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Spectrographic analyses of insoluble-residue samples, Joplin 1° x 2° quadrangle, Missouri and Kansas: Drill hole nos. 112, 113, 114, and 115

By

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Prepared in cooperation with the Kansas Geological Survey and the Missouri Division of Geology and Land Survey.

This report is preliminary and has not been reviewed for conformity with U.S. Geological Survey editorial standards and stratigraphic nomenclature. Any use of trade names is for descriptive purposes only and does not imply endorsement by the U.S. Geological Survey.

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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. 112 (#28032 - MGLS), drill hole no. 113 (#28016 - MGLS), drill hole no. 114 (#28479 - MGLS), and drill hole no. 115 (#28224 - MGLS) are given in this report. Drill hole no. 112 is located in sec. 20, T. 31 N ., R. 30 W. in Barton County, Missouri; drill hole no. 113 is located in sec. 16, T. 37 N., R. 32 W. in Vernon County, Missouri; drill hole no. 114 is located in sec. 23, T. 35 N., R. 33 W. in Vernon County, Missouri; drill hole no. 115 is located in sec. 16, T. 29 N., R. 32 W. in Jasper County, Missouri (fig.1). Data for the insoluble-residue samples from drill holes 112, 113, 114, and 115 are listed in tables 1, 2, 3, and 4 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:

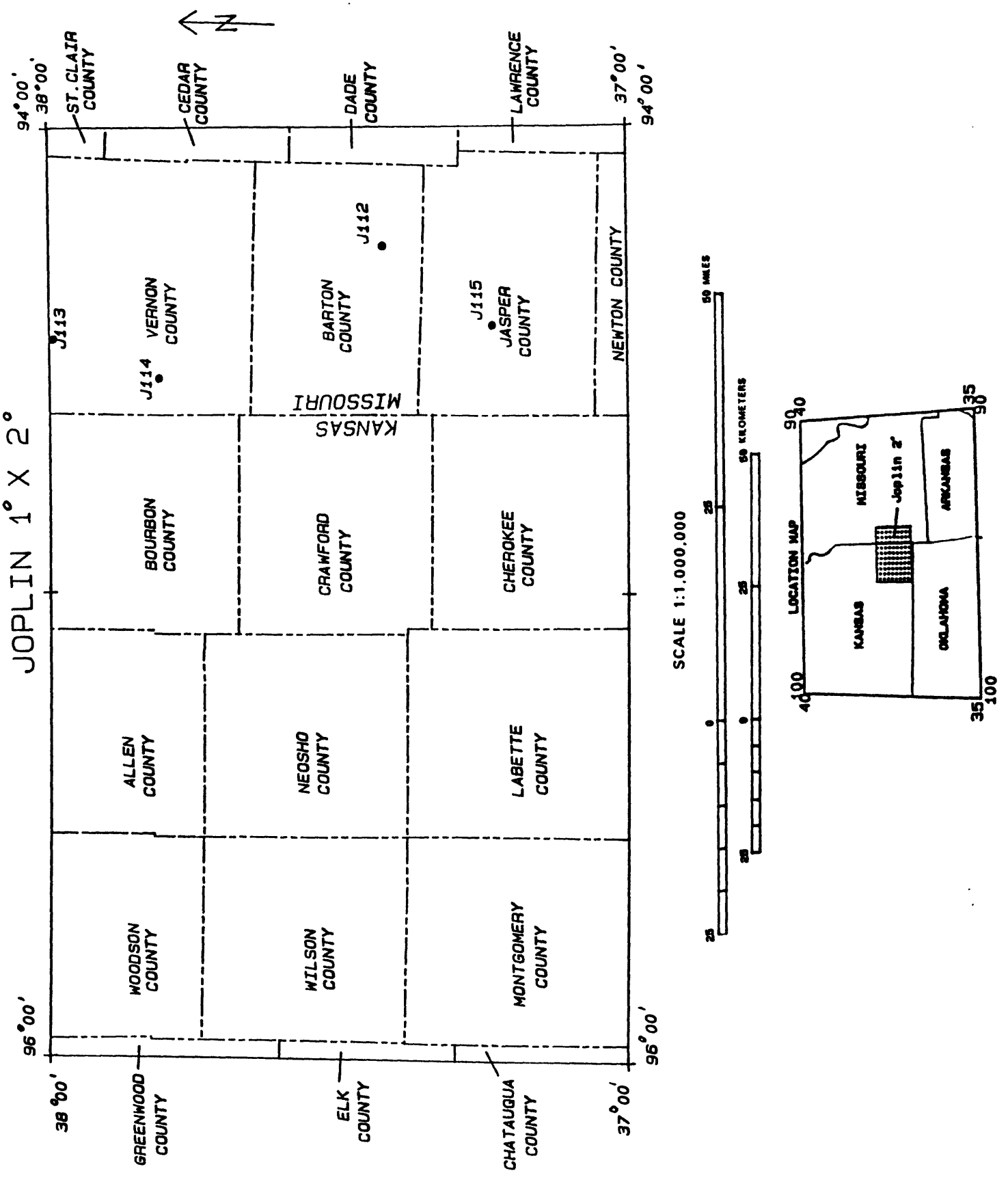

Figure 1. Locations of drill holes 112, 113, 114, and 115, Joplin 1° x 2° quadrangle, Missouri and Kansas.

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 4. 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

EXPLANATION OF DATA

The columns in tables 1 through 4 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 1-4, 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 staff, for making these drill-hole samples available from their sample library.

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. 112, 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
J1120030	37 25 8	94 15 5	5.00	.10	.10	.300	15	N	N	N
J1120040	37 25 8	94 15 5	3.00	.15	.07	.200	20	N	N	N
J1120050	37 25 8	94 15 5	1.50	.20	.10	.300	15	N	N	N
J1120060	37 25 8	94 15 5	1.50	.10	.05	.200	10	N	N	N
J1120070	37 25 8	94 15 5	7.00	.20	.10	.300	100	<.5	N	N
J1120080	37 25 8	94 15 5	1.50	.30	.07	.100	15	N	N	N
J1120090	37 25 8	94 15 5	2.00	.10	.10	.200	30	N	N	N
J1120100	37 25 8	94 15 5	1.50	.10	<.05	.200	10	N	N	N
J1120110	37 25 8	94 15 5	1.00	<.02	<.05	.015	N	N	N	N
J1120120	37 25 8	94 15 5	.05	<.02	.50	.010	N	N	N	N
J1120130	37 25 8	94 15 5	.07	.02	1.00	.010	N	N	N	N
J1120140	37 25 8	94 15 5	.20	.10	.30	.100	N	N	N	N
J1120160	37 25 8	94 15 5	.30	.10	.70	.150	N	N	N	N
J1120180	37 25 8	94 15 5	3.00	.30	.50	.050	20	N	N	N
J1120200	37 25 8	94 15 5	1.50	.07	1.50	.100	30	N	N	N
J1120225	37 25 8	94 15 5	3.00	<.02	.20	.050	10	N	N	N
J1120240	37 25 8	94 15 5	2.00	.05	.50	.150	20	N	N	N
J1120260	37 25 8	94 15 5	.10	<.02	.15	.005	N	N	N	N
J1120280	37 25 8	94 15 5	.15	.02	.10	.007	<10	N	N	N
J1120300	37 25 8	94 15 5	.10	.03	.15	.005	N	N	N	N
J1120325	37 25 8	94 15 5	1.50	.02	.20	.002	N	N	N	N
J1120340	37 25 8	94 15 5	.70	.10	.30	.010	<10	N	N	N
J1120360	37 25 8	94 15 5	.20	.02	.50	.007	N	N	N	N
J1120380	37 25 8	94 15 5	.10	.03	.50	.015	N	N	N	N
J1120400	37 25 8	94 15 5	.07	.02	.10	.015	N	N	N	N
J1120420	37 25 8	94 15 5	.30	.02	.10	.010	<10	N	N	N
J1120430	37 25 8	94 15 5	.70	.15	.20	.030	<10	N	N	N
J1120440	37 25 8	94 15 5	1.00	1.50	.50	.500	20	N	N	N
J1120455	37 25 8	94 15 5	2.00	1.50	.30	1.000	30	N	N	N
J1120480	37 25 8	94 15 5	10.00	1.00	.50	.500	100	N	N	N
J1120500	37 25 8	94 15 5	2.00	.70	.30	.150	15	N	N	N
J1120510	37 25 8	94 15 5	2.00	.20	.20	.030	<10	N	N	N
J1120520	37 25 8	94 15 5	1.00	.30	.50	.010	N	N	N	N
J1120540	37 25 8	94 15 5	.50	.20	.20	.020	N	N	N	N
J1120560	37 25 8	94 15 5	.70	.10	<.05	.015	N	N	N	N
J1120580	37 25 8	94 15 5	.70	.50	.30	.100	N	N	N	N
J1120600	37 25 8	94 15 5	.70	.70	.70	.150	N	N	N	N
J1120610	37 25 8	94 15 5	2.00	1.00	2.00	.150	<10	N	N	N
J1120625	37 25 8	94 15 5	.30	.07	.05	.015	N	N	N	N

TABLE 1--SPECTROGRAPHIC ANALYSES OF INSOLUBLE-RESIDUE SAMPLES FROM DRILL HOLE NO. 112, 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
J1120030	50	100	<1	N	<20	15	100	15	20	N	<20	50
J1120040	70	30	<1	N	N	70	100	15	<20	N	<20	100
J1120050	70	30	<1	N	<20	15	150	20	20	N	<20	30
J1120060	50	20	<1	N	<20	5	100	10	<20	N	N	20
J1120070	70	100	1	N	N	30	150	20	30	N	<20	70
J1120080	50	20	<1	N	N	5	30	10	N	N	N	50
J1120090	70	30	<1	N	N	10	100	15	N	N	<20	50
J1120100	50	30	<1	N	N	7	100	5	N	N	N	20
J1120110	30	<20	N	N	N	N	N	<5	N	N	N	5
J1120120	30	30	N	N	N	N	N	N	N	N	<20	<5
J1120130	30	30	N	N	N	N	N	N	N	N	<20	<5
J1120140	70	50	1	N	N	5	70	<5	N	N	<20	20
J1120160	70	50	<1	N	N	5	100	<5	N	N	<20	15
J1120180	30	30	<1	N	N	5	50	7	N	N	<20	15
J1120200	50	70	<1	N	N	N	70	<5	N	N	<20	7
J1120225	20	<20	N	N	N	7	N	7	N	N	N	30
J1120240	30	100	<1	N	N	<5	30	<5	20	N	N	10
J1120260	50	<20	N	N	N	N	N	N	N	N	N	N
J1120280	50	<20	N	N	N	N	<10	N	N	N	N	N
J1120300	30	20	N	N	N	N	N	N	N	N	N	N
J1120325	15	<20	N	N	N	5	N	<5	N	N	N	10
J1120340	30	30	N	N	N	N	<10	<5	N	N	N	7
J1120360	30	<20	N	N	N	N	N	N	N	N	N	<5
J1120380	50	30	N	N	N	N	N	N	N	N	N	<5
J1120400	10	<20	N	N	N	N	N	N	N	N	N	N
J1120420	10	N	N	N	N	N	N	N	N	N	N	<5
J1120430	10	20	N	N	N	N	N	<5	N	N	N	<5
J1120440	200	200	<1	N	N	<5	100	<5	20	N	<20	5
J1120455	300	200	1	N	N	5	150	7	50	N	20	10
J1120480	100	150	2	N	<20	15	100	15	<20	N	<20	30
J1120500	50	100	1	N	N	5	20	20	N	<5	N	20
J1120510	20	150	N	N	N	<5	<10	200	N	<5	N	15
J1120520	10	20	N	N	N	N	N	10	N	N	N	<5
J1120540	70	100	N	N	N	N	N	5	N	N	N	5
J1120560	N	<20	N	N	N	N	N	<5	N	N	N	N
J1120580	50	70	N	N	N	N	N	5	N	N	N	<5
J1120600	70	50	N	N	N	N	<10	7	N	N	N	<5
J1120610	100	100	N	N	N	<5	10	7	N	<5	N	5
J1120625	10	20	N	N	N	N	N	N	N	N	N	N

TABLE 1--SPECTROGRAPHIC ANALYSES OF INSOLUBLE-RESIDUE SAMPLES FROM DRILL HOLE NO. 112, 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 #
J1120030	<10	N	7	N	N	30	N	70	5,000	100	N	40
J1120040	<10	N	5	N	N	50	N	50	<200	150	N	40
J1120050	N	N	<5	N	N	50	N	30	7,000	500	N	40
J1120060	50	N	<5	N	N	30	N	15	1,500	300	N	40
J1120070	<10	N	7	N	N	70	N	50	<200	500	N	40
J1120080	<10	N	<5	N	N	15	N	15	500	100	N	40
J1120090	30	N	5	N	N	50	N	20	N	150	N	40
J1120100	N	N	5	N	N	70	N	20	N	200	N	40
J1120110	N	N	N	N	N	10	N	N	N	N	N	40
J1120120	N	N	N	N	N	N	N	N	N	N	N	40
J1120130	N	N	N	N	N	N	N	N	N	N	N	40
J1120140	10	N	<5	N	N	50	N	10	N	70	N	40
J1120160	N	N	5	N	N	30	N	30	N	100	N	40
J1120180	N	N	<5	N	N	20	N	10	N	30	N	40
J1120200	N	N	<5	N	N	50	N	10	N	100	N	40
J1120225	N	N	<5	N	N	10	N	N	N	50	N	40
J1120240	N	N	<5	N	N	20	N	<10	N	200	N	40
J1120260	N	N	N	N	N	N	N	N	N	<10	N	40
J1120280	N	N	N	N	N	<10	N	N	N	N	N	40
J1120300	N	N	N	N	N	N	N	N	N	<10	N	40
J1120325	N	N	N	N	N	N	N	N	N	N	N	40
J1120340	N	N	N	N	N	<10	N	N	N	N	N	40
J1120360	N	N	N	N	N	<10	N	N	N	N	N	40
J1120380	N	N	N	N	N	<10	N	N	N	30	N	40
J1120400	N	N	N	N	N	N	N	N	N	N	N	40
J1120420	N	N	N	N	N	N	N	N	N	N	N	40
J1120430	N	N	N	N	N	10	N	N	N	50	N	40
J1120440	<10	N	5	N	N	50	N	15	N	300	N	40
J1120455	10	N	7	N	N	150	N	30	N	500	N	40
J1120480	10	N	10	N	N	150	N	20	N	200	N	40
J1120500	<10	N	<5	N	N	50	N	N	N	50	N	65
J1120510	N	N	N	N	N	<10	N	N	N	15	N	65
J1120520	N	N	N	N	N	N	N	N	N	N	N	66
J1120540	N	N	N	N	N	<10	N	N	N	50	N	66
J1120560	N	N	N	N	N	N	N	N	N	<10	N	66
J1120580	N	N	N	N	N	15	N	N	N	50	N	66
J1120600	N	N	N	N	N	20	N	N	N	30	N	66
J1120610	N	N	N	N	N	15	N	N	N	30	N	66
J1120625	N	N	N	N	N	<10	N	N	N	N	N	66

TABLE 2--SPECTROGRAPHIC ANALYSES OF INSOLUBLE-RESIDUE SAMPLES FROM DRILL HOLE NO. 113, 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
J1130250	37 59 41	94 27 28	10.00	.20	.10	.150	70	<.5	N	N
J1130270	37 59 41	94 27 28	3.00	.20	.15	.100	500	<.5	N	N
J1130290	37 59 41	94 27 28	.30	.03	.10	.020	N	N	N	N
J1130310	37 59 41	94 27 28	.50	.02	.30	.010	<10	N	N	N
J1130330	37 59 41	94 27 28	3.00	.70	.10	.300	50	<.5	N	N
J1130350	37 59 41	94 27 28	.15	.02	.15	.010	N	N	N	N
J1130370	37 59 41	94 27 28	.15	<.02	.50	.007	<10	N	N	N
J1130390	37 59 41	94 27 28	.20	<.02	.15	.010	<10	N	N	N
J1130410	37 59 41	94 27 28	.70	.02	.15	.030	10	N	N	N
J1130430	37 59 41	94 27 28	.20	.07	.15	.015	<10	N	N	N
J1130450	37 59 41	94 27 28	.10	.05	<.05	.010	N	N	N	N
J1130470	37 59 41	94 27 28	.10	.02	<.05	.015	N	N	N	N
J1130490	37 59 41	94 27 28	.70	.05	<.05	.050	<10	N	N	N
J1130510	37 59 41	94 27 28	1.00	.10	<.05	.070	10	N	N	N
J1130530	37 59 41	94 27 28	3.00	.30	.05	.150	70	N	N	N
J1130550	37 59 41	94 27 28	2.00	.20	<.05	.150	50	N	N	N
J1130570	37 59 41	94 27 28	.70	.20	<.05	.100	<10	N	N	N
J1130590	37 59 41	94 27 28	.70	.20	<.05	.070	<10	N	N	N
J1130610	37 59 41	94 27 28	.50	.30	.05	.070	10	N	N	N
J1130630	37 59 41	94 27 28	.50	.02	N	.020	N	N	N	N
J1130650	37 59 41	94 27 28	.50	.07	<.05	.020	N	N	N	N
J1130670	37 59 41	94 27 28	.70	.15	<.05	.030	N	N	N	N
J1130680	37 59 41	94 27 28	2.00	.05	<.05	.020	N	N	N	N
J1130695	37 59 41	94 27 28	1.50	.07	<.05	.050	10	N	N	N

TABLE 2--SPECTROGRAPHIC ANALYSES OF INSOLUBLE-RESIDUE SAMPLES FROM DRILL HOLE NO. 113, 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
J1130250	70	70	1	N	N	15	100	15	20	N	N	100
J1130270	100	50	<1	N	N	5	50	10	20	N	N	20
J1130290	50	30	N	N	N	N	N	<5	N	N	N	7
J1130310	50	20	N	N	N	<5	N	<5	N	N	N	10
J1130330	100	100	3	N	N	20	200	20	50	<5	<20	70
J1130350	20	<20	N	N	N	N	N	<5	N	N	N	<5
J1130370	20	20	N	N	N	N	N	N	N	N	N	<5
J1130390	70	50	N	N	N	N	N	<5	N	N	N	<5
J1130410	50	50	N	N	N	N	N	<5	N	N	N	5
J1130430	30	30	N	N	N	N	N	<5	N	N	N	<5
J1130450	30	<20	N	N	N	N	N	<5	N	N	N	<5
J1130470	30	30	N	N	N	N	N	<5	N	N	N	<5
J1130490	20	30	N	N	N	<5	N	<5	N	N	N	5
J1130510	20	50	N	N	N	<5	10	<5	N	N	N	10
J1130530	30	150	1	N	N	5	50	15	<20	5	N	20
J1130550	50	150	1	N	N	5	20	10	<20	<5	N	15
J1130570	50	50	N	N	N	N	10	<5	N	N	N	5
J1130590	30	30	N	N	N	N	<10	<5	N	N	N	<5
J1130610	30	70	<1	N	N	N	10	<5	N	N	N	<5
J1130630	15	<20	N	N	N	N	N	<5	N	N	N	<5
J1130650	20	30	N	N	N	N	N	20	N	N	N	<5
J1130670	30	50	N	N	N	<5	<10	5	N	<5	N	5
J1130680	20	20	N	N	N	<5	N	20	N	5	N	10
J1130695	30	100	N	N	N	N	20	15	N	<5	N	7

TABLE 2--SPECTROGRAPHIC ANALYSES OF INSOLUBLE-RESIDUE SAMPLES FROM DRILL HOLE NO. 113, 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 #
J1130250	10	N	5	N	<100	20	N	15	<200	70	N	40
J1130270	N	N	<5	N	<100	20	N	10	N	100	N	40
J1130290	N	N	N	N	N	10	N	<10	200	20	N	40
J1130310	N	N	N	N	N	<10	N	<10	N	<10	N	40
J1130330	30	N	7	N	N	200	N	30	300	100	N	40
J1130350	N	N	N	N	N	<10	N	N	N	<10	N	40
J1130370	N	N	N	N	N	N	N	N	N	N	N	40
J1130390	N	N	N	N	N	N	N	N	N	N	N	40
J1130410	N	N	N	N	N	<10	N	N	N	50	N	40
J1130430	N	N	N	N	N	N	N	N	<200	<10	N	40
J1130450	N	N	N	N	N	N	N	N	700	N	N	40
J1130470	N	N	N	N	N	N	N	N	N	<10	N	40
J1130490	N	N	N	N	N	15	N	N	<200	50	N	40
J1130510	N	N	<5	N	N	15	N	N	<200	70	N	40
J1130530	10	N	5	N	N	20	N	10	700	150	N	40
J1130550	15	N	5	N	N	20	N	10	500	100	N	40
J1130570	N	N	N	N	N	15	N	N	<200	50	N	40
J1130590	N	N	N	N	N	15	N	N	500	70	N	40
J1130610	N	N	N	N	N	15	N	N	200	50	N	40
J1130630	N	N	N	N	N	<10	N	N	N	15	N	66
J1130650	N	N	N	N	N	<10	N	N	N	30	N	66
J1130670	N	N	N	N	N	10	N	N	N	30	N	66
J1130680	N	N	N	N	N	<10	N	N	N	20	N	66
J1130695	N	N	N	N	N	10	N	N	N	50	N	66

TABLE 3--SPECTROGRAPHIC ANALYSES OF INSOLUBLE-RESIDUE SAMPLES FROM DRILL HOLE NO. 114, 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.	Mg-pct.	Ca-pct.	Ti-pct.	Mn-ppm	Ag-ppm	As-ppm	Au-ppm
			s	s	s	s	s	s	s	s
J1140260	37 48 28	94 32 30	7.00	.30	<.05	.300	100	<.5	N	N
J1140280	37 48 28	94 32 30	10.00	.20	<.05	.150	150	<.5	N	N
J1140300	37 48 28	94 32 30	.70	.15	.20	.015	<10	N	N	N
J1140310	37 48 28	94 32 30	.30	<.02	.05	.010	N	N	N	N
J1140320	37 48 28	94 32 30	.30	.02	.20	.015	<10	N	N	N
J1140340	37 48 28	94 32 30	1.00	.05	.20	.050	150	<.5	N	N
J1140360	37 48 28	94 32 30	<.05	<.02	.30	<.002	N	N	N	N
J1140380	37 48 28	94 32 30	<.05	<.02	1.00	<.002	N	N	N	N
J1140400	37 48 28	94 32 30	<.05	<.02	.20	<.002	N	N	N	N
J1140420	37 48 28	94 32 30	.05	.02	.20	.010	N	N	N	N
J1140440	37 48 28	94 32 30	.15	.02	.10	.010	<10	N	N	N
J1140465	37 48 28	94 32 30	.10	<.02	.05	.002	N	N	N	N
J1140480	37 48 28	94 32 30	.30	.05	.05	.020	N	N	N	N
J1140500	37 48 28	94 32 30	<.05	<.02	.10	.005	N	N	N	N
J1140520	37 48 28	94 32 30	.10	.02	.20	.020	N	N	N	N
J1140540	37 48 28	94 32 30	1.50	.20	.20	.150	30	N	N	N
J1140560	37 48 28	94 32 30	2.00	1.00	.30	.500	20	N	N	N
J1140580	37 48 28	94 32 30	2.00	.50	.10	.200	10	N	N	N
J1140600	37 48 28	94 32 30	1.50	.70	.20	.300	20	N	N	N
J1140625	37 48 28	94 32 30	5.00	1.00	.30	.200	30	N	N	N
J1140640	37 48 28	94 32 30	5.00	1.00	.15	.300	30	N	N	N
J1140660	37 48 28	94 32 30	2.00	.70	.30	.300	20	N	N	N
J1140680	37 48 28	94 32 30	1.50	.20	<.05	.100	<10	N	N	N
J1140700	37 48 28	94 32 30	3.00	.70	.05	.150	20	N	N	N
J1140720	37 48 28	94 32 30	3.00	1.00	.70	.150	30	N	N	N
J1140740	37 48 28	94 32 30	1.00	.20	.10	.070	<10	N	N	N
J1140760	37 48 28	94 32 30	1.00	.30	.15	.100	N	N	N	N
J1140780	37 48 28	94 32 30	.30	.02	<.05	.020	N	N	N	N
J1140800	37 48 28	94 32 30	.70	.05	<.05	.030	N	N	N	N
J1140820	37 48 28	94 32 30	.50	.05	<.05	.015	N	N	N	N
J1140840	37 48 28	94 32 30	.20	.03	<.05	.010	N	N	N	N
J1140860	37 48 28	94 32 30	.20	<.02	<.05	.010	N	N	N	N
J1140880	37 48 28	94 32 30	.30	.07	.05	.015	N	N	N	N
J1140900	37 48 28	94 32 30	.30	.03	<.05	.015	N	N	N	N

TABLE 3--SPECTROGRAPHIC ANALYSES OF INSOLUBLE-RESIDUE SAMPLES FROM DRILL HOLE NO. 114, 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
J1140260	50	150	<1.0	N	N	20	70	20	20	N	N	70
J1140280	70	150	<1.0	N	N	15	50	20	30	N	N	70
J1140300	20	20	N	N	N	N	N	5	N	N	N	10
J1140310	30	<20	N	N	N	N	N	<5	N	N	N	<5
J1140320	50	20	N	N	N	N	N	<5	N	N	N	7
J1140340	50	100	N	N	N	<5	20	5	N	N	N	15
J1140360	10	20	N	N	N	N	N	N	N	N	N	N
J1140380	15	20	N	N	N	N	N	<5	N	N	N	N
J1140400	15	<20	N	N	N	N	N	N	N	N	N	N
J1140420	15	<20	N	N	N	7	N	N	N	N	N	N
J1140440	20	20	N	N	N	N	N	N	N	N	N	N
J1140465	15	N	N	N	N	N	N	N	N	N	N	<5
J1140480	15	20	N	N	N	N	N	<5	N	N	N	<5
J1140500	20	50	N	N	N	N	N	N	N	N	N	N
J1140520	20	20	N	N	N	N	N	<5	N	N	N	<5
J1140540	30	50	N	N	N	100	10	15	N	<5	N	20
J1140560	100	150	1.0	N	N	<5	100	10	20	<5	N	10
J1140580	50	100	<1.0	N	N	<5	50	7	N	<5	N	10
J1140600	50	100	<1.0	N	N	<5	50	10	N	N	N	10
J1140625	30	100	1.0	N	N	5	70	15	N	<5	N	20
J1140640	70	150	1.5	N	N	7	70	20	<20	5	N	30
J1140660	70	150	1.0	N	N	<5	50	70	20	<5	N	15
J1140680	30	70	N	N	N	<5	<10	50	N	<5	N	15
J1140700	50	150	1.0	N	N	10	20	70	<20	5	N	30
J1140720	70	150	1.0	N	N	<5	50	20	N	7	N	15
J1140740	30	200	N	N	N	N	10	70	N	N	N	5
J1140760	30	30	N	N	N	N	<10	<5	N	N	N	<5
J1140780	20	150	N	N	N	N	N	5	N	N	N	<5
J1140800	30	150	N	N	N	N	N	150	N	N	N	<5
J1140820	30	150	N	N	N	N	N	20	N	N	N	<5
J1140840	10	30	N	N	N	N	N	5	N	N	N	N
J1140860	<10	20	N	N	N	N	N	50	N	N	N	N
J1140880	10	50	N	N	N	N	N	15	N	N	N	<5
J1140900	<10	30	N	N	N	N	N	5	N	N	N	N

TABLE 3--SPECTROGRAPHIC ANALYSES OF INSOLUBLE-RESIDUE SAMPLES FROM DRILL HOLE NO. 114, 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 #
J1140260	20	N	10	N	N	50	50	15	<200	100	N	40
J1140280	15	N	7	N	N	50	N	15	<200	70	N	40
J1140300	N	N	N	N	N	<10	N	N	N	N	N	40
J1140310	N	N	N	N	N	N	70	N	N	N	N	40
J1140320	N	N	N	N	N	10	N	N	N	N	N	40
J1140340	N	N	N	N	N	15	N	N	500	20	N	40
J1140360	N	N	N	N	N	N	N	N	200	N	N	40
J1140380	N	N	N	N	N	N	<50	N	N	N	N	40
J1140400	N	N	N	N	N	N	<50	N	<200	N	N	40
J1140420	N	N	N	N	N	N	<50	N	N	N	N	40
J1140440	N	N	N	N	N	N	<50	N	N	N	N	40
J1140465	N	N	N	N	N	N	N	N	200	N	N	40
J1140480	N	N	N	N	N	<10	N	N	200	<10	N	40
J1140500	N	N	N	N	N	N	<50	N	N	N	N	40
J1140520	N	N	N	N	N	<10	N	N	N	N	N	40
J1140540	N	N	<5	N	N	10	N	N	N	50	N	40
J1140560	<10	N	5	N	N	100	N	10	N	300	N	40
J1140580	N	N	5	N	N	50	N	<10	200	100	N	65
J1140600	N	N	5	N	N	50	N	15	N	150	N	65
J1140625	10	N	5	N	N	30	N	10	N	150	N	65
J1140640	10	N	7	N	N	70	N	10	<200	200	N	66
J1140660	N	N	5	N	N	30	N	<10	N	200	N	66
J1140680	<10	N	N	N	N	20	N	N	<200	70	N	66
J1140700	15	N	7	N	N	70	N	N	N	100	N	66
J1140720	<10	N	<5	N	100	50	N	N	N	70	N	66
J1140740	N	N	N	N	N	10	N	N	N	50	N	66
J1140760	N	N	N	N	N	15	N	N	N	70	N	66
J1140780	N	N	N	N	N	10	N	N	N	<10	N	66
J1140800	N	N	N	N	N	<10	N	N	200	<10	N	66
J1140820	N	N	N	N	N	<10	N	N	N	<10	N	67
J1140840	N	N	N	N	N	N	<50	N	<200	N	N	67
J1140860	N	N	N	N	N	N	50	N	N	N	N	67
J1140880	N	N	N	N	N	<10	<50	N	N	<10	N	67
J1140900	N	N	N	N	N	N	N	N	N	10	N	67

TABLE 4--SPECTROGRAPHIC ANALYSES OF INSOLUBLE-RESIDUE SAMPLES FROM DRILL HOLE NO. 115, 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
J1150030	37 15 9	94 25 31	.50	.02	.20	.020	15	N	N	N
J1150050	37 15 9	94 25 31	.30	.05	.50	.020	10	N	N	N
J1150070	37 15 9	94 25 31	.15	.02	1.50	.007	15	N	N	N
J1150090	37 15 9	94 25 31	.15	<.02	1.50	.007	20	N	N	N
J1150110	37 15 9	94 25 31	.07	<.02	3.00	.007	10	N	N	N
J1150130	37 15 9	94 25 31	.05	.10	20.00	.010	200	N	N	N
J1150150	37 15 9	94 25 31	.05	.03	10.00	.003	50	N	N	N
J1150170	37 15 9	94 25 31	.05	<.02	1.00	.005	50	N	N	N
J1150190	37 15 9	94 25 31	<.05	.02	5.00	.002	50	N	N	N
J1150210	37 15 9	94 25 31	.15	.02	.20	.003	N	N	N	N
J1150230	37 15 9	94 25 31	.15	.02	.20	.007	<10	N	N	N
J1150250	37 15 9	94 25 31	.10	<.02	.50	.007	<10	N	N	N
J1150270	37 15 9	94 25 31	.10	.02	.30	.007	<10	N	N	N
J1150290	37 15 9	94 25 31	.10	.02	.15	.007	<10	N	N	N
J1150310	37 15 9	94 25 31	.30	.07	.30	.020	10	N	N	N
J1150330	37 15 9	94 25 31	.50	.10	.70	.050	30	N	N	N
J1150350	37 15 9	94 25 31	.30	.07	.50	.020	15	N	N	N
J1150370	37 15 9	94 25 31	.20	.07	.50	.030	20	N	N	N
J1150390	37 15 9	94 25 31	1.50	.30	1.00	.150	50	N	N	N
J1150410	37 15 9	94 25 31	3.00	.30	.50	.150	70	N	N	N
J1150430	37 15 9	94 25 31	.50	.20	1.00	.070	30	N	N	N
J1150450	37 15 9	94 25 31	.70	.07	.50	.050	70	N	N	N
J1150470	37 15 9	94 25 31	.50	.30	.30	.070	20	N	N	N
J1150490	37 15 9	94 25 31	1.00	.50	1.50	.070	500	N	N	N
J1150510	37 15 9	94 25 31	.50	.10	.10	.070	30	N	N	N
J1150530	37 15 9	94 25 31	.20	.07	.10	.050	10	N	N	N
J1150550	37 15 9	94 25 31	.20	.20	.20	.050	10	N	N	N
J1150570	37 15 9	94 25 31	.10	.05	.05	.020	N	N	N	N
J1150590	37 15 9	94 25 31	.30	.07	.05	.030	N	N	N	N
J1150610	37 15 9	94 25 31	.10	.50	.70	.010	<10	N	N	N
J1150630	37 15 9	94 25 31	.30	.05	.05	.050	N	N	N	N
J1150650	37 15 9	94 25 31	.50	.07	.05	.070	<10	N	N	N
J1150670	37 15 9	94 25 31	1.00	.30	.15	.100	10	N	N	N
J1150690	37 15 9	94 25 31	.70	.20	.10	.100	<10	N	N	N
J1150710	37 15 9	94 25 31	.50	.10	.15	.030	<10	N	N	N
J1150730	37 15 9	94 25 31	.20	.07	.10	.020	N	N	N	N
J1150750	37 15 9	94 25 31	.30	.10	<.05	.070	N	N	N	N
J1150770	37 15 9	94 25 31	.70	.10	<.05	.070	N	N	N	N
J1150790	37 15 9	94 25 31	.30	.07	.10	.020	N	N	N	N
J1150810	37 15 9	94 25 31	.20	.05	<.05	.010	N	N	N	N
J1150830	37 15 9	94 25 31	.05	<.02	<.05	.003	N	N	N	N
J1150850	37 15 9	94 25 31	<.05	<.02	<.05	.005	N	N	N	N
J1150870	37 15 9	94 25 31	.50	.07	<.05	.050	N	N	N	N
J1150890	37 15 9	94 25 31	.05	.03	<.05	.005	N	N	N	N
J1150910	37 15 9	94 25 31	.07	.07	.07	.020	N	N	N	N

TABLE 4--SPECTROGRAPHIC ANALYSES OF INSOLUBLE-RESIDUE SAMPLES FROM DRILL HOLE NO. 115, 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
J1150030	70	70	N	N	N	N	<10	7	N	<5	N	20
J1150050	70	70	N	N	N	N	<10	<5	N	N	N	10
J1150070	50	50	N	N	N	N	<10	5	N	N	N	<5
J1150090	50	30	N	N	N	N	N	<5	N	N	N	<5
J1150110	50	20	N	N	N	N	N	5	N	N	N	<5
J1150130	50	50	N	N	N	N	10	5	20	N	N	N
J1150150	30	<20	N	N	N	N	N	<5	N	N	N	N
J1150170	50	<20	N	N	N	N	N	N	N	N	N	N
J1150190	50	20	N	N	N	N	N	<5	N	N	N	N
J1150210	100	100	N	N	N	N	N	<5	N	N	N	N
J1150230	70	70	N	N	N	N	N	5	N	N	N	N
J1150250	70	100	N	N	N	N	N	N	N	N	N	N
J1150270	70	70	N	N	N	N	N	<5	N	N	N	N
J1150290	50	30	N	N	N	N	N	N	N	N	N	<5
J1150310	50	30	N	N	N	N	N	<5	N	N	N	30
J1150330	70	70	N	N	N	N	10	5	N	N	N	50
J1150350	50	70	N	N	N	N	<10	<5	N	N	N	50
J1150370	50	70	N	N	N	<5	<10	N	N	N	N	150
J1150390	50	500	<1	N	N	<5	30	10	<20	N	N	20
J1150410	100	200	<1	N	N	15	30	15	N	N	N	100
J1150430	70	100	N	N	N	N	20	30	N	N	N	5
J1150450	50	100	N	N	N	<5	<10	7	N	N	N	10
J1150470	50	150	N	N	N	N	10	7	N	N	N	5
J1150490	50	200	N	N	N	<5	30	5	N	N	N	10
J1150510	30	100	N	N	N	N	10	5	N	N	N	7
J1150530	50	70	N	N	N	N	<10	<5	N	N	N	<5
J1150550	50	70	N	N	N	N	<10	5	N	N	N	5
J1150570	70	70	N	N	N	N	N	N	N	N	N	N
J1150590	70	70	N	N	N	N	N	5	N	N	N	<5
J1150610	50	20	N	N	N	N	N	<5	N	N	N	N
J1150630	50	30	N	N	N	N	N	5	N	N	N	<5
J1150650	70	150	N	N	N	N	<10	10	N	N	N	10
J1150670	70	150	<1	N	N	<5	20	15	N	30	N	15
J1150690	100	100	<1	N	N	<5	15	15	N	20	N	10
J1150710	70	100	N	N	N	N	<10	7	N	N	N	5
J1150730	50	70	N	N	N	N	N	<5	N	N	N	<5
J1150750	30	100	<1	N	N	N	10	7	N	N	N	5
J1150770	70	50	N	N	N	N	N	5	N	N	N	5
J1150790	50	30	N	N	N	N	N	<5	N	N	N	N
J1150810	50	70	N	N	N	N	N	<5	N	N	N	N
J1150830	<10	20	N	N	N	N	N	N	N	N	N	N
J1150850	N	20	N	N	N	N	N	<5	N	N	N	N
J1150870	20	50	N	N	N	N	N	7	N	N	N	<5
J1150890	50	100	N	N	N	N	N	N	N	N	N	N
J1150910	70	70	N	N	N	N	N	N	N	N	N	N

TABLE 4--SPECTROGRAPHIC ANALYSES OF INSOLUBLE-RESIDUE SAMPLES FROM DRILL HOLE NO. 115, 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 #
J1150030	N	N	N	N	N	20	N	N	3,000	10	N	40
J1150050	N	N	N	N	N	15	N	N	N	<10	N	40
J1150070	N	N	N	N	N	10	N	N	N	<10	N	40
J1150090	N	N	N	N	N	<10	N	N	N	<10	N	40
J1150110	N	N	N	N	N	<10	N	N	N	N	N	40
J1150130	N	N	<5	N	<100	15	N	10	N	<10	N	40
J1150150	N	N	N	N	N	<10	N	N	N	N	N	40
J1150170	N	N	N	N	N	<10	N	N	N	N	N	40
J1150190	N	N	N	N	N	<10	N	N	N	N	N	40
J1150210	15	N	N	N	N	<10	N	N	N	N	N	40
J1150230	20	N	N	N	N	<10	N	N	1,000	<10	N	40
J1150250	N	N	N	N	N	<10	N	N	700	<10	N	40
J1150270	N	N	N	N	N	<10	N	N	<200	N	N	40
J1150290	N	N	N	N	N	<10	N	N	N	<10	N	40
J1150310	N	N	N	N	N	10	N	N	N	10	N	40
J1150330	20	N	N	N	N	20	N	N	N	15	N	40
J1150350	N	N	N	N	N	15	N	N	500	10	N	40
J1150370	N	N	N	N	N	15	N	N	N	10	N	40
J1150390	N	N	<5	N	N	30	N	<10	N	100	N	40
J1150410	10	N	5	N	N	50	N	10	500	100	N	40
J1150430	N	N	N	N	N	20	N	N	1,500	20	N	65
J1150450	N	N	N	N	N	15	N	N	N	10	N	65
J1150470	N	N	<5	N	N	10	N	N	300	70	N	65
J1150490	10	N	<5	N	<100	30	N	N	700	50	N	65
J1150510	N	N	N	N	N	15	N	N	500	30	N	66
J1150530	N	N	N	N	N	10	N	N	N	20	N	66
J1150550	N	N	N	N	N	15	N	N	500	20	N	66
J1150570	N	N	N	N	N	<10	N	N	N	10	N	66
J1150590	N	N	N	N	N	<10	N	N	N	10	N	66
J1150610	N	N	N	N	N	<10	N	N	N	<10	N	66
J1150630	N	N	N	N	N	10	N	N	N	15	N	66
J1150650	N	N	N	N	N	10	N	N	N	20	N	66
J1150670	<10	N	N	N	N	20	N	N	N	20	N	66
J1150690	<10	N	N	N	N	30	N	N	N	30	N	66
J1150710	N	N	N	N	N	10	N	N	N	10	N	67
J1150730	N	N	N	N	N	<10	N	N	N	10	N	67
J1150750	N	N	N	N	N	20	N	N	N	50	N	67
J1150770	N	N	N	N	N	20	N	N	N	20	N	67
J1150790	N	N	N	N	N	<10	N	N	N	<10	N	67
J1150810	N	N	N	N	N	<10	N	N	N	<10	N	67
J1150830	N	N	N	N	N	<10	N	N	N	<10	N	67
J1150850	N	N	N	N	N	<10	N	N	N	10	N	67
J1150870	N	N	N	N	N	15	N	N	N	50	N	67
J1150890	N	N	N	N	N	<10	N	N	N	<10	N	67
J1150910	N	N	N	N	N	10	N	N	N	<10	N	68

TABLE 4--SPECTROGRAPHIC ANALYSES OF INSOLUBLE-RESIDUE SAMPLES FROM DRILL HOLE NO. 115, 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
J1150930	37 15 9	94 25 31	.05	.05	.15	.003	N	N	N	N
J1150950	37 15 9	94 25 31	.20	.05	.10	.003	N	N	N	N
J1150970	37 15 9	94 25 31	.50	.30	.50	.030	N	N	N	N
J1150990	37 15 9	94 25 31	.10	.07	.05	.007	N	N	N	N
J1151010	37 15 9	94 25 31	.30	.05	.05	.010	N	N	N	N
J1151030	37 15 9	94 25 31	.30	.07	.10	.007	N	N	N	N
J1151050	37 15 9	94 25 31	.15	.07	.15	.007	N	N	N	N
J1151070	37 15 9	94 25 31	1.50	.10	.50	.050	<10	N	N	N
J1151090	37 15 9	94 25 31	1.50	.20	.07	.100	N	N	N	N
J1151100	37 15 9	94 25 31	10.00	.30	.07	.300	20	1.0	500	N

TABLE 4--SPECTROGRAPHIC ANALYSES OF INSOLUBLE-RESIDUE SAMPLES FROM DRILL HOLE NO. 115, 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
J1150930	70	30	N	N	N	N	N	N	N	N	N	N
J1150950	70	50	N	N	N	N	N	5	N	N	N	N
J1150970	50	70	N	N	N	N	<10	<5	N	N	N	<5
J1150990	30	50	N	N	N	N	N	<5	N	N	N	<5
J1151010	50	70	N	N	N	N	N	20	N	N	N	N
J1151030	30	50	N	N	N	N	N	<5	N	N	N	<5
J1151050	30	50	N	N	N	N	N	<5	N	N	N	<5
J1151070	20	50	N	N	N	N	<10	10	N	5	N	7
J1151090	100	50	N	N	N	<5	10	20	N	<5	N	15
J1151100	150	150	1	N	N	30	50	500	<20	5	N	200

TABLE 4--SPECTROGRAPHIC ANALYSES OF INSOLUBLE-RESIDUE SAMPLES FROM DRILL HOLE NO. 115, 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 #
J1150930	N	N	N	N	N	<10	N	N	N	N	N	68
J1150950	N	N	N	N	N	<10	N	N	N	N	N	68
J1150970	N	N	N	N	N	15	N	N	N	<10	N	68
J1150990	N	N	N	N	N	15	N	N	N	<10	N	68
J1151010	N	N	N	N	N	10	N	N	N	<10	N	68
J1151030	N	N	N	N	N	<10	N	N	N	<10	N	68
J1151050	N	N	N	N	N	<10	N	N	N	<10	N	68
J1151070	50	N	N	N	N	20	N	N	N	15	N	68
J1151090	N	N	N	N	N	50	N	N	N	50	N	68
J1151100	70	N	<5	N	N	70	N	10	N	100	N	68