

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

**Spectrographic analyses of insoluble-residue samples,
Joplin 1° x 2° quadrangle, Kansas and Missouri:
Drill hole nos. 56, 57, and 58**

By

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

Open-File Report 89-475

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

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. 56, 57, and 58, Joplin 1° x 2° quadrangle, Missouri and Kansas.....	2
--	---

TABLES

Table 1. Spectrographic analyses of insoluble-residue samples from drill hole no. 56, Joplin 1° x 2° quadrangle, Missouri and Kansas.....	5
Table 2. Spectrographic analyses of insoluble-residue samples from drill hole no. 57, Joplin 1° x 2° quadrangle, Missouri and Kansas.....	11
Table 3. Spectrographic analyses of insoluble-residue samples from drill hole no. 58, Joplin 1° x 2° quadrangle, Missouri and Kansas.....	14

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 are company confidential or intersect economically significant mineralized ground.

The analytical results for drill hole no. 56 (#1 Baker - KGS), drill hole no. 57 (#1 KL 2-1 Gray - KGS), and drill hole no. 58 (#2 Hebb - KGS) are given in this report. Drill hole no. 56 is located in sec. 11, T. 31 S., R. 20 E. in Labette County, Kansas; drill hole no. 57 is located in sec. 34, T. 30 S., R. 21 E. in Neosho County, Kansas; drill hole no. 58 is located in sec. 33, T. 28 S., R. 12 E. in Elk County, Kansas (fig.1). Data for the insoluble-residue samples from drill holes 56, 57, and 58 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:

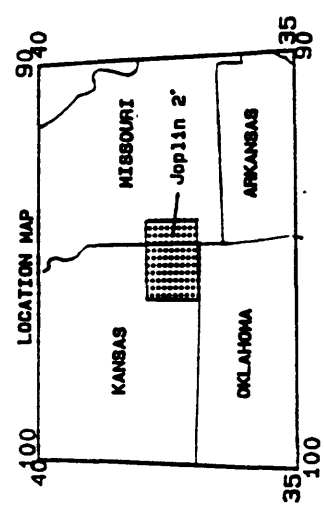
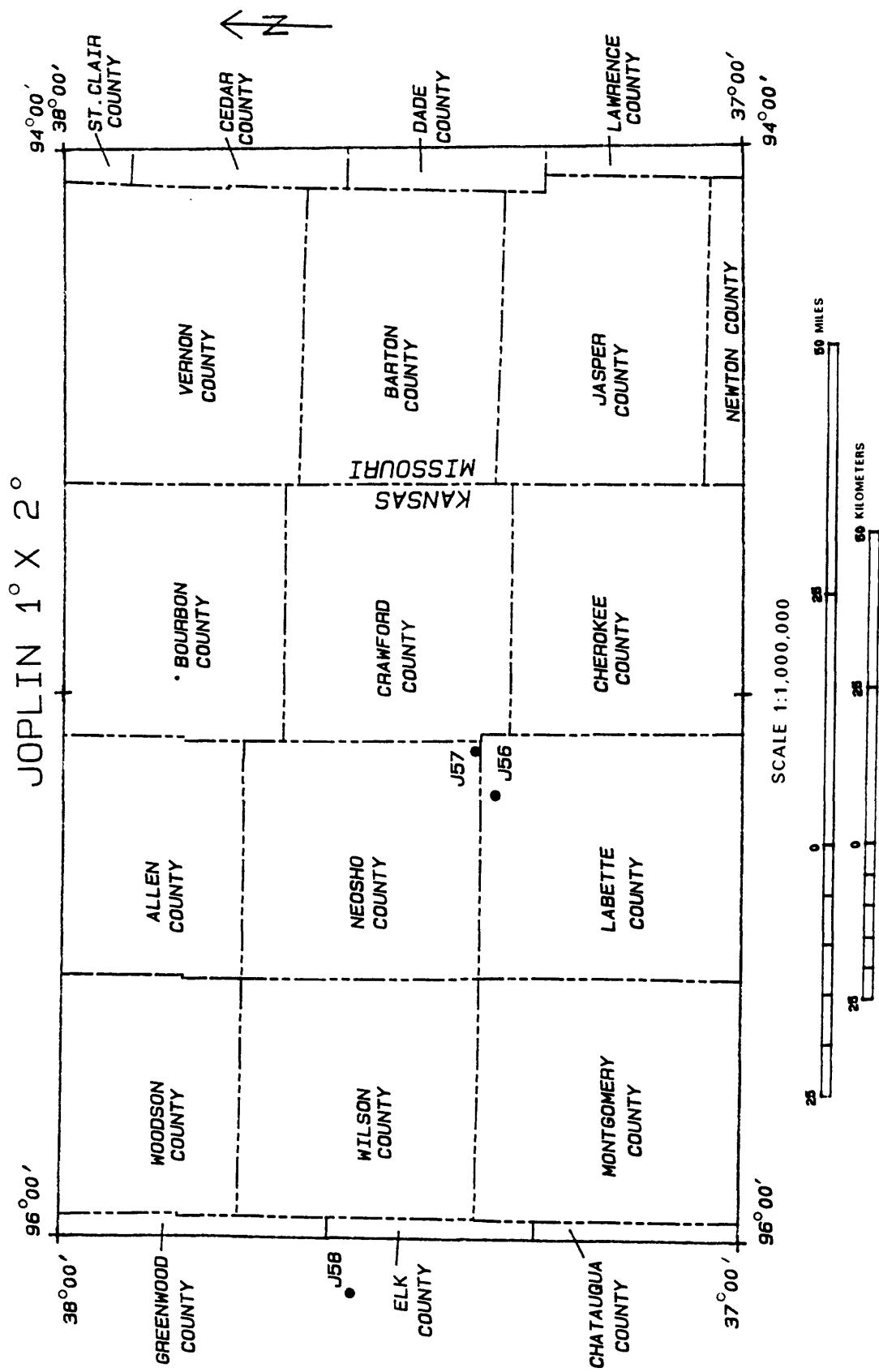


Figure 1. Locations of drill holes 56, 57, and 58, Joplin 1° x 2° quadrangle, Missouri and Kansas.

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
80	Cambrian Undifferentiated

EXPLANATION OF DATA

The columns in tables 1 through 3 have headings of sample, elements, and formation number. 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 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. 56, 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
J56R0040	37 21 40	95 21 12	3.00	1.00	.15	.500	150	.5	N	N
J56R0050	37 21 40	95 21 12	5.00	1.00	.07	.300	150	1.5	N	N
J56R0060	37 21 40	95 21 12	3.00	1.00	<.05	.300	150	N	N	N
J56R0070	37 21 40	95 21 12	3.00	1.00	<.05	.500	150	N	N	N
J56R0080	37 21 40	95 21 12	5.00	1.00	<.05	.500	150	N	N	N
J56R0090	37 21 40	95 21 12	3.00	1.00	<.05	.300	150	N	N	N
J56R0100	37 21 40	95 21 12	3.00	1.00	<.05	.500	150	N	N	N
J56R0110	37 21 40	95 21 12	5.00	1.00	.05	.500	100	N	N	N
J56R0120	37 21 40	95 21 12	2.00	.20	.20	.150	70	N	N	N
J56R0130	37 21 40	95 21 12	3.00	.70	.07	.500	200	1.0	N	N
J56R0140	37 21 40	95 21 12	3.00	.50	.15	.300	150	1.0	N	N
J56R0150	37 21 40	95 21 12	5.00	1.00	.50	.500	150	2.0	N	N
J56R0170	37 21 40	95 21 12	3.00	.50	.10	.500	200	N	N	N
J56R0180	37 21 40	95 21 12	5.00	.70	<.05	.500	200	N	N	N
J56R0190	37 21 40	95 21 12	5.00	.70	<.05	.700	200	N	N	N
J56R0200	37 21 40	95 21 12	3.00	.70	<.05	.700	200	N	N	N
J56R0210	37 21 40	95 21 12	3.00	.70	<.05	.700	200	N	N	N
J56R0220	37 21 40	95 21 12	3.00	1.00	<.05	.500	150	N	N	N
J56R0230	37 21 40	95 21 12	3.00	1.00	<.05	.700	200	N	N	N
J56R0250	37 21 40	95 21 12	5.00	1.00	<.05	.700	200	N	N	N
J56R0260	37 21 40	95 21 12	5.00	.70	.15	.500	300	.5	N	N
J56R0270	37 21 40	95 21 12	5.00	.70	<.05	.500	150	N	N	N
J56R0280	37 21 40	95 21 12	3.00	.70	<.05	.500	150	N	N	N
J56R0290	37 21 40	95 21 12	2.00	.50	<.05	.500	150	N	N	N
J56R0300	37 21 40	95 21 12	3.00	.50	<.05	.500	200	N	N	N
J56R0310	37 21 40	95 21 12	3.00	1.00	<.05	.500	150	N	N	N
J56R0320	37 21 40	95 21 12	3.00	.70	<.05	.500	150	N	N	N
J56R0330	37 21 40	95 21 12	2.00	.50	<.05	1.000	100	N	N	N
J56R0340	37 21 40	95 21 12	2.00	.50	<.05	.700	150	N	N	N
J56R0350	37 21 40	95 21 12	3.00	1.00	<.05	.700	200	N	N	N
J56R0360	37 21 40	95 21 12	2.00	.70	<.05	.500	150	N	N	N
J56R0370	37 21 40	95 21 12	3.00	.50	<.05	.700	200	N	N	N
J56R0380	37 21 40	95 21 12	3.00	1.00	<.05	.700	100	N	N	N
J56R0390	37 21 40	95 21 12	2.00	.50	<.05	1.000	100	N	N	N
J56R0400	37 21 40	95 21 12	2.00	.50	<.05	.700	70	N	N	N
J56R0410	37 21 40	95 21 12	2.00	.50	<.05	.700	100	N	N	N
J56R0420	37 21 40	95 21 12	5.00	.50	.07	1.000	150	<.5	N	N
J56R0430	37 21 40	95 21 12	3.00	.50	.05	.700	100	N	N	N
J56R0440	37 21 40	95 21 12	3.00	.70	<.05	.700	150	N	N	N
J56R0460	37 21 40	95 21 12	2.00	.70	<.05	.500	100	N	N	N
J56R0470	37 21 40	95 21 12	2.00	.70	<.05	.700	100	N	N	N
J56R0480	37 21 40	95 21 12	3.00	.70	<.05	.700	200	N	N	N
J56R0490	37 21 40	95 21 12	3.00	.70	<.05	.500	100	N	N	N
J56R0500	37 21 40	95 21 12	3.00	1.00	<.05	.500	100	N	N	N
J56R0510	37 21 40	95 21 12	1.50	.30	<.05	.700	100	N	N	N

TABLE 1--SPECTROGRAPHIC ANALYSES OF INSOLUBLE-RESIDUE SAMPLES FROM DRILL HOLE NO. 56, 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
J56R0040	150	150	2.0	N	N	15	100	100	N	7	N	150
J56R0050	150	100	3.0	N	N	15	300	150	N	20	N	200
J56R0060	100	200	1.5	N	N	20	70	50	20	N	N	50
J56R0070	150	200	1.5	N	N	10	50	70	20	N	N	30
J56R0080	150	200	2.0	N	N	15	50	30	N	N	N	50
J56R0090	150	300	2.0	N	N	7	50	20	30	N	N	30
J56R0100	150	200	2.0	N	N	10	70	15	20	<5	N	30
J56R0110	200	150	3.0	N	N	15	70	30	N	N	N	30
J56R0120	50	50	N	N	N	5	20	20	N	5	N	20
J56R0130	200	150	3.0	N	N	20	200	70	N	10	N	150
J56R0140	100	100	1.0	N	N	15	100	100	N	20	N	100
J56R0150	150	100	2.0	N	N	20	200	100	N	20	N	200
J56R0170	150	500	1.5	N	N	10	50	20	20	N	N	50
J56R0180	100	300	2.0	N	N	10	50	30	N	N	N	30
J56R0190	100	200	2.0	N	N	15	70	20	20	N	N	30
J56R0200	100	200	2.0	N	N	10	50	20	20	N	N	30
J56R0210	100	200	2.0	N	N	15	50	10	20	N	N	50
J56R0220	100	200	2.0	N	N	15	50	10	200	N	N	50
J56R0230	150	200	2.0	N	N	15	70	15	20	N	N	50
J56R0250	200	1,500	3.0	N	N	20	70	30	N	5	N	70
J56R0260	150	200	2.0	N	N	10	150	50	N	10	N	70
J56R0270	150	150	2.0	N	N	20	70	20	N	<5	N	70
J56R0280	150	300	2.0	N	N	20	100	15	50	<5	N	50
J56R0290	70	200	1.5	N	N	20	70	20	50	N	N	30
J56R0300	100	200	2.0	N	20	15	70	30	20	<5	N	30
J56R0310	150	200	3.0	N	N	20	100	20	50	N	N	50
J56R0320	150	200	3.0	N	N	20	100	50	20	15	N	100
J56R0330	100	500	1.5	N	N	7	100	15	100	N	N	20
J56R0340	100	200	1.5	N	N	15	100	15	20	N	N	30
J56R0350	150	300	2.0	N	N	15	100	15	20	N	N	50
J56R0360	150	200	2.0	N	N	7	100	20	20	N	N	20
J56R0370	100	200	2.0	N	N	15	100	30	50	N	N	30
J56R0380	100	200	2.0	N	N	10	100	10	50	N	N	70
J56R0390	150	500	2.0	N	N	20	70	50	30	N	N	50
J56R0400	100	200	1.5	N	N	10	70	20	50	5	N	30
J56R0410	100	200	2.0	N	N	10	70	10	50	N	N	30
J56R0420	150	200	2.0	N	N	30	150	70	70	5	N	70
J56R0430	100	300	1.5	N	N	10	70	15	50	N	N	20
J56R0440	100	200	2.0	N	N	15	100	30	50	N	N	50
J56R0460	100	200	2.0	N	N	20	100	10	50	N	N	50
J56R0470	100	200	2.0	N	N	15	100	30	50	N	N	50
J56R0480	150	200	5.0	N	N	10	100	20	70	N	N	50
J56R0490	100	200	1.5	N	N	10	70	20	30	N	N	30
J56R0500	100	200	5.0	N	N	30	150	15	50	N	N	70
J56R0510	100	200	1.0	N	N	10	70	7	50	N	<20	30

TABLE 1--SPECTROGRAPHIC ANALYSES OF INSOLUBLE-RESIDUE SAMPLES FROM DRILL HOLE NO. 56, 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#
J56R0040	20	N	10	N	N	200	N	10	300	150	N	20
J56R0050	70	N	10	N	N	300	N	10	N	100	N	20
J56R0060	N	N	10	N	N	100	N	20	N	100	N	20
J56R0070	N	N	10	N	N	150	N	20	N	200	N	20
J56R0080	10	N	15	N	N	150	N	20	N	150	N	20
J56R0090	10	N	10	N	100	150	N	15	N	150	N	20
J56R0100	<10	N	10	N	N	200	N	15	N	150	N	20
J56R0110	10	N	15	N	N	200	N	15	N	150	N	20
J56R0120	100	N	5	N	N	30	N	N	N	50	N	20
J56R0130	20	N	15	N	N	150	N	15	N	100	N	20
J56R0140	10	N	7	N	N	200	N	10	500	100	N	20
J56R0150	50	N	15	N	100	200	N	20	200	150	N	20
J56R0170	10	N	10	N	100	100	N	20	N	500	N	20
J56R0180	10	N	10	N	100	100	N	15	N	300	N	20
J56R0190	<10	N	10	N	100	150	N	20	N	300	N	20
J56R0200	<10	N	10	N	100	150	N	20	N	300	N	20
J56R0210	<10	N	15	N	100	150	N	20	N	200	N	20
J56R0220	N	N	15	N	100	200	N	15	N	150	N	20
J56R0230	15	N	15	N	100	200	N	20	N	150	N	20
J56R0250	50	N	15	N	100	200	N	15	N	150	N	20
J56R0260	20	N	15	N	100	200	N	15	500	100	N	20
J56R0270	10	N	10	N	100	150	N	20	N	200	N	20
J56R0280	10	N	15	N	300	200	N	20	N	150	N	20
J56R0290	10	N	10	N	200	100	N	20	N	300	N	20
J56R0300	15	N	10	N	150	100	N	15	5,000	200	N	20
J56R0310	15	N	15	N	150	200	N	20	N	150	N	20
J56R0320	20	N	15	N	100	150	N	15	N	100	N	20
J56R0330	10	N	15	N	500	200	N	20	N	300	N	20
J56R0340	<10	N	10	N	150	150	N	20	N	200	N	20
J56R0350	<10	N	15	N	200	200	N	30	N	200	N	20
J56R0360	15	N	10	N	200	150	N	15	N	100	N	20
J56R0370	10	N	15	N	200	100	N	20	N	200	N	20
J56R0380	10	N	20	N	150	200	N	20	N	200	N	20
J56R0390	10	N	20	N	200	150	N	20	N	200	N	20
J56R0400	<10	N	15	N	200	100	N	20	N	200	N	20
J56R0410	10	N	15	N	200	150	N	20	N	150	N	20
J56R0420	30	N	20	N	200	200	N	30	<200	200	N	20
J56R0430	<10	N	10	N	200	100	N	20	N	200	N	20
J56R0440	10	N	15	N	150	100	N	20	N	150	N	20
J56R0460	15	N	20	N	150	150	N	20	N	150	N	20
J56R0470	10	N	20	N	150	150	N	20	N	200	N	20
J56R0480	10	N	20	N	200	150	N	20	N	150	N	20
J56R0490	<10	N	15	N	100	150	N	20	N	200	N	20
J56R0500	20	N	20	N	150	150	N	20	N	100	N	20
J56R0510	N	N	7	N	100	70	N	20	300	500	N	20

TABLE 1--SPECTROGRAPHIC ANALYSES OF INSOLUBLE-RESIDUE SAMPLES FROM DRILL HOLE NO. 56, 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
J56R0520	37 21 40	95 21 12	5.00	.50	<.05	.500	150	N	N	N
J56R0530	37 21 40	95 21 12	3.00	.50	<.05	.500	100	N	N	N
J56R0540	37 21 40	95 21 12	3.00	.50	<.05	.700	100	N	N	N
J56R0550	37 21 40	95 21 12	3.00	1.00	<.05	1.000	100	N	N	N
J56R0560	37 21 40	95 21 12	3.00	.50	<.05	.500	100	N	N	N
J56R0570	37 21 40	95 21 12	2.00	.70	<.05	.700	70	N	N	N
J56R0580	37 21 40	95 21 12	2.00	.70	<.05	.500	100	N	N	N
J56R0600	37 21 40	95 21 12	5.00	.30	.05	.300	70	N	N	N
J56R0610	37 21 40	95 21 12	3.00	.10	.10	.150	50	N	N	N
J56R0620	37 21 40	95 21 12	1.50	.10	.07	.200	30	N	N	N
J56R0630	37 21 40	95 21 12	.20	.05	.05	.070	10	N	N	N
J56R0640	37 21 40	95 21 12	.30	.10	.07	.150	15	N	N	N
J56R0650	37 21 40	95 21 12	.20	.07	.05	.050	10	N	N	N
J56R0660	37 21 40	95 21 12	.20	.07	.05	.100	15	N	N	N
J56R0670	37 21 40	95 21 12	1.00	.20	.07	.150	50	N	N	N
J56R0680	37 21 40	95 21 12	.70	.15	.07	.150	50	N	N	N
J56R0690	37 21 40	95 21 12	2.00	.50	.10	.200	100	N	N	N
J56R0700	37 21 40	95 21 12	.50	.07	.05	.050	10	N	N	N
J56R0710	37 21 40	95 21 12	.10	.03	.05	.015	N	N	N	N
J56R0720	37 21 40	95 21 12	.15	.02	<.05	.015	N	N	N	N
J56R0730	37 21 40	95 21 12	.30	.05	.05	.020	<10	N	200	N
J56R0740	37 21 40	95 21 12	.30	.03	.05	.020	<10	N	200	N
J56R0750	37 21 40	95 21 12	1.00	.20	<.05	.200	20	N	200	N
J56R0760	37 21 40	95 21 12	1.50	.15	<.05	.150	20	N	200	N
J56R0770	37 21 40	95 21 12	.50	.10	<.05	.100	10	N	200	N
J56R0780	37 21 40	95 21 12	1.50	.20	.05	.300	50	N	200	N
J56R0790	37 21 40	95 21 12	1.50	.20	.07	.200	50	N	200	N
J56R0800	37 21 40	95 21 12	1.50	.20	.10	.200	50	N	200	N
J56R0810	37 21 40	95 21 12	2.00	.50	.07	.300	70	N	200	N
J56R0820	37 21 40	95 21 12	2.00	.50	.05	.300	100	N	200	N
J56R0830	37 21 40	95 21 12	2.00	.30	.05	.200	100	N	200	N
J56R0840	37 21 40	95 21 12	2.00	.30	.05	.200	100	N	200	N
J56R0850	37 21 40	95 21 12	1.50	.20	.05	.200	50	N	200	N
J56R0860	37 21 40	95 21 12	1.50	.50	.05	.200	70	N	200	N
J56R0870	37 21 40	95 21 12	2.00	.50	.15	.300	70	N	200	N
J56R0880	37 21 40	95 21 12	3.00	.50	.15	.500	100	N	200	N
J56R0890	37 21 40	95 21 12	5.00	.70	.20	.300	100	N	200	N
J56R0900	37 21 40	95 21 12	3.00	.70	.05	.500	50	N	200	N
J56R0910	37 21 40	95 21 12	5.00	1.00	.05	.500	100	N	200	N
J56R0920	37 21 40	95 21 12	5.00	1.00	.07	.500	70	N	200	N
J56R0925	37 21 40	95 21 12	2.00	.20	.05	.150	20	N	200	N

TABLE 1--SPECTROGRAPHIC ANALYSES OF INSOLUBLE-RESIDUE SAMPLES FROM DRILL HOLE NO. 56, JOPLIN 1 x 2 QUADRANGLE,
MISSOURI AND KANSAS.--Continued

Sample	B-ppm S	Ba-ppm S	Be-ppm S	Rf-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
J56R0520	100	200	2.0	N	N	15	100	30	30	N	N	70
J56R0530	100	200	2.0	N	N	15	100	30	50	N	N	50
J56R0540	150	300	3.0	N	N	15	150	20	70	N	<20	50
J56R0550	150	300	5.0	N	N	15	150	20	50	N	<20	50
J56R0560	150	200	3.0	N	N	20	100	20	30	N	N	30
J56R0570	100	200	2.0	N	N	10	100	10	50	N	N	30
J56R0580	150	200	2.0	N	N	10	100	15	50	N	N	30
J56R0600	150	150	1.5	N	N	15	70	15	20	N	N	30
J56R0610	100	100	N	N	N	7	30	10	N	N	N	20
J56R0620	100	100	N	N	N	5	20	7	N	N	N	10
J56R0630	70	50	N	N	N	N	10	<5	N	N	N	7
J56R0640	100	70	N	N	N	N	10	10	N	N	N	7
J56R0650	70	50	N	N	N	N	N	<5	N	N	N	7
J56R0660	70	70	N	N	N	N	N	5	N	5	N	10
J56R0670	100	150	1.0	N	N	5	20	10	20	15	N	20
J56R0680	70	70	1.0	N	N	5	20	15	20	10	N	20
J56R0690	100	100	2.0	N	N	5	50	20	20	10	N	50
J56R0700	70	50	N	N	N	N	10	5	N	5	N	7
J56R0710	50	50	N	N	N	N	N	<5	N	N	N	5
J56R0720	50	30	N	N	N	N	N	<5	N	N	N	5
J56R0730	70	30	N	N	N	N	N	<5	N	N	N	5
J56R0740	50	70	N	N	N	N	N	<5	N	N	N	5
J56R0750	70	150	1.0	N	N	5	20	20	20	N	N	15
J56R0760	100	100	N	N	N	5	20	10	N	N	N	20
J56R0770	70	70	N	N	N	5	10	5	N	N	N	10
J56R0780	100	200	1.0	N	N	7	30	20	20	N	N	20
J56R0790	100	200	1.5	N	N	7	50	30	20	N	N	20
J56R0800	100	150	1.5	N	N	7	50	15	20	N	N	30
J56R0810	100	200	1.5	N	N	15	70	30	50	5	N	70
J56R0820	100	150	1.5	N	N	10	70	50	20	N	N	70
J56R0830	100	200	1.0	N	N	10	50	50	20	N	N	100
J56R0840	100	150	1.0	N	N	10	30	20	20	N	N	50
J56R0850	100	150	1.0	N	N	10	20	50	20	N	N	50
J56R0860	100	200	1.5	N	N	20	30	10	20	N	<20	100
J56R0870	100	500	1.5	N	N	20	50	50	30	5	<20	70
J56R0880	100	500	2.0	N	N	10	100	100	50	5	<20	50
J56R0890	100	1,000	2.0	N	N	30	100	150	30	7	<20	100
J56R0900	100	300	2.0	N	N	15	100	15	30	N	<20	50
J56R0910	100	200	2.0	N	N	50	100	100	50	N	<20	50
J56R0920	200	200	3.0	N	N	30	100	50	50	N	<20	70
J56R0925	100	150	1.5	N	N	10	20	10	20	N	N	15

TABLE 1--SPECTROGRAPHIC ANALYSES OF INSOLUBLE-RESIDUE SAMPLES FROM DRILL HOLE NO. 56, 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#
J56R0520	10	N	10	N	100	150	N	20	N	150	N	20
J56R0530	15	N	15	N	100	150	N	20	N	200	N	20
J56R0540	20	N	20	N	200	200	N	30	N	150	N	20
J56R0550	20	N	20	N	200	200	N	30	N	200	N	20
J56R0560	15	N	10	N	100	150	N	20	N	200	N	20
J56R0570	15	N	15	N	100	150	N	30	N	200	N	20
J56R0580	<10	N	15	N	100	100	N	20	N	200	N	20
J56R0600	10	N	10	N	N	100	N	30	N	100	N	20
J56R0610	N	N	5	N	N	30	N	<10	N	50	N	40
J56R0620	N	N	N	N	N	30	N	N	N	70	N	40
J56R0630	N	N	N	N	N	10	N	N	N	20	N	40
J56R0640	N	N	N	N	N	20	N	N	200	30	N	40
J56R0650	N	N	N	N	N	15	N	N	N	20	N	40
J56R0660	N	N	N	N	N	20	N	N	300	30	N	40
J56R0670	N	N	5	N	N	50	N	10	<200	100	N	40
J56R0680	N	N	N	N	N	50	N	N	200	50	N	40
J56R0690	10	N	5	N	N	100	N	10	<200	100	N	40
J56R0700	N	N	N	N	N	20	N	N	N	10	N	40
J56R0710	N	N	N	N	N	N	N	N	N	N	N	40
J56R0720	N	N	N	N	N	N	N	N	N	N	N	40
J56R0730	N	N	N	N	N	N	N	N	N	10	N	40
J56R0740	N	N	N	N	N	N	N	N	N	10	N	40
J56R0750	N	N	5	N	N	70	N	N	N	70	N	40
J56R0760	N	N	<5	N	N	50	N	N	N	100	N	40
J56R0770	N	N	N	N	N	20	N	N	N	30	N	40
J56R0780	N	N	7	N	100	70	N	15	N	100	N	40
J56R0790	<10	N	7	N	100	70	N	10	N	100	N	40
J56R0800	<10	N	7	N	100	50	N	10	N	70	N	40
J56R0810	<10	N	15	N	100	100	N	15	N	100	N	40
J56R0820	15	N	10	N	N	100	N	15	N	100	N	40
J56R0830	10	N	10	N	N	100	N	10	N	100	N	40
J56R0840	10	N	7	N	N	100	N	10	N	70	N	40
J56R0850	10	N	7	N	N	100	N	10	N	100	N	40
J56R0860	15	N	10	N	N	100	N	10	N	70	N	40
J56R0870	15	N	15	N	150	100	N	20	N	100	N	40
J56R0880	20	N	15	N	200	200	N	20	N	150	N	40
J56R0890	20	N	15	N	150	150	N	20	<200	150	N	40
J56R0900	15	N	10	N	100	150	N	20	<200	300	N	40
J56R0910	15	N	15	N	100	200	N	20	<200	200	N	31
J56R0920	15	N	15	N	N	150	N	30	200	150	N	20
J56R0925	N	N	<5	N	N	50	N	N	N	70	N	80

TABLE 2--SPECTROGRAPHIC ANALYSES OF INSOLUBLE-RESIDUE SAMPLES FROM DRILL HOLE NO. 57, 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
J57R0490	37 23 21	95 5 55	3.00	.50	<.05	.500	100	N	N	N
J57P0495	37 23 21	95 5 55	7.00	.15	<.05	.200	50	<.5	N	N
J57R0510	37 23 21	95 5 55	2.00	.05	.05	.050	20	<.5	N	N
J57R0520	37 23 21	95 5 55	1.00	.05	.07	.050	10	N	N	N
J57R0530	37 23 21	95 5 55	1.50	.10	.07	.200	15	N	N	N
J57R0540	37 23 21	95 5 55	1.50	.10	.10	.200	20	N	N	N
J57R0550	37 23 21	95 5 55	1.00	.20	.20	.150	30	N	N	N
J57R0560	37 23 21	95 5 55	.70	.10	.20	.200	20	N	N	N
J57R0570	37 23 21	95 5 55	.20	.05	2.00	.100	30	N	N	N
J57R0580	37 23 21	95 5 55	.15	.02	.10	.005	10	N	N	N
J57R0590	37 23 21	95 5 55	.30	.03	.05	.020	20	N	N	N
J57R0600	37 23 21	95 5 55	1.00	.05	1.00	.100	50	N	N	N
J57R0610	37 23 21	95 5 55	3.00	.20	.10	.200	200	.5	N	N
J57R0620	37 23 21	95 5 55	1.00	.05	.30	.070	20	N	N	N
J57R0630	37 23 21	95 5 55	.15	.03	.20	.015	10	N	N	N
J57R0640	37 23 21	95 5 55	.10	.02	.10	.020	15	N	N	N
J57R0650	37 23 21	95 5 55	.10	.02	.05	.010	10	N	N	N
J57R0660	37 23 21	95 5 55	.10	.02	.05	.010	10	N	N	N
J57R0670	37 23 21	95 5 55	.10	.02	.07	.010	10	N	N	N
J57R0675	37 23 21	95 5 55	.15	.02	.05	.020	15	N	N	N
J57R0690	37 23 21	95 5 55	.20	.03	.05	.050	15	N	N	N
J57R0695	37 23 21	95 5 55	.15	.02	<.05	.020	10	N	N	N

TABLE 2--SPECTROGRAPHIC ANALYSES OF INSOLUBLE-RESIDUE SAMPLES FROM DRILL HOLE NO. 57, JOPLIN 1 x 2 QUADRANGLE,
MISSOURI AND KANSAS.--Continued

Sample	B-rpm 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
J57R0490	150	200	5.0	N	N	7	150	30	30	N	<20	50
J57R0495	100	150	1.5	N	N	20	70	20	N	N	N	100
J57R0510	100	50	N	N	N	7	10	10	N	N	N	15
J57R0520	100	30	N	N	N	N	N	15	N	N	N	10
J57R0530	100	50	N	N	N	N	20	5	N	<5	N	15
J57R0540	100	70	N	N	N	<5	30	15	N	N	N	20
J57R0550	100	70	1.0	N	N	N	20	10	N	N	N	15
J57R0560	70	50	N	N	N	<5	10	7	N	N	N	15
J57R0570	70	20	N	N	N	N	10	<5	N	N	N	5
J57R0580	70	<20	N	N	N	N	N	<5	N	N	N	5
J57R0590	100	20	N	N	N	N	N	<5	N	7	N	10
J57R0600	70	50	N	N	N	5	10	15	N	7	N	15
J57R0610	100	100	2.0	N	N	20	100	300	N	15	N	70
J57R0620	50	50	N	N	N	7	15	30	N	7	N	20
J57R0630	70	30	N	N	N	N	N	<5	N	5	N	5
J57R0640	70	30	N	N	N	N	N	<5	N	N	N	<5
J57R0650	70	20	N	N	N	N	N	<5	N	N	N	<5
J57R0660	70	20	N	N	N	N	N	<5	N	N	N	5
J57R0670	100	30	N	N	N	N	N	<5	N	N	N	<5
J57R0675	50	20	N	N	N	N	N	<5	N	N	N	7
J57R0690	70	50	N	N	N	<5	N	10	N	N	N	10
J57R0695	100	30	N	N	N	N	N	<5	N	N	N	5

TABLE 2--SPECTROGRAPHIC ANALYSES OF INSOLUBLE-RESIDUE SAMPLES FROM DRILL HOLE NO. 57, 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#
J57R0490	10	N	15	N	N	200	N	30	N	150	N	20
J57R0495	<10	N	7	N	N	50	N	20	N	100	N	20
J57R0510	N	N	N	N	N	10	N	N	N	15	N	40
J57R0520	N	N	N	N	N	10	N	N	N	15	N	40
J57R0530	N	N	N	N	N	30	N	10	N	500	N	40
J57R0540	N	N	N	N	N	50	N	10	N	300	N	40
J57R0550	N	N	N	N	N	50	N	N	<200	70	N	40
J57R0560	N	N	N	N	N	30	N	N	N	30	N	40
J57R0570	N	N	N	N	N	10	N	N	N	10	N	40
J57R0580	N	N	N	N	N	N	N	N	N	N	N	40
J57R0590	N	N	N	N	N	<10	N	N	N	20	N	40
J57R0600	N	N	N	N	N	20	N	N	1,000	20	N	40
J57R0610	10	N	5	N	N	100	N	10	200	70	N	40
J57R0620	N	N	N	N	N	20	N	N	N	30	N	40
J57R0630	N	N	N	N	N	N	N	N	N	N	N	40
J57R0640	N	N	N	N	N	N	N	N	N	N	N	40
J57R0650	N	N	N	N	N	N	N	N	N	N	N	40
J57R0660	N	N	N	N	N	N	N	N	N	N	N	40
J57R0670	N	N	N	N	N	N	N	N	N	N	N	40
J57R0675	N	N	N	N	N	<10	N	N	N	<10	N	40
J57R0690	N	N	N	N	N	<10	N	N	N	20	N	40
J57R0695	N	N	N	N	N	<10	N	N	N	10	N	40

TABLE 3--SPECTROGRAPHIC ANALYSES OF INSOLUBLE-RESIDUE SAMPLES FROM DRILL HOLE NO. 58, 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
J58R0730	37 40 0	96 5 10	5	1.0	.05	.7	150	N	N	N
J58R0760	37 40 0	96 5 10	5	1.0	.05	.7	200	N	N	N
J58R0790	37 40 0	96 5 10	5	1.0	.05	.5	200	N	N	N
J58R0810	37 40 0	96 5 10	5	1.0	<.05	.7	200	N	N	N
J58R0840	37 40 0	96 5 10	5	1.0	<.05	.5	150	N	N	N
J58R0870	37 40 0	96 5 10	5	.7	<.05	.5	150	N	N	N
J58R0900	37 40 0	96 5 10	5	1.0	<.05	.5	150	N	N	N
J58R0940	37 40 0	96 5 10	5	1.0	.07	.5	150	N	N	N
J58R0980	37 40 0	96 5 10	5	.5	.07	.5	70	N	N	N
J58R1020	37 40 0	96 5 10	5	1.0	.05	.5	150	N	N	N
J58R1040	37 40 0	96 5 10	3	.5	.05	.5	100	N	N	N
J58R1060	37 40 0	96 5 10	3	1.0	.07	.5	150	N	N	N
J58R1100	37 40 0	96 5 10	3	1.0	.07	.7	200	N	N	N
J58R1140	37 40 0	96 5 10	7	1.0	.05	.5	200	.5	N	N
J58R1180	37 40 0	96 5 10	5	1.0	.05	.5	150	N	N	N
J58R1230	37 40 0	96 5 10	5	1.0	.05	.7	150	N	N	N
J58R1260	37 40 0	96 5 10	5	1.0	.05	.5	200	N	N	N
J58R1290	37 40 0	96 5 10	5	.7	.05	.7	150	N	N	N
J58R1320	37 40 0	96 5 10	5	1.0	.05	.7	200	N	N	N
J58R1350	37 40 0	96 5 10	5	1.0	.05	.5	100	N	N	N
J58R1380	37 40 0	96 5 10	5	1.0	.07	.5	100	N	N	N
J58R1410	37 40 0	96 5 10	5	.7	.05	.5	100	.5	N	N
J58R1430	37 40 0	96 5 10	5	1.0	.05	.5	100	<.5	N	N
J58R1450	37 40 0	96 5 10	3	.7	<.05	.5	150	N	N	N
J58R1470	37 40 0	96 5 10	3	1.0	.05	.7	150	<.5	N	N
J58R1490	37 40 0	96 5 10	3	.7	<.05	.7	200	<.5	N	N
J58R1510	37 40 0	96 5 10	2	.7	.05	.7	100	N	N	N
J58R1530	37 40 0	96 5 10	5	.7	<.05	.5	100	<.5	N	N
J58R1550	37 40 0	96 5 10	2	.5	<.05	.5	100	N	N	N
J58R1570	37 40 0	96 5 10	2	.5	<.05	.5	70	N	N	N
J58R1590	37 40 0	96 5 10	2	.5	<.05	.5	100	N	N	N
J58R1610	37 40 0	96 5 10	3	.5	<.05	.5	100	N	N	N
J58R1630	37 40 0	96 5 10	5	.7	<.05	.7	100	N	N	N
J58R1650	37 40 0	96 5 10	3	.7	<.05	.5	100	N	N	N
J58R1660	37 40 0	96 5 10	5	.7	<.05	.7	100	.5	N	N
J58R1670	37 40 0	96 5 10	3	.5	<.05	.5	70	<.5	N	N
J58R1680	37 40 0	96 5 10	5	.7	<.05	.7	100	<.5	N	N
J58R1690	37 40 0	96 5 10	3	.5	<.05	.5	70	<.5	N	N
J58R1700	37 40 0	96 5 10	5	.5	.05	.5	70	<.5	N	N
J58R1720	37 40 0	96 5 10	2	.2	.05	.5	50	<.5	N	N
J58R1740	37 40 0	96 5 10	2	.3	.05	.5	70	<.5	N	N
J58R1770	37 40 0	96 5 10	2	.5	.05	.5	70	.5	N	N
J58R1810	37 40 0	96 5 10	2	.5	.05	.5	50	<.5	N	N
J58R1840	37 40 0	96 5 10	1	.2	.05	.2	30	N	N	N
J58R1880	37 40 0	96 5 10	2	.3	.05	.3	70	N	N	N

TABLE 3--SPECTROGRAPHIC ANALYSES OF INSOLUBLE-RESIDUE SAMPLES FROM DRILL HOLE NO. 58, 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
J58R0730	150	200	3.0	N	N	30	100	150	30	N	N	70
J58R0760	150	300	3.0	N	N	30	100	50	30	N	N	70
J58R0790	150	300	3.0	N	N	20	100	50	50	N	N	50
J58R0810	150	300	3.0	N	N	20	150	30	50	N	N	50
J58R0840	150	300	3.0	N	N	20	150	50	50	N	N	70
J58R0870	150	300	3.0	N	N	15	100	100	50	N	N	50
J58R0900	150	500	3.0	N	N	30	150	70	50	N	N	50
J58R0940	200	1,000	3.0	N	30	20	100	100	20	N	N	100
J58R0980	150	300	2.0	N	30	15	100	500	20	N	N	50
J58R1020	200	200	3.0	N	N	20	150	100	30	N	N	70
J58R1040	150	150	2.0	N	N	10	100	20	30	N	N	20
J58R1060	200	200	3.0	N	<20	20	150	30	50	N	N	70
J58R1100	200	300	3.0	N	N	20	150	30	50	N	N	100
J58R1140	200	200	3.0	N	<20	20	150	150	50	N	N	100
J58R1180	200	200	2.0	N	N	20	100	50	30	N	N	50
J58R1230	150	1,000	3.0	N	N	20	100	100	50	N	N	70
J58R1260	150	200	3.0	N	N	20	100	50	50	N	N	50
J58R1290	150	300	3.0	N	N	20	100	50	50	5	N	50
J58R1320	200	500	3.0	N	N	20	100	700	50	N	N	70
J58R1350	150	500	3.0	N	N	20	150	70	30	5	N	100
J58R1380	150	700	3.0	N	N	20	100	700	20	7	N	100
J58R1410	150	500	3.0	N	20	20	200	100	30	15	N	100
J58R1430	150	300	3.0	N	<20	20	100	100	50	5	N	50
J58R1450	100	300	3.0	N	N	15	100	15	50	N	N	50
J58R1470	100	500	5.0	N	N	20	100	30	50	7	N	70
J58R1490	100	300	3.0	N	N	20	150	100	50	5	N	70
J58R1510	100	300	3.0	N	N	10	100	50	70	N	N	30
J58R1530	100	500	3.0	N	N	20	100	500	50	5	N	50
J58R1550	150	200	3.0	N	N	15	100	100	50	N	N	30
J58R1570	100	200	2.0	N	N	10	100	100	30	N	N	20
J58R1590	100	200	3.0	N	N	10	100	70	50	N	N	20
J58R1610	100	200	2.0	N	N	20	100	70	50	N	N	30
J58R1630	150	200	3.0	N	N	15	150	70	50	N	N	50
J58R1650	100	200	3.0	N	N	20	150	200	50	N	N	50
J58R1660	100	200	3.0	N	100	30	100	100	50	N	N	100
J58R1670	100	200	2.0	N	N	20	100	70	50	N	N	70
J58R1680	100	200	3.0	N	N	30	100	70	70	N	N	100
J58R1690	100	150	1.5	N	N	20	100	20	50	N	N	70
J58R1700	150	300	2.0	N	N	15	150	50	50	N	N	70
J58R1720	100	200	1.5	N	N	10	100	20	30	N	N	50
J58R1740	100	150	2.0	N	N	15	70	15	30	N	N	50
J58R1770	100	200	2.0	N	N	10	100	20	30	N	N	50
J58R1810	100	100	2.0	N	N	5	70	20	20	N	N	50
J58R1840	100	100	N	N	N	5	50	5	20	N	N	30
J58R1880	100	150	1.0	N	N	7	70	15	30	N	N	50

TABLE 3--SPECTROGRAPHIC ANALYSES OF INSOLUBLE-RESIDUE SAMPLES FROM DRILL HOLE NO. 58, 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#
J58R0730	15	N	15	N	200	200	50	20	200	150	N	20
J58R0760	N	N	15	N	>5,000	200	N	30	<200	150	N	20
J58R0790	30	N	15	N	5,000	200	N	20	N	200	N	20
J58R0810	N	N	15	N	200	200	N	20	<200	150	N	20
J58R0840	15	N	15	N	300	200	50	20	<200	150	N	20
J58R0870	15	N	15	N	150	150	50	20	<200	150	N	20
J58R0900	10	N	15	N	200	200	50	20	<200	150	N	20
J58R0940	20	N	15	N	200	200	200	20	1,000	150	N	20
J58R0980	15	N	10	N	100	150	50	15	1,500	150	N	20
J58R1020	<10	N	15	N	100	200	N	20	200	200	N	20
J58R1040	10	N	10	N	100	150	N	20	<200	300	N	20
J58R1060	10	N	15	N	100	200	N	20	500	150	N	20
J58R1100	10	N	15	N	100	200	<50	20	200	200	N	20
J58R1140	20	N	15	N	100	200	N	15	500	150	N	20
J58R1180	10	N	10	N	100	150	N	30	N	150	N	20
J58R1230	10	N	20	N	100	200	N	20	200	150	N	20
J58R1260	10	N	20	N	100	200	N	30	<200	150	N	20
J58R1290	15	N	15	N	100	200	N	20	<200	200	N	20
J58R1320	20	N	15	N	100	200	<50	20	200	200	N	20
J58R1350	10	N	15	N	100	200	N	20	200	100	N	20
J58R1380	100	N	15	N	100	200	N	20	200	150	N	20
J58R1410	30	N	15	N	100	200	<50	15	1,000	150	N	20
J58R1430	15	N	15	N	150	150	N	30	200	200	N	20
J58R1450	15	N	15	N	100	150	N	30	300	150	N	20
J58R1470	30	N	15	N	100	200	N	30	200	150	N	20
J58R1490	15	N	15	N	150	200	N	30	700	200	N	20
J58R1510	10	N	20	N	150	300	N	50	N	200	N	20
J58R1530	15	N	15	N	300	200	N	N	200	150	N	20
J58R1550	10	N	15	N	100	200	N	30	N	200	N	20
J58R1570	N	N	15	N	100	200	N	20	N	150	N	20
J58R1590	<10	N	20	N	150	150	N	30	N	200	N	20
J58R1610	15	N	15	N	150	150	N	20	N	100	N	20
J58R1630	<10	N	20	N	150	200	N	30	N	200	N	20
J58R1650	20	N	20	N	150	200	N	20	N	150	N	20
J58R1660	30	N	20	N	200	200	N	50	200	200	N	20
J58R1670	20	N	20	N	100	200	N	20	N	100	N	20
J58R1680	30	N	30	N	150	200	N	30	N	200	N	20
J58R1690	20	N	10	N	100	150	N	70	N	100	N	20
J58R1700	10	N	15	N	200	150	N	30	300	150	N	40
J58R1720	N	N	7	N	100	70	N	20	200	70	N	40
J58R1740	<10	N	10	N	100	100	N	15	<200	150	N	40
J58R1770	<10	N	7	N	100	100	N	15	300	100	N	40
J58R1810	<10	N	5	N	100	100	N	15	<200	100	N	40
J58R1840	N	N	N	N	100	50	N	10	N	70	N	40
J58R1880	<10	N	5	N	100	70	N	15	500	70	N	40

TABLE 3--SPECTROGRAPHIC ANALYSES OF INSOLUBLE-RESIDUE SAMPLES FROM DRILL HOLE NO. 58, 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
J58R1930	37 40 0	96 5 10	2	.5	.07	.3	50	N	N	N
J58R1940	37 40 0	96 5 10	3	1.0	.05	.7	100	N	N	N
J58R1955	37 40 0	96 5 10	5	1.0	<.05	.5	150	N	N	N
J58R1985	37 40 0	96 5 10	7	.7	.10	.5	100	.5	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
J58R1930	100	100	1.5	N	N	10	70	10	30	N	<20	50
J58R1940	150	200	2.0	N	N	15	100	20	50	N	<20	50
J58R1955	150	300	3.0	N	N	30	100	30	30	30	<20	50
J58R1985	150	200	2.0	N	N	10	100	20	50	15	<20	50

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#
J58R1930	10	N	7	N	100	100	N	10	N	100	N	40
J58R1940	10	N	15	N	100	200	N	50	<200	200	N	31
J58R1955	30	N	15	N	100	200	N	20	N	100	N	31
J58R1985	20	N	20	N	500	150	N	30	<200	150	N	60