180850	37 25 21	94 25 16	.10	.05	<.05	.010	N	N	N	N
J1180870	37 25 21	94 25 16	<.05	<.02	N	<.002	N	N	N	N
J1180890	37 25 21	94 25 16	.05	.02	N	.005	N	N	N	N
J1180910	37 25 21	94 25 16	.30	.10	<.05	.010	N	N	N	N
J1180930	37 25 21	94 25 16	<.05	.10	.10	.007	N	N	N	N
J1180950	37 25 21	94 25 16	.05	.20	.05	.020	N	N	N	N
J1180970	37 25 21	94 25 16	1.00	.20	<.05	.030	N	N	N	N
J1180990	37 25 21	94 25 16	1.00	.50	.05	.150	N	N	N	N
J1181010	37 25 21	94 25 16	.15	.10	.05	.015	N	N	N	N
J1181030	37 25 21	94 25 16	.20	.20	.05	.050	N	N	N	N

TABLE 3--SPECTROGRAPHIC ANALYSES OF INSOLUBLE-RESIDUE SAMPLES FROM DRILL HOLE NO. 118, JOPLIN 1 x 2 QUADRANGLE, MISSOURI AND KANSAS.--Continued

Sample	B-ppm s	Ba-ppm s	Be-ppm s	Bi-ppm s	Cd-ppm s	Co-ppm s	Cr-ppm s	Cu-ppm s	La-ppm s	Mo-ppm s	Nb-ppm s	Ni-ppm s
J1180155	200	150	1	N	N	50	150	50	20	N	<20	100
J1180170	50	200	<1	N	N	5	70	10	N	N	N	20
J1180190	30	<20	N	N	N	<5	N	5	N	N	N	10
J1180210	30	20	N	N	N	<5	N	5	N	N	N	7
J1180230	30	20	N	N	N	N	N	<5	N	N	N	<5
J1180250	30	<20	N	N	N	N	N	<5	N	N	N	<5
J1180270	50	30	<1	N	N	<5	20	7	20	N	N	5
J1180290	20	N	N	N	N	N	N	<5	N	N	N	<5
J1180310	30	<20	N	N	N	N	N	<5	N	N	N	N
J1180330	30	<20	N	N	N	N	N	N	N	N	N	N
J1180350	50	<20	N	N	N	N	N	N	N	N	N	<5
J1180370	30	<20	N	N	N	N	N	N	N	N	N	<5
J1180390	30	20	N	N	N	N	N	N	N	N	N	N
J1180410	20	<20	N	N	N	N	N	<5	N	N	N	N
J1180430	20	20	N	N	N	N	N	N	N	N	N	N
J1180450	20	<20	N	N	N	N	N	N	N	N	N	N
J1180470	100	100	N	N	N	<5	50	<5	N	N	<20	5
J1180490	200	200	1	N	N	7	100	20	20	N	<20	20
J1180510	100	150	1	N	N	7	70	70	<20	N	N	50
J1180530	30	30	N	N	N	N	N	5	N	N	N	<5
J1180550	20	20	N	N	N	N	N	<5	N	N	N	N
J1180570	20	50	N	N	N	N	N	<5	N	N	N	<5
J1180590	30	100	<1	N	N	N	<10	15	N	N	N	<5
J1180610	30	50	N	N	N	N	N	5	N	N	N	5
J1180630	10	30	N	N	N	N	N	10	N	N	N	<5
J1180650	30	50	N	N	N	10	N	5	N	N	N	<5
J1180670	70	100	<1	N	N	N	<10	<5	N	N	N	<5
J1180690	50	50	N	N	N	300	N	5	N	N	<20	5
J1180710	70	100	N	N	N	100	10	7	N	N	<20	5
J1180730	100	300	<1	N	N	15	20	15	N	N	N	5
J1180750	70	100	<1	N	N	20	<10	5	N	N	N	<5
J1180770	20	50	N	N	N	15	N	<5	N	N	N	N
J1180790	N	30	N	N	N	15	N	N	N	N	N	N
J1180810	N	20	N	N	N	20	N	N	N	N	<20	N
J1180830	N	20	N	N	N	20	N	N	N	N	N	N
J1180850	10	30	N	N	N	<5	N	N	N	N	N	<5
J1180870	N	<20	N	N	N	10	N	<5	N	N	N	N
J1180890	N	30	N	N	N	N	N	N	N	N	N	N
J1180910	N	20	N	N	N	N	N	<5	N	N	N	<5
J1180930	20	20	N	N	N	30	N	N	N	N	N	N
J1180950	20	30	N	N	N	5	N	<5	N	<5	N	<5
J1180970	20	30	N	N	N	N	<10	7	N	<5	N	5
J1180990	30	30	<1	N	N	20	20	7	N	N	N	5
J1181010	10	<20	N	N	N	N	N	<5	N	<5	N	N
J1181030	15	20	N	N	N	10	10	5	N	N	N	5

TABLE 3--SPECTROGRAPHIC ANALYSES OF INSOLUBLE-RESIDUE SAMPLES FROM DRILL HOLE NO. 118, JOPLIN 1 x 2 QUADRANGLE, MISSOURI AND KANSAS.--Continued

Sample	Pb-ppm s	Sb-ppm s	Sc-ppm s	Sn-ppm s	Sr-ppm s	V-ppm s	W-ppm s	Y-ppm s	Zn-ppm s	Zr-ppm s	Th-ppm s	Form #
J1180155	20	N	10	N	<100	100	N	20	200	200	N	40
J1180170	N	N	N	N	N	15	N	N	N	70	N	40
J1180190	N	N	N	N	N	<10	N	N	N	10	N	40
J1180210	N	N	N	N	N	10	N	N	N	N	N	40
J1180230	N	N	N	N	N	10	N	N	N	<10	N	40
J1180250	N	N	N	N	N	<10	N	N	N	<10	N	40
J1180270	N	N	<5	N	N	20	N	50	N	20	N	40
J1180290	N	N	N	N	N	<10	N	N	N	N	N	40
J1180310	N	N	N	N	N	N	N	N	N	N	N	40
J1180330	N	N	N	N	N	N	N	N	N	N	N	40
J1180350	N	N	N	N	N	N	N	N	N	N	N	40
J1180370	N	N	N	N	N	<10	N	N	N	10	N	40
J1180390	N	N	N	N	N	N	N	N	N	N	N	40
J1180410	N	N	N	N	N	<10	N	N	N	N	N	40
J1180430	N	N	N	N	N	10	N	N	N	<10	N	40
J1180450	N	N	N	N	N	<10	N	N	N	N	N	40
J1180470	N	N	<5	N	N	150	N	15	N	500	N	40
J1180490	10	N	15	N	N	300	N	20	N	300	N	40
J1180510	20	N	15	N	N	500	N	10	N	150	N	70
J1180530	N	N	N	N	N	10	N	10	N	100	N	70
J1180550	N	N	N	N	N	<10	N	N	N	70	N	70
J1180570	N	N	N	N	N	<10	N	N	N	<10	N	70
J1180590	N	N	N	N	N	15	N	N	N	30	N	70
J1180610	N	N	N	N	N	10	N	N	N	<10	N	70
J1180630	N	N	N	N	N	N	N	N	N	100	N	70
J1180650	N	N	N	N	N	<10	N	N	N	10	N	70
J1180670	N	N	N	N	N	15	N	N	N	30	N	70
J1180690	N	N	N	N	<100	15	2,000	N	N	15	N	70
J1180710	N	N	N	N	<100	20	1,000	N	N	50	N	70
J1180730	N	N	N	N	N	50	50	N	N	70	N	70
J1180750	N	N	N	N	N	15	70	N	N	30	N	67
J1180770	N	N	N	N	N	10	100	N	N	20	N	67
J1180790	N	N	N	N	N	N	70	N	N	10	N	67
J1180810	N	N	N	N	N	<10	100	N	N	10	N	67
J1180830	N	N	N	N	N	<10	N	N	N	10	N	67
J1180850	N	N	N	N	N	<10	N	N	N	<10	N	67
J1180870	N	N	N	N	N	N	N	N	N	N	N	67
J1180890	N	N	N	N	N	N	N	N	N	10	N	68
J1180910	N	N	N	N	N	<10	N	N	N	20	N	68
J1180930	N	N	N	N	N	N	150	N	N	N	N	68
J1180950	N	N	N	N	N	15	50	N	N	<10	N	68
J1180970	N	N	N	N	N	15	<50	N	N	<10	N	68
J1180990	N	N	N	N	N	100	N	N	N	50	N	68
J1181010	N	N	N	N	N	10	<50	N	N	N	N	68
J1181030	N	N	N	N	N	50	50	N	N	15	N	68

TABLE 3--SPECTROGRAPHIC ANALYSES OF INSOLUBLE-RESIDUE SAMPLES FROM DRILL HOLE NO. 118, JOPLIN 1 x 2 QUADRANGLE, MISSOURI AND KANSAS.--Continued

Sample	Latitude	Longitude	Fe-pct. s	Mg-pct. s	Ca-pct. s	Ti-pct. s	Mn-ppm s	Ag-ppm s	As-ppm s	Au-ppm s
J1181050	37 25 21	94 25 16	<.05	.10	.10	.010	N	N	N	N
J1181070	37 25 21	94 25 16	.10	.20	.15	.050	N	N	N	N
J1181100	37 25 21	94 25 16	1.00	.20	.07	.070	N	N	N	N

TABLE 3--SPECTROGRAPHIC ANALYSES OF INSOLUBLE-RESIDUE SAMPLES FROM DRILL HOLE NO. 118, JOPLIN 1 x 2 QUADRANGLE, MISSOURI AND KANSAS.--Continued

Sample	B-ppm s	Ba-ppm s	Be-ppm s	Bi-ppm s	Cd-ppm s	Co-ppm s	Cr-ppm s	Cu-ppm s	La-ppm s	Mo-ppm s	Nb-ppm s	Ni-ppm s
J1181050	10	20	N	N	N	15	N	N	N	N	N	N
J1181070	15	30	N	N	N	7	<10	<5	N	N	N	5
J1181100	30	50	N	N	N	100	10	10	N	10	N	5

TABLE 3--SPECTROGRAPHIC ANALYSES OF INSOLUBLE-RESIDUE SAMPLES FROM DRILL HOLE NO. 118, JOPLIN 1 x 2 QUADRANGLE, MISSOURI AND KANSAS.--Continued

Sample	Pb-ppm s	Sb-ppm s	Sc-ppm s	Sn-ppm s	Sr-ppm s	V-ppm s	W-ppm s	Y-ppm s	Zn-ppm s	Zr-ppm s	Th-ppm s	Form #
J1181050	N	N	N	N	N	<10	100	N	N	N	N	68
J1181070	N	N	N	N	N	15	N	N	N	10	N	68
J1181100	N	N	N	N	N	20	100	N	N	30	N	68