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**Spectrographic analyses of insoluble-residue samples,
Joplin 1° x 2° quadrangle, Kansas and Missouri:
Drill hole nos. 36, 37, and 38**

By

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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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CONTENTS

	Page
Introduction.....	1
Preparation and analysis of samples.....	1
Description of data tables.....	3
Explanation of data.....	3
RASS.....	4
Acknowledgments.....	4
References.....	4

FIGURE

Figure 1. Locations of drill hole nos. 36, 37, and 38, Joplin 1° x 2° quadrangle, Missouri and Kansas.....	2
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TABLES

Table 1. Spectrographic analyses of insoluble-residue samples from drill hole no. 36, Joplin 1° x 2° quadrangle, Missouri and Kansas.....	5
Table 2. Spectrographic analyses of insoluble-residue samples from drill hole no. 37, Joplin 1° x 2° quadrangle, Missouri and Kansas.....	8
Table 3. Spectrographic analyses of insoluble-residue samples from drill hole no. 38, Joplin 1° x 2° quadrangle, Missouri and Kansas.....	11

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. 36 (#1 Corbin - KGS), drill hole no. 37 (#1 Eagle - KGS), and drill hole no. 38 (#1 Leavall - KGS) are given in this report. Drill hole no. 36 is located in sec. 29, T. 31 S., R. 13 E. in Elk County, Kansas; drill hole no. 37 is located in sec. 19, T. 26 S., R. 16 E. in Woodson County, Kansas; drill hole no. 38 is located in sec. 10, T. 24 S., R. 19 E. in Allen County, Kansas (fig.1). Drill hole J36R, although it is located just outside the 2° sheet, has been included in this study because it provides good and useful information about the area. Data for the insoluble-residue samples from drill holes 36, 37, and 38 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.

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:

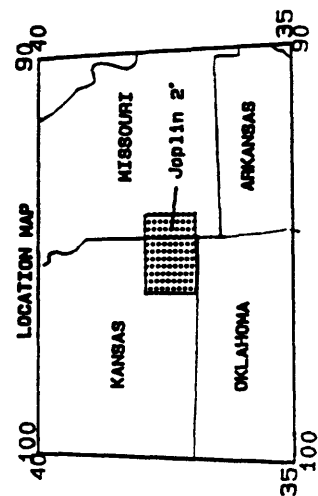
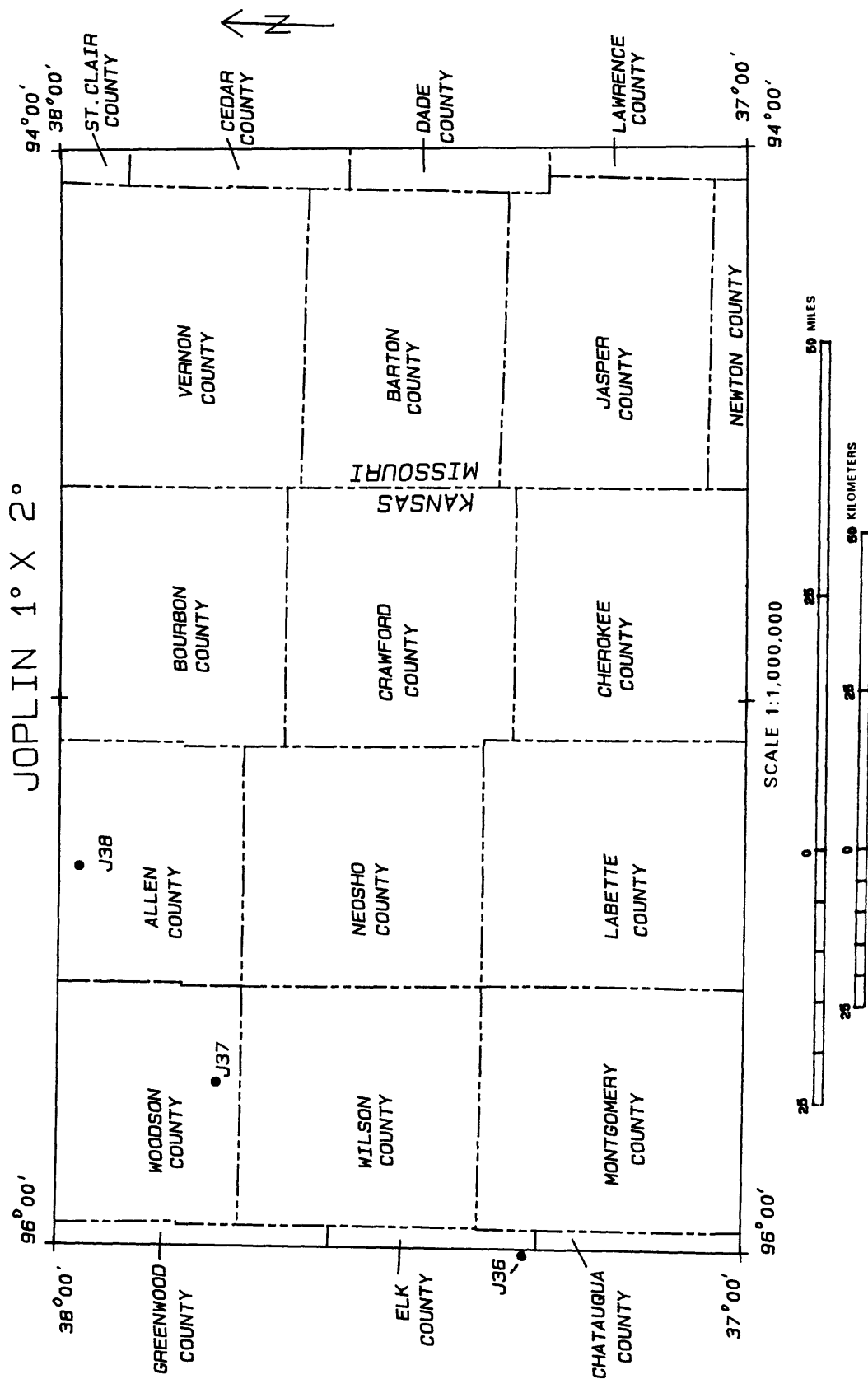


Figure 1. Locations of drill holes 36, 37, and 38, Joplin 1° X 2° quadrangle, Missouri and Kansas.

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:

<u>Code</u>	<u>Formation</u>
20	Pennsylvanian Undifferentiated
31	Chattanooga Shale
40	Mississippian Undifferentiated
60	Ordovician 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 these drill-hole samples available from their sample libraries.

REFERENCES

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- 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. 36, 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
J36R0120	37 50 24	95 41 45	1.5	.20	<.05	.30	50	N	N	N
J36R0150	37 50 24	95 41 45	1.5	.50	<.05	.50	50	N	N	N
J36R0190	37 50 24	95 41 45	1.5	.50	<.05	.50	50	N	N	N
J36R0230	37 50 24	95 41 45	1.5	.50	<.05	.50	50	N	N	N
J36R0270	37 50 24	95 41 45	2.0	.70	<.05	.50	50	N	N	N
J36R0310	37 50 24	95 41 45	2.0	.70	<.05	.50	50	N	N	N
J36R0350	37 50 24	95 41 45	3.0	1.00	<.05	.50	100	N	N	N
J36R0390	37 50 24	95 41 45	5.0	1.00	<.05	.50	100	N	N	N
J36R0440	37 50 24	95 41 45	5.0	1.00	.05	.50	100	N	N	N
J36R0480	37 50 24	95 41 45	5.0	.70	<.05	.50	70	N	N	N
J36R0510	37 50 24	95 41 45	5.0	1.50	<.05	.50	200	N	N	N
J36R0550	37 50 24	95 41 45	5.0	1.00	<.05	.50	200	N	N	N
J36R0610	37 50 24	95 41 45	3.0	.70	<.05	.50	150	N	N	N
J36R0650	37 50 24	95 41 45	5.0	1.00	<.05	.50	150	N	N	N
J36R0710	37 50 24	95 41 45	7.0	1.50	<.05	.50	200	N	N	N
J36R0750	37 50 24	95 41 45	2.0	.70	.05	.50	150	N	N	N
J36R0790	37 50 24	95 41 45	5.0	1.00	.05	.50	100	N	N	N
J36R0830	37 50 24	95 41 45	5.0	1.00	.05	.50	150	N	N	N
J36R0890	37 50 24	95 41 45	5.0	1.50	.05	.30	200	1.5	N	N
J36R0930	37 50 24	95 41 45	5.0	1.50	.05	.50	150	.5	N	N
J36R1000	37 50 24	95 41 45	5.0	1.50	.05	.50	200	N	N	N
J36R1090	37 50 24	95 41 45	5.0	1.50	.05	.50	200	N	N	N
J36R1170	37 50 24	95 41 45	7.0	1.50	.05	.50	300	1.0	N	N
J36R1250	37 50 24	95 41 45	7.0	1.50	<.05	.50	300	.5	N	N
J36R1330	37 50 24	95 41 45	7.0	1.50	<.05	.50	200	N	N	N
J36R1370	37 50 24	95 41 45	7.0	1.50	<.05	.50	200	N	N	N
J36R1430	37 50 24	95 41 45	7.0	1.50	<.05	.50	150	N	N	N
J36R1470	37 50 24	95 41 45	7.0	1.50	<.05	.50	150	N	N	N
J36R1510	37 50 24	95 41 45	7.0	1.00	<.05	.50	150	N	N	N
J36R1550	37 50 24	95 41 45	2.0	.30	.20	.20	50	N	N	N
J36R1610	37 50 24	95 41 45	1.5	.30	<.05	.20	70	N	N	N
J36R1670	37 50 24	95 41 45	3.0	.50	<.05	.30	100	N	N	N
J36R1730	37 50 24	95 41 45	1.0	.30	<.05	.15	50	N	N	N
J36R1780	37 50 24	95 41 45	1.0	.15	<.05	.10	30	N	N	N
J36R1840	37 50 24	95 41 45	5.0	.15	.05	.30	100	N	N	N
J36R1860	37 50 24	95 41 45	2.0	.50	.05	.20	50	N	N	N

TABLE 1--SPECTROGRAPHIC ANALYSES OF INSOLUBLE RESIDUE SAMPLES FROM DRILL HOLE NO. 36, JOPLIN 1 x 2 QUADRANGLE,
MISSOURI AND KANSAS.--Continued

Sample	B-ppm S	Ra-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
J36R0120	20	500	1.0	N	N	5	50	20	30	N	<20	15
J36R0150	30	500	1.5	N	N	10	50	30	50	N	<20	30
J36R0190	50	300	1.5	N	N	7	50	30	50	N	<20	20
J36R0230	30	300	1.5	N	N	7	50	30	30	N	<20	20
J36R0270	30	300	2.0	N	N	10	70	30	30	N	<20	30
J36R0310	30	300	2.0	N	N	15	70	30	50	N	<20	30
J36R0350	50	300	2.0	N	N	20	100	30	50	N	<20	50
J36R0390	50	200	2.0	N	N	20	100	30	50	N	<20	50
J36R0440	50	500	1.5	N	N	20	70	50	30	N	<20	50
J36R0480	50	300	1.5	N	N	15	70	30	70	N	<20	50
J36R0510	50	300	1.5	N	N	20	70	30	20	N	<20	50
J36R0550	50	500	2.0	N	N	20	70	50	30	N	<20	50
J36R0610	30	150	1.0	N	N	15	70	30	30	N	<20	50
J36R0650	50	500	2.0	N	N	20	100	50	30	N	<20	50
J36R0710	50	500	2.0	N	N	30	100	50	30	N	<20	30
J36R0750	50	200	1.0	N	N	15	70	30	50	N	<20	50
J36R0790	50	200	1.5	N	N	20	50	30	50	N	<20	50
J36R0830	50	200	1.5	N	N	20	50	30	50	N	<20	50
J36R0890	50	200	1.5	N	N	20	200	70	50	20	<20	100
J36R0930	50	200	1.5	N	N	20	150	50	50	10	<20	70
J36R1000	50	300	1.5	N	N	20	100	50	30	N	<20	70
J36R1090	50	300	1.5	N	N	20	50	30	50	N	<20	20
J36R1170	50	300	1.5	N	N	20	200	70	50	20	<20	100
J36R1250	50	500	2.0	N	N	20	200	70	50	20	<20	70
J36R1330	50	500	2.0	N	N	20	150	70	50	10	<20	50
J36R1370	50	700	1.5	N	N	20	150	70	50	5	<20	50
J36R1430	50	500	1.5	N	N	30	150	70	50	N	<20	50
J36R1470	70	500	2.0	N	N	20	150	70	50	N	<20	70
J36R1510	50	300	2.0	N	N	20	150	100	50	5	<20	70
J36R1550	50	100	1.0	N	N	10	50	15	30	N	N	30
J36R1610	30	70	N	N	N	5	50	30	20	N	N	20
J36R1670	50	200	1.5	N	N	10	70	50	20	7	<20	50
J36R1730	30	70	N	N	N	5	30	15	N	N	N	20
J36R1780	30	30	N	N	N	5	15	7	N	N	N	15
J36R1840	50	300	1.5	N	N	15	100	50	30	20	<20	50
J36R1860	50	150	N	N	N	7	50	30	30	10	N	30

TABLE 1--SPECTROGRAPHIC ANALYSES OF INSOLUBLE RESIDUE SAMPLES FROM DRILL HOLE NO. 36, 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	Y--ppm S	W--ppm S	Y--ppm S	Zn--ppm S	Zr--ppm S	Th--ppm S	Form.#
J36R0120	20	N	7	N	100	100	N	20	N	150	N	20
J36R0150	20	N	10	N	100	150	N	20	N	200	N	20
J36R0190	15	N	15	N	100	150	N	20	N	200	N	20
J36R0230	15	N	15	N	100	200	N	20	N	200	N	20
J36R0270	20	N	15	N	150	200	N	20	N	150	N	20
J36R0310	20	N	15	N	150	200	N	20	N	150	N	20
J36R0350	20	N	15	N	150	300	N	20	N	150	N	20
J36R0390	20	N	15	N	150	200	N	20	N	150	N	20
J36R0440	20	N	15	N	500	200	N	20	N	150	N	20
J36R0480	15	N	15	N	200	200	N	30	N	100	N	20
J36R0510	10	N	10	N	100	300	N	15	N	150	N	20
J36R0550	10	N	15	N	150	200	N	15	N	150	N	20
J36R0610	20	N	10	N	150	150	N	20	N	200	N	20
J36R0650	20	N	15	N	150	200	N	20	N	200	N	20
J36R0710	50	N	15	N	150	200	N	20	N	200	N	20
J36R0750	20	N	10	N	150	150	N	20	N	200	N	20
J36R0790	15	N	10	N	150	200	N	20	N	200	N	20
J36R0830	15	N	15	N	150	200	N	20	N	200	N	20
J36R0890	30	N	10	N	150	500	N	20	500	200	N	20
J36R0930	20	N	15	N	150	300	N	20	N	100	N	20
J36R1000	15	N	15	N	150	200	N	20	<200	150	N	20
J36R1090	10	N	10	N	150	150	N	20	N	200	N	20
J36R1170	50	N	15	N	150	200	N	20	500	200	N	20
J36R1250	50	N	20	N	150	500	N	30	N	200	N	20
J36R1330	20	N	20	N	150	500	N	20	N	200	N	20
J36R1370	20	N	20	N	200	300	N	30	N	200	N	20
J36R1430	15	N	20	N	200	500	N	30	N	200	N	20
J36R1470	20	N	20	N	200	500	N	30	N	200	N	20
J36R1510	30	N	20	N	200	300	N	30	N	200	N	20
J36R1550	15	N	7	N	100	150	N	15	N	100	N	40
J36R1610	10	N	5	N	100	100	N	15	N	70	N	40
J36R1670	15	N	10	N	N	200	N	15	N	150	N	40
J36R1730	<10	N	<5	N	N	100	N	10	500	100	N	40
J36R1780	N	N	N	N	N	70	N	N	N	50	N	40
J36R1840	20	N	15	N	N	300	N	20	<200	150	N	60
J36R1860	20	N	10	N	N	100	N	15	500	100	N	--

TABLE 2--SPECTROGRAPHIC ANALYSES OF INSOLUBLE RESIDUE SAMPLES FROM DRILL HOLE NO. 37, 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	Hg-pct. S	Ca-pct. S	Ti-pct. S	Mn-ppm S	Ag-ppm S	As-ppm S	Au-ppm S
J37R1169	37 46 20	95 42 10	3.0	5.00	1.00	>1.00	300	N	N	N
J37R1200	37 46 20	95 42 10	5.0	7.00	.20	1.00	500	N	N	N
J37R1215	37 46 20	95 42 10	3.0	7.00	.30	1.00	300	N	N	N
J37R1235	37 46 20	95 42 10	3.0	7.00	.20	1.00	300	N	N	N
J37R1253	37 46 20	95 42 10	5.0	7.00	.30	1.00	300	N	N	N
J37R1284	37 46 20	95 42 10	3.0	1.00	.07	.50	100	N	N	N
J37R1300	37 46 20	95 42 10	7.0	.30	.05	.10	50	N	N	N
J37R1340	37 46 20	95 42 10	1.0	.05	.05	.03	10	N	N	N
J37R1385	37 46 20	95 42 10	.2	.07	.05	.05	<10	N	N	N
J37R1430	37 46 20	95 42 10	.2	.05	.05	.05	<10	N	N	N
J37R1455	37 46 20	95 42 10	2.0	.20	.10	.10	150	N	N	N
J37R1490	37 46 20	95 42 10	.5	.02	.15	.02	15	N	N	N
J37R1535	37 46 20	95 42 10	7.0	1.00	.10	.70	70	N	N	N
J37R1590	37 46 20	95 42 10	5.0	.70	.05	.30	100	N	N	N
J37R1620	37 46 20	95 42 10	1.0	.20	.07	.10	20	N	N	N
J37R1640	37 46 20	95 42 10	.5	.10	.05	.07	10	N	N	N

TABLE 2--SPECTROGRAPHIC ANALYSES OF INSOLUBLE RESIDUE SAMPLES FROM DRILL HOLE NO. 37, JOPLIN 1 x 2 QUADRANGLE,
MISSOURI AND KANSAS.--Continued

Sample	H-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
J37R1169	20	>5,000	3	N	N	70	1,000	15	500	N	50	500
J37R1200	20	1,000	2	N	N	70	1,500	10	300	N	30	500
J37R1215	20	1,500	2	N	N	70	1,500	5	200	N	30	700
J37R1235	15	1,000	2	N	N	70	1,500	7	200	N	30	700
J37R1253	20	1,000	2	N	N	70	1,000	10	300	N	30	1,000
J37R1284	100	3,000	2	N	N	20	200	20	30	5	<20	100
J37R1300	100	70	1	N	N	20	50	20	20	N	N	50
J37R1340	70	50	N	N	N	N	15	5	N	N	N	15
J37R1385	70	50	N	N	N	N	10	<5	N	N	N	10
J37R1430	70	30	N	N	N	N	10	<5	N	N	N	10
J37R1455	50	70	N	N	N	7	70	7	N	N	N	50
J37R1490	70	50	N	N	N	N	N	<5	N	N	N	7
J37R1535	200	200	2	N	N	10	150	30	20	N	N	50
J37R1590	200	200	3	N	N	15	70	30	20	30	N	50
J37R1620	100	100	<1	N	N	N	15	5	N	N	N	10
J37R1640	70	70	N	N	N	N	10	<5	N	N	N	5

TABLE 2--SPECTROGRAPHIC ANALYSES OF INSOLUBLE RESIDUE SAMPLES FROM DRILL HOLE NO. 37, 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.#
J37R1169	N	N	10	N	700	100	N	20	N	1,000	N	20
J37R1200	200	N	10	N	500	100	N	15	N	500	N	20
J37R1215	30	N	10	N	500	20	N	15	N	500	N	20
J37R1235	15	N	10	N	500	30	N	15	N	500	N	20
J37R1253	10	N	10	N	500	30	N	10	N	500	N	20
J37R1284	10	N	10	N	500	100	N	15	200	100	N	20
J37R1300	10	N	5	N	100	30	N	15	300	30	N	20
J37R1340	N	N	N	N	N	N	N	N	500	20	N	20
J37R1385	N	N	N	N	N	N	N	N	N	50	N	40
J37R1430	N	N	N	N	N	N	N	N	N	15	N	40
J37R1455	<10	N	N	N	N	20	N	N	N	50	N	40
J37R1490	N	N	N	N	N	N	N	N	N	10	N	40
J37R1535	10	N	10	N	N	200	N	20	<200	200	N	40
J37R1590	20	N	10	N	N	150	N	15	200	100	N	31
J37R1620	N	N	N	N	N	20	N	N	N	50	N	60
J37R1640	N	N	N	N	N	10	N	N	N	15	N	60

TABLE 3--SPECTROGRAPHIC ANALYSES OF INSOLUBLE RESIDUE SAMPLES FROM DRILL HOLE NO. 38, 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	Hg-pct. s	Ca-pct. s	Ti-pct. s	Mn-ppm s	Ag-ppm s	As-ppm s	Au-ppm s
J38R0225	37 58 10	95 18 20	1.50	.15	.20	.150	50	N	N	N
J38R0265	37 58 10	95 18 20	2.00	.50	.30	.300	100	2.0	N	N
J38R0300	37 58 10	95 18 20	3.00	.50	.05	.300	70	1.5	N	N
J38R0330	37 58 10	95 18 20	2.00	.50	.07	.500	100	N	N	N
J38R0360	37 58 10	95 18 20	3.00	.70	.05	1.000	150	N	N	N
J38R0400	37 58 10	95 18 20	2.00	1.00	<.05	.700	150	N	N	N
J38R0430	37 58 10	95 18 20	5.00	1.00	<.05	.700	200	N	N	N
J38R0460	37 58 10	95 18 20	2.00	.70	.05	.500	100	N	N	N
J38R0490	37 58 10	95 18 20	3.00	1.00	.05	.500	100	N	N	N
J38R0530	37 58 10	95 18 20	3.00	1.00	.07	.500	300	<.5	N	N
J38R0560	37 58 10	95 18 20	2.00	.70	.05	.500	70	N	N	N
J38R0600	37 58 10	95 18 20	5.00	1.00	.05	.500	200	N	N	N
J38R0650	37 58 10	95 18 20	5.00	1.00	.05	.500	200	N	N	N
J38R0680	37 58 10	95 18 20	2.00	.70	.10	.300	150	1.0	N	N
J38R0721	37 58 10	95 18 20	2.00	.70	<.05	.300	100	N	N	N
J38R0745	37 58 10	95 18 20	2.00	.70	<.05	.500	100	N	N	N
J38R0778	37 58 10	95 18 20	2.00	1.00	.05	.500	100	<.5	N	N
J38R0820	37 58 10	95 18 20	3.00	.70	<.05	.500	100	N	N	N
J38R0850	37 58 10	95 18 20	3.00	1.00	<.05	.500	150	N	N	N
J38R0881	37 58 10	95 18 20	2.00	.50	<.05	.300	50	<.5	N	N
J38R0935	37 58 10	95 18 20	3.00	.30	<.05	.500	70	N	N	N
J38R0981	37 58 10	95 18 20	2.00	.20	<.05	.300	50	N	N	N
J38R1030	37 58 10	95 18 20	3.00	.30	<.05	.300	100	.5	N	N
J38R1091	37 58 10	95 18 20	2.00	.20	.05	.300	50	N	N	N
J38R1124	37 58 10	95 18 20	.50	.05	.05	.100	<10	N	N	N
J38R1160	37 58 10	95 18 20	.50	.05	<.05	.100	<10	N	N	N
J38R1190	37 58 10	95 18 20	.50	.05	.10	.050	<10	N	N	N
J38R1230	37 58 10	95 18 20	.15	.02	.05	.015	N	N	N	N
J38R1258	37 58 10	95 18 20	5.00	.50	.05	.500	70	N	N	N
J38R1281	37 58 10	95 18 20	1.50	.70	<.05	.300	50	N	N	N
J38R1324	37 58 10	95 18 20	2.00	.70	.07	.300	70	N	N	N
J38R1352	37 58 10	95 18 20	5.00	1.00	.05	.300	100	N	N	N
J35R1385	37 58 10	95 18 20	2.00	.10	.05	.070	20	N	N	N

TABLE 3--SPECTROGRAPHIC ANALYSES OF INSOLUBLE RESIDUE SAMPLES FROM DRILL HOLE NO. 38, 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
J38R0225	70	70	N	N	70	7	20	15	N	N	N	20
J38R0265	150	100	2.0	N	N	10	500	50	200	50	N	150
J38R0300	150	100	1.5	N	20	10	500	100	20	50	<20	100
J38R0330	100	1,000	1.5	N	N	10	30	20	20	N	<20	20
J38R0360	150	300	2.0	N	N	10	100	20	50	N	<20	20
J38R0400	150	300	2.0	N	N	15	100	15	30	N	<20	20
J38R0430	150	200	3.0	N	N	15	100	30	50	N	<20	50
J38R0460	200	300	1.5	N	N	10	100	20	30	N	N	20
J38R0490	150	150	2.0	N	N	20	150	30	30	10	N	50
J38R0530	150	200	2.0	N	N	15	150	30	30	5	N	30
J38R0560	150	300	1.5	N	N	7	100	15	30	N	N	15
J38R0600	200	300	2.0	N	N	15	150	30	20	7	N	30
J38R0650	200	200	2.0	N	N	15	150	30	20	5	N	50
J38R0680	200	150	2.0	N	N	15	200	50	20	15	N	100
J38R0721	150	150	2.0	N	N	10	70	15	30	N	N	20
J38R0745	200	200	3.0	N	N	10	100	10	50	N	N	20
J38R0778	200	200	2.0	N	N	15	200	30	50	10	N	50
J38R0820	200	200	2.0	N	N	10	150	20	50	N	N	30
J38R0850	200	200	3.0	N	N	10	200	20	50	N	N	30
J38R0881	200	100	2.0	N	N	10	200	30	50	10	N	70
J38R0935	200	300	2.0	N	N	10	100	30	50	N	N	50
J38R0981	200	100	1.5	N	N	10	100	15	30	N	N	30
J38R1030	200	100	3.0	N	N	20	100	20	50	N	N	50
J38R1091	200	70	1.5	N	N	15	100	10	50	N	N	30
J38R1124	100	20	N	N	N	N	20	10	N	N	N	10
J38R1160	100	20	N	N	N	N	20	7	N	N	N	10
J38R1190	100	20	N	N	N	N	N	30	N	N	N	7
J38R1230	70	<20	N	N	N	N	N	N	N	N	N	5
J38R1258	200	100	2.0	N	N	7	150	20	20	N	N	20
J38R1281	100	100	N	N	N	7	100	10	20	N	N	20
J38R1324	200	100	1.5	N	N	7	100	10	20	N	N	70
J38R1352	150	200	2.0	N	N	15	100	30	30	30	N	70
J38R1385	100	70	3.0	N	N	5	10	15	N	7	N	20

TABLE 3--SPECTROGRAPHIC ANALYSES OF INSOLUBLE RESIDUE SAMPLES FROM DRILL HOLE NO. 38, 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.#
J38R0225	<10	N	N	N	N	30	N	<10	3,000	70	N	20
J38R0265	50	N	10	N	100	500	N	20	700	100	N	20
J38R0300	10	N	7	N	N	500	N	<10	1,500	150	N	20
J38R0330	N	N	10	N	100	100	N	20	<200	300	N	20
J38R0360	10	N	20	N	100	150	N	30	<200	500	N	20
J38R0400	<10	N	20	N	100	200	N	20	<200	300	N	20
J38R0430	20	N	20	N	100	200	N	20	500	200	N	20
J38R0460	N	N	10	N	N	100	N	20	N	200	N	20
J38R0490	20	N	15	N	100	300	N	30	N	200	N	20
J38R0530	10	N	15	N	100	150	N	30	N	200	N	20
J38R0560	<10	N	10	N	100	100	N	20	N	200	N	20
J38R0600	15	N	10	N	100	100	N	15	500	100	N	20
J38R0650	10	N	15	N	100	150	N	20	200	100	N	20
J38R0680	20	N	10	N	100	200	N	20	500	100	N	20
J38R0721	<10	N	10	N	100	100	N	20	N	150	N	20
J38R0745	<10	N	15	N	100	150	N	30	N	100	N	20
J38R0778	10	N	15	N	100	200	N	20	300	100	N	20
J38R0820	10	N	15	N	150	200	N	20	N	150	N	20
J38R0850	15	N	15	N	200	200	N	30	200	150	N	20
J38R0881	10	N	10	N	100	150	N	20	300	100	N	20
J38R0935	10	N	10	N	150	100	N	20	N	100	N	20
J38R0981	15	N	10	N	100	100	N	30	700	150	N	20
J38R1030	15	N	15	N	100	100	N	30	N	150	N	20
J38R1091	10	N	10	N	100	100	N	20	N	100	N	40
J38R1124	10	N	N	N	N	20	N	10	500	30	N	40
J38R1160	N	N	N	N	N	15	N	10	N	50	N	40
J38R1190	N	N	N	N	N	10	N	N	<200	15	N	40
J38R1230	N	N	N	N	N	N	N	N	N	10	N	40
J38R1258	10	N	7	N	N	150	N	20	N	200	N	40
J38R1281	10	N	7	N	N	100	N	20	N	150	N	40
J38R1324	10	N	7	N	N	100	N	15	200	100	N	40
J38R1352	20	N	10	N	N	200	N	20	N	100	N	31
J35R1385	<10	N	N	N	N	50	N	N	N	20	N	60