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Spectrographic analyses of insoluble-residue samples, Joplin 1° x 2° quadrangle, Kansas and Missouri: Drill hole nos. 30, 31, and 32

By

John H. Bullock, Jr.* and Helen A. Whitney*

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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.

*U.S. Geological Survey, DFC, Box 25046, MS 973, Denver, CO 80225

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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 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. 30 (#1 J. Gobl - KGS), drill hole no. 31 (#1 Ecco Ranch - KGS),and drill hole no. 32 (Clinesmith 3-4 - KGS) are given in this report. Drill hole no. 30 is located in sec. 20, T. 28 S., R. 25 E. in Cherokee County, Kansas; drill hole no. 31 is located in sec. 33, T. 26 S., R. 15 E. in Woodson County, Kansas; drill hole no. 32 is located in sec. 4, T. 27 S., R. 15 E. in Wilson County, Kansas (fig.1). Data for the insoluble-residue samples from drill holes 30, 31, and 32 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 Kansas Geological Survey (fig. 1).

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:

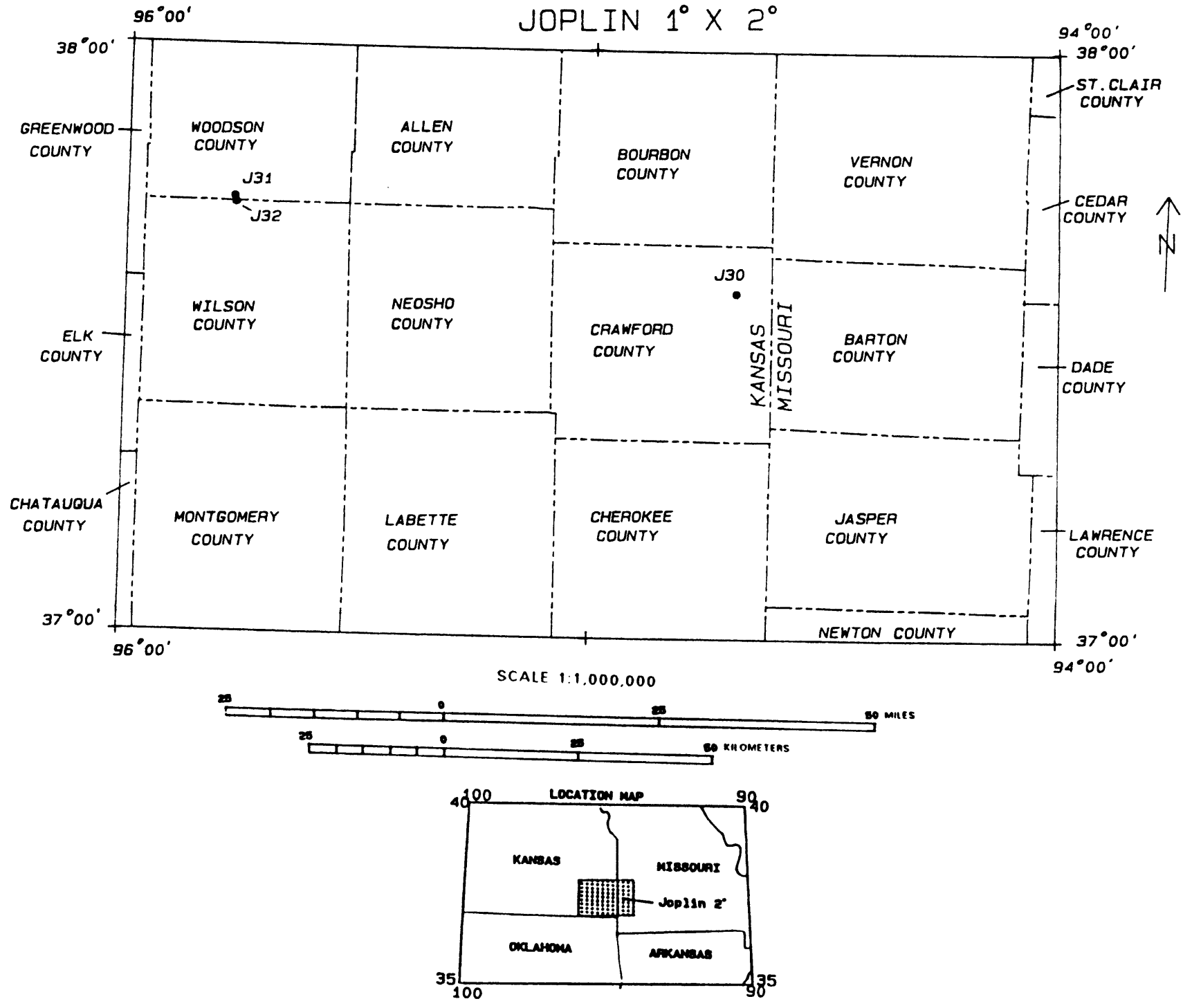

Figure 1. Locations of drill holes 30, 31, and 32, Joplin 1° x 2° quadrangle, Missouri and Kansas.

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 number signifies the USGS drill-hole number. The letter R appears after the drill hole number and signifies insoluble residue. The next 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
20	Pennsylvanian Undifferentiated
40	Mississippian Undifferentiated
60	Ordovician Undifferentiated
80	Cambrian Undifferentiated
90	Precambrian Undifferentiated

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) 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 Kansas Geological Survey, Dr. Lee C. Gerhart, State Geologist, and his staff, for making the 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. 30, 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
J30R0370	37 35 35	94 41 43	5.00	.30	<.05	.300	30	N	N	N
J30R0410	37 35 35	94 41 43	1.50	.05	<.05	.050	10	N	N	N
J30R0440	37 35 35	94 41 43	.30	.07	<.05	.050	<10	N	N	N
J30R0465	37 35 35	94 41 43	.20	.02	<.05	.007	<10	N	N	N
J30R0508	37 35 35	94 41 43	.05	<.02	<.05	.003	N	N	N	N
J30R0536	37 35 35	94 41 43	.15	.02	<.05	.010	N	N	N	N
J30R0560	37 35 35	94 41 43	.10	<.02	<.05	.005	N	N	N	N
J30R0600	37 35 35	94 41 43	.20	.02	<.05	.007	N	N	N	N
J30R0630	37 35 35	94 41 43	.15	.02	<.05	.010	N	N	N	N
J30R0650	37 35 35	94 41 43	.15	.02	<.05	.015	N	N	N	N
J30R0720	37 35 35	94 41 43	2.00	.70	<.05	.300	30	N	N	N
J30R0770	37 35 35	94 41 43	2.00	.05	<.05	.030	20	N	N	N
J30R0820	37 35 35	94 41 43	.50	.05	<.05	.030	N	N	N	N
J30R0870	37 35 35	94 41 43	.20	.02	<.05	.005	N	N	N	N
J30R0920	37 35 35	94 41 43	.20	.02	<.05	.003	N	N	N	N
J30R0990	37 35 35	94 41 43	.30	.03	.05	.010	N	N	N	N
J30R1115	37 35 35	94 41 43	.10	<.02	<.05	.003	N	N	N	N
J30R1250	37 35 35	94 41 43	.05	<.02	<.05	.003	N	N	N	N
J30R1310	37 35 35	94 41 43	.10	<.02	<.05	.003	N	N	N	N
J30R1370	37 35 35	94 41 43	.50	.02	<.05	.030	N	N	N	N
J30R1450	37 35 35	94 41 43	1.00	.10	.05	.050	N	N	N	N
J30R1525	37 35 35	94 41 43	3.00	.15	.05	.070	20	N	N	N
J30R1577	37 35 35	94 41 43	7.00	.70	<.05	.300	30	N	N	N
J30R1618	37 35 35	94 41 43	5.00	.70	<.05	.500	20	N	N	N
J30R1664	37 35 35	94 41 43	2.00	.50	<.05	.200	10	N	N	N
J30R1730	37 35 35	94 41 43	2.00	.50	<.05	.200	10	N	N	N
J30R1833	37 35 35	94 41 43	.07	<.02	<.05	.010	N	N	N	N
J30R1862	37 35 35	94 41 43	2.00	.50	<.05	.200	200	N	N	N

TABLE 1--SPECTROGRAPHIC ANALYSES OF INSOLUBLE-RESIDUE SAMPLES FROM DRILL HOLE NO. 30, 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
J30R0370	30	100	N	N	N	7	50	20	20	N	N	50
J30R0410	20	20	N	N	N	N	N	7	N	N	N	20
J30R0440	20	<20	N	N	N	N	N	5	N	N	N	15
J30R0465	15	N	N	N	N	N	N	<5	N	N	N	10
J30R0508	15	N	N	N	N	N	N	<5	N	N	N	5
J30R0536	20	<20	N	N	N	N	N	<5	N	N	N	7
J30R0560	20	N	N	N	N	N	N	<5	N	N	N	5
J30R0600	20	N	N	N	N	N	N	<5	N	N	N	10
J30R0630	20	<20	N	N	N	N	N	<5	N	N	N	5
J30R0650	15	<20	N	N	N	N	N	<5	N	N	N	7
J30R0720	30	100	<1	N	N	7	50	20	N	N	N	30
J30R0770	20	30	N	N	N	<5	N	15	N	N	N	20
J30R0820	20	30	N	N	N	N	N	5	N	N	N	10
J30R0870	20	20	N	N	N	N	N	30	N	N	N	5
J30R0920	20	<20	N	N	N	N	N	<5	N	N	N	5
J30R0990	20	30	N	N	N	N	N	7	N	N	N	7
J30R1115	10	<20	N	N	N	N	N	<5	N	N	N	5
J30R1250	15	<20	N	N	N	N	N	<5	N	N	N	5
J30R1310	15	30	N	N	N	N	N	<5	N	N	N	5
J30R1370	20	<20	N	N	N	N	N	7	N	N	N	10
J30R1450	20	30	N	N	N	N	10	15	N	N	N	20
J30R1525	20	100	N	N	N	7	N	70	N	7	N	30
J30R1577	20	500	N	N	N	10	15	50	N	10	<20	30
J30R1618	20	1,000	N	N	N	10	15	30	50	7	<20	20
J30R1664	30	700	<1	N	N	7	N	10	30	N	<20	10
J30R1730	30	500	1	N	N	7	N	7	30	N	<20	10
J30R1833	N	N	N	N	N	N	N	<5	N	N	N	N
J30R1862	15	500	<1	N	N	5	N	<5	N	N	<20	7

TABLE 1--SPECTROGRAPHIC ANALYSES OF INSOLUBLE-RESIDUE SAMPLES FROM DRILL HOLE NO. 30, 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.#
J30R0370	10	N	10	N	N	150	N	20	N	100	N	20
J30R0410	N	N	N	N	N	30	N	N	N	15	N	40
J30R0440	N	N	N	N	N	20	N	N	700	20	N	40
J30R0465	N	N	N	N	N	N	N	N	N	15	N	40
J30R0508	N	N	N	N	N	N	N	N	N	N	N	40
J30R0536	N	N	N	N	N	N	N	N	N	N	N	40
J30R0560	N	N	N	N	N	N	N	N	N	N	N	40
J30R0600	N	N	N	N	N	N	N	N	N	N	N	40
J30R0630	N	N	N	N	N	N	N	N	N	N	N	40
J30R0650	N	N	N	N	N	N	N	N	N	N	N	40
J30R0720	10	N	5	N	N	200	N	15	N	150	N	60
J30R0770	N	N	N	N	N	20	N	N	N	20	N	60
J30R0820	N	N	N	N	N	N	N	N	N	30	N	60
J30R0870	N	N	N	N	N	N	N	N	N	N	N	60
J30R0920	N	N	N	N	N	N	N	N	N	N	N	60
J30R0990	N	N	N	N	N	N	N	N	N	N	N	60
J30R1115	N	N	N	N	N	N	N	N	N	30	N	60
J30R1250	N	N	N	N	N	N	N	N	N	N	N	60
J30R1310	N	N	N	N	N	N	N	N	N	N	N	80
J30R1370	N	N	N	N	N	10	N	N	N	10	N	80
J30R1450	N	N	N	N	N	20	N	N	N	15	N	80
J30R1525	50	N	N	N	N	20	N	N	N	100	N	80
J30R1577	70	N	<5	N	N	100	N	10	300	150	N	80
J30R1618	50	N	5	N	N	150	N	20	N	200	N	80
J30R1664	20	N	N	N	N	50	N	15	N	200	N	80
J30R1730	30	N	N	N	N	50	N	15	N	300	N	80
J30R1833	N	N	N	N	N	N	N	N	N	10	N	80
J30R1862	15	N	N	N	N	50	N	10	N	100	N	90

TABLE 2--SPECTROGRAPHIC ANALYSES OF INSOLUBLE-RESIDUE SAMPLES FROM DRILL HOLE NO. 31, 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
J31R0010	37 44 33	95 46 24	5.0	.3	<.05	.5	70	N	N	N
J31R0020	37 44 33	95 46 24	10.0	.7	<.05	.7	100	N	N	N
J31R0030	37 44 33	95 46 24	3.0	.7	<.05	.5	70	N	N	N
J31R0040	37 44 33	95 46 24	5.0	.7	.05	.3	300	N	N	N
J31R0050	37 44 33	95 46 24	2.0	.7	<.05	.3	50	N	N	N
J31R0060	37 44 33	95 46 24	2.0	.7	<.05	.3	50	N	N	N
J31R0070	37 44 33	95 46 24	5.0	1.0	.07	.5	1,000	N	N	N
J31R0080	37 44 33	95 46 24	5.0	1.0	.05	.5	500	N	N	N
J31R0090	37 44 33	95 46 24	5.0	1.0	.10	.3	70	N	N	N
J31R0100	37 44 33	95 46 24	3.0	1.0	.05	.3	70	N	N	N
J31R0110	37 44 33	95 46 24	5.0	1.0	<.05	.5	70	N	N	N
J31R0120	37 44 33	95 46 24	5.0	1.0	<.05	.5	70	N	N	N
J31R0130	37 44 33	95 46 24	5.0	1.0	<.05	.5	70	N	N	N
J31R0140	37 44 33	95 46 24	5.0	1.0	<.05	.5	70	N	N	N
J31R0150	37 44 33	95 46 24	5.0	1.0	<.05	.5	70	N	N	N
J31R0160	37 44 33	95 46 24	5.0	1.0	<.05	.5	70	N	N	N
J31R0170	37 44 33	95 46 24	5.0	1.0	.15	.3	70	N	N	N
J31R0180	37 44 33	95 46 24	5.0	.7	.10	.3	50	N	N	N
J31R0190	37 44 33	95 46 24	5.0	1.0	.05	.5	50	N	N	N
J31R0200	37 44 33	95 46 24	3.0	1.0	<.05	.5	70	N	N	N
J31R0210	37 44 33	95 46 24	2.0	1.0	<.05	.5	50	N	N	N
J31R0220	37 44 33	95 46 24	3.0	1.0	<.05	.5	70	N	N	N
J31R0230	37 44 33	95 46 24	2.0	1.0	<.05	.5	70	N	N	N
J31R0240	37 44 33	95 46 24	2.0	1.0	<.05	.5	70	N	N	N
J31R0250	37 44 33	95 46 24	3.0	1.0	.05	.5	100	N	N	N
J31R0480	37 44 33	95 46 24	2.0	2.0	.10	1.0	300	N	N	N
J31R0490	37 44 33	95 46 24	2.0	1.5	.10	.7	200	N	N	N
J31R0500	37 44 33	95 46 24	2.0	2.0	.10	.7	500	N	N	N
J31R0510	37 44 33	95 46 24	3.0	1.5	.20	.5	200	N	N	N
J31R0520	37 44 33	95 46 24	2.0	1.0	.05	.2	30	.5	N	N
J31R0530	37 44 33	95 46 24	2.0	1.5	<.05	.5	30	5.0	N	N
J31R0540	37 44 33	95 46 24	2.0	2.0	<.05	.7	100	1.5	N	N
J31R0550	37 44 33	95 46 24	2.0	.5	<.05	.3	100	N	N	N
J31R0560	37 44 33	95 46 24	3.0	1.5	.05	.5	150	.5	N	N
J31R0570	37 44 33	95 46 24	5.0	1.5	.20	.5	150	<.5	N	N
J31R0580	37 44 33	95 46 24	3.0	1.0	.05	.5	150	<.5	N	N
J31R0590	37 44 33	95 46 24	5.0	1.5	.07	.5	100	<.5	N	N
J31R0600	37 44 33	95 46 24	5.0	2.0	.15	.5	100	<.5	N	N
J31R0610	37 44 33	95 46 24	1.5	1.0	<.05	.3	70	<.5	N	N
J31R0620	37 44 33	95 46 24	3.0	2.0	.15	>1.0	300	N	N	N
J31R0630	37 44 33	95 46 24	3.0	2.0	.15	.7	200	N	N	N
J31R0640	37 44 33	95 46 24	1.5	.7	.50	.3	70	N	N	N
J31R0650	37 44 33	95 46 24	3.0	1.0	<.05	.5	150	N	N	N
J31R0660	37 44 33	95 46 24	5.0	1.5	<.05	.5	200	N	N	N
J31R0670	37 44 33	95 46 24	5.0	1.5	<.05	.5	150	N	N	N

TABLE 2--SPECTROGRAPHIC ANALYSES OF INSOLUBLE-RESIDUE SAMPLES FROM DRILL HOLE NO. 31, 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
J31R0010	20	500	N	N	N	5	50	20	20	N	<20	30
J31R0020	70	500	2.0	N	N	15	100	30	30	N	<20	50
J31R0030	50	500	1.5	N	N	20	100	30	30	N	<20	50
J31R0040	50	500	1.5	N	N	15	70	30	30	N	<20	30
J31R0050	30	300	1.0	N	N	10	70	15	30	N	N	30
J31R0060	50	300	1.5	N	N	10	70	20	N	N	N	50
J31R0070	50	500	1.5	N	N	20	70	20	N	N	<20	50
J31R0080	50	500	1.5	N	N	20	100	20	N	N	<20	50
J31R0090	50	300	1.5	N	N	15	70	50	N	5	<20	50
J31R0100	50	200	1.5	N	N	15	70	20	N	7	<20	30
J31R0110	50	300	2.0	N	N	15	70	30	50	N	<20	50
J31R0120	50	300	1.5	N	N	15	70	50	30	N	<20	50
J31R0130	50	300	1.5	N	N	20	70	50	30	N	<20	50
J31R0140	50	300	1.5	N	N	20	70	70	30	N	<20	50
J31R0150	50	300	2.0	N	N	15	70	50	30	N	<20	50
J31R0160	50	300	1.5	N	N	20	70	100	30	N	<20	50
J31R0170	30	2,000	1.5	N	N	20	70	70	N	5	<20	50
J31R0180	30	3,000	1.0	N	N	15	50	70	N	5	<20	50
J31R0190	30	500	1.0	N	N	15	70	50	N	7	<20	50
J31R0200	50	300	1.5	N	N	10	70	70	30	N	<20	30
J31R0210	30	200	1.0	N	N	10	50	50	20	N	<20	20
J31R0220	30	300	1.5	N	N	15	50	70	20	N	<20	30
J31R0230	50	500	1.5	N	N	10	70	70	30	N	<20	30
J31R0240	50	300	1.5	N	N	10	50	50	20	N	<20	30
J31R0250	50	700	2.0	N	N	15	70	100	30	N	<20	50
J31R0480	10	1,000	2.0	N	N	50	500	50	N	N	30	500
J31R0490	15	700	1.5	N	N	30	500	50	N	N	20	500
J31R0500	15	1,000	1.0	N	N	50	500	50	N	N	20	700
J31R0510	30	1,000	1.0	N	N	30	200	50	N	10	<20	300
J31R0520	20	200	N	N	N	10	50	70	N	7	<20	100
J31R0530	15	700	1.0	N	N	20	150	100	N	100	<20	200
J31R0540	15	700	1.0	N	N	30	300	100	N	70	20	300
J31R0550	20	150	N	N	N	7	20	20	N	5	<20	30
J31R0560	30	500	1.0	N	N	30	150	70	N	15	<20	150
J31R0570	30	700	N	N	N	30	200	70	N	10	<20	200
J31R0580	20	300	1.0	N	N	15	100	50	N	30	<20	100
J31R0590	20	700	1.0	N	N	20	150	70	N	20	<20	150
J31R0600	20	1,500	1.0	N	N	30	200	70	N	20	<20	300
J31R0610	30	700	N	N	N	10	70	50	N	15	<20	50
J31R0620	15	2,000	1.5	N	N	30	500	70	N	N	20	300
J31R0630	20	2,000	1.0	N	N	30	200	70	N	30	<20	200
J31R0640	20	1,000	N	N	N	15	150	50	N	10	<20	100
J31R0650	30	300	1.0	N	N	20	150	100	N	10	<20	150
J31R0660	30	300	1.0	N	N	15	70	50	20	N	<20	50
J31R0670	30	300	1.5	N	N	20	50	50	30	N	<20	50

TABLE 2--SPECTROGRAPHIC ANALYSES OF INSOLUBLE-RESIDUE SAMPLES FROM DRILL HOLE NO. 31, 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.#
J31R0010	15	N	10	N	N	200	N	20	N	300	N	20
J31R0020	20	N	20	N	N	500	N	20	N	150	N	20
J31R0030	30	N	15	N	N	500	N	15	N	150	N	20
J31R0040	30	N	10	N	N	200	N	10	N	100	N	20
J31R0050	15	N	10	N	N	200	N	10	N	150	N	20
J31R0060	<10	N	7	N	N	200	N	<10	N	100	N	20
J31R0070	20	N	10	N	N	300	N	10	N	150	N	20
J31R0080	15	N	10	N	N	300	N	10	N	150	N	20
J31R0090	20	N	10	N	N	300	N	<10	N	150	N	20
J31R0100	20	N	10	N	N	300	N	10	N	150	N	20
J31R0110	15	N	15	N	N	300	N	20	N	150	N	20
J31R0120	15	N	15	N	N	500	N	20	N	150	N	20
J31R0130	15	N	15	N	N	300	N	20	N	100	N	20
J31R0140	15	N	15	N	N	500	N	20	N	150	N	20
J31R0150	10	N	15	N	N	300	N	15	N	150	N	20
J31R0160	20	N	15	N	N	500	N	20	N	150	N	20
J31R0170	30	N	15	N	N	300	N	15	1,000	150	N	20
J31R0180	15	N	10	N	N	500	N	10	200	100	N	20
J31R0190	100	N	10	N	N	500	N	15	N	150	N	20
J31R0200	10	N	15	N	N	500	N	15	N	200	N	20
J31R0210	10	N	10	N	N	300	N	10	N	150	N	20
J31R0220	10	N	15	N	N	500	N	15	N	200	N	20
J31R0230	<10	N	10	N	N	300	N	15	N	200	N	20
J31R0240	<10	N	10	N	N	300	N	15	N	150	N	20
J31R0250	15	N	15	N	N	500	N	15	N	150	N	20
J31R0480	<10	N	10	N	N	200	N	N	N	300	N	20
J31R0490	N	N	10	N	N	200	N	N	N	300	N	20
J31R0500	20	N	7	N	N	200	N	N	N	300	N	20
J31R0510	20	N	7	N	N	200	N	N	N	200	N	20
J31R0520	15	N	5	N	N	150	N	N	N	100	N	20
J31R0530	20	N	10	N	N	1,000	N	N	N	200	N	20
J31R0540	N	N	10	N	N	1,000	N	N	N	300	N	20
J31R0550	10	N	5	N	N	150	N	15	N	200	N	20
J31R0560	20	N	10	N	N	300	N	10	N	200	N	20
J31R0570	10	N	7	N	N	200	N	<10	200	100	N	20
J31R0580	15	N	10	N	N	200	N	10	200	150	N	20
J31R0590	20	N	10	N	N	300	N	10	N	150	N	20
J31R0600	15	N	10	N	N	500	N	<10	N	150	N	20
J31R0610	10	N	10	N	N	300	N	N	N	100	N	20
J31R0620	N	N	10	N	N	200	N	N	N	500	N	20
J31R0630	10	N	10	N	N	200	N	N	N	200	N	20
J31R0640	10	N	<5	N	N	100	N	N	N	100	N	20
J31R0650	30	N	10	N	N	300	N	<10	500	150	N	20
J31R0660	15	N	15	N	N	500	N	20	N	150	N	20
J31R0670	10	N	15	N	N	500	N	15	N	100	N	20

TABLE 2--SPECTROGRAPHIC ANALYSES OF INSOLUBLE-RESIDUE SAMPLES FROM DRILL HOLE NO. 31, 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
J31R0680	37 44 33	95 46 24	5.0	1.0	<.05	.3	100	N	N	N
J31R0690	37 44 33	95 46 24	3.0	1.0	<.05	.2	100	N	N	N
J31R0700	37 44 33	95 46 24	3.0	1.0	<.05	.3	100	N	N	N
J31R0710	37 44 33	95 46 24	3.0	1.0	<.05	.3	100	N	N	N
J31R0720	37 44 33	95 46 24	3.0	1.0	<.05	.2	70	N	N	N
J31R0730	37 44 33	95 46 24	5.0	1.0	<.05	.2	100	N	N	N
J31R0740	37 44 33	95 46 24	5.0	1.0	<.05	.3	100	N	N	N
J31R0750	37 44 33	95 46 24	3.0	1.0	<.05	.2	100	N	N	N
J31R0760	37 44 33	95 46 24	2.0	1.5	.10	.5	100	N	N	N
J31R0770	37 44 33	95 46 24	3.0	3.0	.07	.5	150	N	N	N
J31R0780	37 44 33	95 46 24	2.0	3.0	.07	.5	300	N	N	N
J31R0790	37 44 33	95 46 24	3.0	3.0	.07	.5	300	N	N	N
J31R0800	37 44 33	95 46 24	2.0	1.0	<.05	.3	50	N	N	N
J31R0810	37 44 33	95 46 24	2.0	1.0	<.05	.3	70	N	N	N
J31R0820	37 44 33	95 46 24	3.0	1.0	<.05	.5	70	N	N	N
J31R0830	37 44 33	95 46 24	5.0	1.5	<.05	.5	150	N	N	N
J31R0840	37 44 33	95 46 24	3.0	1.0	<.05	.3	100	N	N	N
J31R0850	37 44 33	95 46 24	2.0	.7	<.05	.3	70	N	N	N
J31R0860	37 44 33	95 46 24	1.5	.7	<.05	.3	70	N	N	N
J31R0870	37 44 33	95 46 24	3.0	1.0	<.05	.3	70	N	N	N
J31R0880	37 44 33	95 46 24	2.0	1.0	<.05	.3	100	N	N	N
J31R0890	37 44 33	95 46 24	3.0	1.0	<.05	.3	100	N	N	N
J31R0900	37 44 33	95 46 24	3.0	1.0	<.05	.3	100	N	N	N
J31R0910	37 44 33	95 46 24	2.0	1.0	<.05	.3	50	N	N	N
J31R0920	37 44 33	95 46 24	2.0	1.0	<.05	.3	50	.5	N	N
J31R0930	37 44 33	95 46 24	2.0	1.0	<.05	.3	70	N	N	N
J31R0940	37 44 33	95 46 24	2.0	1.0	<.05	.5	70	N	N	N
J31R0950	37 44 33	95 46 24	2.0	1.5	.05	.5	70	N	N	N
J31R0960	37 44 33	95 46 24	3.0	1.0	<.05	.3	100	.7	N	N
J31R0970	37 44 33	95 46 24	2.0	.7	<.05	.3	50	.7	N	N
J31R0980	37 44 33	95 46 24	5.0	.7	<.05	.3	150	1.5	N	N
J31R0990	37 44 33	95 46 24	2.0	.5	<.05	.3	70	N	N	N
J31R1000	37 44 33	95 46 24	3.0	.7	<.05	.5	70	N	N	N
J31R1010	37 44 33	95 46 24	1.5	.5	<.05	.3	50	N	N	N
J31R1020	37 44 33	95 46 24	2.0	.5	<.05	.3	50	N	N	N
J31R1030	37 44 33	95 46 24	2.0	.5	<.05	.5	50	N	N	N
J31R1040	37 44 33	95 46 24	2.0	.7	<.05	.3	50	N	N	N
J31R1050	37 44 33	95 46 24	2.0	.7	<.05	.3	50	N	N	N
J31R1060	37 44 33	95 46 24	2.0	.7	<.05	.5	70	N	N	N
J31R1070	37 44 33	95 46 24	3.0	.7	<.05	.5	70	N	N	N
J31R1080	37 44 33	95 46 24	3.0	.5	<.05	.3	100	N	N	N
J31R1090	37 44 33	95 46 24	5.0	.7	<.05	.3	100	N	N	N
J31R1100	37 44 33	95 46 24	2.0	.5	<.05	.3	70	N	N	N

TABLE 2--SPECTROGRAPHIC ANALYSES OF INSOLUBLE-RESIDUE SAMPLES FROM DRILL HOLE NO. 31, 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
J31R0680	50	300	1.5	N	N	20	50	50	20	N	<20	50
J31R0690	30	200	1.5	N	N	20	50	30	N	N	<20	50
J31R0700	30	300	1.0	N	N	20	50	100	N	N	<20	50
J31R0710	50	150	1.0	N	N	20	50	50	N	N	<20	50
J31R0720	30	150	1.0	N	N	20	50	30	20	N	<20	50
J31R0730	30	150	1.5	N	N	30	70	70	N	7	<20	70
J31R0740	30	150	1.0	N	N	20	50	70	N	N	<20	100
J31R0750	30	200	1.0	N	N	20	50	70	N	<5	<20	100
J31R0760	20	1,000	1.5	N	N	20	150	50	N	N	20	100
J31R0770	15	1,000	1.5	N	N	70	500	50	N	N	20	1,000
J31R0780	20	2,000	1.5	N	N	70	700	50	20	N	20	1,000
J31R0790	20	2,000	2.0	N	N	70	700	50	N	N	20	1,000
J31R0800	30	500	1.0	N	N	20	100	50	N	7	<20	200
J31R0810	30	200	N	N	N	15	50	70	N	5	<20	70
J31R0820	30	200	N	N	N	15	50	50	N	5	<20	50
J31R0830	50	300	1.0	N	N	15	50	50	30	N	<20	50
J31R0840	30	100	N	N	N	15	30	30	N	N	<20	50
J31R0850	20	70	N	N	N	10	30	30	N	N	<20	50
J31R0860	20	150	N	N	N	15	50	30	N	N	<20	50
J31R0870	30	150	1.0	N	N	15	50	50	N	N	N	50
J31R0880	30	150	1.0	N	N	15	50	50	N	N	N	50
J31R0890	30	150	1.5	N	N	15	50	50	N	N	N	50
J31R0900	30	500	1.0	N	N	15	50	50	N	7	N	70
J31R0910	30	700	1.5	N	N	15	100	70	N	15	N	100
J31R0920	30	300	1.5	N	N	10	200	100	N	7	N	100
J31R0930	30	300	1.5	N	N	15	100	50	N	5	N	70
J31R0940	20	500	1.5	N	N	10	70	70	20	N	N	50
J31R0950	30	1,000	1.0	N	N	20	100	50	N	5	N	100
J31R0960	30	700	1.0	N	N	20	100	50	N	50	N	100
J31R0970	30	70	1.0	N	N	15	70	50	N	10	N	70
J31R0980	30	100	1.0	N	N	20	150	100	N	50	N	100
J31R0990	30	150	N	N	N	10	50	70	N	5	N	50
J31R1000	20	150	N	N	N	10	50	50	N	<5	N	50
J31R1010	20	150	N	N	N	7	50	30	20	<5	N	50
J31R1020	20	100	1.0	N	N	10	50	30	20	N	N	50
J31R1030	30	150	1.0	N	N	10	50	20	20	N	N	30
J31R1040	20	150	1.5	N	N	10	50	20	20	N	N	30
J31R1050	30	300	1.5	N	N	15	70	30	20	N	N	50
J31R1060	30	200	1.0	N	N	10	50	50	20	N	N	50
J31R1070	30	500	1.5	N	N	20	70	50	N	15	N	70
J31R1080	30	100	1.5	N	N	10	70	50	20	N	N	50
J31R1090	30	200	1.5	N	N	10	70	50	20	N	N	50
J31R1100	30	150	1.5	N	N	10	70	30	20	N	N	50

TABLE 2--SPECTROGRAPHIC ANALYSES OF INSOLUBLE-RESIDUE SAMPLES FROM DRILL HOLE NO. 31, 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.#
J31R0680	30	N	10	N	N	200	N	15	N	100	N	20
J31R0690	20	N	10	N	N	200	N	10	N	100	N	20
J31R0700	10	N	10	N	N	150	N	15	N	200	N	20
J31R0710	15	N	10	N	N	150	N	10	N	100	N	20
J31R0720	15	N	10	N	N	150	N	10	N	100	N	20
J31R0730	50	N	10	N	N	200	N	10	N	100	N	20
J31R0740	20	N	10	N	N	200	N	10	N	150	N	20
J31R0750	20	N	10	N	N	150	N	10	N	150	N	20
J31R0760	10	N	15	N	N	200	N	<10	N	500	N	20
J31R0770	N	N	10	N	N	150	N	N	N	300	N	20
J31R0780	N	N	10	N	100	150	N	N	N	300	N	20
J31R0790	N	N	10	N	100	150	N	N	N	200	N	20
J31R0800	<10	N	10	N	N	300	N	N	N	150	N	20
J31R0810	N	N	10	N	N	200	N	15	N	150	N	20
J31R0820	<10	N	15	N	N	300	N	15	N	200	N	20
J31R0830	<10	N	10	N	N	200	N	20	N	200	N	20
J31R0840	10	N	7	N	N	200	N	15	N	200	N	20
J31R0850	N	N	7	N	N	150	N	10	N	300	N	20
J31R0860	N	N	5	N	N	100	N	<10	N	200	N	20
J31R0870	N	N	7	N	N	200	N	15	N	150	N	20
J31R0880	N	N	10	N	N	200	N	10	N	150	N	20
J31R0890	10	N	15	N	N	200	N	10	N	100	N	20
J31R0900	100	N	10	N	N	200	N	10	N	150	N	20
J31R0910	20	N	10	N	N	200	N	10	N	150	N	20
J31R0920	20	N	10	N	N	200	N	<10	N	150	N	20
J31R0930	20	N	10	N	N	200	N	10	N	150	N	20
J31R0940	15	N	10	N	N	300	N	15	N	200	N	20
J31R0950	15	N	10	N	N	200	N	10	N	150	N	20
J31R0960	20	N	10	N	N	200	N	N	N	100	N	20
J31R0970	10	N	7	N	N	200	N	<10	N	100	N	20
J31R0980	50	N	10	N	N	1,000	N	10	N	100	N	20
J31R0990	30	N	10	N	N	200	N	15	N	200	N	20
J31R1000	30	N	10	N	N	200	N	15	N	200	N	20
J31R1010	15	N	7	N	N	20	N	15	N	150	N	20
J31R1020	15	N	10	N	N	150	N	15	N	150	N	20
J31R1030	10	N	10	N	N	200	N	15	N	150	N	20
J31R1040	10	N	10	N	N	300	N	15	N	100	N	20
J31R1050	15	N	10	N	N	300	N	15	N	150	N	20
J31R1060	15	N	10	N	N	300	N	15	N	100	N	20
J31R1070	20	N	10	N	N	300	N	15	N	150	N	20
J31R1080	20	N	10	N	N	200	N	15	N	150	N	20
J31R1090	20	N	10	N	N	300	N	15	N	150	N	20
J31R1100	20	N	10	N	N	200	N	15	N	150	N	20

TABLE 3--SPECTROGRAPHIC ANALYSES OF INSOLUBLE-RESIDUE SAMPLES FROM DRILL HOLE NO. 32, 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
J32R0510	37 43 33	96 5 30	3.0	1.50	.20	.70	150	N	N	N
J32R0520	37 43 33	96 5 30	3.0	1.00	.10	.50	150	N	N	N
J32R0530	37 43 33	96 5 30	5.0	1.50	.50	.50	200	N	N	N
J32R0540	37 43 33	96 5 30	2.0	1.00	.20	.50	200	.5	N	N
J32R0550	37 43 33	96 5 30	3.0	.70	.07	.50	200	N	N	N
J32R0560	37 43 33	96 5 30	3.0	1.00	.05	.70	200	N	N	N
J32R0570	37 43 33	96 5 30	3.0	1.00	.10	.50	200	N	N	N
J32R0580	37 43 33	96 5 30	3.0	1.00	.15	.50	150	N	N	N
J32R0590	37 43 33	96 5 30	3.0	1.00	.07	.50	200	N	N	N
J32R0600	37 43 33	96 5 30	3.0	1.00	.10	.50	200	N	N	N
J32R0610	37 43 33	96 5 30	3.0	1.00	.15	.50	150	1.5	N	N
J32R0620	37 43 33	96 5 30	2.0	.70	.05	.30	100	2.0	N	N
J32R0630	37 43 33	96 5 30	3.0	1.00	.07	.50	150	3.0	N	N
J32R0640	37 43 33	96 5 30	5.0	1.00	.07	.50	200	.5	N	N
J32R0650	37 43 33	96 5 30	7.0	1.00	.05	.50	200	.5	N	N
J32R0660	37 43 33	96 5 30	5.0	1.00	.05	.50	200	N	N	N
J32R0670	37 43 33	96 5 30	10.0	1.00	.05	1.00	200	N	N	N
J32R0680	37 43 33	96 5 30	5.0	1.00	<.05	.50	200	N	N	N
J32R0690	37 43 33	96 5 30	7.0	1.50	.05	.70	200	N	N	N
J32R0700	37 43 33	96 5 30	3.0	1.00	<.05	.50	150	N	N	N
J32R0910	37 43 33	96 5 30	5.0	1.00	.05	.50	150	N	N	N
J32R0920	37 43 33	96 5 30	10.0	1.50	.10	.70	200	1.0	N	N
J32R0930	37 43 33	96 5 30	5.0	1.50	.07	.50	200	1.0	N	N
J32R0940	37 43 33	96 5 30	5.0	1.50	.05	.70	200	.5	N	N
J32R0950	37 43 33	96 5 30	7.0	1.00	.05	.50	200	.5	N	N
J32R0960	37 43 33	96 5 30	5.0	1.00	.07	.70	200	1.5	N	N
J32R0970	37 43 33	96 5 30	5.0	1.00	.07	.50	300	2.0	N	N
J32R0980	37 43 33	96 5 30	3.0	1.00	.05	.50	200	5.0	N	N
J32R0990	37 43 33	96 5 30	5.0	1.00	.05	.50	200	2.0	N	N
J32R1000	37 43 33	96 5 30	7.0	1.00	.05	.50	300	1.0	N	N
J32R1010	37 43 33	96 5 30	3.0	.70	.05	.70	150	N	N	N
J32R1020	37 43 33	96 5 30	3.0	1.00	.07	.70	150	N	N	N
J32R1030	37 43 33	96 5 30	3.0	1.00	.05	.70	200	1.0	N	N
J32R1040	37 43 33	96 5 30	3.0	1.00	.05	.70	200	N	N	N
J32R1050	37 43 33	96 5 30	3.0	1.00	.05	.70	100	N	N	N
J32R1060	37 43 33	96 5 30	5.0	1.00	.05	.70	150	N	N	N
J32R1070	37 43 33	96 5 30	5.0	1.00	.05	.70	150	N	N	N
J32R1080	37 43 33	96 5 30	3.0	.70	<.05	.50	100	N	N	N
J32R1090	37 43 33	96 5 30	3.0	1.00	<.05	.70	150	N	N	N
J32R1100	37 43 33	96 5 30	5.0	1.00	<.05	.70	200	N	N	N
J32R1110	37 43 33	96 5 30	5.0	1.00	<.05	.70	500	N	N	N
J32R1120	37 43 33	96 5 30	7.0	1.00	<.05	1.00	200	N	N	N
J32R1130	37 43 33	96 5 30	5.0	.70	<.05	.50	150	.7	N	N
J32R1140	37 43 33	96 5 30	5.0	1.00	<.05	.50	150	.5	N	N
J32R1150	37 43 33	96 5 30	3.0	.70	<.05	.30	100	.5	N	N

TABLE 3--SPECTROGRAPHIC ANALYSES OF INSOLUBLE-RESIDUE SAMPLES FROM DRILL HOLE NO. 32, 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
J32R0510	50	1,000	1.5	N	<20	20	300	200	50	5	20	150
J32R0520	50	300	1.0	N	N	10	200	150	20	15	<20	50
J32R0530	50	500	1.0	N	<20	20	300	100	20	15	<20	100
J32R0540	50	500	1.0	N	N	15	200	70	20	7	<20	100
J32R0550	70	300	1.0	N	N	10	100	70	20	20	<20	50
J32R0560	70	200	1.0	N	N	10	100	50	30	N	<20	50
J32R0570	70	300	1.0	N	N	15	100	50	30	20	<20	100
J32R0580	70	300	1.5	N	N	10	100	50	30	20	<20	70
J32R0590	50	300	1.5	N	N	15	150	100	30	20	<20	100
J32R0600	50	>5,000	1.5	N	<20	15	100	200	N	7	<20	100
J32R0610	50	>5,000	1.0	N	<20	20	200	70	N	20	<20	150
J32R0620	50	2,000	1.0	N	<20	10	200	70	N	20	<20	150
J32R0630	50	>5,000	1.0	N	<20	15	300	70	N	20	<20	200
J32R0640	50	2,000	1.5	N	N	20	150	100	N	5	<20	150
J32R0650	50	2,000	1.5	N	N	20	100	100	N	N	<20	100
J32R0660	50	1,000	1.5	N	N	15	100	100	N	N	<20	100
J32R0670	70	1,000	2.0	N	N	20	150	100	50	N	<20	70
J32R0680	70	700	2.0	N	N	20	100	50	30	N	<20	50
J32R0690	70	1,000	1.5	N	N	20	100	50	20	N	<20	50
J32R0700	50	700	1.5	N	N	20	100	50	30	N	<20	50
J32R0910	50	1,000	1.5	N	N	15	150	70	30	N	<20	50
J32R0920	70	1,000	2.0	N	<20	20	150	150	20	15	<20	100
J32R0930	70	1,000	2.0	N	<20	20	200	200	20	15	<20	100
J32R0940	100	500	2.0	N	N	20	200	70	20	15	<20	70
J32R0950	70	500	2.0	N	N	20	200	100	20	20	<20	70
J32R0960	70	2,000	2.0	N	N	20	200	200	20	20	<20	100
J32R0970	70	1,000	2.0	N	N	20	200	100	N	30	<20	150
J32R0980	70	1,500	1.5	N	<20	15	500	150	30	30	<20	200
J32R0990	70	1,000	1.5	N	N	15	200	150	20	20	<20	100
J32R1000	50	500	1.5	N	N	15	150	70	30	30	<20	70
J32R1010	50	500	1.0	N	N	10	100	50	30	7	<20	70
J32R1020	50	500	1.5	N	N	10	100	50	50	10	<20	70
J32R1030	50	500	2.0	N	N	15	150	70	50	5	<20	70
J32R1040	50	500	1.5	N	N	15	150	50	50	5	<20	70
J32R1050	50	700	1.5	N	N	10	150	50	50	5	<20	50
J32R1060	50	700	2.0	N	N	15	150	50	50	N	<20	70
J32R1070	50	500	1.5	N	N	10	150	50	30	N	<20	50
J32R1080	50	500	1.0	N	N	10	150	50	30	5	<20	50
J32R1090	50	700	1.5	N	N	10	100	50	50	N	<20	50
J32R1100	50	500	1.5	N	N	15	150	50	50	N	<20	50
J32R1110	70	500	1.5	N	N	15	150	100	50	5	<20	70
J32R1120	70	500	2.0	N	N	20	150	1,000	50	10	<20	70
J32R1130	50	300	1.5	N	N	15	100	150	50	7	<20	50
J32R1140	50	500	2.0	N	N	20	100	70	50	10	<20	70
J32R1150	50	100	2.0	N	N	10	100	50	50	N	<20	50

TABLE 3--SPECTROGRAPHIC ANALYSES OF INSOLUBLE-RESIDUE SAMPLES FROM DRILL HOLE NO. 32, 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.#
J32R0510	20	N	15	N	200	200	150	20	1,000	200	N	20
J32R0520	50	N	10	N	100	200	70	15	N	200	N	20
J32R0530	100	N	15	N	150	200	N	15	700	200	N	20
J32R0540	30	N	10	N	100	200	<50	10	<200	150	N	20
J32R0550	50	N	10	N	100	200	<50	20	N	200	N	20
J32R0560	30	N	15	N	100	200	N	20	N	200	N	20
J32R0570	30	N	15	N	100	300	50	15	200	150	N	20
J32R0580	70	N	15	N	100	200	70	20	<200	150	N	20
J32R0590	30	N	10	N	100	200	100	15	200	150	N	20
J32R0600	50	N	15	N	700	200	70	10	300	100	N	20
J32R0610	70	N	10	N	1,000	200	300	15	1,000	150	N	20
J32R0620	70	N	10	N	150	3,000	N	<10	500	150	N	20
J32R0630	70	N	10	N	300	500	50	10	700	150	N	20
J32R0640	70	N	15	N	100	200	N	10	N	150	N	20
J32R0650	50	N	15	N	100	300	<50	20	N	200	N	20
J32R0660	30	N	15	N	N	200	<50	20	N	150	N	20
J32R0670	50	N	20	N	100	300	N	30	N	200	N	20
J32R0680	30	N	20	N	100	300	N	20	N	150	N	20
J32R0690	30	N	20	N	100	300	<50	20	N	200	N	20
J32R0700	30	N	15	N	100	200	<50	20	N	200	N	20
J32R0910	50	N	15	N	100	200	50	20	300	200	N	20
J32R0920	50	N	15	N	150	300	70	20	500	150	N	20
J32R0930	200	N	15	N	100	300	100	15	500	150	N	20
J32R0940	50	N	15	N	100	200	N	15	N	150	N	20
J32R0950	500	N	10	N	100	200	70	15	500	150	N	20
J32R0960	1,000	N	15	N	150	200	100	15	200	150	N	20
J32R0970	200	N	15	N	100	300	70	15	<200	150	N	20
J32R0980	50	N	15	N	150	700	N	10	1,000	150	N	20
J32R0990	50	N	15	N	100	500	50	20	200	150	N	20
J32R1000	50	N	15	N	100	300	N	20	200	200	N	20
J32R1010	50	N	15	N	100	300	70	30	200	300	N	20
J32R1020	50	N	15	N	200	300	<50	30	<200	300	N	20
J32R1030	10,000	N	15	N	150	300	<50	30	<200	300	N	20
J32R1040	700	N	15	N	150	300	50	30	<200	200	N	20
J32R1050	50	N	20	N	150	500	N	30	200	200	N	20
J32R1060	50	N	20	N	150	300	N	20	N	200	N	20
J32R1070	50	N	20	N	150	300	N	20	N	200	N	20
J32R1080	50	N	15	N	100	200	N	20	N	200	N	20
J32R1090	50	N	20	N	150	300	N	30	N	200	N	20
J32R1100	50	N	20	N	150	300	N	30	N	200	N	20
J32R1110	70	N	20	N	200	300	N	20	N	200	N	20
J32R1120	70	N	20	N	300	500	50	30	N	300	N	20
J32R1130	30	N	15	N	200	200	N	20	N	150	N	20
J32R1140	70	N	15	N	200	200	N	30	N	200	N	20
J32R1150	50	N	15	N	150	200	N	15	N	100	N	20

TABLE 3--SPECTROGRAPHIC ANALYSES OF INSOLUBLE-RESIDUE SAMPLES FROM DRILL HOLE NO. 32, 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
J32R1160	37 43 33	96 5 30	5.0	1.00	<.05	.50	150	.5	N	N
J32R1170	37 43 33	96 5 30	3.0	.70	<.05	.50	200	N	N	N
J32R1180	37 43 33	96 5 30	2.0	.50	<.05	.50	150	N	N	N
J32R1190	37 43 33	96 5 30	2.0	.50	<.05	.50	100	N	N	N
J32R1200	37 43 33	96 5 30	1.5	.50	<.05	.50	100	N	N	N
J32R1210	37 43 33	96 5 30	2.0	.70	<.05	.50	150	N	N	N
J32R1250	37 43 33	96 5 30	2.0	.50	<.05	.50	100	N	N	N
J32R1270	37 43 33	96 5 30	5.0	.50	<.05	.50	150	N	N	N
J32R1290	37 43 33	96 5 30	7.0	.50	<.05	.50	100	N	N	N
J32R1300	37 43 33	96 5 30	5.0	.50	<.05	.50	70	N	N	N
J32R1320	37 43 33	96 5 30	7.0	.50	<.05	.50	70	N	N	N
J32R1330	37 43 33	96 5 30	5.0	.50	<.05	.50	100	N	N	N
J32R1350	37 43 33	96 5 30	7.0	.50	.05	.50	70	.7	N	N
J32R1370	37 43 33	96 5 30	5.0	.50	.05	.30	70	1.0	N	N
J32R1380	37 43 33	96 5 30	1.5	.07	.05	.15	20	N	N	N

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
J32R1160	70	200	2.0	N	N	15	150	50	50	7	<20	70
J32R1170	50	300	1.5	N	N	15	100	70	50	7	<20	70
J32R1180	50	300	1.0	N	N	7	100	70	50	N	<20	50
J32R1190	50	200	1.0	N	N	7	70	30	50	N	<20	50
J32R1200	50	200	1.0	N	N	5	70	15	30	N	<20	20
J32R1210	70	300	1.5	N	N	7	150	30	50	N	<20	30
J32R1250	50	200	1.0	N	N	7	70	200	30	N	<20	30
J32R1270	50	200	1.0	N	N	15	100	50	50	7	<20	50
J32R1290	70	200	2.0	N	N	15	150	50	50	N	<20	100
J32R1300	70	500	2.0	N	N	20	200	50	50	N	<20	100
J32R1320	70	300	1.5	N	N	15	150	70	30	7	<20	100
J32R1330	70	300	2.0	N	N	15	150	100	50	N	<20	100
J32R1350	70	200	1.5	N	N	20	150	70	50	5	<20	100
J32R1370	70	150	N	N	<20	10	150	50	30	N	N	70
J32R1380	50	50	N	N	30	N	15	7	N	N	N	20

TABLE 3--SPECTROGRAPHIC ANALYSES OF INSOLUBLE-RESIDUE SAMPLES FROM DRILL HOLE NO. 32, 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.#
J32R1160	70	N	15	N	150	300	N	20	N	150	N	20
J32R1170	50	N	15	N	150	200	N	30	N	200	N	20
J32R1180	30	N	15	N	150	200	N	20	300	500	N	20
J32R1190	20	N	15	N	150	200	N	20	N	300	N	20
J32R1200	20	N	10	N	100	200	N	15	N	300	N	20
J32R1210	20	N	15	N	150	200	N	20	N	300	N	20
J32R1250	20	N	10	N	100	150	N	15	N	200	N	20
J32R1270	50	N	10	N	150	150	N	15	N	150	N	20
J32R1290	50	N	20	N	100	300	N	30	N	150	N	20
J32R1300	50	N	20	N	150	500	N	30	N	200	N	20
J32R1320	70	N	15	N	100	300	N	20	N	200	N	20
J32R1330	70	N	20	N	100	500	N	20	N	200	N	20
J32R1350	50	N	15	N	100	300	N	50	500	200	N	20
J32R1370	30	N	10	N	100	200	N	20	1,000	100	N	20
J32R1380	10	N	N	N	N	30	N	N	2,000	20	N	20