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Mineralization and other geologic factors related to
the Morrison Formation in particularly the northern
two-thirds of the Colorado Plateau region--Basic
data and factor-analysis results

By

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Abstract

A vanadium-mercury mineralization factor and five other significant geologic factors were determined by multivariate factor analysis of data for Morrison Formation rock samples from the Colorado Plateau region. The data presented in the report were obtained from an agglomeration of 876 samples which yielded a correlation matrix of 44 variables. The variables consisted of geochemical, petrographic, and geographic location parameters.

Mineralization factor scores demonstrate the relative intensity of mineralization in rock samples collected in and around uranium-vanadium ore deposits.

The factors affecting composition and texture of the rocks identified from the analysis are: (1) metalliferous mudstones; (2) interstitial carbonate cements; (3) competing sources of different composition; (4) heavy mineral sources; (5) vanadium mineralization; and (6) regional and stratigraphic sampling bias.

Introduction

Vast amounts of research on geology related to uranium occurrences in the sedimentary rocks of the Morrison Formation of the Colorado Plateau region were accomplished during the years 1947 to 1982. Much of it was done by the U.S. Geological Survey, both as a part of its own continuing resource program, and on behalf of the U.S. Atomic Energy Commission (1947-1958) and the U.S. Department of Energy (1973-1982). Many of the early projects were summarized by Page, Stocking, and Smith (1956) and results of early research were presented by Garrels and Larsen (1959).

Scope and purpose of report

This report summarizes geochemical, textural and mineralogical data from Morrison Formation samples collected by the author and associates during the period 1948 to 1970 in the Colorado Plateau region. Almost no data on uranium abundances are reported. Data on abundances of elements related to uranium occurrences such as vanadium and copper are reported. Available mineralogic and textural data are correlated with the geochemical data and the correlations among selected variables are analyzed by multivariate factor analysis. Major geologic factors relating the selected parameters are identified and interpreted.

Geographic and geologic setting

The geologic framework for the samples used in this study was described in more detail in earlier publications (Craig and others, 1955; Cadigan, 1967a). The Colorado Plateau region includes western Colorado, the northwest quarter of New Mexico, most of the eastern half of Utah, and the northeast

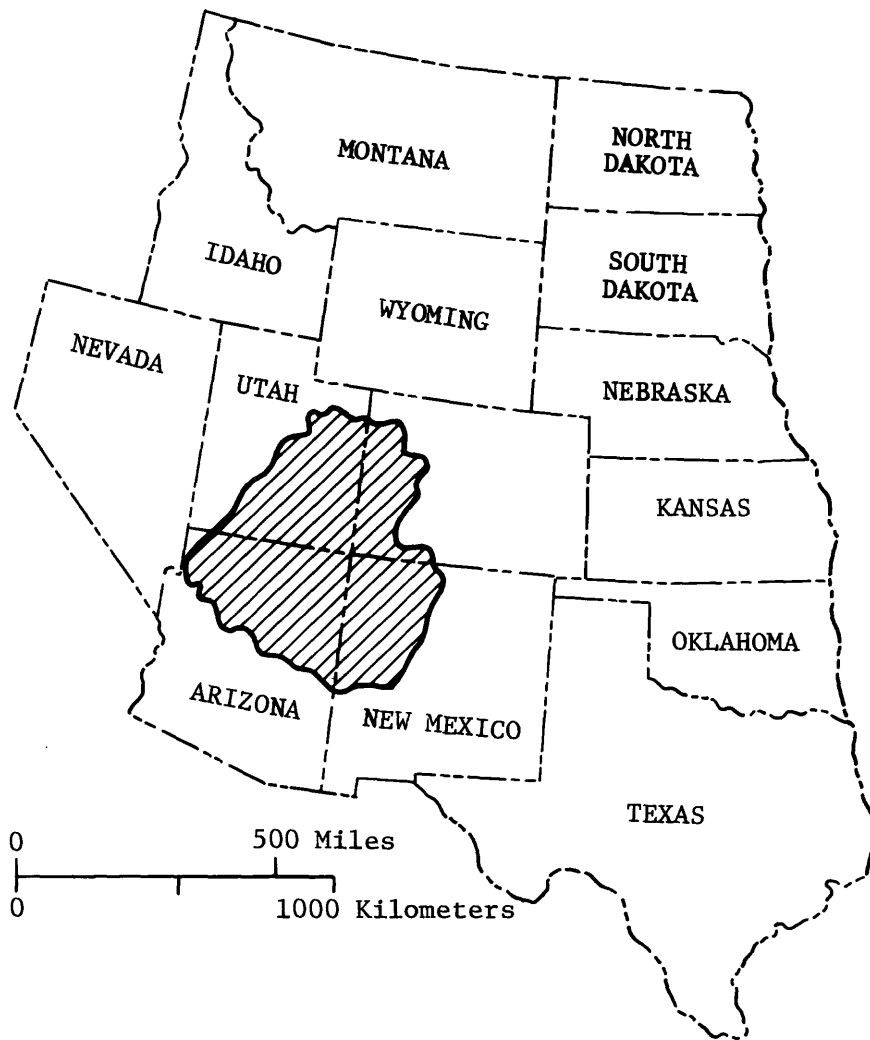


Figure 1.--Location of Colorado Plateau region (shaded).
(From Cadigan, 1967)

corner of Arizona (fig. 1) an area of approximately 337,000 km². Regionwide geologic structures form the boundaries of the Plateau region, but are generally absent in the central part. Sedimentary beds are flat lying or gently warped in roughly four-fifths of the region. In the remainder, the beds reflect the tectonic disturbances of rising salt anticlines, major faulting at depth which has resulted in sharp monoclinal folds, and intrusion by laccoliths, volcanic plugs, and diatremes. Sedimentary rocks exposed in the region range in age from the Precambrian to the Holocene and are discussed by Newman (1962).

Stratigraphy

The Jurassic Morrison Formation in the region of study is divided stratigraphically into four members, which are from bottom to top: Salt Wash Member, Recapture Member, Westwater Canyon Member, and Brushy Basin Member. Figure 2 illustrates the regional extent of the members according to Craig and others (1955, and written comm., 1965). The Salt Wash is present only in the northern two-thirds of the region, the Recapture and Westwater Canyon are restricted to the southern half of the region, and the Brushy Basin is present in both northern and southern parts of the region. The Colorado Plateau region was part of the Jurassic continental Western Interior Basin, a subsiding, north to south elongated area of deposition which extended from what is now the southern Basin and Range Province across what is now the Southern Rocky Mountains area and north-northeastward to the Arctic Ocean. Within the political boundaries of the United States this subsiding basin occupied an area of more than 1,500,000 km². Deposition of the Morrison in the Interior Basin was characterized by the accumulation of thicker and coarser sediments in what is now the Colorado Plateau region than in the rest of the Basin to the northeast and north. Deposition of Morrison sediments is believed to have occurred on a relatively flat slowly subsiding plain in predominantly alluvial environments, and in less conspicuous paludal and lacustral environments. The Morrison Formation is now present and recognized over most of the Interior Basin.

Petrology

Sources of sediment which formed the Morrison in the Colorado Plateau region lie in directions extending in a clockwise arc from southeast to northwest of the center of the region. For details on the composition and effects of the sources the reader is referred to a previous publication (Cadigan, 1967a). The Morrison is formed generally of sediments derived by stream erosion from a variety of widespread igneous, metamorphic, and sedimentary rock terranes. The formation contains rocks of widely varied composition, the result of varied sources, diagenetic processes, and, locally, mineralization, the most notable examples of which are the economically significant uranium-vanadium deposits.

Outcrops of the Morrison consist typically of light-colored ledge-forming medium- to thick-bedded sandstones interbedded with reddish-brown, greenish-gray, or thick-bedded horizontally color-banded and variegated siltstones, mudstones, and claystones, some of which are composed largely of devitrified altered volcanic detritus.

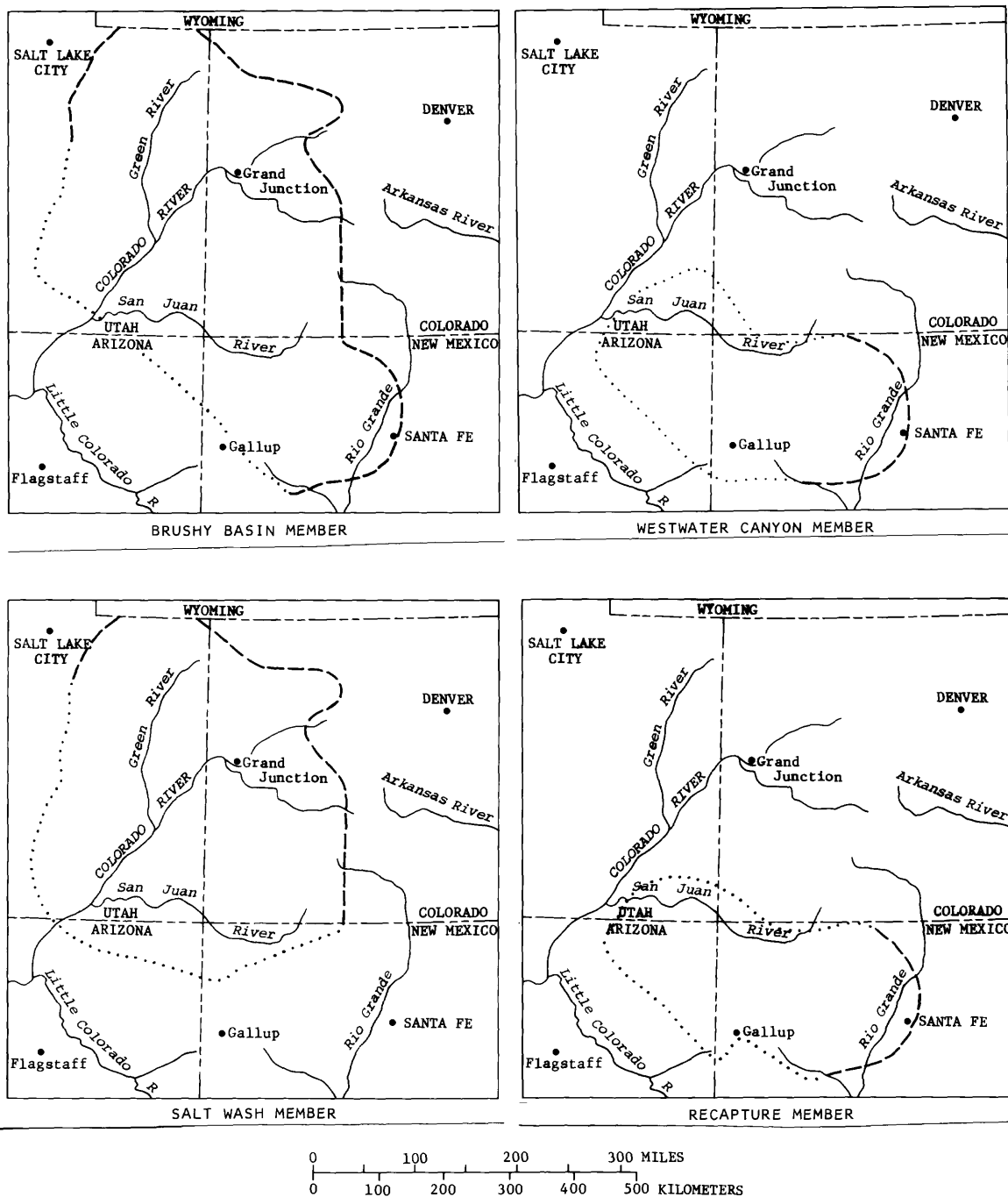


Figure 2.--Areal extent of the members of the Morrison Formation in the Colorado Plateau region and adjacent areas. Dotted line indicates approximate margin resulting from pinchout, facies change, or erosional cutoff; dashed line indicates approximate margin and limit of study. From Craig and others (1955) and L.C. Craig (written commun., 1965).

The general drainage orientation of Morrison Formation sediments in the Colorado Plateau region as defined by resultants of sedimentary structure orientations, size and sorting trends, and various mineralogic trends is from southwest to northeast. Lobes of feldspar concentrations along the southern margins and silicified rock-fragment concentrations along the western margins of the Colorado Plateau region suggest, however, that there was movement of sediment in varying directions from sources south and west of the region. The southern sources appear to have contributed granitic detritus and tuffaceous material to Morrison sediments. The western sources appear to have contributed granitic-monzonitic detritus, silicified rock fragments, and tuffaceous material.

Rock types which make up the Morrison belong chiefly to the orthoquartzite class. Feldspathic orthoquartzites are the dominant variety. The remaining rocks are distributed among the arkose, tuff, graywacke, and chemical rock classes (chiefly carbonates and sulfates), although the rocks classified as graywackes owe their origin to diagenetically altered silicic alkalic tuffaceous sediments rather than to chloritic, micaceous or basaltic source terranes. Description and discussion of the classification system used here are presented in the earlier report (Cadiqan, 1967-a).

Detrital mineral components present in Morrison rocks consist chiefly of grains of quartz, chert, chalcedony, albite, oligoclase, orthoclase, and sanidine, fragments of quartzite, granite, silicified altered rock of unknown classification, and silicified limestone, and fragments of silicified devitrified felsite and tuff. Present in small proportions are flakes of biotite, muscovite, and chlorite, grains of zircon, tourmaline, garnet, staurolite, rutile, apatite, epidote, magnetite, ilmenite and leucoxene and miscellaneous minerals of less quantitative significance.

Clay minerals present are mica clays (illite, etc.), montmorillonite, kaolinite, chlorite, and various mixed-layer montmorillonite, mica and chlorite clay aggregates.

Mineral components vary in kind and in proportion from sample to sample, from location to location and from member to member; this variation produces a similar variation in rock classification. Mineral components also vary with texture.

The siltstones are of two general types: the coarser, more quartzitic illitic mudstones such as those of the Salt Wash Member, whose average median particle size is that of medium silt, and the finer, less quartzitic clayey, and in many instances bentonitic mudstones such as those of the Brushy Basin Member, whose average median particle size is that of fine silt. True claystones (80 percent or more clay-sized particles) are relatively rare; but the finer and poorer sorted mudstones found chiefly in the Brushy Basin Member, and to a lesser extent in the other members, contain higher proportions of clay than the coarser and better sorted mudstones and siltstones. The original sedimentary volcanic debris from which the fine-grained poorer sorted mudstone strata were derived by diagenesis, was significantly coarser when it was first deposited. Diagenetic change reduced most of the fine-textured glassy detritus to very finely crystalline hydrolyzates, principally clay minerals, and free silica.

Table 1 shows the proportions of sedimentary textural facies in the four members and in the formation as a whole.

Previous and contemporary work

A study of the geochemistry of Morrison Formation uranium deposits was made by Shoemaker, Miesch, Newman, and Riley (1959). Miesch, Shoemaker, Newman, and Finch (1960) proposed a method for predicting the size of uranium deposits based on the geochemistry of samples from the deposits. The geochemical relationships of copper, vanadium, and uranium in uranium deposits of the region and their host rocks were summarized by Fischer and Stewart (1961). Newman (1962) made a statistical study of the distribution of elements in sedimentary rocks of the Colorado Plateau region; and Miesch (1963) made a statistical study of the distribution of elements in the uranium deposits.

Newman (1962) reported metallic element concentrations for individual stratigraphic members of the Morrison as well as for various textural fractions and compositional types of rock in the Morrison. Conclusions were drawn predominantly on the basis of the comparison of geometric means of element concentrations. He also predicted the nature of regional variations in concentrations of copper, vanadium, and elements derived from crystalline source terranes on the basis of comparisons of geometric means.

Investigations of the stratigraphy and the petrology of the Morrison Formation by Craig, and others (1955), Craig (1959), and Cadigan (1967a) provided most of the background and sample collections for both the report by Newman (1962) and this report.

Although most of the reports above are concerned with the distribution of elements and use various statistical approaches, this report represents the first attempt to apply factor analysis techniques to the combined geochemical and petrologic data which were accumulated in the several studies of the Morrison Formation, for the purpose of defining the major geologic and geochemical factors affecting the rocks.

Uranium abundance data was not available for this report for two reasons; first, the stratigraphic and petrologic study of the Morrison was deliberately biased toward non-mineralized rocks, because most of the contemporary studies concerned uranium-mineralized rocks; second, most geochemical data accumulated later was obtained for use in the Heavy Metals program which was oriented toward studies of large low-grade resources of gold, silver, copper, and so forth. Spectrographic analyses used to obtain most of the metal abundance data had a lower reporting limit of 500 ppm for uranium. Only a few of the samples contained a detectable amount of uranium at that level. The close relationship between vanadium and uranium led us to use reliable and available vanadium abundance data only, as the principal uranium-vanadium mineralization variable.

Table 1.--Proportional composition in percent by volume of the Morrison Formation in terms of its four members and of the major textural types. ^{1/}

Members	Percent of Major rock types			Percent contribution of each member to Morrison Fm
	Sandstone and Conglomerate	Mudstone Siltstone and Claystone	Limestone and Miscellaneous	
Brushy Basin	3	31	<1	34
Westwater Canyon	10	2	<1	12
Recapture	11	4	<1	39
Salt Wash	24	14	1	39
Totals	48	51	1	100

^{1/} source of data: Craig, 1959

Acknowledgements

The 876 samples used for this study were collected by the author, and by L. C. Craig, T. E. Mullens, and others under the supervision of Craig. B. V. Walker, L. N. Weber, and R. M. Johnson assisted in organizing the samples for chemical analysis and transferring petrographic and laboratory analytical data to computer punch cards.

Wet chemical analyses for silver, mercury, and copper were done under the supervision of C. W. Cole; silver analyses were done by G. W. Dounay, mercury by R. F. Hansen, and copper by Luther Dickson. Semi-quantitative spectrographic analyses of the approximately 630 of the samples were done by L. A. Bradley and J. C. Hamilton under the supervision of A. T. Myers.

Advice and assistance in computer applications were received chiefly from C. W. Adkisson. Computer programs used in the statistical analyses were USGS STATPAC programs prepared by George Van Trump, Jr.

Petrographic modal analyses for 130 of the samples were done by the author. Particle size analyses for 827 of the samples were done mostly by F. H. Spence and M. T. Finch under the supervision of the author.

Sources of the Data

Sampling and analytical methods

Samples used in this study consist of samples of sandstone, siltstone, mudstone, and claystone which were collected for petrologic study or geochemical study.

Samples were collected systematically, but the majority were collected from the Salt Wash Member. This bias exists because for the first years of the Morrison Formation investigation, the Salt Wash Member was of primary economic importance. The result is a marked deficiency of samples from the Brushy Basin, Recapture, and Westwater Canyon Members, and particularly a deficiency of samples from the Grants, New Mexico area. The uranium-bearing "Jackpile sandstone", for example is not adequately represented.

A total of 876 samples from 101 localities were used for this study. The basic sample data are listed in the appendix. With the sample data are geographic coordinates, sample locality numbers, and stratigraphic member identification numbers. Table 2 is an index of sample localities shown in figure 3. The heading page for the appendix contains a list of the parameters measured for various groups of samples. Some parameters examined in the study, and for which there is little if any data, were omitted from the table. Coded abbreviations used to label the variables are the identifications (I.D.'s) used in computer applications to the data and were thus restricted in length.

Table 2.--Index to sample localities*

Number	Locality name	County	State
2	Almont	Gunnison	Colorado
3	Animas River	La Plata	Colorado
6	Beautiful Mountain	San Juan	New Mexico
7	Beclabito Dome	San Juan	New Mexico
8	Bilk Creek	San Miguel	Colorado
12	Black Ridge	Mesa	Colorado
14	Blue Mesa	Mesa	Colorado
19	Bridgeport	Delta	Colorado
23	Brushy Basin Canyon	San Juan	Utah
24	Buckhorn Flat	Emery	Utah
25	Buckhorn Reservoir	Emery	Utah
27	Burns	Eagle	Colorado
28	Butler Wash	San Juan	Utah
29	Caneville	Wayne	Utah
30	Calamity Flats	Navajo	Arizona
31	Cane Spring	San Juan	Utah
37	Church Rock	San Juan	Utah
40	Collette Creek	Kane	Utah
45	Crescent Creek	Garfield	Utah
49	Cuchillo Arroyo	Sandoval	New Mexico
56	Dolores Group	Montrose	Colorado
59	Drunk Man's Point	Emery	Utah
61	Dry Creek Anticline	Montrose	Colorado
64	Duma Point	Grand	Utah
67	East Unaweep	Mesa	Colorado
71	Escalante	Garfield	Utah
72	Escalante Forks	Delta	Colorado
73	Factory Butte	Emery	Utah
75	Flattop Buttes	Emery	Utah
78	Fort Defiance	McKinley	New Mexico
79	Fort Wingate	McKinley	New Mexico
81	Garden Ranch	Sevier	Utah
83	Ghost Ranch	Rio Arriba	New Mexico
86	Halls Creek (The Post)	Garfield	Utah
88	Hanksville	Wayne	Utah
90	Hart Draw	San Juan	Utah
92	Haystack Butte	McKinley	New Mexico
93	Head of Blue Canyon	Mesa	New Mexico
99	Horseshoe Group	San Miguel	Colorado
102	Ladder Canyon	Mesa	Colorado
105	La Sal Creek	San Juan	Utah
105B	La Sal Creek	Montrose	Colorado
107	Last Chance Creek	Sevier	Utah
112	Little Grand Fault	Emery	Utah
114	Lohali Point	Apache	Arizona
115	Loma	Mesa	Colorado
119	Long Park	Montrose	Colorado
121	Los Pinos River	La Plata	Colorado

Table 2.--Index to sample localities*--continued

Number	Locality name	County	State
124	Lower McElmo Canyon	Montezuma	Colorado
125	Lower Piedra River	Archuleta	Colorado
128	Lupton	McKinley	New Mexico
130	McIntyre Canyon	San Miguel	Colorado
133	Mancos Jim Butte	San Juan	Utah
135	Marsh Pass	Navajo	Arizona
136	Maverick Canyon-Calamity Mesa	Mesa	Colorado
138	Meeker	Rio Blanco	Colorado
140	Mesa Gigante	Valencia	New Mexico
142	Monitor Creek	Montrose	Colorado
146	Mounds	Carbon, Emery	Utah
148	Navajo Point	Kane	Utah
151	Oak Spring Wash	San Juan	New Mexico
159	Pine Creek	Garfield	Utah
160	Pinon	Montrose	Colorado
161	Polar Mesa	Grand	Utah
162	Rattlesnake Mines	Apache	Arizona
163	Recapture Creek	San Juan	Utah
165	Red Canyon	Montrose	Colorado
170	Rifle	Garfield	Colorado
171	Roubideau	Montrose	Colorado
172	Salina Trading Post	Apache	Arizona
173	Salt Valley	Grand	Utah
174	Salt Wash	Grand	Utah
175	Sanastee Wash	San Juan	New Mexico
177	San Miguel Canyon	San Miguel	Colorado
178	San Rafael River Bridge	Emery	Utah
179	Sapinero	Gunnison	Colorado
181	Shooting Point	Garfield	Utah
182	Skein Mesa	Montrose	Colorado
184	Slick Rock	San Miguel	Colorado
189	Spring Canyon	Garfield	Utah
194	State Line	Mesa	Colorado
195	Steamboat Canyon	Apache	Arizona
197	Stoner	Montezuma	Colorado
199	Summerville Draw	Emery	Utah
200	Summit Point	San Miguel	Colorado
201	Tabeguache	Montrose	Colorado
207	Thoreau	McKinley	New Mexico
208	Tidwell Ranch	Emery	Utah
209	Toadlena	San Juan	New Mexico
210	Todilto Park	McKinley	New Mexico
214	Upper McElmo Canyon	Montezuma	Colorado
215	Upper Montezuma Canyon	San Juan	Utah
221	Vernal	Uintah	Utah
222	Wahweap Creek	Kane	Utah
224	White Mesa	San Juan	Utah
228	Woodside Anticline	Emery	Utah

Table 2.--Index to sample localities*--continued

Number	Locality name	County	State
230	Yale Point	Apache	Arizona
231	Yellow Cat	Grand	Utah
234	McPhee	Montezuma	Colorado
415	Bowknot Bend	Grand	Utah
416	Circle Cliffs	Garfield	Utah

*From: Craig, and others, (1959).
 Geographic coordinates are given with basic data. See appendix.

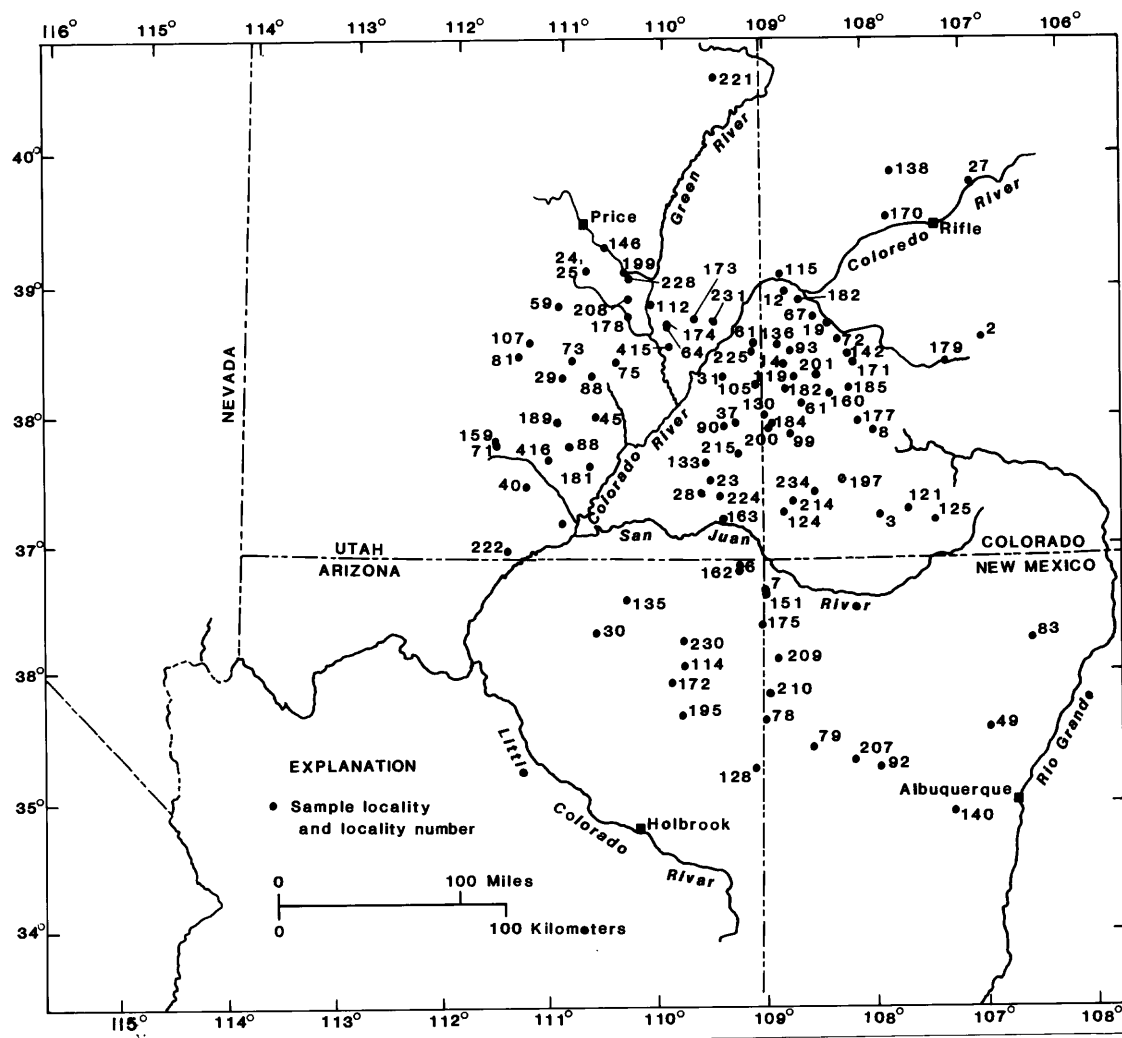


Figure 3.--Sample locality map. (From Cadigan, 1967-a)

Petrographic analysis

Samples collected primarily for petrologic studies represent an outcrop area of about 30 cm². Samples of one to two kilograms of rock were usually collected. Samples collected primarily for geochemical studies represent an outcrop area of about 10 cm². Sample size was 100 to 300 g. Samples from Long Park, Colorado (locality 119) are splits of drill core collected for a "natural state" core study (Manger, Gates, and Cadigan, 1975).

Particle-size distribution measures of 827 of these 876 sedimentary rock samples were determined by mechanical and chemical disaggregation, sieving of sand and coarse silt sized material, and pipette elutriation of silt- and clay- size material. Laboratory methods and statistical analysis of the size-fraction-weight data were generally those described by Krumbein and Pettijohn (1938) and are reviewed in detail by Cadigan (1967a).

Petrographic modal analysis of 130 rock thin sections is based on point-counts of cobaltinitrite-stained thin sections following generally the methods described by Chayes (1956). The results are quantitative estimates of the mineral composition of the 130 rock samples by volume.

Results of the statistical analysis of the particle-size distributions of 483 of the 827 samples and the modal analyses of 130 of these samples were published previously (Cadigan, 1967a, 1967b).

Chemical analyses

Chemical analyses were performed using a six-step spectrographic method, slightly modified from the three-step technique described by Myers, Havens, and Dunton (1961), and by atomic absorption techniques. Silver and copper analyses were done both by spectrographic and by the atomic-absorption technique described by Huffman, Mensik, and Rader (1966) and Huffman (1968). Mercury, not included among the elements determined by the spectrographic method, was determined utilizing a large-volume atomic-absorption technique described by Vaughn (1967).

Values for copper, and mercury determined by atomic absorption are identified in this report by modifying the element symbols to Cu₂ and Hg₂. Unmodified symbols indicate values determined by spectrographic method; for example Cu, Fe and V. Spectrographic and atomic absorption analytical data were obtained for 631 of the 876 rock samples.

Statistical Analysis

Data treatment

Chemical elements looked for, elements selected for the statistical analysis, and elements for which too few numerical values were determined are shown in table 3. Gold and silver data were omitted from the appendix and table 3. Gold values at the lower reporting limit were found to be unreproducible by resampling. Silver values were found to correlate with calcium values because of a deficiency of the analytical technique used at the

Table 3.--Elements looked for, lower reporting limits, and percent of samples for which numerical values were obtained. Based on chemical and spectro-chemical analyses of 631 samples.

Element	Symbol in report	Lower reporting limit	Percent of samples for which numerical values were obtained
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Elements used in statistical study:

Iron	Fe	.001%	100
Magnesium	Mg	.002%	100
Calcium	Ca	.002%	100
Titanium	Ti	.0002%	100
Manganese	Mn	1 ppm	100
Boron	B	20 ppm	61
Barium	Ba	1.5 ppm	100
Beryllium	Be	1 ppm	10
Cobalt	Co	3 ppm	32
Chromium	Cr	1 ppm	100
Copper	Cu	1 ppm	100
Lanthanum	La	30 ppm	17
*Niobium	Nb	10 ppm	6
Nickel	Ni	5 ppm	31
Lead	Pb	10 ppm	47
Scandium	Sc	5 ppm	16
Strontium	Sr	5 ppm	100
Vanadium	V	7 ppm	98
Yttrium	Y	10 ppm	48
Zirconium	Zr	10 ppm	99
Mercury	Hg	.01 ppm	100

Elements looked for but not used in the statistical study because of insufficient numerical values:

Silver (spec)	Ag		1
Tin	Sn		0.3
Zinc	Zn		2
Arsenic	As		0
Gold (spec)	Au		0
Bismuth	Bi		0
Cadmium	Cd		0
*Molybdenum	Mo	(93% = N values)	6
Tungsten	W		0
Antimony	Sb		0

*Niobium was used because 49% of the samples contained detectable amounts below the lower reporting limit. Molybdenum was not used because 93% of the samples contain no detectable amount.

time of analysis according to G. H. Van Sickle (written and oral commun., 1968). Copper (Cu²) values were included in the tables, but were not used in the statistical analysis because it seemed more reasonable to correlate only copper (Cu) values determined by spectrographic methods with other spectrographic values from the same sample. Mercury (Hg²) values determined by atomic absorption were used in the statistical analysis. Uranium values were omitted for reasons explained on p. 10.

To utilize as many of the data as possible, values for the selected variables which fell below the lower reporting limit were arbitrarily assigned a low real value. Arbitrary values were selected according to schemes used in previous reports (Cadigan, 1972; Cadigan and Robinson, 1982). For example, 10L (ppm) may be replaced by 2 and 10N may be replaced by 0.5 in a typical case. The use of arbitrary values in place of qualified ("less than" or "none detected") values is based on the assumption that values below the lower reporting limits can be estimated for statistical testing purposes (Cohen, 1961; Miesch, 1967). Similarly, G qualified ("greater than the upper reporting limit") values were also replaced by arbitrary values, usually twice the upper reporting limit, for example, 10G (percent) values for calcium are replaced by the value 20.

Distributions of all variables to be used in the statistical analyses were tested for normality. Values for those distributions which approached log normal were transformed to natural logarithms. The resulting matrix of normalized values with qualified values replaced is identified for this report as the statistical data matrix, a modification of the basic data matrix in the appendix.

Correlation analysis

All possible pairs of variables in the statistical data matrix were correlated. Correlation coefficients were examined for high redundancy. Redundancy is the degree to which any two variables may appear to be measuring the same property. For example, the two particle-size distribution parameters phi mean particle size and phi median size had a coefficient of correlation, r , of 0.98 which for 827 pairs represents almost perfect (1.0) correlation or complete redundancy.

Before a useful factor analysis of the statistical data matrix could be done, all such extremely high correlated pairs had to be recognized and only one variable selected for use in the factor analysis. The result was that of the 12 particle-size distribution parameters available, only two were found to be sufficiently independent to be used in factor analysis. These two are the phi mean and phi kurtosis. The phi kurtosis parameter appears to be the most independent measure of sorting.

The purpose of variable selection based on eliminating high redundancy is to limit the effects of such redundancy on the results of the factor analysis. Manganese showed high correlation with calcium, an r of 0.73 for 631 pairs. Factor analyses were run both with and without manganese. The results were essentially the same, so manganese was retained for factor analysis. On the other hand, obviously interdependent variables such as

percent calcium, and percent acid soluble minerals could not both be retained when they showed high correlations, in this instance $\underline{r} = 0.80$, for 580 pairs.

Of the 67 variables in the basic data matrix (appendix), 44 were used for factor analysis. The 18 omitted showed excess redundancy, dependency, or were miscellaneous parameters such as location numbers and unit numbers. Incidentally, latitude and longitude were retained inasmuch as they are independent variables.

Another problem that had to be considered was the fact that the numbers of pairs of variables were different because, for example, 130 of the samples had petrographic modal composition data, 631 of the samples had geochemical data, 827 of the samples had particle-size distribution data, and so forth. Correlation coefficients computed for 130 pairs and for 827 pairs have much different levels of significance. A coefficient of $\underline{r} = 0.226$ for 130 pairs is only about as significant as a coefficient of $\underline{r} = 0.090$ for 827 pairs. The correlation coefficient matrix which constitutes the input to R-mode factor analyses must consist of correlation coefficients with the same basis of significance.

This problem was overcome by using standardized or \underline{z} coefficients (Fisher, 1948). From the example above, an \underline{r} value of 0.226 for 130 pairs transforms to a \underline{z} value of 2.59; an \underline{r} value of 0.090 for 827 pairs transforms to a \underline{z} value of 2.59. The \underline{z} coefficients have the same basis of significance.

The correlation coefficient matrix for the 44 selected variables was, therefore, transformed from \underline{r} coefficients to \underline{z} coefficients and used as input for R-mode factor analysis. The formula used for conversion of \underline{r} to \underline{z}

coefficients is: $\underline{z} = \frac{\sqrt{n-3}}{2} \ln \frac{(1 + \underline{r})}{(1 - \underline{r})}$ in which n is the number of pairs, \underline{r}

is the computed correlation coefficient and \ln is an abbreviation for the natural logarithm.

Factor analysis

R-mode factor analysis resulted in a 6-factor matrix with reasonably explainable factors followed by a 7-factor matrix with a single-element factor, a conventional indication that the 6-factor matrix is a logical limit to the analysis. The six factors account for 60 percent of the variance in the correlation coefficient matrix.

Table 4 is taken from the reordered oblique projection matrix for six factors and shows the interpreted factor identifications and groups of variables affected by the factors. Primary components are those variables which are chiefly affected by individual factors. Secondary components are those which are primary components under one factor, but are also significantly affected by one or more other factors. Negative signs indicate that a variable is affected negatively.

Table 4.--Major factors affecting the variance of 44 parameters from the appendix in Morrison Formation rocks in the Colorado Plateau region. Based on R-mode factor analysis and the reordered oblique projection matrix for six factors. Asterisks indicate primary components. Parentheses indicate secondary components.

Factor 1 Metalliferous mudstones	Factor 2 Interstitial carbonate cements	Factor 3 Siliceous & feldspathic sources	Factor 4 Heavy mineral source	Factor 5 Vanadium mineralization	Factor 6 Sedimentation trend
*Sc	*Ca	*SIL-LSFR	*HM-PCT	*V	*THKNESS
*La	*Mn	*CHERT-FR	*Ba	*Co	*LAT
*Y	*CEMENTS	*SIL-RF	*KAOL	*Ni	
*Fe	*Sr	*CHERT-AU	*FE-OX	*Cu	
*PHI MEAN				*Hg2	
*Be		*-K-SPAR		*Pb	*-PHI KURT
*Ti		*-Na-SPAR			*-Zr
*Cr		*-ILLITE		(Cr)	*-LONG
*Mg		*-HV-MIN		(Mq)	*-B
*Nb		*-MISC-OP		(B)	*-TUFF-FR
*-QTZ-GR		*-MICA		(MISC-OP)	*-QTZ-RF
				(HV-MIN)	
(Sr)	(LAT)	(LAT)	(Ti)		(Hg2)
(Ni)		(LONG)	(Sr)		(PHI MEAN)
(Cu)					
(Co)		(-PHI MEAN)	(-LONG)	(-KAOL)	(-Ti)
(Pb)					(-Y)
(Zr)					(-K-SPAR)
(-PHI KURT)	(-B)				(-PB)

Selection of primary and secondary components is partly objective and partly subjective. The loadings for each variable determine objectively which factor is the variable's control. Thus for B (boron) in table 5, the highest loading occurs under Factor 1. For LAT (latitude), the highest loading is under Factor 3. B and LAT are primary factors under Factors 1 and 3, respectively. To obtain additional information it was decided arbitrarily that all loadings of ± 0.300 or greater would be considered significant. On this assumption B has 3 significant loadings which are located under Factors 1, 2, and 6 in order of their size. So B is a primary component under Factor 1 and a secondary component under Factors 2 and 5. LAT is a primary component under Factor 3, and a secondary component under Factors 6 and 2. To interpret the distribution of the loadings one would suggest that B is most strongly affected by Factor 1, but is also significantly affected by Factors 2 and 5. In similar fashion, LAT is most strongly affected by Factor 3, but is also significantly affected by Factors 6 and 2.

Interpretation of the nature of a particular factor is determined by which variables are primary and secondary components under the factor. The name applied to a factor is interpretive and may or may not do a good job of defining the factor. For this reason the name applied to the factor should be considered more a convenient label than a precise identification.

Factor 1, the most important factor, is interpreted to be a textural factor, labeled "metalliferous mudstones" because it associates increasing concentrations of various metallic elements with finer particle sizes and poorer sorting. Increases in the phi mean indicate decreasing particle size; decreases in phi kurtosis indicate poorer sorting. Percentage of quartz grains is also negatively related to this factor. The factor is not related to latitude or longitude and therefore must be a geographically indigenous factor. Factor 1 accounts for 30 percent of the total variance. In previously published investigations (Rose and others, 1980) this factor may have been mistakenly interpreted as a mineralization factor.

Factor 2 is interpreted to be a chemically precipitated cement factor and is labeled "interstitial carbonate cements." Concentrations of calcium, manganese, and strontium are increasing under this factor as is the percent by volume of interstitial cement in the rocks. Increasing latitude is a secondary component under this factor which suggests a geographic trend to the north, that is, samples collected in the northern part of the region tend to contain more interstitial cement. Factor 2 accounts for 10 percent of the total variance.

Factor 3 is what might be called a compound factor. It is a source factor defined by two competitive sources. It is labeled as "siliceous and feldspathic sources." Positive components are the varieties of siliceous-rock and chert fragments associated with increasing latitude and longitude, suggesting a northwestern source. Negative components are percentages of detrital potassic and sodic feldspars, illitic, chloritic, and montmorillonitic clays, detrital heavy minerals and mica flakes and books. By negative association, a feldspar-mica source is implied to the southeast. Factor 3 accounts for 7 percent of the total variance.

Table 5.--Reordered varimax factor matrix with numerical loadings for six factors obtained by R-mode factor analysis of intercorrelation of 44 variables. Asterisks indicate primary component loadings; parentheses indicate secondary component loadings for each factor variables are define in the appendix.

Variables	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Communalities
Sc	*.970	-.022	-.046	-.015	-.106	.096	.97
La	*.930	-.141	-.026	-.014	-.203	.025	.93
Fe	*.922	-.014	-.184	.216	.083	-.042	.94
Be	*.879	-.138	-.104	-.052	-.039	.282	.89
Y	*.873	.129	.053	.139	-.180	-.269	.91
PHI MEAN	*.841	.086	-.214	.022	-.101	(.372)	.91
Cu	*.833	.094	.047	-.057	(.428)	.108	.90
Ni	*.811	.154	.084	-.066	(.382)	.101	.85
Ti	*.808	-.264	.218	.134	-.288	.93	
Cr	*.806	(.300)	.124	-.109	.267	-.076	.84
Co	*.780	.070	-.073	.112	(.423)	.164	.84
Mg	*.761	.227	-.181	.144	.252	.170	.78
Pb	*.719	-.093	.286	.179	(.330)	-.143	.77
B	*.526	(-.410)	.035	-.126	(.344)	-.225	.63
Zr	*.510	-.294	-.147	.161	.273	(-.344)	.59
Nb	*.504	(-.302)	-.011	-.071	.097	.130	.38
QTZ-GR	*-.380	-.131	-.216	.145	-.010	-.067	.23
PHI-KURT	*-.727	-.071	-.189	-.169	.057	(-.477)	.83
Ca	.021	*.946	.118	-.110	-.114	.011	.94
Mn	.099	*.889	.016	.049	-.153	-.159	.85
CEMENTS	-.055	*.680	.033	-.003	.136	.085	.49
Sr	(.610)	*.646	-.063	.213	-.194	.087	.88
MONT	.117	*-.225	.148	.183	-.160	-.038	.15
SIL-LSFR	-.076	.007	*.717	-.019	.102	-.100	.54
CHERT-FR	-.059	-.026	*.630	-.006	.001	-.055	.40
SIL-RF	-.091	.066	*.585	-.047	.101	-.197	.41
LAT	.145	(.414)	*.521	-.146	.138	(.457)	.71
CHERT-AU	-.018	.083	*.408	.122	.077	-.118	.21
MICA	.017	-.054	*-.289	.096	.155	-.117	.13
MISC-OP	.096	.057	*-.346	-.061	.275	-.061	.22
HV-MIN	.172	.050	*-.367	-.237	.193	-.040	.26
ILLITE	-.020	-.041	*-.457	.080	.037	-.081	.23
NA-SPAR	-.042	.189	*-.476	.235	.039	-.117	.34
K-SPAR	.003	.009	*-.481	-.140	.058	-.166	.28
HM PCT	.047	.113	-.135	*.820	.123	-.090	.73
Ba	.143	.014	.054	*.713	.214	-.156	.61
KAOL	-.071	-.277	-.035	*.334	-.184	-.191	.27
FE-OX	.069	-.071	.042	*.326	-.042	.080	.13
LONG	.033	.176	(.419)	*-.508	.046	(-.327)	.58
V	(.437)	-.024	-.084	.108	*.750	.101	.78
Hg	.052	-.270	.107	.071	*.448	.290	.38
THKNES	.045	.072	.054	.175	.008	*.608	.41
QZ-RF	-.051	.006	.099	.176	-.055	*-.299	.14
TUFF-FR	-.170	-.169	-.046	.132	-.096	*-.346	.21

Factor 4 is an interstitial mineral factor whose primary components are percent heavy minerals by weight, barium, and percentages of interstitial kaolinite and iron oxides. Factor 4 accounts for 5 percent of the total variance.

Factor 5 is a mineralization factor. It is labeled "vanadium mineralization." Primary components are vanadium, cobalt, nickel, copper, mercury and lead. Although it accounts for only 4 percent of the variance in the samples used in the analysis, keep in mind that most of the collected samples are from barren rocks or from nonmineralized strata in the vicinity of uranium-vanadium-ore-bearing rocks. Secondary components are chromium, magnesium, boron, and percentages of miscellaneous interstitial opaque material and heavy minerals (by volume). Percent interstitial kaolinite is a secondary negative component. The competition for interstitial space between vanadium-uranium ore and kaolinite has often been observed in thin sections of ore-bearing sandstone by the author.

Factor 6 is identified as related to texture and thickness of stratigraphic units at the sample localities. It is labeled as a "mudstone sampling bias" factor. Primary components are member thicknesses, increasing latitude and decreasing longitude (a geographically northeastern factor), decreasing sorting and decreasing particle-size, decreasing amounts of zirconium, boron, tuff fragments quartzite fragments, potassic feldspar, titanium, yttrium, and lead, and increasing amounts of mercury. Factor 6 is apparently a reflection of sampling bias. It reflects the effects of the relatively larger numbers of mudstone samples collected from the thicker Salt Wash and Brushy Basin Members in southwestern and western Colorado and eastern Utah. Fewer mudstone samples were collected from the thinner units in northeastern Arizona and northwestern and northern New Mexico. Factor 6 accounts for an additional 4 percent of the variance.

Table 5 is the reordered varimax factor matrix of the six factors determined in the factor analysis study. Table 5 also contains a list of the communalities of the variables used in the study. Table 4, the oblique projection matrix was derived from the varimax factor matrix, which shows the numerical loadings for each variable for each factor.

The communalities show the proportion of the variance accounted for by six factors for each variable. For example the communality for "PHI MEAN" is 0.91. This indicates that six factors account for 91 percent of the variance of the phi mean particle size present in the input correlation matrix. The communalities are the sums of the squares of the loadings of each variable. The individual loadings are an indication of the intensity of the relationship of a particular variable to a particular factor. In the description of secondary components (p. 23) it has been suggested that a variable may be highly influenced by two factors. This is especially true of certain metals which tend to be concentrated in mudstones (factor 1), but which are also strongly affected by the intensity of mineralization (factor 5). More will be written about this problem in the following section.

Factor scores

The variable loadings can be used to compute factor scores for each sample, so that each sample can be scored in terms of the effect of each factor on it. The method of Steiner (1965) for computing factor scores is recommended. Only loadings of primary and secondary components for the respective factors are used.

To do a rapid computation of factor scores for the mineralization factors, the individual sample values for the primary and secondary components may be divided by the maximum value, to obtain standardized values, and the resulting standardized values multiplied by the factor loadings. Table 6 is an example of rapid factor score computation. Arbitrary values are substituted for qualified values listed in the appendix and raw data are used. In table 6, the first column contains the symbols for the primary and secondary mineralization components, which happen to be all metallic elements. The second column contains the factor 5 loadings for the components, taken from table 5. The third column contains the maximum value for each component in the 631 samples for which data are available. The fourth column contains the values of the components in sample L233. Raw data are used except that arbitrary values are substituted for "L"-qualified data, in this instance the arbitrary values are one fifth of the lower reporting limit, 10L (ppm), for example, would be replaced by a value of 2. The fifth column consists of standardized values obtained by dividing column-four values by column-three values. The sixth column contains scores obtained by multiplying loadings (column two) times standard values (column five). The sum of the variable scores is the factor score for the sample. The total of column six, 0.122, has been multiplied by ten simply to yield a number which is not a decimal, 1.22.

Figure 4 shows parts of three ore rolls in the Dinosaur Group of mines at Slick Rock, Colorado, locality 184 in table 2. Rock in and adjacent to the dark-gray vanadium-uranium ore bands was sampled and the samples were numbered L233 to L238 and L262 to L266. Analytical data for these samples is listed in the appendix. Factor scores were computed using the component loadings for factor 5 as in table 6. The magnitude of the scores indicates the relative intensity of mineralization represented by the individual samples. Sample L266 which has the highest score contains 10,000 ppm vanadium, 0.75 ppm mercury 15 ppm copper, 50 ppm cobalt, 15 ppm nickel, 4 ppm boron, 15 ppm lead and 2000 ppm uranium (determined spectrographically).

Steiner (1965) recommends that the data used in computing factor scores be standardized using the formal standardization formula:

$$\text{standard score} = \frac{\bar{x} - x}{s}$$

\bar{x} is the mean for the variable, x is the value being standardized, and s is the standard deviation for the variable. The purpose of standardization is to reduce all values to the same scale. Note that in table 6, column 5, the maximum value possible for each component is 1.0, the maximum variable value divided by itself.

Table 6.--Method of calculating the mineralization factor (5) score for an individual sample (L233) using factor loadings from table 5.

Variable	Factor loadings	Maximum value ppm	Sample (L233) value	Standardized sample value	Factor score
V	0.750	20000	1000	0.05	0.04
Hg	.448	4.8	0.15	.03	.01
Cu	.428	200	7.	.04	.02
Co	.423	70	2. *	.03	.013
Ni	.382	50	1.	.02	.008
B	.344	100	4. *	.04	.014
Pb	.330	300	15	.05	.017
Sample factor score for mineralization					.122
Total x 10 =					1.22

*Arbitrary values substituted for "L" qualified values in the appendix.

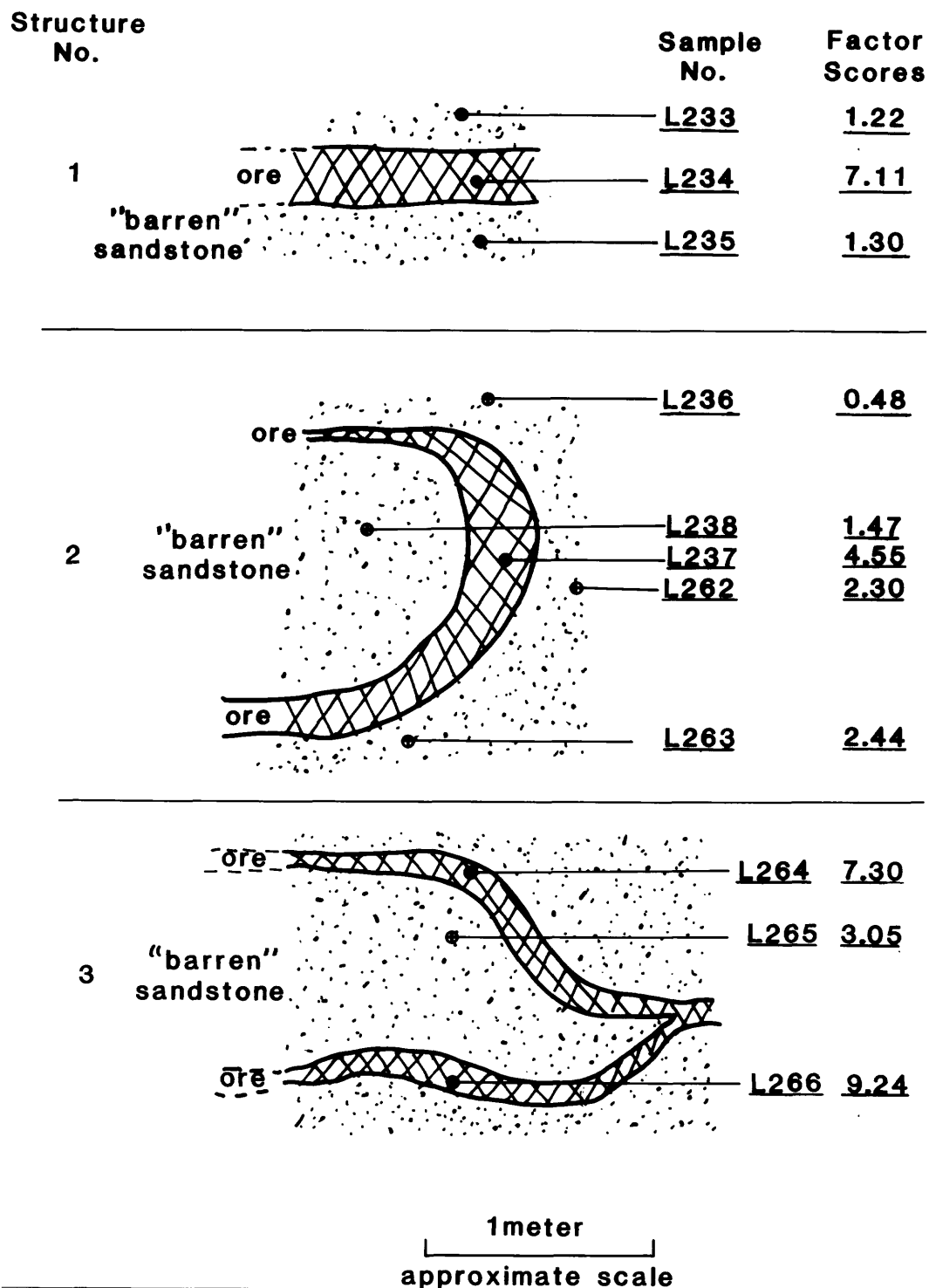


Figure 4.--Sketch of three vanadium-uranium ore roll structures, sample localities and numbers, and computed mineralization factor scores. Location: Dinosaur Group, Slick Rock, Colorado (locality No. 184).

Factor scores may be computed for any and all factors and all samples when it is desired to observe the variation in intensity of effects of specific factors in specific locations or samples. Thus, for example, the effects of the two sources suggested by factor 3 could be studied by computing factor 3 factor scores for all samples and plotting the scores on a map. High positive scores would identify samples affected mostly by the northwestern siliceous-rock source and high negative scores would identify samples affected mostly by the feldspar source.

Conclusions

Statistical analysis of combined textural, geochemical, petrographic and location data from unequal numbers of samples yielded evidence of the effects of five major geologic factors on the composition and texture of the Morrison Formation rocks sampled. A sixth factor suggests effects of sampling bias. The factors in order of importance are: (1) the occurrence of metal-adsorbing or metal-rich mudstones; (2) the deposition of interstitial carbonate cements; (3) the effects of two major terrane sources which supplied siliceous components from the northwest and feldspathic components from the southeast; (4) the less well defined effects of a source of heavy minerals probably from the southeast; (5) the effects of a vanadium-mineralizing process; and (6) the effects of a regional and stratigraphic bias in the sampling of mudstones.

Of major importance to the work of the study is the emergence of a vanadium mineralization factor. This factor has tended to be obscured by factor 1, the mudstones in the formation that tend to carry more metallic elements and heavy minerals than the coarser better sorted rocks. Although no uranium values were used in this study, uranium-vanadium ores are the most common source of uranium in the Morrison Formation in the Colorado Plateau region. On this basis, the mineralization factor, factor 5 may be used to determine the relative intensity of uranium-vanadium mineralization in any outcrop or drill-core samples of Morrison Formation. The intensity of mineralization is measured by computed factor scores.

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Appendix
Harrison Formation basic data

Variables measured and their coded abbreviations used as column headings are shown below:

UNIT--stratigraphic unit	RA PPM--ppm barite
Formation members--coded: Salt Wash, 413010; Brushy Basin, 413040; Recapture, 413020; Westwater Canyon, 41330	RE PPM--ppm beryllium
LAT--geographic latitude	CO PPM--ppm colchalc
LONG--geographic longitude	CR PPM--ppm chromium
LOCNO--location number	CU PPM--ppm copper
(Petrographic modal analysis)	LA PPM--ppm lanthanum
	NB PPM--ppm niobium
	NI PPM--ppm nickel
	PB PPM--ppm lead
	SC PPM--ppm scandium
	SR PPM--ppm strontium
	V PPM--ppm vanadium
	Y PPM--ppm yttrium
	ZN PPM--ppm zinc
	ZR PPM--ppm zirconium
	*HG2 PPM--ppm mercury
	*CU2 PPM--ppm copper
	(Textural parameters--grain-size analysis)
(1) CEMENTS--interstitial carbonate and sulfate cements	PHI MEAN--logarithmic (phi scale) mean particle size
(2) FE-ox --interstitial iron oxides	MODE MM--modal particle size in millimeters
(3) QZ-GR --quartz grains and overgrowths	PHI MED--median particle size in phi units
(4) QZ-RF --quartzite fragments	PHI SD--standard deviation of the phi particle-size distribution
(5) CHERT-FR--chert fragments	PHI SKCN--skewness of the phi particle-size distribution
(6) CHERT-AU--authigenic chert	PHI KIUR--kurtosis of the phi particle-size distribution
(7) SIL-RF--silicified-rock fragments	2PHI PT--two-percentile value of the phi particle-size distribution
(8) SIL-LSFR--silicified limestone fragments	5 PHI PT--five-percentile value
(9) K-SPAR--potassic feldspar	16 PHI PT--sixteen-percentile value
(10) NA-SPAR--sodic feldspar	84 PHI PT--eighty-four-percentile value
(11) KAOL--interstitial kaolinite	95 PHI PT--ninety-five-percentile value
(12) MICA--biotite and muscovite	98 PHI PT--ninety-eight-percentile value
(13) ILLITE--mica and chlorite clays and illite-montmorillonite mixed-layer clays	(Miscellaneous variables)
(14) MIC-RF--micaceous rock fragments	HM PCT--heavy mineral content percent by weight
(15) HV-MIN--heavy minerals	ACSO PCT--acid soluble mineral content percent by weight
(16) MISC-OP--miscellaneous opaque grains	THKNSS--stratigraphic unit thickness at sample locality
(17) TUFF-FR--tuff fragments (altered)	
(18) MONT--montmorillonite clays	
(19) ASH--volcanic ash (altered)	
CCM-TOT--total cements (1) and (2)	
SIL-TOT--total siliceous components (3) through (8)	
FELD-TOT--total feldspathic components (9) through (11)	
MICA-TOT--total micaceous rock components (12) through (16)	
TUFF-TOT--total volcanic components (17) through (19)	
(Texture code)	
TEXTURE--sandstone, 1; siltstone, 2; claystone, 3; limestone, etc., 4.	
(Geochemical components)	
FE PCT--percent iron	
MG PCT--percent magnesium	
CA PCT--percent calcium	
TI PCT--percent titanium	
MN PPM--parts per million (ppm) manganese	
B PPM--ppm boron	
(Qualifiers)	

The letters L, G, M, and B appended to numeric or zero values in the table designate qualified values and indicate respectively, "less than the lower reporting limit," "greater than the upper reporting limit," "none detected," and "not looked for."

*Arbitrary code symbols for Hg and Cu values determined by atomic absorption. Cu was also determined spectrochemically.

Appendix--continued
morrisson formation basic data

SAMPLE	UNIT	LAT	LONG	LOCNO	CEMENTS	FE-OX	QTZ-GR	OZ-RF	CHERT-FR	CHERT-AU
L 1	413010.	38.29	108.85	182.	.00B	.00B	.00B	.00B	.00B	.00B
L 2	413010.	38.29	108.85	182.	.00B	.00B	.00B	.00B	.00B	.00B
L 3	413010.	38.29	108.85	182.	.00B	.00B	.00B	.00B	.00B	.00B
L 4	413010.	38.29	108.85	182.	.00B	.00B	.00B	.00B	.00B	.00B
L 5	413010.	38.29	108.85	182.	.00B	.00B	.00B	.00B	.00B	.00B
L 6	413010.	38.29	108.85	182.	.00B	.00B	.00B	.00B	.00B	.00B
L 7	413010.	38.29	108.85	182.	.00B	.00B	.00B	.00B	.00B	.00B
L 8	413010.	38.29	108.85	182.	.00B	.00B	.00B	.00B	.00B	.00B
L 9	413010.	38.29	108.85	182.	.00B	.00B	.00B	.00B	.00B	.00B
L 10	413010.	38.29	108.85	182.	.00B	.00B	.00B	.00B	.00B	.00B
L 11	413010.	38.29	108.85	182.	.00B	.00B	.00B	.00B	.00B	.00B
L 12	413010.	38.29	108.85	182.	.00B	.00B	.00B	.00B	.00B	.00B
L 13	413010.	38.29	108.85	182.	.00B	.00B	.00B	.00B	.00B	.00B
L 14	413010.	38.41	108.74	56.	.00B	.00B	.00B	.00B	.00B	.00B
L 15	413010.	38.41	108.74	56.	.00B	.00B	.00B	.00B	.00B	.00B
L 16	413010.	38.41	108.74	56.	.00B	.00B	.00B	.00B	.00B	.00B
L 17	413010.	38.41	108.74	56.	.00B	.00B	.00B	.00B	.00B	.00B
L 18	413010.	38.41	108.74	56.	.00B	.00B	.00B	.00B	.00B	.00B
L 19	413010.	38.41	108.74	56.	.00B	.00B	.00B	.00B	.00B	.00B
L 20	413010.	38.41	108.47	56.	.00B	.00B	.00B	.00B	.00B	.00B
L 21	413010.	38.39	108.47	201.	.00B	.00B	.00B	.00B	.00B	.00B
L 22	413010.	38.39	108.47	201.	.00B	.00B	.00B	.00B	.00B	.00B
L 23	413010.	38.39	108.47	201.	.00B	.00B	.00B	.00B	.00B	.00B
L 24	413010.	38.68	108.89	184.	.00B	.00B	.00B	.00B	.00B	.00B
L 25	413010.	38.68	108.89	184.	.00B	.00B	.00B	.00B	.00B	.00B
L 26	413010.	38.68	108.89	184.	.00B	.00B	.00B	.00B	.00B	.00B
L 27	413010.	38.68	108.89	184.	.00B	.00B	.00B	.00B	.00B	.00B
L 28	413010.	38.68	108.89	184.	.00B	.00B	.00B	.00B	.00B	.00B
L 31	413010.	38.61	108.75	93.	1.60	.20	74.40	.00N	.80	.20
L 32	413010.	38.61	108.75	93.	.00B	.00B	.00B	.00B	.00B	.00B
L 33	413010.	38.61	108.75	93.	.00B	.00B	.00B	.00B	.00B	.00B
L 34	413010.	38.35	109.07	105.	.00B	.00B	.00B	.00B	.00B	.00B
L 35	413010.	38.35	109.07	105.	.00B	.00B	.00B	.00B	.00B	.00B
L 36	413010.	38.35	109.07	105.	8.80	.20	76.60	.00N	.40	.00N
L 37	413010.	38.35	109.07	105.	.00B	.00B	.00B	.00B	.00B	.00B
L 38	413010.	38.35	109.07	105.	.00B	.00B	.00B	.00B	.00B	.00B
L 39	413010.	38.35	109.07	105.	.00B	.00B	.00B	.00B	.00B	.00B
L 40	413010.	38.35	109.07	105.	7.80	.40	76.60	.00N	1.00	.00B
L 41	413010.	38.05	108.89	184.	.00B	.00B	.00B	.00B	.00B	.00B
L 43	413010.	38.05	108.89	184.	.00B	.00B	.00B	.00B	.00B	.00B
L 45	413010.	38.58	109.00	78.	.00B	.00B	.00B	.00B	.00B	.00B
L 46	413010.	38.58	109.00	78.	.00B	.00B	.00B	.00B	.00B	.00B

morrison formation basic data-continued

SAMPLE	SIL-RF	SIL-LSFR	K-SPAR	NA-SPAR	KAOL	MICA	ILLITE	MIC-RF	HV-MIN	MISC-OP
L 1	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 2	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 3	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 4	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 5	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 6	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 7	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 8	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 9	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 10	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 11	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 12	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 13	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 14	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 15	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 16	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 17	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 18	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 19	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 20	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 21	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 22	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 23	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 24	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 25	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 26	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 27	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 28	.40	.40	10.20	1.40	2.60	.00N	1.40	.00N	.00N	.20
L 31	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 32	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 33	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 34	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 35	.00N	.00N	.80	.80	.00N	.00N	1.60	.00N	.00N	.80
L 36	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 37	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 38	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 39	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 40	.00N	.00N	6.80	2.40	.00N	.00N	.80	.00N	.00N	.40
L 41	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 43	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 45	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 46	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B

morrison formation basic data-continued

SAMPLE	TUFF-FR	MONT	ASH	CEM-TOT	SIL-TOT	FELD-TOT	MICA-TOT	TUFF-TOT	TEXTURE	FE	PCT
L 1	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00	.00B	.00B
L 2	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00	.00B	.00B
L 3	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00	.00B	.00B
L 4	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00	.00B	.00B
L 5	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00	.00B	.00B
L 6	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00	.00B	.00B
L 7	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00	.00B	.00B
L 8	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00	.00B	.00B
L 9	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00	.00B	.00B
L 10	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00	.00B	.00B
L 11	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00	.00B	.00B
L 12	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00	.00B	.00B
L 13	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00	.00B	.00B
L 14	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00	.00B	.00B
L 15	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00	.00B	.00B
L 16	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00	.00B	.00B
L 17	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00	.00B	.00B
L 18	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00	.00B	.00B
L 19	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00	.00B	.00B
L 20	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00	.00B	.00B
L 21	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00	.00B	.00B
L 22	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00	.00B	.00B
L 23	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00	.00B	.00B
L 24	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00	.00B	.00B
L 25	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00	.00B	.00B
L 26	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00	.00B	.00B
L 27	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00	.00B	.00B
L 28	1.60	4.60	.00N	1.80	76.20	14.20	1.60	6.20	1.00	.15	.15
L 31	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00	.30	.30
L 32	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00	.50	.50
L 33	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00	.00B	.00B
L 34	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00	.00B	.00B
L 35	3.80	.40	.00N	9.00	77.00	7.40	2.40	4.20	1.00	.20	.20
L 36	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00	.00B	.00B
L 37	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00	.15	.15
L 38	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00	.00B	.00B
L 39	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00	.00B	.00B
L 40	3.20	.60	.00N	8.20	77.60	9.20	1.20	3.80	1.00	.30	.30
L 41	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00	.00B	.00B
L 43	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00	.00B	.00B
L 45	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00	.20	.20
L 46	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00	.15	.15

morrison formation basic data-continued

SAMPLE	MG	PCT	CA	T1	PCT	MN	B	PPM	BA	PPM	BE	PPM	CO	PPM	CR	PPM	CU	PPM
L 1		.00B			.00B			.00B		.00B		.00B		.00B		.00B		.00B
L 2		.00B			.00B			.00B		.00B		.00B		.00B		.00B		.00B
L 3		.00B			.00B			.00B		.00B		.00B		.00B		.00B		.00B
L 4		.00B			.00B			.00B		.00B		.00B		.00B		.00B		.00B
L 5		.00B			.00B			.00B		.00B		.00B		.00B		.00B		.00B
L 6		.00B			.00B			.00B		.00B		.00B		.00B		.00B		.00B
L 7		.00B			.00B			.00B		.00B		.00B		.00B		.00B		.00B
L 8		.00B			.00B			.00B		.00B		.00B		.00B		.00B		.00B
L 9		.00B			.00B			.00B		.00B		.00B		.00B		.00B		.00B
L 10		.00B			.00B			.00B		.00B		.00B		.00B		.00B		.00B
L 11		.00B			.00B			.00B		.00B		.00B		.00B		.00B		.00B
L 12		.00B			.00B			.00B		.00B		.00B		.00B		.00B		.00B
L 13		.00B			.00B			.00B		.00B		.00B		.00B		.00B		.00B
L 14		.00B			.00B			.00B		.00B		.00B		.00B		.00B		.00B
L 15		.00B			.00B			.00B		.00B		.00B		.00B		.00B		.00B
L 16		.00B			.00B			.00B		.00B		.00B		.00B		.00B		.00B
L 17		.00B			.00B			.00B		.00B		.00B		.00B		.00B		.00B
L 18		.00B			.00B			.00B		.00B		.00B		.00B		.00B		.00B
L 19		.00B			.00B			.00B		.00B		.00B		.00B		.00B		.00B
L 20		.00B			.00B			.00B		.00B		.00B		.00B		.00B		.00B
L 21	1.00		5.00	.05	.00B	200.00	20.00L	.00B	100.00	.00B		.00B		.00B		.00B		.00B
L 22	1.00		1.50	.05	.00B	150.00	20.00L	.00B	150.00	.00B		.00B	3.00	.00B	5.00	7.00		.00B
L 23	.05		.05	.07	.00B	5.00	20.00	.00B	50.00	.00B		.00B	.00N	.00B	5.00	7.00		.00B
L 24	.00B		.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B		.00B	.00N	.00B	2.00	3.00		.00B
L 25	.00B		.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B		.00B	.00B	.00B	.00B	.00B		.00B
L 26	.00B		.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B		.00B	.00B	.00B	.00B	.00B		.00B
L 27	.00B		.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B		.00B	.00B	.00B	.00B	.00B		.00B
L 28	.50		.50	.07	.00B	70.00	20.00	.00B	200.00	.00B		.00B	.00B	.00B	.00B	.00B		.00B
L 31	1.00		1.50	.05	.00B	100.00	20.00L	.00B	200.00	.00B		.00B	.00N	.00B	3.00	5.00		.00B
L 32	1.00		2.00	.07	.00B	150.00	30.00	.00B	150.00	.00B		.00B	.00N	.00B	3.00	5.00		.00B
L 33	.00B		.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B		.00B	3.00	.00B	20.00	7.00		.00B
L 34	.00B		.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B		.00B	.00B	.00B	.00B	.00B		.00B
L 35	.70		2.00	.03	.00B	150.00	20.00	.00B	200.00	.00B		.00B	.00B	.00B	3.00	10.00		.00B
L 36	.00B		.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B		.00B	.00B	.00B	.00B	.00B		.00B
L 37	.50		10.00	.03	.00B	500.00	10.00	.00B	200.00	.00B		.00B	3.00	.00B	5.00	10.00		.00B
L 38	.00B		.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B		.00B	.00B	.00B	.00B	.00B		.00B
L 39	.00B		.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B		.00B	.00B	.00B	.00B	.00B		.00B
L 40	.10		5.00	.07	.00B	150.00	30.00	.00B	200.00	.00B		.00B	.00B	.00B	7.00	7.00		.00B
L 41	.00B		.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B		.00B	.00B	.00B	.00B	.00B		.00B
L 43	.00B		.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B		.00B	.00B	.00B	.00B	.00B		.00B
L 45	1.50		1.00	.05	.00B	100.00	20.00	.00B	200.00	.00B		.00B	.00N	.00B	3.00	7.00		.00B
L 46	.70		.50	.02	.00B	50.00	20.00	.00B	200.00	.00B		.00B	.00N	.00B	3.00	7.00		.00B

morrison formation basic data-continued

SAMPLE	HQ2	PPM	CU2	PPM	PHI	MEAN	MODE	MM	PHI	SD	PHI	SKEW	PHI	KURT	2PHI	PT	SPHI	PT
L 1	.008			.008	2.70	.177			1.34			1.43		1.04		1.45	1.65	
L 2	.008			.008	2.12	.170			.59			.21		.01		1.20	1.36	
L 3	.008			.008	1.52	.330			.56			.74		.69		.64		
L 4	.008			.008	3.13	.129			.60			.23		.04		2.13	2.32	
L 5	.008			.008	2.39	.210			.66			.63		.65		1.64	1.73	
L 6	.008			.008	1.71	.354			.68			.29		.19		.65	.85	
L 7	.008			.008	1.65	.330			.75			1.08		.72		.84	.92	
L 8	.008			.008	2.99	.113			.62			.34		.18		2.06	2.18	
L 9	.008			.008	2.17	.210			.65			.60		.42		1.30	1.40	
L 10	.008			.008	2.01	.250			.62			.41		.08		1.15	1.30	
L 11	.008			.008	1.86	.297			.75			1.11		.69		.84	1.10	
L 12	.008			.008	2.54	.125			.63			.17		.07		1.54	1.74	
L 13	.008			.008	1.81	.297			.63			.86		.40		1.01	1.23	
L 14	.008			.008	2.72	.145			.63			.38		.12		1.70	1.90	
L 15	.008			.008	2.69	.155			.58			.39		.16		1.75	1.93	
L 16	.008			.008	2.61	.150			.42			.83		.60		1.98	2.14	
L 17	.008			.008	3.17	.121			.70			.47		.17		2.32	2.48	
L 18	.008			.008	2.31	.166			.63			.27		.17		1.30	1.44	
L 19	.008			.008	3.59	.092			.74			.44		.18		2.70	2.82	
L 20	.008			.008	2.47	.166			.53			.50		.46		1.80	1.90	
L 21	.78		20.00	.008	3.72	.106			1.68			1.30		.70		2.20	2.40	
L 22	.38		10.00	.008	3.43	.089			1.11			1.53		1.20		2.30	2.50	
L 23	.33		10.00	.008	2.94	.178			1.31			1.43		.90		1.80	1.93	
L 24	.008		.008	.008	1.80	.297			.66			.73		.35		.90	1.07	
L 25	.008		.008	.008	3.01	.148			.75			.63		.27		2.00	2.22	
L 26	.008		.008	.008	2.94	.125			.72			.64		.34		1.90	2.15	
L 27	.008		.008	.008	2.57	.126			.67			.42		.17		1.75	1.85	
L 28	.02		10.00L	.008	2.45	.190			.88			.59		.31		1.10	1.37	
L 31	.29		10.00	.008	3.06	.126			1.18			1.82		1.53		2.10	2.25	
L 32	.27		10.00L	.008	3.57	.089			1.29			1.81		1.53		2.35	2.57	
L 33	.008		.008	.008	3.25	.089			1.11			1.66		1.53		1.90	2.15	
L 34	.008		.008	.008	2.68	.157			.56			.37		.16		1.80	1.95	
L 35	.33		20.00	.008	2.70	.148			.57			.49		.23		1.85	2.00	
L 36	.008		.008	.008	2.61	.169			.51			.53		.35		1.79	1.95	
L 37	.32		10.00L	.008	3.06	.090			.59			.23		.07		2.25	2.44	
L 38	.008		.008	.008	2.24	.250			.72			.38		.07		1.27	1.38	
L 39	.008		.008	.008	2.70	.149			.50			.78		.31		2.00	2.10	
L 40	.33		10.00L	.008	2.79	.137			.57			.37		.04		2.07	2.22	
L 41	.008		.008	.008	1.84	.297			.65			1.02		.47		1.12	1.25	
L 43	.008		.008	.008	1.80	.297			.59			1.03		.51		1.15	1.25	
L 45	.62		15.00	.008	2.66	.210			1.34			1.65		1.35		1.45	1.60	
L 46	.70		10.00	.008	2.51	.143			.70			2.25		2.78		1.70	1.85	

morrison formation basic data-continued

SAMPLE	16PHI PT	84PHI PT	95PHI PT	98PHI PT	HM	PCT	ACSO PCT	THKNSS
L 1	1.90	3.20	5.00	8.00		.80	19.0	374.1
L 2	1.62	2.53	2.99	3.38		.008	1.2	374.1
L 3	1.09	1.85	2.36	3.12		.4		374.1
L 4	2.63	3.68	4.01	6.06		.008	.6	374.1
L 5	1.90	2.81	3.72	4.06		.008	.08	374.1
L 6	1.10	2.34	2.74	3.25		.008	.6	374.1
L 7	1.12	1.92	3.32	4.32		.008	.8	374.1
L 8	2.53	3.40	4.08	5.06		.008	.0	374.1
L 9	1.62	2.54	3.00	3.76		.008	.0	374.1
L 10	1.60	2.53	2.94	3.38		.008	.0	374.1
L 11	1.32	2.00	3.57	4.38		.008	.0	374.1
L 12	2.00	3.06	3.51	3.90		.008	.2	374.1
L 13	1.31	2.28	2.91	3.76		.008	.0	374.1
L 14	2.27	3.18	3.90	4.50		.14	7.1	334.9
L 15	2.22	3.15	3.70	4.25		1.53	6.5	334.9
L 16	2.35	2.93	3.50	4.00		.45	16.3	334.9
L 17	2.70	3.57	4.43	4.90		.56	19.7	334.9
L 18	1.75	2.80	3.30	3.90		.97	7.9	334.9
L 19	3.00	4.25	4.95	5.50		.05	10.4	334.9
L 20	2.03	2.70	3.25	4.25		1.30	14.5	334.9
L 21	2.70	4.16	8.00	10.00		.36	24.7	364.0
L 22	2.80	3.66	5.60	7.75		1.43	9.9	364.0
L 23	2.15	3.40	6.00	8.00		.09	2.2	364.0
L 24	1.35	2.28	3.00	3.75		.10	7.1	331.5
L 25	2.50	3.52	4.43	4.95		.18	3.4	331.5
L 26	2.62	3.33	4.09	4.75		.32	7.2	331.5
L 27	2.02	3.04	3.90	4.70		.80	5.9	331.5
L 28	1.82	3.05	4.15	5.00		.99	3.3	331.5
L 31	2.45	3.35	4.50	8.00		.35	11.4	328.4
L 32	2.87	3.82	5.50	9.00		.61	13.5	328.4
L 33	2.55	3.63	4.10	8.00		.92	10.2	328.4
L 34	2.22	3.10	3.50	4.10		.45	11.8	363.7
L 35	2.30	3.12	3.72	4.50		.71	7.9	363.7
L 36	2.17	2.96	3.44	4.00		.57	9.9	363.7
L 37	2.68	3.44	3.95	4.50		.05	20.9	363.7
L 38	1.65	2.82	3.50	4.25		.86	5.0	363.7
L 39	2.33	3.08	3.56	4.25		.28	11.1	363.7
L 40	2.50	3.20	3.55	4.00		.24	11.8	363.7
L 41	1.40	2.25	3.00	4.00		.73	1.6	400.6
L 43	1.42	2.18	2.25	3.65		.30	3.3	400.6
L 45	1.87	3.18	4.00	8.00		.09	4.5	281.4
L 46	2.13	3.20	3.83	6.00		.09	1.8	281.4

morrison formation basic data-continued

SAMPLE	UNIT	LAT	LONG	LOCNO	CEMENTS	FE-OX	QTZ-GR	OZ-RF	CHERT-FR	CHERT-AU
L 47	413010.	38.58	109.00	78.	.00B	.00B	.00B	.00B	.00B	.00B
L 48	413010.	38.29	108.85	182.	.00B	.00B	.00B	.00B	.00B	.00B
L 49	413010.	38.29	108.85	182.	.00B	.00B	.00B	.00B	.00B	.00B
L 50	413010.	38.19	108.63	182.	7.00	.00N	83.80	.00B	.00B	.00B
L 51	413010.	38.19	108.63	61.	.00B	.00B	.00B	.00N	.60	.00N
L 52	413010.	38.19	108.63	61.	.00B	.00B	.00B	.00B	.00B	.00B
L 53	413010.	38.19	108.63	61.	.00B	.00B	.00B	.00B	.00B	.00B
L 54	413010.	38.19	108.63	61.	.00B	.00B	.00B	.00B	.00B	.00B
L 55	413010.	38.00	108.98	200.	.00B	.00B	.00B	.00B	.00B	.00B
L 56	413010.	38.00	108.98	200.	.00B	.00B	.00B	.00B	.00B	.00B
L 57	413010.	38.00	108.98	200.	.00B	.00B	.00B	.00B	.00B	.00B
L 58	413010.	38.00	108.98	200.	.00B	.00B	.00B	.00B	.00B	.00B
L 59	413010.	38.00	108.98	200.	.00B	.00B	.00B	.00B	.00B	.00B
L 60	413010.	38.00	108.98	200.	.00B	.00B	.00B	.00B	.00B	.00B
L 89	413040.	38.41	108.74	56.	8.00	.00B	73.20	.00B	.00B	.00B
L 95	413010.	38.64	108.82	136.	.00B	3.80	.00B	.60	1.20	.20
L 96	413010.	38.64	108.82	136.	.00B	.00B	.00B	.00B	.00B	.00B
L 97	413010.	38.64	108.82	136.	.00B	.00B	.00B	.00B	.00B	.00B
L 98	413010.	38.64	108.82	136.	.00B	.00B	.00B	.00B	.00B	.00B
L 99	413010.	38.64	108.82	136.	.00B	.00B	.00B	.00B	.00B	.00B
L 100	413010.	38.64	108.82	136.	.00B	.00B	.00B	.00B	.00B	.00B
L 101	413010.	38.64	108.82	136.	.00B	.00B	.00B	.00B	.00B	.00B
L 102	413010.	38.64	108.82	136.	.00B	.00B	.00B	.00B	.00B	.00B
L 103	413010.	38.64	108.82	136.	.00B	.00B	.00B	.00B	.00B	.00B
L 104	413010.	38.64	108.82	136.	.00B	.00B	.00B	.00B	.00B	.00B
L 105	413010.	38.64	108.82	136.	.00B	.00B	.00B	.00B	.00B	.00B
L 106	413010.	38.64	108.82	136.	.00B	.00B	.00B	.00B	.00B	.00B
L 107	413010.	38.64	108.82	136.	.00B	.00B	.00B	.00B	.00B	.00B
L 108	413010.	38.64	108.82	136.	.00B	.00B	.00B	.00B	.00B	.00B
L 109	413010.	38.64	108.82	136.	.00B	.00B	.00B	.00B	.00B	.00B
L 111	413010.	38.58	109.00	136.	.00B	.00B	.00B	.00B	.00B	.00B
L 132	413010.	39.62	107.76	170.	.00B	.00B	.00B	.00B	.00B	.00B
L 134	413010.	39.62	107.76	170.	.00B	.00B	.00B	.00B	.00B	.00B
L 136	413040.	38.19	108.63	61.	7.20	.00N	66.20	.00B	.00B	.00B
L 137	413040.	38.19	108.63	61.	.00B	.00B	.00B	.00N	1.40	.00N
L 157	413040.	38.83	109.98	174.	.00B	.00B	.00B	.00B	.00B	.00B
L 158	413010.	38.87	110.35	178.	.00B	.00B	.00B	.00B	.00B	.00B
L 159	413010.	38.87	110.35	178.	.00B	.00B	.00B	.00B	.00B	.00B
L 160	413010.	38.87	110.35	178.	20.20	.00B	.00B	.00B	.00B	.00B
L 176	413010.	37.37	108.73	214.	.00B	.00B	63.40	.00N	5.00	.00N
L 177	413010.	37.37	108.73	214.	.00B	.00B	.00B	.00B	.00B	.00B
L 187	413010.	37.35	108.85	214.	.00B	.00B	.00B	.00B	.00B	.00B

morrisson formation basic data-continued

SAMPLE	SIL-RF	SIL-LSFR	K-SPAR	NA-SPAR	KAOL	MICA	ILLITE	MIC-RF	HV-MIN	MISC-OP
L 47	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 48	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 49	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 50	.00N	.20	5.60	1.60	.20	.00N	.00N	.00N	.00N	.20
L 51	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 52	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 53	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 54	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 55	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 56	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 57	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 58	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 59	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 60	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 89	.20	4.80	1.40	1.20	2.40	.20	.40	.00N	.00N	.00N
L 95	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 96	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 97	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 98	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 99	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 100	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 101	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 102	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 103	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 104	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 105	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 106	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 107	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 108	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 109	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 111	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 132	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 134	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 136	.00N	.00N	.00N	16.20	.00N	.00N	3.60	.00N	.00N	.20
L 137	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 157	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 158	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 159	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 160	.00N	3.40	2.60	1.40	.00N	.00N	.00N	.00N	.00N	.00N
L 176	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 177	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 187	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B

morrison formation basic data-continued

SAMPLE	TUFF-FR	MONT	ASH	CEM-TOT	SIL-TOT	FELD-TOT	MICA-TOT	TUFF-TOT	TEXTURE	FE	PCT
L 47	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 48	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 49	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 50	.60	.20	.00N	7.00	84.60	7.40	.20	.80	1.00		.00B
L 51	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.30
L 52	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 53	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 54	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 55	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 56	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 57	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 58	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 59	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.30
L 60	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 89	2.20	.20	.00N	11.80	80.20	5.00	.60	2.40	1.00		.50
L 95	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 96	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 97	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 98	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 99	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 100	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 101	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 102	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 103	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 104	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 105	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 106	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 107	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 108	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 109	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 111	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 132	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 134	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 136	5.20	.00N	.00N	7.20	67.60	16.20	3.80	5.20	1.00		.20
L 137	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.70
L 157	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.30
L 158	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 159	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 160	4.00	.00N	.00N	20.20	71.80	4.00	.00N	4.00	1.00		.10
L 176	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.10
L 177	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 187	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
									3.00		3.00

morrison formation basic data-continued

SAMPLE	MG	PCT	CA	PCT	T1	PCT	MN	PPM	B	PPM	BA	PPM	BE	PPM	CO	PPM	CR	PPM	CU	PPM
L 47	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 48	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 49	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 50	.20	3.00	.00B	.00B	.02	.00B	200.00	.00B	.00B	.00B	150.00	.00B	.00B	.00B	.00B	.00B	3.00	.00B	.00B	5.00
L 51	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 52	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 53	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 54	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 55	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 56	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 57	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 58	5.00	5.00	.00B	.00B	.05	.00B	150.00	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 59	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	300.00	.00B	.00B	.00B	.00B	.00B	5.00	.00B	.00B	.00B
L 60	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 89	2.00	1.00	.00B	.00B	.30	.00B	300.00	.00B	.00B	.00B	70.00	.00B	.00B	.00B	.00B	.00B	7.00	.00B	.00B	2.00
L 95	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 96	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 97	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 98	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 99	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 100	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 101	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 102	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 103	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 104	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 105	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 106	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 107	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 108	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 109	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 111	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 132	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 134	.20	1.50	.00B	.00B	.03	.00B	150.00	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 136	1.00	2.00	.00B	.00B	.10	.00B	700.00	.00B	.00B	.00B	200.00	.00B	.00B	.00B	.00B	.00B	50.00	.00B	.00B	.00B
L 137	.50	1.00	.00B	.00B	.07	.00B	100.00	.00B	.00B	.00B	700.00	.00B	.00B	.00B	.00B	.00B	3.00	.00B	.00B	.00B
L 157	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 158	.15	10.00	.00B	.00B	.02	.00B	500.00	.00B	.00B	.00B	100.00	.00B	.00B	.00B	.00B	.00B	1.30	.00B	.00B	.00B
L 159	.10	10.00	.00B	.00B	.05	.00B	200.00	.00B	.00B	.00B	300.00	.00B	.00B	.00B	.00B	.00B	3.00	.00B	.00B	.00B
L 160	.10	10.00	.00B	.00B	.02	.00B	300.00	.00B	.00B	.00B	700.00	.00B	.00B	.00B	.00B	.00B	3.00	.00B	.00B	.00B
L 176	1.00	5.00	.00B	.00B	.02	.00B	500.00	.00B	.00B	.00B	700.00	.00B	.00B	.00B	.00B	.00B	2.00	.00B	.00B	.00B
L 177	.50	3.00	.00B	.00B	.02	.00B	300.00	.00B	.00B	.00B	300.00	.00B	.00B	.00B	.00B	.00B	3.00	.00B	.00B	.00B
L 187	2.00	.50	.00B	.00B	.30	.00B	100.00	.00B	.00B	.00B	150.00	.00B	.00B	.00B	.00B	.00B	20.00	.00B	.00B	.00B

SAMPLE	LA	NB	N1	PB	SC	SR	U	Y	ZN	ZR	PPM
L 47	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 48	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 49	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 50	.00N	.00N	.00N	30.00	.00N	30.00	10.00	10.00	.00N	30.00	.00B
L 51	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 52	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 53	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 54	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 55	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 56	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 57	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 58	.00N	.00N	.00N	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 59	.00B	.00B	.00B	.00B	.00B	50.00	30.00	10.00	.00B	50.00	.00B
L 60	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 89	.00N	.00N	.00N	.00N	.00N	20.00	20.00	.00N	.00N	30.00	.00B
L 95	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 96	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 97	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 98	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 99	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 100	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 101	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 102	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 103	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 104	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 105	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 106	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 107	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 108	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 109	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 111	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 132	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 134	.00N	.00N	5.00L	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 136	.00N	10.00	5.00L	10.00L	5.00	50.00	70.00	10.00L	.00B	100.00	.00B
L 137	.00N	10.00	.00N	.00N	.00N	30.00	10.00	15.00	.00N	150.00	.00B
L 157	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 158	.00N	.00N	.00N	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 159	.00N	.00N	.00N	.00N	.00N	70.00	.00N	.00B	.00B	.00B	.00B
L 160	.00N	10.00L	.00N	.00N	.00N	50.00	7.00	10.00	.00N		

morrison formation basic data-continued

SAMPLE	HG2	PPM	CU2	PPM	PHI	MEAN	MODE	MM	PHI	SD	PHI	SKEW	KURT	2PHI	PT	5PHI	PT
L 47	.008	.008		.008	1.85	.274		.82	.23	.29	.45	.88	.29	.45	.88		
L 48	.008	.008		.008	3.08	.125		.67	.47	.26	2.12	2.30	.26	2.12	2.30		
L 49	.008	.008		.008	2.75	.157		.53	.74	.21	2.05	2.15	.21	2.05	2.15		
L 50	.28	.008	15.00	.008	2.68	.186		.63	.62	.24	1.90	2.05	.24	1.90	2.05		
L 51	.008	.008		.008	2.32	.240		.63	.27	.17	1.22	1.45	.17	1.22	1.45		
L 52	.008	.008		.008	2.68	.144		.57	.48	.21	1.78	1.98	.21	1.78	1.98		
L 53	.008	.008		.008	2.76	.143		.63	1.01	.70	1.90	2.07	.70	1.90	2.07		
L 54	.008	.008		.008	3.20	.121		.65	1.60	1.73	2.13	2.30	1.73	2.13	2.30		
L 55	.008	.008		.008	2.83	.176		.87	1.29	.96	1.70	1.90	.96	1.70	1.90		
L 56	.008	.008		.008	3.52	.095		1.02	.77	.35	2.45	2.66	.35	2.45	2.66		
L 57	.008	.008		.008	2.46	.165		.67	.26	.15	1.33	1.53	.15	1.33	1.53		
L 58	.19	.008	10.00L	.008	2.69	.151		.78	1.05	.93	1.55	1.77	.93	1.55	1.77		
L 59	.008	.008		.008	2.92	.146		.87	1.48	1.12	2.08	2.20	1.12	2.08	2.20		
L 60	.008	.008		.008	2.09	.265		.96	1.10	.74	.95	1.12	.74	.95	1.12		
L 89	.48	.008	15.00	.008	1.92	.273		.65	.71	.29	1.07	1.22	.29	1.07	1.22		
L 95	.008	.008		.008	2.68	.211		1.04	.85	.48	1.35	1.55	.48	1.35	1.55		
L 96	.008	.008		.008	2.43	.211		.94	.96	.62	1.30	1.48	.62	1.30	1.48		
L 97	.008	.008		.008	2.51	.203		.94	.78	.43	1.30	1.48	.43	1.30	1.48		
L 98	.008	.008		.008	3.15	.121		1.53	.71	.38	1.40	1.80	.38	1.40	1.80		
L 99	.008	.008		.008	3.13	.149		1.01	1.09	.63	2.00	2.20	.63	2.00	2.20		
L 100	.008	.008		.008	3.32	.113		1.02	1.12	.66	2.08	2.29	.66	2.08	2.29		
L 101	.008	.008		.008	3.05	.149		1.00	.88	.50	2.68	1.90	.50	2.68	1.90		
L 102	.008	.008		.008	2.83	.149		1.08	1.05	.73	2.40	1.60	.73	2.40	1.60		
L 103	.008	.008		.008	2.91	.149		1.12	1.06	.71	1.47	1.68	.71	1.47	1.68		
L 104	.008	.008		.008	2.74	.176		1.22	.95	.53	1.35	1.50	.53	1.35	1.50		
L 105	.008	.008		.008	2.97	.148		.94	.92	.54	1.80	1.98	.54	1.80	1.98		
L 106	.008	.008		.008	2.92	.149		1.02	1.22	.90	1.70	1.90	.90	1.70	1.90		
L 107	.008	.008		.008	2.99	.149		1.18	1.29	.80	1.77	1.95	.80	1.77	1.95		
L 108	.008	.008		.008	2.35	.250		1.04	1.40	1.16	1.25	1.38	1.16	1.25	1.38		
L 109	.008	.008		.008	2.80	.149		1.21	.99	.53	1.48	1.65	.53	1.48	1.65		
L 111	.008	.008		.008	3.31	.149		.81	.77	.54	2.25	2.44	.54	2.25	2.44		
L 132	.008	.008		.008	3.41	.113		1.17	1.22	.81	2.15	2.33	.81	2.15	2.33		
L 134	.13	.008	10.00	.008	3.15	.125		.82	1.32	1.47	2.33	2.55	1.47	2.33	2.55		
L 136	.29	.008	15.00	.008	3.21	.149		1.36	1.12	.56	1.86	2.05	.56	1.86	2.05		
L 137	.24	.008	10.00L	.008	2.97	.125		.87	1.35	1.17	1.95	2.15	1.17	1.95	2.15		
L 157	.008	.008		.008	3.78	.088		.92	1.49	1.34	2.80	2.95	1.34	2.80	2.95		
L 158	.74	.008	10.00L	.008	2.38	.250		1.28	1.12	.72	.88	1.10	.72	.88	1.10		
L 159	.22	.008	10.00L	.008	2.45	.210		.78	1.03	1.25	1.40	1.58	1.25	1.40	1.58		
L 160	.55	.008	15.00	.008	2.45	.210		1.08	1.62	1.66	1.37	1.57	1.66	1.37	1.57		
L 176	.28	.008	10.00	.008	3.13	.125		1.04	1.61	1.40	2.15	2.35	1.40	2.15	2.35		
L 177	.21	.008	10.00	.008	2.51	.176		.85	1.42	1.85	1.33	1.55	1.85	1.33	1.55		
L 187	.14	.008	10.00	.008	7.64	.002		1.82	-.43	-.02	3.25	3.93	-.02	3.25	3.93		

morrison formation basic data-continued

SAMPLE	16PHI PT	84PHI PT	95PHI PT	98PHI PT	HM	PCT	ACSO PCT	THKNSS
L 47	1.28	2.45	3.10	4.50		2.19	1.6	281.4
L 48	2.65	3.45	4.15	4.75		.16	9.0	374.1
L 49	2.40	3.12	3.60	4.50		.58	13.7	374.1
L 50	2.23	3.07	3.22	4.20		.10	9.3	377.0
L 51	1.75	2.65	3.00	3.70		.18	7.7	377.0
L 52	2.22	3.10	3.70	4.50		.60	8.4	377.0
L 53	2.33	3.10	3.75	4.65		.28	19.2	377.0
L 54	2.61	3.68	4.55	5.00		.22	14.9	377.0
L 55	2.13	3.35	4.50	5.75		2.29	9.8	302.3
L 56	2.95	4.35	5.60	7.25		.31	27.3	302.3
L 57	1.90	2.97	3.60	4.70		.71	12.2	302.3
L 58	2.12	3.10	3.80	5.00		.82	6.2	302.3
L 59	2.40	3.33	4.44	6.00		.25	2.0	302.3
L 60	1.40	2.62	3.85	5.00		1.35	6.2	302.3
L 89	1.46	2.33	2.90	3.80		2.23	4.6	365.8
L 95	1.90	3.80	4.60	5.50		.16	1.4	350.6
L 96	1.75	2.98	4.00	5.25		2.19	1.7	350.6
L 97	1.80	3.15	4.30	5.00		.76	4.7	350.6
L 98	2.33	3.77	4.95	6.50		.10	1.6	350.6
L 99	2.53	3.60	4.88	7.00		.32	1.5	350.6
L 100	2.67	3.70	5.10	8.00		.26	5.1	350.6
L 101	2.32	3.65	4.90	6.25		.33	3.3	350.6
L 102	2.00	3.45	4.70	6.00		.15	3.8	350.6
L 103	2.10	3.60	4.80	6.50		.18	10.0	350.6
L 104	1.83	3.62	4.90	6.50		.14	7.4	350.6
L 105	2.17	3.60	4.70	6.00		.13	2.5	350.6
L 106	2.23	3.45	4.60	6.50		.45	2.9	350.6
L 107	2.23	3.53	5.50	7.75		.18	3.4	350.6
L 108	1.69	2.84	3.85	6.00		.98	5.5	350.6
L 109	1.96	3.60	5.15	7.00		3.33	8.1	350.6
L 111	2.66	3.96	4.66	5.10		.22	1.5	281.4
L 132	2.60	4.00	5.50	7.00		.36	.08	100.0
L 134	2.68	3.62	4.40	5.00		.10	4.7	100.0
L 136	2.30	4.05	6.25	7.50		1.38	12.0	478.1
L 137	2.38	3.45	4.30	5.50		1.19	5.8	478.1
L 157	3.15	4.25	5.10	7.00		.90	29.0	300.0
L 158	1.53	3.10	4.50	6.50		.57	24.7	191.0
L 159	1.81	2.98	3.50	4.00		.71	15.8	191.0
L 160	1.80	2.98	3.85	5.50		5.20	20.5	191.0
L 176	2.62	3.45	4.50	6.50		.52	25.1	269.6
L 177	1.88	3.00	3.55	4.50		.68	22.4	269.6
L 187	5.30	9.28	9.74	9.88		.16	.08	100.9

morrison formation basic data-continued

SAMPLE	UNIT	LAT	LONG	LOCNO	CEMENTS	FE-OX	QTZ-CR	OZ-RF	CHERT-FR	CHERT-AU
L 188	413010.	37.35	108.85	214.	.00B	.00B	.00B	.00B	.00B	.00B
L 190	413010.	37.35	108.85	124.	16.20	.00N	70.40	.20	.80	.00N
L 191	413010.	37.35	108.85	124.	.00B	.00B	.00B	.00B	.00B	.00B
L 192	413020.	37.35	108.85	124.	5.60	.80	80.80	.00N	.20	.00N
L 193	413020.	37.35	108.85	124.	1.60	.00N	83.20	.00N	.40	.20
L 194	413020.	37.35	108.85	124.	3.80	.20	70.60	.20	.60	.00N
L 195	413030.	37.35	108.85	125.	2.60	1.20	81.80	.00N	.00N	.00N
L 196	413030.	37.35	108.85	125.	5.60	1.20	72.20	.00N	.40	.00N
L 197	413030.	37.35	108.85	125.	6.40	1.00	54.60	.20	.60	.20
L 206	413020.	37.32	109.43	163.	1.60	.00N	79.00	.00N	.40	.00N
L 207	413020.	37.32	109.43	163.	.00B	.00B	.00B	.00B	.00B	.00B
L 208	413030.	37.32	109.43	163.	.00B	.00B	.00B	.00B	.00B	.00B
L 209	413020.	37.32	109.43	163.	.00B	.00B	.00B	.00B	.00B	.00B
L 210	413030.	37.32	109.43	163.	.00B	.00B	.00B	.00B	.00B	.00B
L 211	413040.	38.83	109.98	174.	.00N	.00N	69.60	.00N	1.80	.20
L 212	413040.	38.83	109.98	174.	.00B	.00B	.00B	.00B	.00B	.00B
L 213	413040.	38.83	109.98	174.	.00B	.00B	.00B	.00B	.00B	.00B
L 214	413040.	38.83	109.98	174.	.00B	.00B	.00B	.00B	.00B	.00B
L 215	413010.	38.83	109.98	174.	.00B	.00B	.00B	.00B	.00B	.00B
L 216	413010.	38.83	109.98	174.	.00B	.00B	.00B	.00B	.00B	.00B
L 217	413010.	38.83	109.98	174.	.00B	.00B	.00B	.00B	.00B	.00B
L 218	413010.	38.83	109.98	174.	.00B	.00B	.00B	.00B	.00B	.00B
L 219	413010.	38.83	109.98	174.	.00B	.00B	.00B	.00B	.00B	.00B
L 220	413010.	38.83	109.98	174.	.00B	.00B	.00B	.00B	.00B	.00B
L 221	413010.	38.83	109.98	174.	.00B	.00B	.00B	.00B	.00B	.00B
L 222	413010.	38.83	109.98	174.	.00B	.00B	.00B	.00B	.00B	.00B
L 223	413010.	38.83	109.98	174.	.00B	.00B	.00B	.00B	.00B	.00B
L 224	413010.	38.83	109.98	174.	.00B	.00B	.00B	.00B	.00B	.00B
L 225	413040.	38.87	110.35	178.	2.60	.00N	49.60	.00N	5.00	32.20
L 226	413010.	38.87	110.35	178.	.00B	.00B	.00B	.00B	.00B	.00B
L 227	413010.	38.87	110.35	178.	.00B	.00B	.00B	.00B	.00B	.00B
L 228	413010.	38.87	110.35	178.	.00B	.00B	.00B	.00B	.00B	.00B
L 229	413010.	38.87	110.35	178.	.00B	.00B	.00B	.00B	.00B	.00B
L 230	413010.	38.87	110.35	178.	.00B	.00B	.00B	.00B	.00B	.00B
L 231	413010.	38.87	110.35	178.	.00B	.00B	.00B	.00B	.00B	.00B
L 232	413010.	38.88	110.67	45.	.00B	.00B	.00B	.00B	.00B	.00B
L 233	413010.	38.84	109.52	231.	.00B	.00B	.00B	.00B	.00B	.00B
L 234	413010.	38.84	109.52	231.	.00B	.00B	.00B	.00B	.00B	.00B
L 235	413010.	38.84	109.52	231.	.00B	.00B	.00B	.00B	.00B	.00B
L 236	413010.	38.84	109.52	231.	.00B	.00B	.00B	.00B	.00B	.00B
L 237	413010.	38.84	109.52	231.	.00B	.00B	.00B	.00B	.00B	.00B
L 238	413010.	38.84	109.52	231.	.00B	.00B	.00B	.00B	.00B	.00B

Morrison formation basic data-continued

SAMPLE	SIL-RF	SIL-LSFR	K-SPAR	NA-SPAR	KAOL	MICA	ILLITE	MIC-RF	HV-MIN	MISC-OP
L 188	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 190	.00N	.00N	4.40	1.80	3.00	.00N	.60	.20	.00B	.60
L 191	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 192	.20	.00N	6.00	2.40	1.60	.00N	.60	.00N	.00N	.40
L 193	.00N	.00N	8.20	1.80	2.00	.00N	1.20	.00N	.00N	.20
L 194	.00N	.00N	8.00	2.60	7.40	.40	2.80	.00N	.40	.20
L 195	.40	.00N	5.40	.80	4.80	.00N	.80	.00N	.20	.00N
L 196	.00N	.00N	7.80	1.80	4.80	.00N	1.20	.00N	.00N	.20
L 197	.20	.00N	2.60	5.00	17.40	.00N	.20	.00N	.00N	.60
L 206	.00N	.00N	10.40	2.60	.60	.00N	.60	.00N	.00N	.00N
L 207	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 208	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 209	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 210	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 211	.00N	.80	.20	4.80	.00N	.00N	.00N	.00N	.00N	.00N
L 212	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 213	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 214	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 215	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 216	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 217	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 218	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 219	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 220	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 221	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 222	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 223	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 224	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 225	.00N	.00B	.40	.20	.40	.00N	.00N	.00N	.00N	.00N
L 226	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 227	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 228	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 229	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 230	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 231	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 232	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 233	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 234	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 235	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 236	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 237	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 238	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B

Morrison formation basic data-continued

SAMPLE	TUFF-FR	MONT	ASH	CEN-TOT	SIL-TOT	FELD-TOT	MICA-TOT	TUFF-TOT	TEXTURE	FE	PCT
L 188	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	3.00		3.00
L 190	1.40	.20	.00N	16.20	71.40	9.20	1.60	1.60	1.00		.50
L 191	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 192	1.20	.20	.00N	6.42	81.20	10.00	1.00	1.40	1.00		.50
L 193	1.00	.20	.00N	1.60	83.80	12.00	1.40	1.20	1.00		.50
L 194	2.80	.00N	.00N	4.00	71.40	18.00	3.80	2.80	1.00		.30
L 195	1.60	.40	.00N	3.80	82.20	11.00	1.00	2.00	1.00		.50
L 196	4.00	.80	.00N	6.80	72.60	14.40	1.40	4.80	1.00		.50
L 197	10.80	.20	.00N	7.40	55.80	25.00	.80	11.00	1.00		.70
L 206	3.80	1.00	.00N	1.60	79.40	13.60	.60	4.80	1.00		.30
L 207	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.30
L 208	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.20
L 209	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.20
L 210	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 211	6.80	15.80	.00N	.00N	72.40	5.00	.00N	22.60	1.00		.50
L 212	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.70
L 213	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.30
L 214	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.30
L 215	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 216	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 217	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.15
L 218	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 219	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 220	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.30
L 221	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.30
L 222	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 223	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.07
L 224	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.20
L 225	.40	.00N	.00N	2.60	96.00	1.00	.00N	.40	1.00		.07
L 226	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 227	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.10
L 228	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.30
L 229	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.07
L 230	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 231	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 232	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.30
L 233	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.20
L 234	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.70
L 235	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.20
L 236	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.20
L 237	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 238	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.30

morrison formation basic data-continued

SAMPLE	MG	PCT	CA	PCT	T1	PCT	MN	PPM	B	PPM	BA	PPM	BE	PPM	CO	PPM	CR	PPM	CU	PPM
L 188	2.00	5.00	.20	300.00	50.00	150.00	2.00	.00N	.00N	.00N	20.00	7.00	20.00	20.00	3.00	.00N	20.00	20.00	20.00	20.00
L 190	.70	2.00	.03	500.00	.00N	100.00	.00N	.00N	.00N	.00N	100.00	.00N	.00N	.00N	.00N	.00N	5.00	5.00	30.00	30.00
L 191	.20	.70	.05	150.00	20.00	500.00	.00N	.00N	.00N	.00N	200.00	.00N	.00N	.00N	.00N	.00N	1.50	1.50	3.00	3.00
L 192	.20	1.00	.05	150.00	20.00	500.00	.00N	.00N	.00N	.00N	500.00	.00N	.00N	.00N	.00N	.00N	2.00	2.00	3.00	3.00
L 193	.30	.70	.07	150.00	20.00	200.00	.00N	.00N	.00N	.00N	200.00	.00N	.00N	.00N	.00N	.00N	2.00	2.00	7.00	7.00
L 194	.50	.70	.07	150.00	20.00	300.00	.00N	.00N	.00N	.00N	300.00	.00N	.00N	.00N	.00N	.00N	20.00	20.00	7.00	7.00
L 195	.30	1.00	.10	150.00	20.00L	200.00	.00N	.00N	.00N	.00N	200.00	.00N	.00N	.00N	.00N	.00N	20.00	20.00	10.00	10.00
L 196	.70	1.50	.05	500.00	20.00	200.00	.00N	.00N	.00N	.00N	200.00	.00N	.00N	.00N	.00N	.00N	1.00	1.00	2.00	2.00
L 197	.50	2.00	.05	500.00	.00N	1000.00	.00N	.00N	.00N	.00N	1000.00	.00N	.00N	.00N	.00N	.00N	2.00	2.00	3.00	3.00
L 206	.30	.70	.05	100.00	.00N	200.00	.00N	.00N	.00N	.00N	200.00	.00N	.00N	.00N	.00N	.00N	2.00	2.00	3.00	3.00
L 207	.15	.20	.05	70.00	20.00	200.00	.00N	.00N	.00N	.00N	200.00	.00N	.00N	.00N	.00N	.00N	2.00	2.00	3.00	3.00
L 208	.20	3.00	.05	700.00	20.00	200.00	.00N	.00N	.00N	.00N	200.00	.00N	.00N	.00N	.00N	.00N	2.00	2.00	2.00	2.00
L 209	.30	2.00	.07	200.00	20.00	200.00	.00N	.00N	.00N	.00N	200.00	.00N	.00N	.00N	.00N	.00N	3.00	3.00	3.00	3.00
L 210	.50	.30	.10	150.00	.00N	150.00	.00N	.00N	.00N	.00N	150.00	.00N	.00N	.00N	.00N	.00N	3.00	3.00	5.00	5.00
L 211	1.00	.20	.07	50.00	20.00L	100.00	.00N	.00N	.00N	.00N	100.00	.00N	.00N	.00N	.00N	.00N	3.00	3.00	7.00	7.00
L 212	1.00	.30	.10	150.00	20.00	1000.00	.00N	.00N	.00N	.00N	1000.00	.00N	.00N	.00N	.00N	.00N	30.00	30.00	5.00	5.00
L 213	.50	1.50	.05	100.00	20.00	70.00	.00N	.00N	.00N	.00N	70.00	.00N	.00N	.00N	.00N	.00N	7.00	7.00	3.00	3.00
L 214	3.00	10.00G	.02	1000.00	.00N	70.00	.00N	.00N	.00N	.00N	70.00	.00N	.00N	.00N	.00N	.00N	5.00	5.00	3.00	3.00
L 215	.50	10.00	.03	700.00	20.00L	500.00	.00N	.00N	.00N	.00N	500.00	.00N	.00N	.00N	.00N	.00N	10.00	10.00	5.00	5.00
L 216	.50	7.00	.10	700.00	20.00	500.00	.00N	.00N	.00N	.00N	500.00	.00N	.00N	.00N	.00N	.00N	30.00	30.00	10.00	10.00
L 217	.20	5.00	.02	300.00	.00N	700.00	.00N	.00N	.00N	.00N	700.00	.00N	.00N	.00N	.00N	.00N	2.00	2.00	1.50	1.50
L 218	.30	10.00	.07	1000.00	20.00	700.00	.00N	.00N	.00N	.00N	700.00	.00N	.00N	.00N	.00N	.00N	5.00	5.00	5.00	5.00
L 219	.30	7.00	.05	500.00	30.00	300.00	.00N	.00N	.00N	.00N	300.00	.00N	.00N	.00N	.00N	.00N	10.00	10.00	7.00	7.00
L 220	.50	.15	.07	20.00	30.00	500.00	.00N	.00N	.00N	.00N	500.00	.00N	.00N	.00N	.00N	.00N	5.00	5.00	3.00	3.00
L 221	.50	2.00	.02	150.00	20.00L	300.00	.00N	.00N	.00N	.00N	300.00	.00N	.00N	.00N	.00N	.00N	3.00	3.00	5.00	5.00
L 222	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 223	.20	5.00	.02	150.00	20.00L	70.00	.00N	.00N	.00N	.00N	70.00	.00N	.00N	.00N	.00N	.00N	3.00	3.00	3.00	3.00
L 224	.30	5.00	.05	200.00	.00N	500.00	.00N	.00N	.00N	.00N	500.00	.00N	.00N	.00N	.00N	.00N	2.00	2.00	3.00	3.00
L 225	.03	1.00	.01	70.00	20.00L	200.00	.00N	.00N	.00N	.00N	200.00	.00N	.00N	.00N	.00N	.00N	3.00	3.00	2.00	2.00
L 226	.10	10.00	.03	500.00	.00N	150.00	.00N	.00N	.00N	.00N	150.00	.00N	.00N	.00N	.00N	.00N	3.00	3.00	5.00	5.00
L 227	.05	2.00	.03	150.00	.00N	500.00	.00N	.00N	.00N	.00N	500.00	.00N	.00N	.00N	.00N	.00N	2.00	2.00	7.00	7.00
L 228	.20	2.00	.05	100.00	20.00L	300.00	.00N	.00N	.00N	.00N	300.00	.00N	.00N	.00N	.00N	.00N	3.00	3.00	5.00	5.00
L 229	.05	10.00	.02	500.00	.00N	700.00	.00N	.00N	.00N	.00N	700.00	.00N	.00N	.00N	.00N	.00N	3.00	3.00	5.00	5.00
L 230	.05	10.00G	.03	500.00	.00N	150.00	.00N	.00N	.00N	.00N	150.00	.00N	.00N	.00N	.00N	.00N	3.00	3.00	5.00	5.00
L 231	.07	5.00	.05	300.00	20.00L	150.00	.00N	.00N	.00N	.00N	150.00	.00N	.00N	.00N	.00N	.00N	5.00	5.00	7.00	7.00
L 232	.50	1.00	.02	100.00	.20	300.00	.00N	.00N	.00N	.00N	300.00	.00N	.00N	.00N	.00N	.00N	20.00N	20.00N	10.00	10.00
L 233	2.00	1.00	.05	100.00	20.00L	700.00	.00N	.00N	.00N	.00N	700.00	.00N	.00N	.00N	.00N	.00N	100.00	100.00	7.00	7.00
L 234	.50	1.00	.10	30.00	20.00	500.00	.00N	.00N	.00N	.00N	500.00	.00N	.00N	.00N	.00N	.00N	7.00	7.00	5.00	5.00
L 235	.20	1.00	.03	70.00	.00N	700.00	.00N	.00N	.00N	.00N	700.00	.00N	.00N	.00N	.00N	.00N	2.00	2.00	20.00	20.00
L 236	.20	1.00	.03	200.00	20.00L	500.00	.00N	.00N	.00N	.00N	500.00	.00N	.00N	.00N	.00N	.00N	50.00	50.00	5.00	5.00
L 237	.50	.50	.07	30.00	.00N	700.00	.00N	.00N	.00N	.00N	700.00	.00N	.00N	.00N	.00N	.00N	5.00	5.00	15.00	15.00
L 238	.30	2.00	.02	200.00	.00N	500.00	.00N	.00N	.00N	.00N	500.00	.00N	.00N	.00N	.00N	.00N	5.00	5.00	10.00	10.00

morrison formation basic data-continued

SAMPLE	LA	PPM	NB	PPM	N1	PPM	PB	PPM	SC	PPM	SR	PPM	V	PPM	Y	PPM	ZN	PPM	ZR	PPM
L 188	50.00	10.00	15.00	20.00	15.00	300.00	100.00	100.00	100.00	100.00	30.00	30.00	100.00	100.00	30.00	100.00	100.00	100.00	100.00	100.00
L 190	.00N	.00N	5.00L	20.00	.00N	70.00	20.00	.00N	.00N	.00N	20.00	20.00	20.00	20.00	.00N	20.00	.00N	.00N	20.00	20.00
L 191	.00N	10.00L	.00N	.00N	.00N	50.00	.00N	.00N	.00N	.00N	10.00	10.00	10.00	10.00	.00N	10.00	.00N	.00N	70.00	70.00
L 192	.00N	10.00L	.00N	10.00	.00N	100.00	.00N	.00N	.00N	.00N	100.00	100.00	10.00	10.00	.00N	.00N	.00N	.00N	100.00	100.00
L 193	.00N	10.00L	.00N	.00N	.00N	100.00	.00N	.00N	.00N	.00N	100.00	100.00	10.00	10.00	.00N	.00N	.00N	.00N	70.00	70.00
L 194	.00N	.00N	.00N	10.00	.00N	200.00	10.00	.00N	.00N	.00N	200.00	200.00	15.00	15.00	.00N	.00N	.00N	.00N	70.00	70.00
L 195	.00N	.00N	.00N	10.00L	.00N	200.00	10.00L	.00N	.00N	.00N	200.00	200.00	10.00	10.00	.00N	.00N	.00N	.00N	70.00	70.00
L 196	.00N	.00N	.00N	10.00L	.00N	100.00	10.00L	.00N	.00N	.00N	100.00	100.00	10.00	10.00	.00N	.00N	.00N	.00N	150.00	150.00
L 197	.00N	.00N	.00N	10.00L	.00N	200.00	10.00L	.00N	.00N	.00N	200.00	200.00	15.00	15.00	.00N	.00N	.00N	.00N	50.00	50.00
L 206	.00N	10.00L	.00N	10.00L	.00N	100.00	10.00L	.00N	.00N	.00N	100.00	100.00	10.00	10.00	.00N	.00N	.00N	.00N	50.00	50.00
L 207	.00N	10.00L	.00N	10.00	.00N	30.00	10.00	.00N	.00N	.00N	30.00	30.00	10.00	10.00	.00N	.00N	.00N	.00N	70.00	70.00
L 208	.00N	.00N	.00N	10.00	.00N	100.00	10.00	.00N	.00N	.00N	100.00	100.00	10.00	10.00	.00N	.00N	.00N	.00N	30.00	30.00
L 209	.00N	.00N	.00N	.00N	.00N	70.00	.00N	.00N	.00N	.00N	70.00	70.00	15.00	15.00	.00N	.00N	.00N	.00N	50.00	50.00
L 210	.00N	10.00L	.00N	.00N	.00N	50.00	.00N	.00N	.00N	.00N	50.00	50.00	20.00	20.00	.00N	.00N	.00N	.00N	150.00	150.00
L 211	.00N	10.00L	.00N	.00N	5.00L	20.00	.00N	.00N	.00N	.00N	20.00	20.00	20.00	20.00	.00N	.00N	.00N	.00N	200.00	200.00
L 212	.00N	10.00L	.00N	10.00L	5.00L	150.00	10.00L	5.00	5.00	5.00	150.00	150.00	20.00	20.00	.00N	.00N	.00N	.00N	70.00	70.00
L 213	.00N	.00N	.00N	.00N	.00N	5.00	.00N	.00N	.00N	.00N	5.00	5.00	15.00	15.00	.00N	.00N	.00N	.00N	200.00	200.00
L 214	.00N	.00N	.00N	.00N	.00N	150.00	.00N	.00N	.00N	.00N	150.00	150.00	10.00	10.00	.00N	.00N	.00N	.00N	70.00	70.00
L 215	.00N	.00N	.00N	10.00	5.00L	150.00	10.00	.00N	.00N	.00N	150.00	150.00	15.00	15.00	.00N	.00N	.00N	.00N	100.00	100.00
L 216	.00N	.00N	.00N	10.00	5.00	200.00	10.00	5.00	5.00	5.00	200.00	200.00	20.00	20.00	.00N	.00N	.00N	.00N	200.00	200.00
L 217	.00N	.00N	.00N	10.00L	.00N	70.00	10.00L	.00N	.00N	.00N	70.00	70.00	15.00	15.00	.00N	.00N	.00N	.00N	30.00	30.00
L 218	.00N	.00N	.00N	.00N	5.00L	150.00	.00N	.00N	.00N	.00N	150.00	150.00	15.00	15.00	.00N	.00N	.00N	.00N	50.00	50.00
L 219	.00N	.00N	.00N	10.00L	5.00L	200.00	10.00L	.00N	.00N	.00N	200.00	200.00	15.00	15.00	.00N	.00N	.00N	.00N	100.00	100.00
L 220	.00N	10.00L	.00N	10.00L	5.00L	150.00	10.00L	.00N	.00N	.00N	150.00	150.00	20.00	20.00	.00N	.00N	.00N	.00N	200.00	200.00
L 221	.00N	.00N	.00N	.00N	.00N	50.00	.00N	.00N	.00N	.00N	50.00	50.00	10.00	10.00	.00N	.00N	.00N	.00N	30.00	30.00
L 222	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 223	.00N	.00N	.00N	.00N	.00N	50.00	.00N	.00N	.00N	.00N	50.00	50.00	20.00L	20.00L	.00N	.00N	.00N	.00N	20.00	20.00
L 224	.00N	.00N	.00N	.00N	.00N	70.00	.00N	.00N	.00N	.00N	70.00	70.00	10.00L	10.00L	.00N	.00N	.00N	.00N	70.00	70.00
L 225	.00N	10.00L	.00N	.00N	.00N	50.00	.00N	.00N	.00N	.00N	50.00	50.00	20.00	20.00	.00N	.00N	.00N	.00N	15.00	15.00
L 226	.00N	.00N	.00N	.00N	.00N	70.00	.00N	.00N	.00N	.00N	70.00	70.00	20.00	20.00	.00N	.00N	.00N	.00N	20.00	20.00
L 227	.00N	10.00L	.00N	.00N	.00N	30.00	.00N	.00N	.00N	.00N	30.00	30.00	20.00	20.00	.00N	.00N	.00N	.00N	100.00	100.00
L 228	.00N	.00N	.00N	.00N	.00N	100.00	.00N	.00N	.00N	.00N	100.00	100.00	10.00	10.00	.00N	.00N	.00N	.00N	70.00	70.00
L 229	.00N	.00N	.00N	.00N	.00N	700.00	.00N	.00N	.00N	.00N	700.00	700.00	10.00L	10.00L	.00N	.00N	.00N	.00N	50.00	50.00
L 230	.00N	.00N	.00N	10.00L	.00N	300.00	10.00L	.00N	.00N	.00N	300.00	300.00	30.00	30.00	.00N	.00N	.00N	.00N	20.00	20.00
L 231	.00N	.00N	.00N	10.00L	.00N	300.00	10.00L	.00N	.00N	.00N	300.00	300.00	30.00	30.00	.00N	.00N	.00N	.00N	70.00	70.00
L 232	50.00N	.00N	30.00	200.00	30.00	300.00	200.00	.00N	.00N	.00N	300.00	300.00	20000.00	20000.00	20.00N	20.00N	200.00N	.00N	100.00	100.00
L 233	.00N	.00N	5.00L	15.00	.00N	50.00	15.00	.00N	.00N	.00N	50.00	50.00	1000.00	1000.00	.00N	.00N	.00N	.00N	150.00	150.00
L 234	.00N	.00N	.00N	10.00L	.00N	30.00	10.00L	.00N	.00N	.00N	30.00	30.00	7000.00	7000.00	.00N	.00N	.00N	.00N	100.00	100.00
L 235	.00N	10.00L	.00N	10.00L	5.00L	20.00	10.00L	.00N	.00N	.00N	20.00	20.00	300.00	300.00	.00N	.00N	.00N	.00N	100.00	100.00
L 236	.00N	.00N	.00N	.00N	.00N	30.00	.00N	.00N	.00N	.00N	30.00	30.00	150.00	150.00	.00N	.00N	.00N	.00N	100.00	100.00
L 237	.00N	10.00L	15.00	.00N	15.00	20.00	.00N	.00N	.00N	.00N	20.00	20.00	3000.00	3000.00	.00N	.00N	.00N	.00N	150.00	150.00
L 238	.00N	10.00L	5.00	.00N	5.00	50.00	.00N	.00N	.00N	.00N	50.00	50.00	300.00	300.00	.00N	.00N	.00N	.00N	100.00	100.00

morrison formation basic data-continued

SAMPLE	HG2	PPH	CU2	PPH	PHI	MEAN	MODE	MM	PHI	MED	PHI	SD	PHI	SKEW	PHI	KURT	2PHI	PT	SPHI	PT
L 188	.10		20.00			7.38	.002			8.36		2.07		-.32		-10	3.44		3.77	
L 190	.14		20.00			3.22	.134			2.92		1.31		1.39		.89	2.00		2.14	
L 191	.10		10.00			2.62	.177			2.43		.98		1.68		1.72	1.55		1.75	
L 192	.17		10.00			2.89	.148			2.74		1.02		1.98		2.09	1.85		2.05	
L 193	.20		10.00L			3.05	.134			2.86		1.08		1.62		1.41	2.00		2.17	
L 194	.16		10.00L			3.44	.121			3.11		1.42		1.34		.77	2.22		2.38	
L 195	.17		15.00			2.72	.148			2.58		1.08		1.89		1.88	1.45		1.75	
L 196	.14		15.00			2.97	.148			2.63		1.52		1.48		.91	1.55		1.77	
L 197	.21		20.00			3.58	.250			2.00		1.76		1.10		.46	1.12		1.30	
L 206	.09		10.00			2.90	.125			2.81		.82		2.10		2.89	2.03		2.15	
L 207	.19		15.00			2.92	.148			2.79		.93		1.87		2.20	1.90		2.06	
L 208	.14		15.00			3.08	.125			2.97		.98		2.05		2.35	2.05		2.23	
L 209	.10		20.00			3.10	.105			2.99		.97		1.72		1.62	2.05		2.24	
L 210	.16		10.00			2.48	.177			2.36		.76		1.90		2.29	1.60		1.75	
L 211	.13		20.00			2.00	.297			1.80		1.13		1.61		1.36	.88		1.11	
L 212	.23		40.00			3.68	.088			3.40		1.38		1.17		.62	2.15		2.35	
L 213	.14		15.00			2.95	.148			2.78		.91		1.69		1.61	2.02		2.10	
L 214	.21		20.00			1.63	.353			1.48		.81		1.64		2.03	.60		.83	
L 215	.16		15.00			3.66	.088			3.51		.81		1.57		1.73	2.55		2.83	
L 216	.16		20.00			3.90	.075			3.66		1.10		1.70		1.29	2.95		3.13	
L 217	.19		20.00			2.43	.177			2.29		.96		1.59		1.58	1.35		1.53	
L 218	.24		30.00			3.43	.074			3.43		.83		.91		.83	2.22		2.35	
L 219	.13		40.00			3.74	.088			3.40		.98		1.96		1.87	2.75		2.94	
L 220	.24		15.00			3.57	.088			3.43		.76		2.13		2.77	2.60		2.85	
L 221	.11		15.00			2.91	.138			2.78		.96		1.85		1.95	1.90		2.07	
L 222	.00B		.00B			3.63	.088			3.47		.66		.94		1.07	2.66		2.80	
L 223	.22		20.00			1.89	.258			1.85		.71		1.28		1.41	.99		1.15	
L 224	.16		10.00			2.49	.195			2.30		.72		1.04		1.21	1.55		1.73	
L 225	.23		15.00			2.36	.352			1.93		1.35		.92		.45	.75		1.05	
L 226	.14		10.00			1.90	.295			1.72		1.24		1.81		1.75	.60		.93	
L 227	.90		15.00			2.40	.188			2.21		1.19		1.59		1.37	1.15		1.33	
L 228	.14		10.00			3.27	.088			3.20		1.20		1.25		.98	1.75		1.94	
L 229	.14		10.00			2.08	.296			1.85		.93		.65		.25	.88		1.10	
L 230	.20		15.00			3.00	.125			2.98		.74		.89		.83	1.90		2.18	
L 231	.42		20.00			2.63	.250			2.38		1.20		.95		.70	1.25		1.40	
L 232	4.00		15.00			3.61	.102			3.22		1.79		.92		.40	1.38		1.64	
L 233	.15		15.00			2.55	.148			2.47		1.06		1.47		1.48	1.22		1.38	
L 234	.40		20.00			2.87	.148			2.62		1.35		1.16		.76	1.30		1.50	
L 235	.23		30.00			2.24	.250			2.08		1.04		1.26		1.12	.95		1.13	
L 236	.14		10.00L			2.54	.148			2.51		.93		1.39		1.44	1.33		1.52	
L 237	.11		20.00			2.48	.250			2.29		1.22		1.23		.82	1.15		1.32	
L 238	.12		20.00			2.64	.148			2.64		1.05		1.18		1.06	1.15		1.35	

morrison formation basic data-continued

SAMPLE	16PHI PT	84PHI PT	95PHI PT	98PHI PT	HM	PCT	ACSO PCT	THKNSS
L 188	4.68	9.60	9.90	9.96		.12	13.3	100.9
L 190	2.38	3.66	6.00	9.00		.80	16.9	100.9
L 191	2.00	3.03	3.66	6.00		.51	6.9	100.9
L 192	2.33	3.28	3.73	7.00		.58	6.4	117.1
L 193	2.44	3.44	4.50	7.00		.92	4.7	117.1
L 194	2.68	3.70	7.25	9.00		.16	4.5	117.1
L 195	2.15	3.07	3.70	7.50		.68	4.0	79.0
L 196	2.12	3.27	7.50	9.00		.50	6.1	79.0
L 197	2.55	3.50	7.25	8.75		1.93	9.9	79.0
L 206	2.40	3.33	3.66	4.00		.39	3.3	183.4
L 207	2.35	3.40	3.83	4.50		.24	2.1	183.4
L 208	2.53	3.40	3.85	5.00		.11	9.2	228.0
L 209	2.52	3.40	3.83	7.00		.20	9.2	183.4
L 210	2.03	2.75	3.12	4.00		1.18	3.1	228.0
L 211	1.38	2.44	3.75	6.00		.37	1.8	300.0
L 212	2.73	4.25	7.00	9.00		.17	15.0	300.0
L 213	2.33	3.35	4.00	6.00		.14	4.7	300.0
L 214	1.10	2.00	2.55	4.00		1.22	36.3	300.0
L 215	3.15	4.08	4.65	6.00		.34	31.0	250.0
L 216	3.35	4.20	6.00	9.00		.13	19.1	250.0
L 217	1.80	2.83	3.66	5.50		.22	14.0	250.0
L 218	2.66	3.81	4.25	5.00		1.02	27.7	250.0
L 219	3.20	3.73	4.60	8.00		.11	26.8	250.0
L 220	3.13	3.73	4.35	6.00		.07	8.2	250.0
L 221	2.33	3.30	4.00	6.00		.40	11.3	250.0
L 222	3.06	3.93	4.50	5.00		.16	25.4	250.0
L 223	1.44	2.33	2.88	3.50		.12	14.0	250.0
L 224	1.99	2.92	3.50	4.00		.40	17.1	250.0
L 225	1.33	3.55	4.80	6.50		.10	8.6	317.0
L 226	1.26	2.28	3.00	8.00		1.25	16.2	191.0
L 227	1.60	2.88	3.70	8.00		.22	8.6	191.0
L 228	2.30	3.65	4.50	8.00		.20	10.1	191.0
L 229	1.40	3.10	3.75	4.25		.57	28.7	191.0
L 230	2.55	3.44	3.92	4.30		.19	38.2	191.0
L 231	1.70	3.55	4.40	5.50		.13	14.4	191.0
L 232	2.27	4.65	7.50	10.00		.72	22.3	660.0
L 233	1.75	3.06	4.00	6.00		.89	4.7	250.1
L 234	1.88	3.55	5.25	7.50		.75	4.5	250.1
L 235	1.44	2.88	3.66	5.00		1.16	3.6	250.1
L 236	1.88	3.07	3.55	5.00		.55	4.2	250.1
L 237	1.60	3.06	5.00	7.00		1.14	3.8	250.1
L 238	1.77	3.21	3.75	5.00		.43	8.2	250.1

morrison formation basic data-continued

SAMPLE	UNIT	LAT	LONG	LOCNO	CEMENTS	FE-OX	QTZ-GR	QZ-RF	CHERT-FR	CHERT-AU
L 239	413010.	37. 37	108. 73	214.	. 00B	. 00B	. 00B	. 00B	. 00B	. 00B
L 240	413010.	37. 37	108. 73	214.	. 00B	. 00B	. 00B	. 00B	. 00B	. 00B
L 241	413010.	37. 37	108. 73	214.	18. 20	3. 00	69. 20	. 00N	. 60	. 00N
L 243	413040.	37. 37	108. 73	214.	. 82	. 80	84. 80	. 00N	. 40	. 00N
L 244	413040.	37. 37	108. 73	214.	15. 60	2. 80	69. 40	. 00N	. 20	. 00N
L 245	413040.	37. 37	108. 73	214.	. 00B	. 00B	. 00B	. 00B	. 00B	. 00B
L 249	413010.	38. 87	110. 35	178.	. 00B	. 00B	. 00B	. 00B	. 00B	. 00B
L 250	413010.	38. 87	110. 35	178.	. 00B	. 00B	. 00B	. 00B	. 00B	. 00B
L 251	413010.	38. 87	110. 35	178.	. 00B	. 00B	. 00B	. 00B	. 00B	. 00B
L 255	413010.	38. 39	110. 74	88.	. 00B	. 00B	. 00B	. 00B	. 00B	. 00B
L 256	413010.	38. 39	110. 74	88.	. 00B	. 00B	. 00B	. 00B	. 00B	. 00B
L 257	413010.	38. 39	110. 74	88.	. 00B	. 00B	. 00B	. 00B	. 00B	. 00B
L 262	413010.	38. 84	109. 52	231.	. 00B	. 00B	. 00B	. 00B	. 00B	. 00B
L 263	413010.	38. 84	109. 52	231.	. 00B	. 00B	. 00B	. 00B	. 00B	. 00B
L 264	413010.	38. 84	109. 52	231.	. 00B	. 00B	. 00B	. 00B	. 00B	. 00B
L 265	413010.	38. 84	109. 52	231.	. 00B	. 00B	. 00B	. 00B	. 00B	. 00B
L 266	413010.	38. 84	109. 52	231.	. 00B	. 00B	. 00B	. 00B	. 00B	. 00B
L 267	413010.	38. 84	109. 52	231.	. 00B	. 00B	. 00B	. 00B	. 00B	. 00B
L 268	413010.	38. 84	109. 52	231.	. 00N	. 00N	62. 80	. 00N	4. 00	. 00N
L 269	413010.	38. 84	109. 52	231.	. 00B	. 00B	. 00B	. 00B	. 00B	. 00B
L 270	413010.	38. 84	109. 52	231.	. 00B	. 00B	. 00B	. 00B	. 00B	. 00B
L 271	413010.	38. 84	109. 52	231.	. 00B	. 00B	. 00B	. 00B	. 00B	. 00B
L 272	413010.	38. 84	109. 52	231.	. 00B	. 00B	. 00B	. 00B	. 00B	. 00B
L 273	413010.	38. 84	109. 52	231.	. 00B	. 00B	. 00B	. 00B	. 00B	. 00B
L 274	413010.	38. 84	109. 52	231.	. 00B	. 00B	. 00B	. 00B	. 00B	. 00B
L 275	413010.	38. 84	109. 52	231.	. 00B	. 00B	. 00B	. 00B	. 00B	. 00B
L 276	413010.	38. 84	109. 52	231.	. 00B	. 00B	. 00B	. 00B	. 00B	. 00B
L 284	413010.	38. 84	109. 52	231.	. 00B	. 00B	. 00B	. 00B	. 00B	. 00B
L 286	413010.	37. 37	108. 73	214.	. 00B	. 00B	. 00B	. 00B	. 00B	. 00B
L 300	413010.	36. 91	109. 28	162.	. 00B	. 00B	. 00B	. 00B	. 00B	. 00B
L 301	413010.	36. 91	109. 28	162.	. 00B	. 00B	. 00B	. 00B	. 00B	. 00B
L 302	413010.	36. 91	109. 28	162.	8. 60	. 20	69. 60	. 00N	. 40	. 00N
L 303	413010.	36. 91	109. 28	162.	. 00B	. 00B	. 00B	. 00B	. 00B	. 00B
L 304	413010.	36. 91	109. 28	162.	. 00B	. 00B	. 00B	. 00B	. 00B	. 00B
L 305	413010.	36. 91	109. 28	162.	. 00B	. 00B	. 00B	. 00B	. 00B	. 00B
L 306	413010.	36. 91	109. 28	162.	. 00B	. 00B	. 00B	. 00B	. 00B	. 00B
L 307	413010.	36. 91	109. 28	162.	. 00B	. 00B	. 00B	. 00B	. 00B	. 00B
L 308	413010.	36. 91	109. 28	162.	. 00B	. 00B	. 00B	. 00B	. 00B	. 00B
L 309	413010.	36. 91	109. 28	162.	. 00B	. 00B	. 00B	. 00B	. 00B	. 00B
L 311	413010.	37. 32	109. 43	163.	. 00B	. 00B	. 00B	. 00B	. 00B	. 00B
L 312	413010.	37. 32	109. 43	163.	23. 20	. 00N	67. 20	. 00N	2. 60	. 00N
L 319	413030.	36. 64	110. 41	135.	. 00B	. 00B	. 00B	. 00B	. 00B	. 00B

morrison formation basic data-continued

SAMPLE	SIL-RF	SIL-LSFR	K-SPAR	NA-SPAR	KADL	MICA	ILLITE	MIC-RF	HV-MIN	MISC-OP
L 239	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 240	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 241	.00N	.00N	3.80	.60	3.20	.00N	.40	.00N	.00N	.00B
L 243	.00N	.00N	3.40	1.40	6.00	.00N	.00N	.00N	.00N	.00N
L 244	.60	.00N	4.60	2.20	2.80	.00N	.20	.00N	.00N	.00N
L 245	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 249	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 250	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 251	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 255	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 256	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 257	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 262	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 263	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 264	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 265	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 266	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 267	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 268	.00N	2.20	2.80	2.40	.00N	.20	5.00	.00N	.00N	.00N
L 269	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 270	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 271	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 272	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 273	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 274	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 275	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 276	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 284	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 286	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 300	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 301	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 302	.00N	.00N	6.60	5.00	.00N	.00N	.00B	.00B	.00B	.00B
L 303	.00B	.00B	.00B	.00B	.00B	.00B	.40	.00N	.00N	.00B
L 304	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 305	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 306	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 307	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 308	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 309	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 311	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 312	1.00	1.60	1.80	1.00	.00N	.20	.40	.00N	.00N	.20
L 319	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B

morrison formation basic data-continued

SAMPLE	TUFF-FR	MONT	ASH	CEM-TOT	SIL-TOT	FELD-TOT	MICA-TOT	TUFF-TOT	TEXTURE	FE	PCT
L 239	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.30
L 240	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 241	1.00	.00N	.00N	21.20	69.80	7.60	.40	1.00	1.00		.50
L 243	1.00	1.40	.00N	1.60	85.20	10.80	.00N	2.40	1.00		.20
L 244	1.20	.40	.00N	18.40	70.20	9.60	.20	1.60	1.00		.70
L 245	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.70
L 249	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		1.00
L 250	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 251	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.30
L 255	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		1.00
L 256	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.15
L 257	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.20
L 262	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.15
L 263	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.20
L 264	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 265	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.30
L 266	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 267	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.10
L 268	4.40	1.20	15.00	.00N	69.00	5.20	5.20	20.60	1.00		.10
L 269	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.70
L 270	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 271	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 272	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		1.00
L 273	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		1.00
L 274	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 275	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.30
L 276	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.20
L 284	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 286	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 300	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.20
L 301	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.20
L 302	2.40	6.80	.00N	8.80	70.00	11.60	.40	9.20	1.00		.30
L 303	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 304	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 305	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.20
L 306	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.30
L 307	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	2.00		2.00
L 308	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.30
L 309	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 311	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.20
L 312	.80	.00N	.00N	23.20	72.40	2.80	.80	.80	1.00		.20
L 319	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.15

morrison formation basic data-continued

SAMPLE	MG	PCT	CA	PCT	T1	PCT	MN	PPM	B	PPM	BA	PPM	BE	PPM	CO	PPM	CR	PPM	CU	PPM
L 239	.15	.70		.03	150.00	.00N	300.00	.00N		.00N		.00N		.00N		.00N		1.00		3.00
L 240	.20	5.00		.02	700.00	20.00	500.00	.00N		20.00		.00N		.00N		.00N		2.00		3.00
L 241	.50	2.00		.05	300.00	20.00	1000.00	.00N		20.00		.00N		.00N		3.00		3.00		5.00
L 243	.30	.50		.03	100.00	20.00L	300.00	.00N		20.00L		.00N		.00N		.00N		2.00		3.00
L 244	.70	2.00		.03	500.00	.00N	1500.00	.00N		.00N		.00N		.00N		.00N		3.00		5.00
L 245	.20	1.50		.05	200.00	20.00L	150.00	.00N		20.00L		.00N		.00N		3.00		3.00		5.00
L 249	.70	.20		.07	20.00	20.00	1000.00	.00N		20.00		1.00		10.00		20.00N		10.00		30.00
L 250	.30	.07		.03	7.00	20.00L	200.00	.00N		20.00L		.00N		.00N		10.00		3.00		5.00
L 251	.20	.10		.07	100.00	20.00L	2000.00	.00N		20.00L		.00N		.00N		50.00		5.00		5.00
L 255	.20	.30		.07	100.00	30.00	200.00	.00N		30.00		5.00		70.00		70.00		5.00		7.00
L 256	.10	5.00		.05	300.00	20.00L	200.00	.00N		20.00L		.00N		.00N		10.00		5.00		10.00
L 257	.10	2.00		.03	200.00	20.00L	200.00	.00N		20.00L		.00N		.00N		20.00		10.00		5.00
L 262	.20	.70		.05	70.00	20.00L	300.00	.00N		20.00L		.00N		.00N		20.00		70.00		7.00
L 263	.30	1.00		.05	150.00	.00N	700.00	.00N		.00N		.00N		.00N		20.00		7.00		7.00
L 264	1.00	.20		.10	20.00	20.00	200.00	.00N		20.00		.00N		.00N		30.00		5.00		10.00
L 265	.30	.70		.07	100.00	.00N	150.00	.00N		.00N		.00N		.00N		30.00		3.00		5.00
L 266	1.00	.15		.10	70.00	20.00L	1000.00	.00N		20.00L		1.00		50.00		50.00		7.00		15.00
L 267	.15	2.00		.03	500.00	20.00L	1000.00	.00N		20.00L		.00N		.00N		.00N		3.00		3.00
L 268	.20	.70		.05	10.00	20.00L	150.00	.00N		20.00L		.00N		.00N		150.00		2.00		2.00
L 269	.10	10.00G		.01	500.00	.00N	200.00	.00N		.00N		.00N		.00N		.00N		10.00		7.00
L 270	.30	.10		.07	15.00	20.00	5000.00	.00N		20.00		.00N		.00N		3.00		5.00		5.00
L 271	.30	.50		.10	20.00	20.00	1500.00	.00N		20.00		.00N		.00N		7.00		5.00		5.00
L 272	.70	.20		.15	50.00	20.00	500.00	.00N		20.00		3.00		30.00		30.00		70.00		200.00
L 273	.15	.10		.10	30.00	30.00	1000.00	.00N		30.00		.00N		.00N		5.00N		10.00		20.00
L 274	.70	1.50		.07	70.00	20.00L	1000.00	.00N		20.00L		.00N		.00N		15.00		3.00		7.00
L 275	.20	.10		.05	100.00	50.00	200.00	.00N		50.00		.00N		.00N		10.00		5.00		7.00
L 276	.20	.15		.05	150.00	20.00	300.00	.00N		20.00		.00N		.00N		3.00		7.00		5.00
L 284	.00B	.00B		.00B	.00B	.00B	.00B	.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 286	.10	10.00G		.05	500.00	.00N	150.00	.00N		.00N		.00N		.00N		.00N		3.00		5.00
L 300	.20	3.00		.03	200.00	20.00L	200.00	.00N		20.00L		.00N		.00N		.00N		3.00		3.00
L 301	.20	10.00		.05	500.00	20.00L	150.00	.00N		20.00L		.00N		.00N		.00N		5.00		3.00
L 302	.30	1.50		.07	200.00	20.00	200.00	.00N		20.00		.00N		.00N		.00N		7.00		7.00
L 303	.20	.70		.10	200.00	30.00	300.00	.00N		30.00		.00N		.00N		3.00		50.00		7.00
L 304	.30	10.00		.10	300.00	20.00	150.00	.00N		20.00		.00N		.00N		5.00N		5.00		5.00
L 305	.15	5.00		.05	500.00	20.00L	150.00	.00N		20.00L		.00N		.00N		.00N		3.00		5.00
L 306	.20	2.00		.05	300.00	20.00L	300.00	.00N		20.00L		.00N		.00N		.00N		5.00		5.00
L 307	2.00	.50		.30	200.00	70.00	1000.00	.00N		70.00		3.00		20.00		20.00		50.00		50.00
L 308	.20	3.00		.05	200.00	20.00L	100.00	.00N		20.00L		.00N		.00N		.00N		3.00		5.00
L 309	.00B	.00B		.00B	.00B	.00B	.00B	.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 311	.07	10.00		.05	500.00	20.00L	200.00	.00N		20.00L		.00N		.00N		.00N		3.00		7.00
L 312	.10	3.00		.03	300.00	.00N	1000.00	.00N		.00N		.00N		.00N		.00N		3.00		7.00
L 319	.05	.07		.05	7.00	.00N	150.00	.00N		.00N		.00N		.00N		.00N		2.00		3.00

morrison formation basic data-continued

SAMPLE	LA	PPM	NB	PPM	N1	PPM	PB	PPM	SC	PPM	SR	PPM	V	PPM	Y	PPM	ZN	PPM	ZR	PPM
L 239	.00N	10.00L	.00N	.00N	.00N	.00N	.00N	30.00	.00N	.00N	20.00	20.00	.00N	10.00L	.00N	.00N	.00N	.00N	70.00	.00N
L 240	.00N	.00N	.00N	.00N	.00N	.00N	10.00L	150.00	.00N	.00N	20.00	20.00	.00N	10.00L	.00N	.00N	.00N	.00N	100.00	.00N
L 241	.00N	.00N	5.00L	.00N	.00N	.00N	10.00	150.00	.00N	.00N	20.00	20.00	.00N	10.00L	.00N	.00N	.00N	.00N	10.00	.00N
L 243	.00N	10.00L	.00N	.00N	.00N	.00N	10.00L	50.00	.00N	.00N	15.00	15.00	.00N	.00N	.00N	.00N	.00N	.00N	50.00	.00N
L 244	.00N	.00N	.00N	.00N	.00N	.00N	10.00	200.00	.00N	.00N	15.00	15.00	.00N	.00N	.00N	.00N	.00N	.00N	30.00	.00N
L 245	.00N	.00N	.00N	.00N	.00N	.00N	10.00	30.00	.00N	.00N	30.00	30.00	.00N	10.00	.00N	.00N	.00N	.00N	50.00	.00N
L 249	.00N	.00N	5.00	.00N	.00N	.00N	20.00	1000.00	.00N	.00N	1000.00	1000.00	.00N	1.00N	.00N	.00N	.00N	.00N	50.00	.00N
L 250	.00N	.00N	7.00	.00N	.00N	.00N	.00N	7.00	.00N	.00N	1000.00	1000.00	.00N	1.50N	.00N	.00N	.00N	.00N	150.00	.00N
L 251	.00N	10.00L	50.00	.00N	.00N	.00N	.00N	30.00	.00N	.00N	700.00	700.00	.00N	50.00	.00N	.00N	.00N	.00N	100.00	.00N
L 255	.00N	.00N	50.00	.00N	.00N	.00N	70.00	50.00	.00N	.00N	20000.00	20000.00	.00N	.00N	.00N	.00N	.00N	.00N	150.00	.00N
L 256	.00N	.00N	10.00	.00N	.00N	.00N	20.00	70.00	.00N	.00N	700.00	700.00	.00N	.00N	.00N	.00N	.00N	.00N	200.00	.00N
L 257	.00N	.00N	15.00	.00N	.00N	.00N	15.00	50.00	.00N	.00N	1000.00	1000.00	.00N	.00N	.00N	.00N	.00N	.00N	70.00	.00N
L 262	.00N	.00N	5.00	.00N	.00N	.00N	15.00	30.00	.00N	.00N	200.00	200.00	.00N	10.00	.00N	.00N	.00N	.00N	50.00	.00N
L 263	.00N	.00N	10.00	.00N	.00N	.00N	10.00L	30.00	.00N	.00N	700.00	700.00	.00N	10.00	.00N	.00N	.00N	.00N	70.00	.00N
L 264	.00N	.00N	15.00	.00N	.00N	.00N	15.00	30.00	.00N	.00N	7000.00	7000.00	.00N	30.00	.00N	.00N	.00N	.00N	200.00	.00N
L 265	.00N	.00N	10.00	.00N	.00N	.00N	.00N	20.00	.00N	.00N	500.00	500.00	.00N	.00N	.00N	.00N	.00N	.00N	100.00	.00N
L 266	.00N	.00N	15.00	.00N	.00N	.00N	15.00	50.00	.00N	.00N	10000.00	10000.00	.00N	70.00	.00N	.00N	.00N	.00N	150.00	.00N
L 267	.00N	.00N	.00N	.00N	.00N	.00N	.00N	50.00	.00N	.00N	100.00	100.00	.00N	10.00	.00N	.00N	.00N	.00N	150.00	.00N
L 268	.00N	.00N	.00N	.00N	.00N	.00N	.00N	20.00	.00N	.00N	20.00	20.00	.00N	10.00L	.00N	.00N	.00N	.00N	300.00	.00N
L 269	.00N	.00N	.00N	.00N	.00N	.00N	.00N	300.00	.00N	.00N	70.00	70.00	.00N	10.00L	.00N	.00N	.00N	.00N	30.00	.00N
L 270	.00N	.00N	.00N	.00N	.00N	.00N	10.00	30.00	.00N	.00N	2000.00	2000.00	.00N	.00N	.00N	.00N	.00N	.00N	100.00	.00N
L 271	.00N	.00N	7.00	.00N	.00N	.00N	.00N	20.00	.00N	.00N	700.00	700.00	.00N	.00N	.00N	.00N	.00N	.00N	150.00	.00N
L 272	.00N	.00N	10.00	.00N	.00N	.00N	70.00	100.00	.00N	.00N	20000.00	20000.00	.00N	.00N	.00N	.00N	.00N	.00N	200.00	.00N
L 273	.00N	.00N	.00N	.00N	.00N	.00N	15.00	150.00	.00N	.00N	1500.00	1500.00	.00N	10.00	.00N	.00N	.00N	.00N	200.00	.00N
L 274	.00N	.00N	5.00	.00N	.00N	.00N	10.00	50.00	.00N	.00N	2000.00	2000.00	.00N	.00N	.00N	.00N	.00N	.00N	150.00	.00N
L 275	.00N	.00N	5.00	.00N	.00N	.00N	10.00	50.00	.00N	.00N	300.00	300.00	.00N	.00N	.00N	.00N	.00N	.00N	100.00	.00N
L 276	.00N	.00N	.00N	.00N	.00N	.00N	10.00L	70.00	.00N	.00N	200.00	200.00	.00N	10.00	.00N	.00N	.00N	.00N	100.00	.00N
L 284	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	20.00	.00B
L 286	.00N	.00N	.00N	.00N	.00N	.00N	.00N	100.00	.00N	.00N	50.00	50.00	.00N	.00N	.00N	.00N	.00N	.00N	70.00	.00N
L 300	.00N	.00N	.00N	.00N	.00N	.00N	10.00L	70.00	.00N	.00N	150.00	150.00	.00N	.00N	.00N	.00N	.00N	.00N	70.00	.00N
L 301	.00N	.00N	.00N	.00N	.00N	.00N	10.00	150.00	.00N	.00N	1500.00	1500.00	.00N	.00N	.00N	.00N	.00N	.00N	70.00	.00N
L 302	.00N	.00N	.00N	.00N	.00N	.00N	10.00L	100.00	.00N	.00N	150.00	150.00	.00N	10.00	.00N	.00N	.00N	.00N	150.00	.00N
L 303	.00N	.00N	.00N	.00N	.00N	.00N	15.00	70.00	.00N	.00N	700.00	700.00	.00N	.00N	.00N	.00N	.00N	.00N	100.00	.00N
L 304	.00N	.00N	.00N	.00N	.00N	.00N	50.00	200.00	.00N	.00N	7000.00	7000.00	.00N	.00N	.00N	.00N	.00N	.00N	70.00	.00N
L 305	.00N	.00N	.00N	.00N	.00N	.00N	10.00	100.00	.00N	.00N	700.00	700.00	.00N	.00N	.00N	.00N	.00N	.00N	150.00	.00N
L 306	.00N	.00N	.00N	.00N	.00N	.00N	10.00	100.00	.00N	.00N	500.00	500.00	.00N	.00N	.00N	.00N	.00N	.00N	100.00	.00N
L 307	70.00	10.00	20.00	.00N	.00N	.00N	70.00	700.00	.00N	.00N	10000.00	10000.00	.00N	70.00	.00N	.00N	.00N	.00N	100.00	.00N
L 308	.00N	.00N	.00N	.00N	.00N	.00N	10.00	100.00	.00N	.00N	2000.00	2000.00	.00N	.00N	.00N	.00N	.00N	.00N	30.00	.00N
L 309	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 311	.00N	.00N	.00N	.00N	.00N	.00N	.00N	150.00	.00N	.00N	30.00	30.00	.00N	.00N	.00N	.00N	.00N	.00N	150.00	.00N
L 312	.00N	.00N	.00N	.00N	.00N	.00N	.00N	150.00	.00N	.00N	20.00	20.00	.00N	.00N	.00N	.00N	.00N	.00N	150.00	.00N
L 319	.00N	.00N	.00N	.00N	.00N	.00N	.00N	10.00	.00N	.00N	10.00	10.00	.00N	.00N	.00N	.00N	.00N	.00N	100.00	.00N

morrison formation basic data-continued

SAMPLE	HG2	PPM	CU2	PPM	PHI	MEAN	MODE	MM	PHI	MED	PHI	SD	PHI	SKEW	PHI	KURT	2PHI	PT	SPHI	PT
L 239	.11		30.00			2.68	.148			2.49		1.37		1.57		1.18		1.23		1.42
L 240	.14		20.00			3.07	.117			2.92		1.03		1.73		1.65		2.00		2.20
L 241	.20		20.00			2.99	.148			2.64		1.62		1.29		.69		1.30		1.55
L 243	.14		20.00			2.57	.176			2.21		1.41		1.29		.77		1.22		1.38
L 244	.23		15.00			2.88	.148			2.66		1.17		1.53		1.09		1.75		1.93
L 245	.10		20.00			1.83	.352			1.51		1.53		1.32		.81		.15		.45
L 249	.25		30.00			1.83	.353			1.06		1.44		1.10		.85		.40		.10
L 250	.22		10.00			1.31	.420			1.22		1.02		1.63		2.18		.33		.20
L 251	.15		10.00			2.61	.211			2.35		1.06		1.28		1.27		1.25		1.42
L 255	2.80		10.00			3.31	.149			2.84		1.76		1.18		.60		1.54		1.77
L 256	.18		20.00			2.97	.149			2.72		1.20		1.59		1.39		1.55		1.88
L 257	.60		20.00			2.90	.149			2.79		1.02		1.53		1.55		1.57		1.87
L 262	.20		15.00			2.23	.250			2.16		.92		1.01		.85		.96		1.14
L 263	.24		15.00			2.38	.250			2.17		1.28		1.34		1.04		.95		1.13
L 264	.70		15.00			3.02	.125			2.83		1.22		1.35		.98		1.68		1.88
L 265	.15		10.00			2.43	.210			2.34		.90		1.39		1.50		1.28		1.44
L 266	.75		15.00			1.29	.418			1.09		1.25		1.53		1.38		.21		.11
L 267	.18		10.00			2.02	.318			1.78		1.10		1.34		1.16		.75		.95
L 268	.23		10.00L			2.20	.225			2.08		.94		1.52		1.65		1.15		1.33
L 269	.36		10.00			1.52	.297			1.56		1.52		.78		.62		-1.25		-1.66
L 270	1.10		15.00			2.22	.297			1.94		1.45		1.08		.73		.33		.71
L 271	1.10		15.00			2.36	.250			2.09		1.53		.84		.51		.15		.62
L 272	.44		240.00			2.54	.318			2.10		1.56		1.14		.64		.95		1.15
L 273	.10		15.00			2.22	.352			1.79		1.39		1.26		.92		.77		.92
L 274	.01		20.00			3.13	.125			2.92		1.18		1.52		1.21		1.98		2.08
L 275	.15		15.00			3.02	.148			2.86		1.05		1.63		1.63		1.80		2.00
L 276	.02		30.00			3.03	.125			2.93		1.01		1.78		1.89		2.00		2.12
L 284	.008		.008			3.57	.090			3.47		.51		2.21		3.05		2.95		3.03
L 286	.17		10.00			2.57	.250			2.49		1.11		1.03		.79		1.25		1.42
L 300	.03		15.00			2.86	.149			2.78		.69		1.43		1.49		2.03		2.14
L 301	.12		15.00			3.32	.125			3.12		1.04		1.59		1.43		2.35		2.55
L 302	.16		75.00			3.22	.125			3.07		1.19		1.64		1.38		1.93		2.17
L 303	.38		40.00			3.52	.089			3.38		.75		1.60		1.81		2.40		2.65
L 304	.40		20.00			3.56	.088			3.33		.98		1.54		1.42		2.53		2.53
L 305	.28		20.00			3.15	.105			3.00		1.12		1.42		1.26		1.77		2.00
L 306	.08		10.00			3.44	.105			3.27		.78		1.24		1.08		2.40		2.60
L 307	.32		20.00			7.64	.008			7.95		1.88		.01		.08		4.00		4.75
L 308	.16		20.00			2.53	.210			2.34		.85		1.44		1.62		1.50		1.70
L 309	.008		.008			3.70	.088			3.37		.98		1.84		1.64		2.75		2.90
L 311	1.00		20.00			2.98	.138			2.79		1.09		1.27		.92		1.70		1.90
L 312	.37		30.00			2.43	.210			2.33		.89		1.31		1.21		1.33		1.50
L 319	.40		10.00			2.40	.211			2.18		1.27		1.79		1.64		1.10		1.30

morrison formation basic data-continued

SAMPLE	16PHI PT	84PHI PT	95PHI PT	98PHI PT	HM	PCT	ACSO PCT	THKNESS
L 239	1.84	3.08	4.75	8.75		.87	6.9	269.6
L 240	2.50	3.35	4.12	7.00		.80	8.3	269.6
L 241	2.03	3.33	7.50	9.25		.56	8.1	269.6
L 243	1.66	3.00	5.65	7.75		.60	5.4	194.1
L 244	2.22	3.13	5.50	7.50		1.80	12.4	194.1
L 245	.88	2.28	6.00	7.50		1.53	6.4	194.1
L 249	.80	2.55	4.35	6.00		.44	4.2	191.0
L 250	.75	1.73	2.40	4.00		.33	3	191.0
L 251	1.77	3.40	4.20	5.50		1.28	2.2	191.0
L 255	2.13	3.94	7.50	10.00		.21	6.2	266.0
L 256	2.22	3.44	4.18	8.00		.12	11.2	266.0
L 257	2.22	3.40	4.00	6.00		.17	9.5	266.0
L 262	1.47	2.88	3.45	5.00		.47	1.9	250.1
L 263	1.45	3.00	4.25	7.00		.27	4.9	250.1
L 264	2.25	3.40	5.25	8.00		.48	2.6	250.0
L 265	1.77	2.95	3.53	4.00		.16	2.5	250.1
L 266	.61	1.68	3.00	6.00		.37	2.6	250.1
L 267	1.27	2.71	3.65	5.00		.21	4.6	250.1
L 268	1.63	2.63	3.35	5.00		.26	2.0	250.1
L 269	.58	2.45	4.00	6.00		1.34	36.1	250.1
L 270	1.22	3.15	4.50	7.00		.54	2.9	250.1
L 271	1.24	3.42	5.00	7.00		.46	4.9	250.1
L 272	1.40	3.47	5.75	9.00		.43	5.8	250.1
L 273	1.20	3.18	4.35	7.00		1.41	2.4	250.1
L 274	2.33	3.57	4.75	8.00		.61	4.8	250.1
L 275	2.28	3.51	4.22	6.00		.12	6.6	250.1
L 276	2.45	3.44	4.00	6.00		.21	7.0	250.1
L 284	3.20	3.75	5.25	8.00		.48	2.6	250.1
L 286	1.69	3.26	4.00	6.00		1.45	29.5	269.6
L 300	2.37	3.32	3.82	4.20		.05	10.3	180.0
L 301	2.80	3.68	4.75	7.00		.19	34.0	180.0
L 302	2.55	3.62	4.50	7.50		.17	10.7	180.0
L 303	3.05	3.82	4.45	6.00		.25	5.0	180.0
L 304	3.00	3.85	5.00	7.00		.11	21.6	180.0
L 305	2.35	2.56	4.75	7.00		.27	16.4	180.0
L 306	2.90	3.70	4.40	6.50		.10	11.8	180.0
L 307	5.75	10.05	10.75	10.92		.008	13.3	380.0
L 308	1.95	3.00	5.00	7.50		.02	9.2	180.0
L 309	3.12	3.85	5.50	7.50		.27	5.7	380.0
L 311	2.28	3.57	4.60	7.00		.36	26.4	34.1
L 312	1.82	2.94	3.40	5.00		.56	12.2	34.1
L 319	1.63	2.88	3.60	8.00		.03	2.8	160.1

morrison formation basic data-continued

SAMPLE	UNIT	LAT	LONG	LOCNO	CEMENTS	FE-OX	QTZ-GR	QZ-RF	CHERT-FR	CHERT-AU
L 320	413020.	36.64	110.41	135.	.00B	.00B	.00B	.00B	.00B	.00B
L 321	413010.	36.64	110.41	135.	.42	.00N	77.60	.00N	1.20	.00N
L 327	413030.	36.47	110.59	30.	.00B	.00B	.00B	.00B	.00B	.00B
L 329	413010.	38.50	107.25	179.	.00B	.00B	.00B	.00B	.00B	.00B
L 330	413010.	38.30	108.18	165.	.00B	.00B	.00B	.00B	.00B	.00B
L 331	413010.	38.61	108.22	142.	.00B	.00B	.00B	.00B	.00B	.00B
L 332	413010.	38.82	108.38	19.	.00B	.00B	.00B	.00B	.00B	.00B
L 333	413010.	38.82	108.38	19.	.00B	.00B	.00B	.00B	.00B	.00B
L 334	413010.	38.62	108.88	136.	.00B	.00B	.00B	.00B	.00B	.00B
L 335	413010.	38.62	108.88	136.	.00B	.00B	.00B	.00B	.00B	.00B
L 336	413010.	38.62	108.88	136.	.00B	.00B	.00B	.00B	.00B	.00B
L 337	413010.	38.62	108.88	136.	.00B	.00B	.00B	.00B	.00B	.00B
L 338	413040.	38.62	108.88	136.	.00B	.00B	.00B	.00B	.00B	.00B
L 339	413010.	38.55	108.19	171.	.00B	.00B	.00B	.00B	.00B	.00B
L 340	413010.	39.13	109.06	194.	.00B	.00B	.00B	.00B	.00B	.00B
L 341	413010.	39.19	108.82	115.	.00B	.00B	.00B	.00B	.00B	.00B
L 342	413010.	39.19	108.82	115.	.00B	.00B	.00B	.00B	.00B	.00B
L 343	413010.	39.97	107.71	138.	12.80	.00N	68.80	.20	.20	.00N
L 344	413010.	39.88	106.91	27.	15.00	.00N	68.20	.20	2.00	.00N
L 345	413010.	39.08	108.82	12.	.00B	.00B	.00B	.00B	.00B	.00B
L 346	413010.	39.08	108.82	12.	.00B	.00B	.00B	.00B	.00B	.00B
L 347	413010.	39.08	108.82	12.	.00B	.00B	.00B	.00B	.00B	.00B
L 349	413010.	38.05	108.10	177.	.00B	.00B	.00B	.00B	.00B	.00B
L 350	413010.	38.05	108.10	177.	8.00	1.20	84.60	.00N	1.80	.00N
L 351	413010.	38.05	108.10	177.	.00B	.00B	.00B	.00B	.00B	.00B
L 352	413010.	38.05	108.10	177.	.00B	.00B	.00B	.00B	.00B	.00B
L 353	413010.	37.94	108.76	99.	.00B	.00B	.00B	.00B	.00B	.00B
L 354	413010.	37.94	108.76	99.	.00B	.00B	.00B	.00B	.00B	.00B
L 355	413010.	37.94	108.76	99.	.00B	.00B	.00B	.00B	.00B	.00B
L 356	413010.	37.94	108.76	99.	.00B	.00B	.00B	.00B	.00B	.00B
L 357	413010.	37.94	108.76	99.	.00B	.00B	.00B	.00B	.00B	.00B
L 358	413010.	36.80	109.01	7.	.40	.00N	84.80	.00N	.60	.20
L 359	413010.	36.80	109.01	7.	.00B	.00B	.00B	.00B	.00B	.00B
L 360	413010.	36.80	109.01	7.	4.40	.20	86.20	.00N	.80	.00N
L 366	413010.	37.94	108.76	99.	.00B	.00B	.00B	.00B	.00B	.00B
L 368	413010.	37.97	107.92	8.	.00B	.00B	.00B	.00B	.00B	.00B
L 370	413040.	37.46	109.62	28.	.80	.00N	27.60	.00N	.40	.00N
L 371	413030.	37.62	109.62	28.	.00B	.00B	.00B	.00B	.00B	.00B
L 372	413030.	37.46	109.62	28.	6.80	.00N	75.60	.00N	1.00	.00N
L 373	413030.	37.46	109.62	28.	2.20	.00N	79.20	.00N	.00N	.00N
L 374	413030.	36.72	109.04	151.	.00B	.00B	.00B	.00B	.00B	.00B
L 375	413030.	36.72	109.04	151.	.00B	.00B	.00B	.00B	.00B	.00B

morrison formation basic data-continued

SAMPLE	SIL-RF	SIL-LSFR	K-SPAR	NA-SPAR	KAOL	MICA	ILLITE	MIC-RF	HV-MIN	MISC-OP
L 320	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 321	.20	.00N	9.60	1.20	.00N	.20	4.60	.20	.00N	.20
L 327	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 329	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 330	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 331	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 332	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 333	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 334	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 335	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 336	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 337	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 338	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 339	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 340	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 341	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 342	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 343	.60	.00N	10.80	3.60	.00N	.00N	.40	.20	.00N	.00N
L 344	.00B	.00B	8.60	4.40	.00N	.00N	.20	.00N	.00N	.00N
L 345	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 346	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 347	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 349	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 350	.00N	.40	.00N	.60	.00N	.00N	1.00	.00N	.00N	.00N
L 351	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 352	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 353	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 354	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 355	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 356	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 357	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 358	2.20	.00N	5.40	2.40	.00N	.20	.80	.00N	.00N	.40
L 359	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 360	.20	.00B	4.20	2.20	.00N	.00N	.00N	.00N	.00N	.00N
L 366	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 368	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 370	.00N	.00N	8.20	6.40	.00N	1.60	.00N	.00N	.20	.80
L 371	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 372	.00N	.00N	12.00	1.40	.60	.00N	.00N	.00N	.00N	.00N
L 373	.00N	.00N	11.60	1.40	.60	.00N	.60	.00N	.20	.00N
L 374	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 375	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B

morrison formation basic data--continued

SAMPLE	TUFF-FR	MONT	ASH	CEM-TOT	SIL-TOT	FELD-TOT	MICA-TOT	TUFF-TOT	TEXTURE	FE	PCT
L 320	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.15
L 321	4.40	.20	.00N	.40	79.00	10.80	5.20	4.60	1.00		.20
L 327	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.30
L 329	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.05
L 330	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.05
L 331	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.20
L 332	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.30
L 333	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.30
L 334	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.30
L 335	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.30
L 336	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 337	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 338	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 339	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.15
L 340	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 341	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.15
L 342	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.10
L 343	1.40	.80	.00N	12.80	70.00	14.40	.60	2.20	1.00		.50
L 344	.80	.00N	.00N	15.00	71.00	13.00	.20	.80	1.00		.15
L 345	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.15
L 346	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 347	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		1.00
L 349	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 350	2.40	.00N	.00N	9.20	56.80	.60	1.00	2.40	1.00		.30
L 351	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 352	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 353	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 354	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.10
L 355	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.15
L 356	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.30
L 357	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.20
L 358	2.60	.00N	.00N	.40	87.80	7.80	1.40	2.60	1.00		.20
L 359	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 360	1.80	.00N	.00N	4.60	87.20	6.40	.00N	1.80	1.00		.15
L 366	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.70
L 368	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 370	43.40	10.60	.00N	.80	28.00	14.60	2.60	54.00	1.00		.70
L 371	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 372	2.60	.00N	.00N	6.80	76.60	14.00	.00N	2.60	1.00		.20
L 373	4.20	.00N	.00N	2.20	79.20	13.60	.80	4.20	1.00		.15
L 374	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.30
L 375	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.20

morrison formation basic data-continued

SAMPLE	HG	PCT	CA	PCT	T1	PCT	MN	PPM	B	PPM	BA	PPM	BE	PPM	CO	PPM	CR	PPM	CU	PPM
L 320	.10	3.00	.03	500.00	20.00L	1000.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N
L 321	.20	.20	.05	30.00	30.00	200.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N
L 327	.10	.07	.07	20.00	20.00L	200.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N
L 329	.02	.10	.01	1.50	.00N	700.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N
L 330	.02	.07	.03	2.00	.00N	200.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N
L 331	.10	10.00	.01	300.00	.00N	200.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N
L 332	.15	3.00	.02	300.00	.00N	1000.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N
L 333	.05	3.00	.03	150.00	20.00L	500.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N
L 334	.07	3.00	.03	150.00	20.00L	200.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N
L 335	.70	2.00	.05	100.00	30.00	500.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N
L 336	.70	1.50	.07	150.00	20.00	700.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N
L 337	1.00	2.00	.07	200.00	30.00	1000.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N
L 338	.50	3.00	.05	500.00	20.00L	1000.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N
L 339	.15	1.50	.05	70.00	.00N	300.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N
L 340	.50	5.00	.05	500.00	.00N	2000.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N
L 341	.10	7.00	.02	200.00	.00N	500.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N
L 342	.15	1.50	.02	150.00	.00N	70.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N
L 343	.30	.20	.07	300.00	20.00	200.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N
L 344	.20	.30	.05	100.00	20.00	500.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N
L 345	.07	.30	.03	150.00	20.00L	1000.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N
L 346	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 347	.10	1.50	.05	70.00	20.00L	200.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N
L 349	.30	1.50	.03	70.00	.00N	300.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N
L 350	.07	5.00	.02	300.00	.00N	300.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N
L 351	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 352	1.00	2.00	.05	200.00	20.00L	2000.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N
L 353	1.00	3.00	.02	200.00	.00N	500.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N
L 354	.10	5.00	.02	500.00	.00N	500.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N
L 355	.30	.70	.03	50.00	.00N	200.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N
L 356	.20	3.00	.03	300.00	.00N	1000.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N
L 357	.20	.70	.02	150.00	.00N	150.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N
L 358	.20	.50	.02	100.00	.00N	200.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N
L 359	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 360	.10	2.00	.02	100.00	.00N	150.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N
L 366	1.50	2.00	.03	200.00	20.00L	300.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N
L 368	.30	3.00	.05	200.00	20.00	700.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N
L 370	.50	.30	.20	150.00	20.00	700.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N
L 371	.15	.30	.07	150.00	20.00L	500.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N
L 372	.15	.70	.07	300.00	20.00	300.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N
L 373	.20	.50	.07	200.00	20.00L	200.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N
L 374	.10	.10	.07	70.00	20.00L	200.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N
L 375	.07	.10	.05	70.00	.00N	200.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N

morrison formation basic data-continued

SAMPLE	LA	PPM	NB	PPM	N1	PPM	PB	PPM	SC	PPM	SR	PPM	U	PPM	Y	PPM	ZN	PPM	ZR	PPM
L 320	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	150.00	.00N	30.00	.00N		.00N		.00N	100.00	
L 321	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	30.00	.00N	20.00	.00N		.00N		.00N	150.00	
L 327	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	20.00	.00N	10.00	.00N		.00N		.00N	50.00	
L 329	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	30.00	.00N	.00N	.00N		.00N		.00N	30.00	
L 330	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	70.00	.00N	.00N	.00N		.00N		.00N	30.00	
L 331	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	150.00	.00N	10.00	.00N		.00N		.00N	20.00	
L 332	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	150.00	.00N	10.00	.00N		.00N		.00N	30.00	
L 333	.00N	.00N	.00N	.00N	.00N	.00N	10.00L	.00N	.00N	.00N	100.00	.00N	10.00	.00N		.00N		.00N	200.00	
L 334	.00N	.00N	.00N	.00N	.00N	.00N	10.00L	.00N	.00N	.00N	100.00	.00N	15.00	.00N		.00N		.00N	70.00	
L 335	.00N	.00N	.00N	.00N	.00N	.00N	10.00	.00N	.00N	.00N	100.00	.00N	50.00	.00N		.00N		.00N	100.00	
L 336	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	100.00	.00N	30.00	.00N		.00N		.00N	100.00	
L 337	.00N	.00N	.00N	.00N	.00N	.00N	10.00L	.00N	.00N	.00N	200.00	.00N	30.00	.00N	15.00	.00N		.00N	200.00	
L 338	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	200.00	.00N	70.00	.00N	10.00	.00N		.00N	100.00	
L 339	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	70.00	.00N	10.00	.00N	10.00	.00N		.00N	50.00	
L 340	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	150.00	.00N	15.00	.00N	10.00L	.00N		.00N	70.00	
L 341	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	100.00	.00N	10.00	.00N	10.00L	.00N		.00N	50.00	
L 342	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	30.00	.00N	7.00	.00N	10.00	.00N		.00N	20.00	
L 343	.00N	.00N	.00N	.00N	.00N	.00N	10.00L	.00N	.00N	.00N	100.00	.00N	15.00	.00N	10.00	.00N		.00N	150.00	
L 344	.00N	.00N	.00N	.00N	.00N	.00N	10.00L	.00N	.00N	.00N	100.00	.00N	10.00	.00N	10.00	.00N		.00N	200.00	
L 345	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	150.00	.00N	10.00	.00N	10.00	.00N		.00N	100.00	
L 346	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B		.00B	.00B	
L 347	.00N	.00N	.00N	.00N	.00N	.00N	10.00	.00N	.00N	.00N	70.00	.00N	10.00	.00N	.00N	.00N		.00N	150.00	
L 349	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	30.00	.00N	10.00	.00N	.00N	.00N		.00N	50.00	
L 350	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	50.00	.00B	7.00	.00B	.00B	.00B		.00B	30.00	
L 351	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B		.00B	.00B	
L 352	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	150.00	.00N	15.00	.00N	.00N	.00N		.00N	70.00	
L 353	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	50.00	.00N	20.00	.00N	.00N	.00N		.00N	100.00	
L 354	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	100.00	.00N	50.00	.00N	10.00	.00N		.00N	20.00	
L 355	30.00	.00N	.00N	.00N	.00N	.00N	15.00	.00N	.00N	.00N	50.00	.00N	50.00	.00N	.00N	.00N		.00N	50.00	
L 356	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	100.00	.00N	15.00	.00N	10.00L	.00N		.00N	70.00	
L 357	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	30.00	.00N	10.00	.00N	.00N	.00N		.00N	20.00	
L 358	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	30.00	.00B	20.00	.00B	.00B	.00B		.00B	30.00	
L 359	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	7.00	.00N	.00N	.00N		.00N	20.00	
L 360	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	50.00	.00N	7.00	.00N	.00N	.00N		.00N	.00B	
L 364	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	50.00	.00N	70.00	.00N	.00N	.00N		.00N	20.00	
L 368	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	70.00	.00N	10.00	.00N	.00N	.00N		.00N	50.00	
L 370	50.00	.00N	10.00L	.00N	.00N	.00N	10.00	.00N	.00N	.00N	70.00	.00N	10.00	.00N	.00N	.00N		.00N	70.00	
L 371	.00N	.00N	.00N	.00N	.00N	.00N	10.00L	.00N	.00N	.00N	200.00	.00N	30.00	.00N	20.00	.00N		.00N	150.00	
L 372	.00N	.00N	.00N	.00N	.00N	.00N	10.00	.00N	.00N	.00N	70.00	.00N	20.00	.00N	10.00	.00N		.00N	70.00	
L 373	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	50.00	.00N	10.00	.00N	10.00L	.00N		.00N	10.00	
L 374	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	50.00	.00N	15.00	.00N	10.00L	.00N		.00N	10.00	
L 375	.00N	.00N	.00N	.00N	.00N	.00N	10.00	.00N	.00N	.00N	50.00	.00N	15.00	.00N	10.00L	.00N		.00N	30.00	
							.00N	.00N	.00N	.00N	50.00	.00N	10.00	.00N	10.00L	.00N		.00N	30.00	

morrison formation basic data-continued

SAMPLE	HG2	PPM	CU2	PPM	PHI MEAN	MODE	MM	PHI MED	PHI	SD	PHI SKEW	PHI KURT	2PHI	PT	SPHI	PT
L 320		.13	15.00		3.22	.105		3.10		.90	1.87	2.16	2.37		2.53	
L 321		.25	20.00		3.05	.105		2.95		1.11	1.52	1.53	1.55		1.80	
L 327		.52	15.00		2.71	.189		2.44		1.29	1.59	1.26	1.37		1.57	
L 329		.18	15.00		1.70	.297		1.64		.51	.87	.57	.95		1.10	
L 330		.13	10.00		3.05	.149		2.81		1.23	1.66	1.22	2.00		2.17	
L 331		.16	10.00L		2.61	.177		2.54		.82	.89	.72	1.33		1.60	
L 332		.18	15.00		2.80	.177		2.54		1.38	1.61	1.23	1.45		1.62	
L 333		.40	10.00		3.41	.075		3.38		1.01	1.84	1.97	2.05		2.30	
L 334		.15	10.00		3.17	.106		3.07		1.18	1.42	1.21	1.55		1.82	
L 335		.33	15.00		3.57	.089		3.38		1.23	1.74	1.53	2.30		2.50	
L 336		.32	10.00L		3.27	.105		3.00		1.56	1.19	.74	1.46		1.66	
L 337		.29	10.00L		3.80	.106		3.32		1.58	1.24	.66	2.27		2.45	
L 338		.15	10.00		1.60	.330		1.43		1.87	1.09	.65	-1.30		.75	
L 339		.04	15.00		2.73	.210		2.42		1.26	1.51	1.16	1.62		1.75	
L 340		.06	10.00		3.15	.125		2.85		1.26	1.61	1.16	2.17		2.30	
L 341		.09	15.00		2.90	.210		2.50		1.08	1.85	1.71	1.97		2.05	
L 342		.10	15.00		1.85	.296		1.68		.95	2.52	3.41	1.03		1.15	
L 343		.32	15.00		3.51	.088		3.38		1.03	1.16	.96	2.07		2.28	
L 344		.21	15.00		3.37	.088		3.28		.81	1.59	1.78	2.30		2.52	
L 345		.13	10.00		2.68	.210		2.29		1.29	1.51	1.18	1.53		1.68	
L 346		.00B	.00B		3.00	.126		2.97		.76	1.82	2.23	2.30		2.43	
L 347		.20	10.00		2.76	.150		2.63		.98	2.40	2.67	1.93		2.07	
L 349		.19	30.00		2.79	.212		2.51		1.42	1.17	.75	1.22		1.38	
L 350		.13	10.00		2.61	.211		2.20		.91	1.09	.86	1.27		1.43	
L 351		.00B	.00B		3.15	.106		3.01		.84	.94	.93	2.00		2.17	
L 352		.33	20.00		3.80	.089		3.46		1.25	1.24	.75	2.32		2.55	
L 353		.10	15.00		2.98	.176		2.67		1.15	1.30	.97	1.77		1.92	
L 354		.03	10.00L		2.56	.209		2.43		1.06	1.71	1.76	1.57		1.73	
L 355		.15	20.00		2.51	.225		2.27		1.15	1.35	1.14	1.33		1.45	
L 356		.38	20.00		3.01	.148		2.78		1.03	1.48	1.19	2.05		2.16	
L 357		.12	20.00		2.04	.296		1.83		1.27	1.76	1.66	.77		.94	
L 358		.08	20.00		2.70	.159		2.60		.88	2.11	2.72	1.77		1.92	
L 359		.00B	.00B		3.11	.125		2.91		1.07	1.82	1.74	2.14		2.28	
L 360		.03	20.00		2.29	.210		2.17		.74	1.16	1.31	1.38		1.53	
L 366		.04	10.00L		3.25	.125		3.10		1.28	1.16	.72	1.95		2.12	
L 368		.30	10.00L		3.35	.143		3.03		1.41	1.45	1.05	2.02		2.17	
L 370		.09	15.00		3.28	.125		3.00		1.29	1.38	.94	2.00		2.15	
L 371		.13	10.00		2.51	.210		2.30		1.18	1.62	1.35	1.30		1.50	
L 372		.08	15.00		3.13	.125		3.03		.89	2.10	2.29	2.28		2.46	
L 373		.13	15.00		2.75	.125		2.71		1.05	1.87	2.02	1.44		1.66	
L 374		.08	10.00		2.73	.148		2.70		.69	2.16	3.11	1.92		2.07	
L 375		.07	10.00L		2.81	.148		2.67		.97	2.11	2.30	1.90		2.05	

morrison formation basic data-continued

SAMPLE	16PHI PT	84PHI PT	95PHI PT	98PHI PT	HM	PCT	ACSO PCT	THKNSS
L 320	2.77	3.50	4.00	5.00		.62	12.7	335.9
L 321	2.30	3.53	4.30	6.00		.34	2.8	105.1
L 327	1.90	3.18	4.10	8.00		.41	2.7	48.3
L 329	1.35	2.10	2.45	2.70		.06	1.4	183.2
L 330	2.47	3.38	5.00	8.50		.05	.5	437.0
L 331	2.00	3.11	3.54	5.00		.05	31.7	309.0
L 332	1.95	3.20	4.50	9.00		.16	15.8	229.4
L 333	2.80	3.70	4.20	7.00		.11	18.9	229.4
L 334	2.36	3.58	4.50	8.00		.55	20.5	350.6
L 335	2.88	3.88	5.25	9.00		.12	11.8	350.6
L 336	2.11	3.92	6.75	9.00		.60	8.6	350.6
L 337	2.82	4.25	7.75	9.50		.46	13.0	350.6
L 338	1.50	2.15	6.00	8.50		.43	11.4	350.6
L 339	1.95	3.27	4.25	7.75		.09	6.1	414.0
L 340	2.50	3.64	5.50	8.50		1.22	12.8	230.8
L 341	2.20	3.33	4.50	7.00		.09	16.9	185.5
L 342	1.35	2.20	3.00	4.00		.06	7.3	185.5
L 343	2.75	4.05	5.30	7.00		.31	15.9	148.1
L 344	2.85	3.63	4.20	5.50		.42	13.9	79.0
L 345	1.90	3.18	4.75	8.00		.52	14.9	296.0
L 346	2.63	3.35	3.70	4.10		.10	21.9	296.0
L 347	2.30	3.00	3.55	7.00		.15	5.1	296.0
L 349	1.75	3.60	5.50	8.00		.01	8.7	380.6
L 350	1.75	2.85	3.90	5.00		.04	13.2	380.6
L 351	2.55	3.55	4.30	5.75		.73	14.3	380.6
L 352	3.04	4.35	6.40	9.00		.56	15.6	380.6
L 353	2.15	3.63	4.85	7.00		.13	14.5	321.1
L 354	1.97	3.10	4.00	6.00		.23	14.1	321.1
L 355	1.72	3.18	4.08	6.50		.05	4.0	321.1
L 356	2.36	3.62	4.80	6.50		.23	11.9	321.1
L 357	1.27	2.48	3.40	8.00		.09	3.9	321.1
L 358	2.15	3.05	3.55	5.00		.04	4.0	185.0
L 359	2.56	3.44	4.25	7.00		.17	6.2	185.0
L 360	1.77	2.73	3.20	4.00		.08	6.6	185.0
L 366	2.45	3.96	6.00	8.00		.42	15.6	321.1
L 368	2.45	3.92	6.00	9.00		.20	12.4	315.2
L 370	2.53	3.62	5.75	8.50		.13	15.4	213.2
L 371	1.82	2.88	3.75	7.50		.13	3.7	279.2
L 372	2.74	3.45	3.75	4.50		.17	4.9	279.2
L 373	2.10	3.16	3.54	5.00		.17	3.1	279.2
L 374	2.30	3.08	3.43	3.75		.59	.6	243.5
L 375	2.25	3.12	3.65	6.00		.04	1.0	243.5

morrison formation basic data-continued

SAMPLE	UNIT	LAT	LONG	LOGNO	CEMENTS	FE-OX	QTZ-GR	QZ-RF	CHERT-FR	CHERT-AU
L 376	413020.	36.72	109.04	151.	.00B	.00B	.00B	.00B	.00B	.00B
L 377	413010.	36.72	109.04	151.	.00B	.00B	.00B	.00B	.00B	.00B
L 378	413010.	36.72	109.04	151.	.00B	.00B	.00B	.00B	.00B	.00B
L 379	413010.	37.75	109.60	133.	.00B	.00B	.00B	.00B	.00B	.00B
L 380	413010.	38.50	107.25	179.	.00B	.00B	.00B	.00B	.00B	.00B
L 381	413010.	38.50	107.25	179.	.00B	.00B	.00B	.00B	.00B	.00B
L 382	413010.	38.50	107.25	179.	.00B	.00B	.00B	.00B	.00B	.00B
L 383	413010.	38.50	107.25	179.	.00B	.00B	.00B	.00B	.00B	.00B
L 384	413010.	38.50	107.25	179.	.00B	.00B	.00B	.00B	.00B	.00B
L 385	413010.	38.50	107.25	179.	.00B	.00B	.00B	.00B	.00B	.00B
L 386	413010.	38.50	107.25	179.	.00B	.00B	.00B	.00B	.00B	.00B
L 387	413040.	38.61	108.22	142.	17.20	2.20	.00B	.00B	.00B	.00B
L 388	413010.	38.61	108.22	142.	7.80	.80	60.20	.40	5.20	.60
L 389	413010.	38.61	108.22	142.	17.60	.40	84.40	.00N	.80	.00N
L 390	413010.	38.61	108.22	142.	25.80	.00N	70.80	.00N	.20	.00N
L 391	413020.	37.32	109.43	163.	.00B	.00B	63.40	.00N	2.00	.20
L 392	413020.	37.46	109.62	28.	.00B	.00B	.00B	.00B	.00B	.00B
L 393	413010.	37.46	109.62	28.	.00B	.00B	.00B	.00B	.00B	.00B
L 394	413010.	37.46	109.62	28.	.00B	.00B	.00B	.00B	.00B	.00B
L 395	413030.	37.82	109.28	215.	3.40	1.20	.00B	.00B	.00B	.00B
L 396	413030.	37.82	109.28	215.	3.00	.00N	66.00	.20	2.00	.00N
L 397	413030.	37.82	109.28	215.	8.60	.20	54.40	.00N	.60	22.20
L 398	413010.	37.82	109.28	215.	.20	.80	78.80	.40	.40	.00N
L 399	413010.	37.82	109.28	215.	.00B	.00B	86.40	.00N	.40	.00N
L 400	413010.	38.98	110.34	208.	.00B	.00B	.00B	.00B	.00B	.00B
L 401	413010.	38.98	110.34	208.	.00B	.00B	.00B	.00B	.00B	.00B
L 402	413010.	38.98	110.34	208.	.00B	.00B	.00B	.00B	.00B	.00B
L 405	413010.	38.70	108.29	72.	.00B	.00B	.00B	.00B	.00B	.00B
L 406	413010.	38.70	108.29	72.	.00B	.00B	.00B	.00B	.00B	.00B
L 407	413010.	38.70	108.29	72.	.00B	.00B	.00B	.00B	.00B	.00B
L 409	413040.	38.98	110.34	208.	11.80	.00N	63.20	.60	5.20	1.00
L 412	413040.	38.98	110.34	208.	.00B	.00B	.00B	.00B	.00B	.00B
L 413	413040.	38.81	109.95	64.	.00B	.00B	.00B	.00B	.00B	.00B
L 414	413040.	38.81	109.95	64.	.00B	.00B	.00B	.00B	.00B	.00B
L 415	413040.	38.81	109.95	64.	.00B	.00B	.00B	.00B	.00B	.00B
L 416	413040.	38.81	109.95	64.	.00B	.00B	.00B	.00B	.00B	.00B
L 417	413010.	38.81	109.95	64.	.00B	.00B	.00B	.00B	.00B	.00B
L 418	413010.	38.81	109.95	64.	.00B	.00B	.00B	.00B	.00B	.00B
L 419	413010.	38.81	109.95	64.	.00B	.00B	.00B	.00B	.00B	.00B
L 420	413010.	38.81	109.95	64.	.00B	.00B	.00B	.00B	.00B	.00B
L 421	413010.	38.81	109.95	64.	.00B	.00B	.00B	.00B	.00B	.00B
L 422	413010.	38.81	109.95	64.	2.00	.40	15.20	.00N	.20	.00N
					34.40	.00N	48.00	.00N	2.80	.00N

morrison formation basic data-continued

SAMPLE	SIL-RF	SIL-LSFR	K-SPAR	NA-SPAR	KADL	MICA	ILLITE	MIC-RF	HV-MIN	MISC-OP
L 376	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 377	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 378	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 379	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 380	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 381	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 382	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 383	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 384	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 385	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 386	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 387	4.20	3.20	2.00	1.00	3.00	.00N	.20	.00N	.00N	.00N
L 388	1.20	.20	.80	.40	2.60	.00N	.40	.00N	.00N	.00N
L 389	.40	.00N	4.20	1.60	4.40	.00N	.00N	.00N	.20	.00N
L 390	.20	.00N	5.40	1.00	.40	.00N	.00N	.00N	.00N	.00N
L 391	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 392	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 393	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 394	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 395	2.40	.20	1.40	8.60	5.20	.20	4.40	.20	.00N	.60
L 396	1.00	.00N	7.40	5.40	.00N	.00N	.20	.00N	.00N	.00N
L 397	.00N	.00N	3.60	5.80	.20	.00N	.40	.00N	.00N	.00N
L 398	.00N	.00N	4.40	.60	2.20	.40	1.60	.00N	.20	.40
L 399	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 400	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 401	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 402	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 405	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 406	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 407	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 409	4.00	5.00	.00N	4.60	.00N	.00N	1.40	.00N	.00N	.00N
L 412	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 413	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 414	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 415	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 416	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 417	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 418	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 419	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 420	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 421	.00N	.00N	5.40	.40	.00N	.00N	.00N	.00N	.20	.80
L 422	.00N	3.40	6.80	3.00	.00N	.20	.00N	.00N	.00N	.00N

morrison formation basic data-continued

SAMPLE	TUFF-FR	MONT	ASH	CEM-TOT	SIL-TOT	FELD-TOT	MICA-TOT	TUFF-TOT	TEXTURE	FE	PCT
L 376	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.70
L 377	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.20
L 378	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.30
L 379	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.15
L 380	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		2.00
L 381	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.05
L 382	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	4.00		.07
L 383	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 384	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.70
L 385	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		5.00
L 386	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.30
L 387	.40	.20	.00N	19.40	73.80	6.00	.20	.60	1.00		1.00
L 388	.00N	.60	.00N	8.60	86.60	3.80	.40	.60	1.00		.15
L 389	.20	.00N	.00N	18.00	71.40	10.20	.20	.20	1.00		.20
L 390	1.40	.20	.00N	25.80	65.80	6.80	.00N	1.60	1.00		1.00
L 391	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.20
L 392	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.20
L 393	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.20
L 394	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.20
L 395	3.80	.20	.00N	4.60	70.80	15.20	5.40	4.00	1.00		.50
L 396	3.80	2.00	.00N	3.00	78.20	12.80	.20	5.80	1.00		.70
L 397	1.60	.00N	.00N	8.80	79.60	9.60	.40	1.60	1.00		.15
L 398	2.20	.20	.00N	1.00	86.80	7.20	2.60	2.40	1.00		.10
L 399	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 400	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 401	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.10
L 402	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.10
L 405	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 406	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.20
L 407	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.70
L 409	2.80	.40	.00N	11.80	79.00	4.60	1.40	3.20	1.00		.20
L 412	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 413	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 414	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		1.00
L 415	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 416	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 417	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 418	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.10
L 419	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 420	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.20
L 421	.00N	75.40	.00N	2.40	15.40	5.80	1.00	75.40	2.00		5.00
L 422	.80	.60	.00N	34.40	54.20	9.80	.20	1.40	1.00		.20

morrison formation basic data-continued

SAMPLE	MG	PCT	CA	PCT	T1	PCT	MN	PPM	B	PPM	BA	PPM	BE	PPM	CO	PPM	CR	PPM	CU	PPM
L 376	.20	.15				.10	150.00	20.00L		300.00		.00N		3.00		5.00		5.00		5.00
L 377	.15	1.50				.07	70.00	20.00		200.00		.00N		.00N		5.00		5.00		5.00
L 378	.15	.50				.07	70.00	20.00L		300.00		.00N		.00N		3.00		5.00		5.00
L 379	.20	.50				.05	50.00	20.00		150.00		.00N		.00N		5.00		5.00		5.00
L 380	.50	1.00				.30	500.00	.00N		500.00		2.00N		5.00		10.00		30.00		30.00
L 381	.03	.15				.02	10.00	.00N		700.00		.00N		.00N		1.50		1.50		1.50
L 382	.10	10.00G				.00	700.00	.00N		1000.00		.00N		.00N		1.50		1.50		1.50
L 383	.15	2.00				.05	100.00	20.00		300.00		.00N		3.00		3.00		5.00		5.00
L 384	1.00	3.00				.05	300.00	.00N		200.00		.00N		3.00		30.00		2.00		2.00
L 385	1.00	3.00				.50	700.00	.00N		1000.00		2.00		15.00		50.00		50.00		50.00
L 386	.10	.10				.07	10.00	20.00L		500.00		.00N		.00N		5.00		7.00		7.00
L 387	1.00	5.00				.03	300.00	20.00L		3000.00		.00N		5.00		5.00		7.00		7.00
L 388	.07	5.00				.05	200.00	.00N		150.00		.00N		.00N		5.00		3.00		3.00
L 389	.10	3.00				.07	150.00	20.00		50.00		.00N		.00N		7.00		5.00		5.00
L 390	2.00	7.00				.07	200.00	20.00		1000.00		.00N		5.00		10.00		7.00		7.00
L 391	.50	1.00				.05	200.00	20.00		500.00		.00N		.00N		5.00		2.00		2.00
L 392	.20	.50				.07	50.00	20.00		200.00		.00N		.00N		3.00		2.00		2.00
L 393	.20	.50				.05	50.00	20.00		300.00		.00N		.00N		5.00		5.00		5.00
L 394	.20	.20				.07	50.00	20.00		300.00		.00N		.00N		5.00		5.00		5.00
L 395	.20	1.50				.07	200.00	30.00		200.00		.00N		.00N		30.00		5.00		5.00
L 396	.50	2.00				.07	500.00	20.00		15000.00		.00N		3.00		5.00		5.00		5.00
L 397	.10	5.00				.02	500.00	20.00L		10000.00		.00N		.00N		2.00		5.00		5.00
L 398	.20	.50				.07	100.00	20.00		500.00		.00N		.00N		2.00		5.00		5.00
L 399	.00B	.00B				.00B	.00B	.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 400	.20	5.00				.07	500.00	30.00		150.00		.00N		.00N		20.00		5.00		5.00
L 401	.10	10.00				.02	500.00	20.00		200.00		.00N		.00N		5.00		5.00		5.00
L 402	2.00	10.00				.02	500.00	20.00		200.00		.00N		.00N		10.00		5.00		5.00
L 405	.50	2.00				.05	200.00	20.00		500.00		.00N		3.00		5.00		5.00		5.00
L 406	.10	10.00				.02	500.00	20.00L		100.00		.00N		.00N		7.00		7.00		7.00
L 407	.50	5.00				.05	200.00	20.00		500.00		.00N		20.00		5.00		15.00		15.00
L 409	.20	7.00				.05	1000.00	20.00		500.00		.00N		.00N		10.00		5.00		5.00
L 412	.20	.50				.10	70.00	20.00		70.00		.00N		.00N		10.00		5.00		5.00
L 413	.20	10.00				.10	5000.00	20.00		1000.00		.00N		.00N		10.00		10.00		10.00
L 414	.10	.50				.15	100.00	20.00		1000.00		.00N		.00N		30.00		7.00		7.00
L 415	.50	2.00				.05	500.00	20.00		100.00		.00N		.00N		5.00		5.00		5.00
L 416	.30	.20				.10	100.00	20.00		1000.00		.00N		3.00L		5.00		5.00		5.00
L 417	.50	5.00				.10	500.00	20.00		2000.00		.00N		3.00		10.00		7.00		7.00
L 418	.20	2.00				.05	100.00	20.00		1000.00		.00N		.00N		10.00		2.00		2.00
L 419	.20	5.00				.07	300.00	20.00		1000.00		.00N		.00N		10.00		7.00		7.00
L 420	.20	10.00				.05	500.00	20.00		500.00		.00N		3.00		7.00		5.00		5.00
L 421	1.00	2.00				.30	100.00	70.00		300.00		2.00		10.00		70.00		70.00		70.00
L 422	.20	10.00G				.02	1000.00	20.00L		1000.00		.00N		.00N		10.00		10.00		10.00

morrison formation basic data-continued

SAMPLE	LA	PPM	NB	PPM	N1	PPM	PB	PPM	SC	PPM	SR	PPM	U	PPM	Y	PPM	ZN	PPH	ZR	PPM
L 376	.00N	.00N	.00N	.00N	.00N	.00N	10.00	.00N	.00N	.00N	50.00	20.00	20.00	10.00	.00N	.00N	.00N	.00N	200.00	.00N
L 377	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	70.00	20.00	20.00	10.00	.00N	.00N	.00N	.00N	150.00	.00N
L 378	.00N	.00N	.00N	.00N	.00N	.00N	10.00	.00N	.00N	.00N	70.00	15.00	15.00	.00N	.00N	.00N	.00N	.00N	50.00	.00N
L 379	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	10.00	.00N	30.00	30.00	30.00	30.00	.00N	.00N	.00N	.00N	70.00	.00N
L 380	50.00	10.00	10.00	10.00	5.00	5.00	15.00	.00N	.00N	.00N	300.00	30.00	30.00	30.00	.00N	.00N	.00N	.00N	200.00	.00N
L 381	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	50.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	30.00	.00N
L 382	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	500.00	7.00	7.00	10.00L	.00N	.00N	.00N	.00N	50.00	.00N
L 383	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	50.00	15.00	15.00	.00N	.00N	.00N	.00N	.00N	50.00	.00N
L 384	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	50.00	10.00	10.00	.00N	.00N	.00N	.00N	.00N	50.00	.00N
L 385	50.00	10.00L	10.00L	10.00L	20.00	20.00	10.00	.00N	15.00	.00N	500.00	100.00	100.00	50.00	.00N	.00N	.00N	.00N	200.00	.00N
L 386	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	150.00	10.00	10.00	10.00L	.00N	.00N	.00N	.00N	300.00	.00N
L 387	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	5.00	.00N	150.00	30.00	30.00	15.00	.00N	.00N	.00N	.00N	100.00	.00N
L 388	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	100.00	7.00	7.00	10.00L	.00N	.00N	.00N	.00N	200.00	.00N
L 389	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	70.00	10.00	10.00	.00N	.00N	.00N	.00N	.00N	500.00	.00N
L 390	.00N	.00N	.00N	.00N	10.00	10.00	100.00	.00N	.00N	.00N	200.00	30.00	30.00	10.00	.00N	.00N	.00N	.00N	100.00	.00N
L 391	.00N	.00N	.00N	.00N	.00N	.00N	20.00	.00N	.00N	.00N	50.00	20.00	20.00	10.00	.00N	.00N	.00N	.00N	100.00	.00N
L 392	.00N	.00N	.00N	.00N	.00N	.00N	20.00	.00N	.00N	.00N	50.00	20.00	20.00	.00N	.00N	.00N	.00N	.00N	50.00	.00N
L 393	.00N	.00N	.00N	.00N	.00N	.00N	10.00	.00N	.00N	.00N	20.00	10.00	10.00	10.00L	.00N	.00N	.00N	.00N	150.00	.00N
L 394	.00N	.00N	.00N	.00N	.00N	.00N	20.00	.00N	.00N	.00N	50.00	20.00	20.00	10.00	.00N	.00N	.00N	.00N	100.00	.00N
L 395	.00N	.00N	.00N	.00N	.00N	.00N	10.00	.00N	.00N	.00N	30.00	20.00	20.00	10.00	.00N	.00N	.00N	.00N	100.00	.00N
L 396	.00N	.00N	.00N	.00N	.00N	.00N	10.00	.00N	.00N	.00N	300.00	10.00	10.00	10.00	.00N	.00N	.00N	.00N	100.00	.00N
L 397	.00N	.00N	.00N	.00N	.00N	.00N	10.00	.00N	.00N	.00N	200.00	10.00	10.00	10.00L	.00N	.00N	.00N	.00N	30.00	.00N
L 398	.00N	.00N	.00N	.00N	.00N	.00N	10.00	.00N	.00N	.00N	20.00	10.00	10.00	10.00L	.00N	.00N	.00N	.00N	50.00	.00N
L 399	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 400	.00N	.00N	.00N	.00N	.00N	.00N	10.00	.00N	.00N	.00N	70.00	20.00	20.00	10.00	.00N	.00N	.00N	.00N	200.00	.00N
L 401	.00N	.00N	.00N	.00N	.00N	.00N	10.00	.00N	.00N	.00N	70.00	7.00	7.00	10.00	.00N	.00N	.00N	.00N	30.00	.00N
L 402	.00N	.00N	.00N	.00N	.00N	.00N	10.00L	.00N	.00N	.00N	70.00	10.00	10.00	10.00L	.00N	.00N	.00N	.00N	30.00	.00N
L 403	.00N	.00N	.00N	.00N	.00N	.00N	10.00L	.00N	.00N	.00N	100.00	20.00	20.00	10.00	.00N	.00N	.00N	.00N	50.00	.00N
L 406	.00N	.00N	.00N	.00N	.00N	.00N	10.00L	.00N	.00N	.00N	100.00	10.00	10.00	10.00L	.00N	.00N	.00N	.00N	20.00	.00N
L 407	.00N	.00N	.00N	.00N	.00N	.00N	20.00	.00N	.00N	.00N	100.00	50.00	50.00	.00N	.00N	.00N	.00N	.00N	50.00	.00N
L 409	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	50.00	10.00	10.00	10.00	.00N	.00N	.00N	.00N	50.00	.00N
L 412	.00N	.00N	.00N	.00N	.00N	.00N	10.00	.00N	.00N	.00N	100.00	10.00	10.00	10.00L	.00N	.00N	.00N	.00N	100.00	.00N
L 413	.00N	.00N	.00N	.00N	.00N	.00N	10.00	.00N	5.00L	.00N	500.00	20.00	20.00	20.00	.00N	.00N	.00N	.00N	100.00	.00N
L 414	.00N	.00N	.00N	.00N	.00N	.00N	10.00	.00N	5.00	.00N	100.00	10.00	10.00	10.00	.00N	.00N	.00N	.00N	200.00	.00N
L 415	.00N	.00N	.00N	.00N	.00N	.00N	10.00L	.00N	.00N	.00N	70.00	10.00	10.00	10.00L	.00N	.00N	.00N	.00N	200.00	.00N
L 416	.00N	.00N	.00N	.00N	.00N	.00N	10.00L	.00N	.00N	.00N	20.00	20.00	20.00	10.00L	.00N	.00N	.00N	.00N	300.00	.00N
L 417	.00N	.00N	.00N	.00N	.00N	.00N	10.00L	.00N	.00N	.00N	300.00	10.00	10.00	10.00	.00N	.00N	.00N	.00N	500.00	.00N
L 418	.00N	.00N	.00N	.00N	.00N	.00N	10.00	.00N	.00N	.00N	30.00	10.00	10.00	10.00L	.00N	.00N	.00N	.00N	70.00	.00N
L 419	.00N	.00N	.00N	.00N	.00N	.00N	10.00	.00N	.00N	.00N	100.00	20.00	20.00	10.00L	.00N	.00N	.00N	.00N	50.00	.00N
L 420	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	200.00	10.00	10.00	10.00	.00N	.00N	.00N	.00N	200.00	.00N
L 421	50.00	10.00	10.00	10.00	20.00	20.00	20.00	.00N	15.00	.00N	200.00	100.00	100.00	20.00	.00N	.00N	.00N	.00N	200.00	.00N
L 422	.00N	.00N	.00N	.00N	.00N	.00N	10.00	.00N	.00N	.00N	200.00	10.00	10.00	10.00L	.00N	.00N	.00N	.00N	20.00	.00N

morrison formation basic data-continued

SAMPLE	HG2	PPM	CU2	PPM	PHI	MEAN	MODE	MM	PHI	MED	PHI	SD	PHI	SKEW	PHI	KURT	2PHI	PT	SPHI	PT
L 376	.05		10.00L		3.02		.125		2.92		.95		2.12		2.47		2.15		2.32	
L 377	.05		10.00L		3.12		.088		3.10		.69		1.02		1.23		2.07		2.26	
L 378	.05		10.00L		3.08		.125		3.00		.90		1.95		2.43		2.05		2.28	
L 379	.08		10.00L		2.20		.250		1.99		1.07		1.66		1.70		1.18		1.35	
L 380	.29		30.00		2.70		.117		2.58		1.27		.43		.15		.75		1.00	
L 381	.13		10.00		1.82		.297		1.75		.59		.77		.36		1.02		1.15	
L 382	.10		10.00L		7.95		.003		8.36		1.61		.41		.07		4.05		4.35	
L 383	.10		10.00L		3.29		.125		2.95		1.46		1.50		1.01		2.10		2.28	
L 384	.13		10.00L		3.16		.129		2.86		1.28		1.48		1.02		2.04		2.15	
L 385	.12		40.00		2.92		.154		2.81		1.62		.26		.15		.05		.70	
L 386	.18		10.00L		2.91		.148		2.73		1.17		1.69		1.64		1.55		1.82	
L 387	.10		20.00		2.63		.210		2.20		1.89		1.27		.71		.50		1.14	
L 388	.12		10.00L		2.45		.210		2.21		1.18		1.76		1.62		1.23		1.40	
L 389	.18		10.00L		3.29		.125		3.08		1.19		1.46		1.03		2.26		2.42	
L 390	.08		10.00L		3.63		.125		3.27		1.55		1.37		.84		2.33		2.50	
L 391	.13		10.00L		2.57		.210		2.46		.90		1.59		1.79		1.44		1.64	
L 392	.14		10.00L		2.72		.148		2.74		1.21		2.19		2.07		2.03		2.20	
L 393	.18		10.00L		2.38		.210		2.23		1.03		1.61		2.36		1.27		1.45	
L 394	.14		10.00L		2.75		.125		2.73		.77		1.61		2.10		1.79		1.96	
L 395	.13		10.00L		2.92		.148		2.68		1.32		1.65		1.21		1.60		1.90	
L 396	.18		10.00L		3.27		.148		2.88		1.38		1.19		.58		2.10		2.30	
L 397	.12		20.00		2.54		.210		2.34		.93		1.74		1.82		1.58		1.75	
L 398	.34		15.00		2.42		.210		2.24		1.02		1.69		1.73		1.28		1.48	
L 399	.008		.008		3.15		.125		3.02		.97		1.74		1.80		2.20		2.36	
L 400	.38		10.00L		2.95		.125		2.81		1.05		1.81		1.80		1.80		2.05	
L 401	.18		15.00		2.40		.210		2.18		1.13		1.62		1.63		1.20		1.36	
L 402	.12		15.00		2.47		.210		2.24		1.23		1.49		1.37		1.05		1.33	
L 405	.21		10.00L		2.41		.250		2.05		1.65		1.85		1.45		1.48		1.60	
L 406	.12		10.00		2.34		.210		2.06		1.27		1.84		1.58		1.44		1.57	
L 407	.12		15.00		3.15		.148		2.86		1.27		1.46		.98		1.97		2.13	
L 409	.12		10.00		2.12		.250		1.90		1.21		1.63		1.53		.95		1.22	
L 412	.20		15.00		3.43		.088		3.49		1.39		1.44		.99		2.47		2.77	
L 413	.18		10.00		3.86		.088		3.43		1.53		1.75		1.18		2.75		2.93	
L 414	.10		15.00		3.02		.154		2.66		1.52		1.49		1.03		1.77		1.94	
L 415	.09		10.00		2.27		.258		1.96		1.59		1.94		1.65		1.05		1.25	
L 416	.05		30.00		2.04		.250		1.97		.88		2.20		3.00		1.22		1.35	
L 417	.08		20.00		3.40		.088		3.29		1.04		1.58		1.39		2.27		2.48	
L 418	.12		20.00		2.51		.203		2.31		.87		1.86		2.16		1.55		1.74	
L 419	.12		10.00		3.00		.148		2.81		1.10		1.90		1.73		2.08		2.25	
L 420	.17		15.00		3.17		.088		3.08		.91		1.24		1.20		1.95		2.15	
L 421	.10		30.00		5.88		.059		5.80		2.62		.10		.12		3.40		3.80	
L 422	.10		10.00		2.92		.125		2.85		1.12		1.12		.94		1.25		1.55	

morrison formation basic data-continued

SAMPLE	16PHI PT	84PHI PT	95PHI PT	98PHI PT	HM	PCT	ACSD PCT	THKNESS
L 376	2.56	3.36	3.75	5.00		.87	.7	191.6
L 377	2.65	3.48	3.73	4.05		.92	5.1	220.0
L 378	2.60	3.45	3.77	5.00		.32	2.3	220.0
L 379	1.60	2.77	3.75	5.00		.04	2.3	276.7
L 380	1.48	3.84	4.85	5.75		7.11	2.9	183.2
L 381	1.40	2.25	2.70	3.50		.60	.6	183.2
L 382	7.30	9.77	10.62	10.85		.00	96.6	183.2
L 383	2.55	3.71	6.25	9.00		.07	7.1	183.2
L 384	2.40	3.60	5.75	8.50		.12	14.8	183.2
L 385	1.48	4.26	5.60	6.75		13.57	5.7	183.2
L 386	2.20	3.32	3.90	7.00		.29	1.8	183.2
L 387	1.64	2.96	8.00	10.00		.62	16.3	305.0
L 388	1.78	2.77	3.80	8.00		.13	10.7	309.0
L 389	2.66	3.68	5.50	8.50		.59	14.8	309.0
L 390	2.73	4.15	7.50	10.00		.48	26.8	309.0
L 391	1.96	3.04	3.55	4.00		.10	4.0	34.1
L 392	2.42	3.10	3.75	9.00		.11	1.4	163.0
L 393	1.75	2.85	3.40	4.00		.26	1.3	71.2
L 394	2.23	3.17	3.50	3.75		.23	1.1	71.2
L 395	2.18	3.27	5.00	8.50		.62	4.0	167.9
L 396	2.57	3.84	6.70	8.00		1.54	12.6	167.9
L 397	1.98	2.87	3.70	5.50		1.32	8.4	167.9
L 398	1.78	2.85	3.55	6.00		.09	1.3	399.9
L 399	2.65	3.50	4.00	6.50		.35	4.1	399.9
L 400	2.65	3.40	4.05	7.00		.14	10.1	260.0
L 401	1.66	3.02	3.64	6.00		.10	25.3	260.0
L 402	1.70	3.09	4.00	7.00		.14	23.4	260.0
L 403	1.75	2.52	4.50	10.20		.15	7.7	303.0
L 406	1.77	2.46	3.50	8.00		.09	24.8	303.0
L 407	2.43	3.55	5.50	8.00		.11	10.0	303.0
L 409	1.55	2.64	3.92	5.00		.05	15.0	416.3
L 412	3.10	4.35	6.25	9.50		.21	4.4	416.3
L 413	3.15	3.85	8.00	10.50		.42	24.7	294.5
L 414	2.17	3.30	7.00	9.00		.87	5.4	294.5
L 415	1.50	2.70	3.75	12.00		.05	5.3	294.5
L 416	1.58	2.33	2.75	3.75		.53	1.6	294.5
L 417	2.77	3.77	4.65	7.50		1.46	9.8	216.1
L 418	1.99	2.83	3.43	5.00		.33	5.8	216.1
L 419	2.52	3.35	4.15	7.50		.12	12.6	216.1
L 420	2.53	3.58	4.25	5.50		.53	23.3	216.1
L 421	4.15	10.00	11.57	11.85		.20	13.0	216.1
L 422	2.10	3.53	4.15	7.50		.47	33.7	216.1

morrison formation basic data-continued

SAMPLE	UNIT	LAT	LONG	LOCNO	CEMENTS	FE-OX	QTZ-GR	QZ-RF	CHERT-FR	CHERT-AU
L 442	413040.	38.83	109.98	174.	.008	.008	.008	.008	.008	.008
L 443	413040.	38.83	109.98	174.	.008	.008	.008	.008	.008	.008
L 444	413040.	38.83	109.98	174.	.008	.008	.008	.008	.008	.008
L 445	413040.	38.83	109.98	174.	.008	.008	.008	.008	.008	.008
L 446	413040.	38.83	109.98	174.	.008	.008	.008	.008	.008	.008
L 447	413040.	38.83	109.98	174.	.008	.008	.008	.008	.008	.008
L 448	413010.	38.83	109.98	174.	.008	.008	.008	.008	.008	.008
L 449	413010.	38.83	109.98	174.	.008	.008	.008	.008	.008	.008
L 450	413010.	38.83	109.98	174.	.008	.008	.008	.008	.008	.008
L 451	413010.	38.83	109.98	174.	.008	.008	.008	.008	.008	.008
L 455	413040.	38.37	108.53	67.	.008	.008	.008	.008	.008	.008
L 456	413010.	38.87	108.53	67.	.008	.008	.008	.008	.008	.008
L 460	413040.	38.70	108.29	72.	.008	.008	.008	.008	.008	.008
L 461	413010.	38.70	108.29	72.	.008	.008	.008	.008	.008	.008
L 464	413040.	38.19	108.63	61.	.008	.008	.008	.008	.008	.008
L 468	413040.	38.41	108.74	56.	.008	.008	.008	.008	.008	.008
L 469	413040.	38.41	108.74	56.	.008	.008	.008	.008	.008	.008
L 470	413040.	38.41	108.74	56.	.008	.008	.008	.008	.008	.008
L 471	413010.	38.41	108.74	56.	.008	.008	.008	.008	.008	.008
L 474	413040.	38.35	109.07	105.B	.008	.008	.008	.008	.008	.008
L 475	413010.	38.35	109.07	105.B	.008	.008	.008	.008	.008	.008
L 478	413040.	38.40	109.42	31.	.008	.008	.008	.008	.008	.008
L 479	413040.	38.40	109.42	31.	.008	.008	.008	.008	.008	.008
L 480	413010.	38.40	109.42	31.	.008	.008	.008	.008	.008	.008
L 482	413010.	39.20	110.79	24.	.008	.008	.008	.008	.008	.008
L 483	413010.	39.20	110.79	24.	.008	.008	.008	.008	.008	.008
L 484	413010.	39.20	110.79	24.	30.20	.00N	53.20	.00N	1.60	.20
L 485	413010.	38.10	109.00	130.	.008	.008	.008	.008	.008	.008
L 486	413010.	38.10	109.00	130.	.008	.008	.008	.008	.008	.008
L 487	413010.	38.10	109.00	130.	.008	.008	.008	.008	.008	.008
L 488	413010.	38.01	109.42	90.	4.40	.40	79.20	.00N	1.80	.20
L 489	413010.	38.01	109.42	90.	15.60	2.00	62.40	.00N	1.40	.00N
L 490	413010.	38.01	109.42	90.	.008	.008	.008	.008	.008	.008
L 491	413010.	38.05	109.30	37.	.008	.008	.008	.008	.008	.008
L 492	413010.	38.40	109.42	31.	.008	.008	.008	.008	.008	.008
L 493	413010.	38.40	109.42	31.	.008	.008	.008	.008	.008	.008
L 494	413010.	38.40	109.42	31.	.008	.008	.008	.008	.008	.008
L 495	413010.	38.40	109.42	31.	.008	.008	.008	.008	.008	.008
L 496	413010.	38.68	109.13	161.	.008	.008	.008	.008	.008	.008
L 497	413010.	38.68	109.13	161.	.008	.008	.008	.008	.008	.008
L 498	413010.	38.68	109.13	161.	.008	.008	.008	.008	.008	.008
L 499	413010.	38.68	109.13	161.	.008	.008	.008	.008	.008	.008

morrison formation basic data-continued

SAMPLE	SIL-RF	SIL-LSFR	K-SPAR	NA-SPAR	KAOL	MICA	ILLITE	MIC-RF	HV-MIN	MISC-OP
L 442	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 443	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 444	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 445	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 446	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 447	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 448	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 449	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 450	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 451	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 455	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 456	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 460	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 461	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 464	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 468	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 469	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 470	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 471	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 474	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 475	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 478	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 479	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 480	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 482	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 483	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 484	.40	.00N	9.00	4.00	.00N	.20	.20	.00N	.40	.40
L 485	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 486	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 487	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 488	.60	.20	6.00	.40	.00N	.00N	1.00	.00N	.20	.20
L 489	.80	.00N	6.20	3.40	.00N	.00N	.80	.00N	.00N	.20
L 490	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 491	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 492	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 493	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 494	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 495	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 496	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 497	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 498	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 499	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B

morrison formation basic data-continued

SAMPLE	TUFF-FR	MONT	ASH	CEM-TOT	SIL-TOT	FELD-TOT	MICA-TOT	TUFF-TOT	TEXTURE	FE	PCT
L 442	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	2.00		3.00
L 443	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	2.00		1.50
L 444	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	3.00		7.00
L 445	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	3.00		5.00
L 446	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	3.00		5.00
L 447	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	3.00		1.50
L 448	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	3.00		3.00
L 449	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	3.00		3.00
L 450	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	3.00		3.00
L 451	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	3.00		3.00
L 455	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00B		3.00
L 456	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	3.00		3.00
L 460	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	3.00		3.00
L 461	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		1.00
L 464	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	3.00		3.00
L 468	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	3.00		1.00
L 469	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	3.00		3.00
L 470	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	3.00		1.00
L 471	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	3.00		1.50
L 474	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	3.00		2.00
L 475	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	3.00		1.50
L 478	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	3.00		3.00
L 479	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	3.00		1.50
L 480	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	3.00		2.00
L 482	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.20
L 483	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.20
L 484	.20	.00N	.00N	30.20	55.40	13.00	1.20	.00B	2.00		.50
L 485	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 486	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.20
L 487	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.20
L 488	5.40	.00N	.00N	4.80	82.00	6.40	1.40	5.40	1.00		.20
L 489	2.60	3.00	1.60	17.60	64.60	9.60	1.00	7.20	1.00		.70
L 490	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.20
L 491	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.20
L 492	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.20
L 493	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.15
L 494	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.20
L 495	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.10
L 496	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.10
L 497	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.20
L 498	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.20
L 499	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.70

morrison formation basic data-continued

SAMPLE	MG	PCT	CA	PCT	T1	PCT	MN	PPH	B	PPH	BA	PPH	BE	PPH	CO	PPH	CR	PPH	CU	PPH
L 442	1.50	.50				.30	200.00	50.00	50.00	500.00		3.00	10.00	30.00	10.00	30.00	10.00	10.00		
L 443	.50	.10				.20	100.00	50.00	200.00	200.00		1.00	5.00	30.00	5.00	30.00	50.00	50.00		
L 444	1.00	.50				.30	100.00	100.00	300.00	300.00		2.00	10.00	100.00	10.00	100.00	50.00	50.00		
L 445	1.50	5.00				.20	500.00	50.00	1000.00	150.00		1.00	5.00	10.00	5.00	10.00	10.00	10.00		
L 446	2.00	.50				.20	100.00	50.00	50.00	50.00		2.00	5.00	10.00	5.00	10.00	10.00	10.00		
L 447	1.00	10.00G				.20	1000.00	50.00	50.00	700.00		1.50	5.00	20.00	5.00	20.00	20.00	20.00		
L 448	1.00	2.00				.20	300.00	70.00	300.00	300.00		1.50	5.00	30.00	5.00	30.00	30.00	30.00		
L 449	1.00	.50				.20	100.00	50.00	700.00	700.00		1.50	5.00	50.00	5.00	50.00	30.00	30.00		
L 450	1.00	1.50				.20	100.00	50.00	500.00	500.00		1.50	15.00	30.00	15.00	30.00	20.00	20.00		
L 451	1.00	2.00				.20	200.00	50.00	500.00	500.00		1.50	5.00	30.00	5.00	30.00	20.00	20.00		
L 455	1.00	2.00				.20	200.00	50.00	10000.00	10000.00		1.50	5.00	30.00	5.00	30.00	20.00	20.00		
L 456	1.00	2.00				.20	100.00	70.00	1000.00	1000.00		1.50	5.00	70.00	5.00	70.00	20.00	20.00		
L 460	1.00	1.50				.20	100.00	50.00	200.00	200.00		1.50	5.00	30.00	5.00	30.00	20.00	20.00		
L 461	1.00	.20				.15	50.00	50.00	100.00	100.00		.00N	3.00	30.00	3.00	30.00	10.00	10.00		
L 464	1.00	.20				.20	100.00	100.00	200.00	200.00		2.00	10.00	50.00	10.00	50.00	50.00	50.00		
L 468	.20	.50				.20	20.00	50.00	200.00	200.00		.00N	.00N	70.00	.00N	70.00	15.00	15.00		
L 469	.50	.20				.30	.00N	50.00	100.00	100.00		1.00	3.00	70.00	3.00	70.00	70.00	70.00		
L 470	1.00	.70				.20	200.00	50.00	150.00	150.00		2.00	5.00	20.00	5.00	20.00	10.00	10.00		
L 471	1.50	1.00				.20	200.00	100.00	300.00	300.00		2.00	2.00	5.00	5.00	5.00	10.00	10.00		
L 474	2.00	1.00				.20	200.00	50.00	1000.00	1000.00		2.00	5.00	10.00	5.00	10.00	15.00	15.00		
L 475	2.00	10.00				.10	300.00	50.00	200.00	200.00		1.00	10.00	30.00	10.00	30.00	15.00	15.00		
L 478	1.00	5.00				.20	200.00	100.00	200.00	200.00		2.00	10.00	50.00	10.00	50.00	15.00	15.00		
L 479	2.00	.50				.10	100.00	100.00	500.00	500.00		2.00	5.00	10.00	5.00	10.00	15.00	15.00		
L 480	1.00	5.00				.20	200.00	100.00	300.00	300.00		2.00	10.00	50.00	10.00	50.00	15.00	15.00		
L 482	.20	10.00				.10	300.00	30.00	300.00	300.00		.00N	.00N	10.00	.00N	10.00	3.00	3.00		
L 483	.30	5.00				.05	200.00	30.00	500.00	500.00		.00N	.00N	10.00	.00N	10.00	50.00	50.00		
L 484	.30	10.00				.10	500.00	30.00	1000.00	1000.00		.00N	.00N	30.00	.00N	30.00	10.00	10.00		
L 485	.20	2.00				.05	200.00	70.00	200.00	200.00		.00N	.00N	10.00	.00N	10.00	15.00	15.00		
L 486	.10	7.00				.02	500.00	20.00	1000.00	1000.00		.00N	.00N	5.00	.00N	5.00	10.00	10.00		
L 487	.20	1.00				.02	200.00	20.00	100.00	100.00		.00N	.00N	7.00	.00N	7.00	15.00	15.00		
L 488	.20	1.00				.05	100.00	30.00	500.00	500.00		.00N	.00N	5.00	.00N	5.00	7.00	7.00		
L 489	1.50	5.00				.05	300.00	20.00	2000.00	2000.00		.00N	3.00L	30.00	3.00L	30.00	10.00	10.00		
L 490	.10	10.00				.02	200.00	20.00	100.00	100.00		.00N	.00N	5.00	.00N	5.00	5.00	5.00		
L 491	.20	10.00				.05	200.00	20.00	200.00	200.00		.00N	.00N	7.00	.00N	7.00	10.00	10.00		
L 492	.20	1.00				.02	100.00	20.00	200.00	200.00		.00N	.00N	7.00	.00N	7.00	100.00	100.00		
L 493	.20	5.00				.02	200.00	20.00	100.00	100.00		.00N	.00N	7.00	.00N	7.00	10.00	10.00		
L 494	.10	5.00				.05	200.00	20.00	500.00	500.00		.00N	.00N	5.00	.00N	5.00	3.00	3.00		
L 495	.05	2.00				.02	100.00	30.00	200.00	200.00		.00N	.00N	5.00	.00N	5.00	20.00	20.00		
L 496	.10	10.00				.02	500.00	20.00	300.00	300.00		.00N	.00N	7.00	.00N	7.00	10.00	10.00		
L 497	.20	5.00				.02	200.00	20.00	100.00	100.00		.00N	.00N	20.00	.00N	20.00	10.00	10.00		
L 498	.20	3.00				.05	200.00	30.00	200.00	200.00		.00N	3.00	20.00	.00N	20.00	10.00	10.00		
L 499	.20	.20				.05	50.00	20.00	1000.00	1000.00		.00N	3.00	5.00	.00N	5.00	10.00	10.00		

morrison formation basic data-continued

SAMPLE	LA	PPM	NB	PPM	NI	PPM	PB	PPM	SC	PPM	SR	PPM	V	PPM	Y	PPM	ZN	PPM	ZR	PPM
L 442	100.00		10.00	10.00	10.00	20.00	20.00	200.00	10.00	20.00	50.00	70.00	50.00	70.00	200.00					
L 443	30.00		10.00	10.00	5.00	20.00	20.00	100.00	20.00	20.00	50.00	10.00	50.00	10.00	200.00					
L 444	70.00		10.00	10.00	20.00	20.00	20.00	500.00	20.00	20.00	200.00	50.00	200.00	50.00	200.00					
L 445	100.00		10.00	10.00	5.00	20.00	20.00	300.00	10.00	20.00	30.00	50.00	30.00	50.00	200.00					
L 446	100.00		10.00	10.00	5.00	20.00	20.00	200.00	10.00	20.00	20.00	50.00	20.00	50.00	200.00					
L 447	50.00		10.00L	10.00L	5.00	20.00	20.00	1000.00	10.00	20.00	50.00	70.00	50.00	70.00	100.00					
L 448	30.00		10.00L	10.00L	10.00	20.00	20.00	1000.00	10.00	20.00	50.00	30.00	50.00	30.00	200.00					
L 449	30.00		10.00L	10.00L	10.00	20.00	20.00	200.00	10.00	20.00	50.00	50.00	50.00	50.00	100.00					
L 450	50.00		10.00	10.00	20.00	20.00	20.00	200.00	10.00	20.00	100.00	50.00	100.00	50.00	200.00					
L 451	.00N		.00N	.00N	10.00	10.00	10.00	2000.00	10.00	20.00	70.00	20.00	70.00	20.00	200.00					
L 455	100.00		10.00	10.00	10.00	20.00	20.00	700.00	10.00	20.00	70.00	50.00	70.00	50.00	200.00					
L 456	.00N		10.00	10.00	20.00	10.00	10.00	200.00	10.00	20.00	20.00	20.00	200.00	20.00	200.00					
L 460	70.00		10.00	10.00	10.00	20.00	20.00	1000.00	10.00	20.00	50.00	50.00	50.00	50.00	200.00					
L 461	30.00		10.00L	10.00L	10.00	10.00	10.00	500.00	5.00	20.00	50.00	20.00	50.00	20.00	100.00					
L 464	70.00		10.00	10.00	20.00	20.00	20.00	200.00	20.00	20.00	100.00	70.00	100.00	70.00	150.00					
L 468	30.00		10.00	10.00	5.00L	20.00	20.00	1000.00	10.00	20.00	100.00	20.00	100.00	20.00	150.00					
L 469	.00N		10.00	10.00	7.00	20.00	20.00	200.00	20.00	20.00	150.00	20.00	150.00	20.00	200.00					
L 470	70.00		10.00	10.00	7.00	20.00	20.00	500.00	10.00	20.00	50.00	50.00	50.00	50.00	200.00					
L 471	50.00		.00L	.00L	15.00	20.00	20.00	200.00	10.00	20.00	300.00	30.00	300.00	30.00	200.00					
L 474	100.00		10.00	10.00	5.00	20.00	20.00	500.00	10.00	20.00	50.00	50.00	50.00	50.00	200.00					
L 475	50.00		10.00	10.00	10.00	10.00	10.00	500.00	7.00	20.00	150.00	20.00	150.00	20.00	100.00					
L 478	50.00		10.00L	10.00L	15.00	20.00	20.00	500.00	20.00	20.00	100.00	50.00	100.00	50.00	150.00					
L 479	50.00		10.00L	10.00L	7.00	20.00	20.00	300.00	5.00	20.00	30.00	50.00	30.00	50.00	200.00					
L 480	50.00		10.00L	10.00L	15.00	10.00	10.00	200.00	10.00	20.00	150.00	20.00	150.00	20.00	150.00					
L 482	.00N		10.00L	10.00L	.00N	10.00	10.00	100.00	.00N	20.00	15.00	10.00	15.00	10.00	200.00					
L 483	.00N		10.00L	10.00L	5.00L	10.00L	10.00L	100.00	.00N	20.00	30.00	10.00	30.00	10.00	70.00					
L 484	30.00		10.00L	10.00L	5.00L	20.00	20.00	200.00	.00N	20.00	20.00	20.00	20.00	20.00	200.00					
L 485	.00N		10.00L	10.00L	.00N	10.00	10.00	50.00	.00N	20.00	10.00	.00N	10.00	.00N	150.00					
L 486	.00N		10.00L	10.00L	.00N	.00N	.00N	100.00	.00N	20.00	10.00	10.00	10.00	10.00	70.00					
L 487	.00N		10.00L	10.00L	.00N	.00N	.00N	30.00	.00N	20.00	50.00	.00N	50.00	.00N	50.00					
L 488	.00N		10.00L	10.00L	5.00L	.00N	.00N	70.00	.00N	20.00	50.00	.00N	50.00	.00N	70.00					
L 489	.00N		10.00L	10.00L	5.00	10.00	10.00	200.00	.00N	20.00	30.00	10.00L	30.00	10.00L	200.00					
L 490	.00N		10.00L	10.00L	.00N	.00N	.00N	150.00	.00N	20.00	20.00	.00N	20.00	.00N	100.00					
L 491	.00N		10.00L	10.00L	5.00L	10.00	10.00	200.00	.00N	20.00	20.00	10.00	20.00	10.00	70.00					
L 492	.00N		10.00L	10.00L	.00N	10.00L	10.00L	20.00	.00N	20.00	30.00	10.00	30.00	10.00	200.00					
L 493	.00N		10.00L	10.00L	5.00L	10.00L	10.00L	50.00	.00N	20.00	30.00	10.00L	30.00	10.00L	50.00					
L 494	.00N		10.00L	10.00L	.00N	.00N	.00N	50.00	.00N	20.00	30.00	10.00L	30.00	10.00L	50.00					
L 495	.00N		10.00L	10.00L	.00N	.00N	.00N	30.00	.00N	20.00	10.00	.00N	10.00	.00N	50.00					
L 496	.00N		10.00L	10.00L	5.00L	.00N	.00N	150.00	.00N	20.00	30.00	10.00L	30.00	10.00L	20.00					
L 497	.00N		10.00L	10.00L	5.00	.00N	.00N	50.00	.00N	20.00	20.00	10.00L	20.00	10.00L	150.00					
L 498	.00N		10.00L	10.00L	5.00	.00N	.00N	50.00	.00N	20.00	30.00	10.00L	30.00	10.00L	100.00					
L 499	.00N		10.00L	10.00L	5.00	.00N	.00N	20.00	.00N	20.00	20.00	10.00L	20.00	10.00L	50.00					

morrison formation basic data-continued

SAMPLE	HG2	PPM	CUZ	PPM	PHI	MEAN	MODE	MM	PHI	MED	PHI	SD	PHI	SKEW	PHI	KURT	2PHI	PT	SPHI	PT
L 442		.60	10.00L		6.96	.022			6.79	2.54	.00									
L 443		.44	15.00		4.51	.062			4.26	2.70	.16									
L 444		.20	15.00		7.64	.004			7.95	1.79	-.09									
L 445		.18	10.00		6.96	.062			7.15	1.91	.01									
L 446		.10	15.00		7.64	.004			7.95	2.08	-.24									
L 447		.52	20.00		6.96	.004			6.96	2.33	.03									
L 448		.44	20.00		6.64	.075			6.64	2.83	.05									
L 449		.46	15.00		7.15	.005			7.38	2.22	-.01									
L 450		.48	30.00		6.38	.045			5.64	2.22	.37									
L 451		.57	20.00		5.88	.088			4.47	2.90	.32									
L 455		.52	30.00		8.36	.000			8.94	2.67	-.25									
L 456		.42	15.00		6.50	.088			6.06	3.00	.15									
L 460		.80	10.00		6.26	.045			5.50	2.60	.29									
L 461		1.20	10.00L		3.59	.218			2.38	2.68	.73									
L 464		.08	10.00		5.97	.074			5.57	2.72	.23									
L 468		.14	10.00L		7.15	.088			7.38	3.16	.00									
L 469		.18	62.00		6.26	.031			5.79	2.45	.28									
L 470		.18	10.00L		6.38	.019			6.06	1.92	.23									
L 471		.80	10.00L		5.38	.031			5.21	2.41	.20									
L 474		.39	10.00L		7.64	.004			7.95	2.27	-.13									
L 475		.86	10.00L		6.79	.031			6.50	2.10	.21									
L 478		.48	15.00		9.91	.000			9.91	1.94	-.53									
L 479		.64	10.00		7.38	.004			7.64	1.74	-.01									
L 480		1.00	10.00L		6.06	.105			5.26	3.14	.21									
L 482		.08	10.00L		3.03	.125			2.95	1.16	1.33									
L 483		.16	20.00		2.66	.210			2.15	1.67	1.51									
L 484		.18	10.00L		4.24	.072			3.80	1.63	1.27									
L 485		.25	10.00L		3.15	.125			3.01	.98	1.82									
L 486		.18	225.00		1.86	.295			1.70	.94	2.28									
L 487		.25	10.00L		1.78	.352			1.56	.99	1.76									
L 488		.15	10.00L		2.74	.148			2.62	.82	2.24									
L 489		.17	10.00L		3.15	.148			2.76	1.59	1.57									
L 490		.72	10.00L		2.38	.210			2.15	1.10	1.70									
L 491		.18	10.00L		3.22	.078			3.18	1.78	.96									
L 492		.22	125.00		2.47	.209			2.31	.67	1.08									
L 493		.08	10.00		2.68	.209			2.45	1.27	1.58									
L 494		.20	10.00		2.63	.209			2.32	1.33	1.49									
L 495		.15	20.00		2.36	.209			2.22	.97	1.55									
L 496		.12	10.00		2.63	.176			2.47	.93	1.46									
L 497		.13	15.00		2.70	.148			2.65	.87	2.07									
L 498		.25	10.00		3.25	.121			3.10	1.02	1.83									
L 499		.04	10.00		1.79	.364			1.39	1.50	1.73									

morrison formation basic data-continued

SAMPLE	16PHI PT	84PHI PT	95PHI PT	98PHI PT	HM	PCT	ACSO PCT	THKNSS
L 442	4.60	9.80	11.55	11.85		.008	5.6	300.0
L 443	1.90	7.20	9.50	10.80		.008	4.3	300.0
L 444	6.30	9.40	11.10	11.70		.008	3.9	300.0
L 445	5.25	8.90	10.00	11.30		.008	12.8	300.0
L 446	5.90	9.75	11.40	11.80		.008	ON	300.0
L 447	4.45	9.55	11.15	11.70		.008	33.6	300.0
L 448	3.50	9.80	11.40	11.80		.008	11.9	250.0
L 449	4.60	9.60	11.00	11.60		.008	8.2	250.0
L 450	4.30	9.00	10.80	11.80		.008	7.6	.08
L 451	3.10	9.45	11.65	11.90		.008	10.3	250.0
L 455	5.15	11.35	11.85	11.95		.008	11.5	298.0
L 456	3.45	10.80	11.70	11.90		.008	11.2	279.0
L 460	3.90	9.40	11.40	11.85		.008	15.6	339.0
L 461	1.70	6.90	9.50	11.00		.008	8.6	303.0
L 464	3.20	9.10	11.30	11.80		.008	8.0	478.1
L 468	3.45	11.20	11.85	11.95		.008	3.0	365.8
L 469	4.00	9.00	11.50	11.80		.008	3.5	365.8
L 470	4.50	8.50	9.90	10.80		.008	4.9	365.8
L 471	2.80	8.00	10.00	10.60		.008	2.1	334.9
L 474	5.45	11.00	11.70	11.90		.008	8.3	345.4
L 475	4.70	9.00	10.90	11.60		.008	9.9	363.7
L 478	7.45	11.45	11.80	11.90		.008	10.0	373.3
L 479	5.70	9.00	10.20	11.00		.008	9.9	373.3
L 480	3.00	10.05	11.65	11.85		.008	11.3	339.9
L 482	2.22	3.55	4.50	7.00		.19	17.1	126.8
L 483	1.74	3.20	5.25	9.50		.06	12.6	126.8
L 484	3.40	5.10	8.50	10.50		.25	30.4	126.8
L 485	2.55	3.50	4.10	6.00		.19	5.9	334.1
L 486	1.35	2.17	2.90	4.00		.37	15.1	334.1
L 487	1.11	2.27	3.10	4.00		.06	5.7	334.1
L 488	2.13	3.18	3.62	4.30		.17	4.7	14.6
L 489	2.20	3.57	6.50	10.00		.51	14.8	14.6
L 490	1.71	2.81	3.88	5.50		.04	23.5	14.6
L 491	2.65	3.70	4.20	4.55		.13	22.6	361.7
L 492	1.99	2.80	3.33	4.00		.06	3.5	339.9
L 493	1.81	3.22	3.90	8.50		.01	11.2	339.9
L 494	1.80	3.12	4.40	8.00		.13	8.8	339.9
L 495	1.55	2.84	3.50	4.00		.01	7.4	339.9
L 496	2.00	3.10	3.80	5.00		.10	26.8	356.2
L 497	2.22	3.00	3.55	6.00		.54	10.8	356.2
L 498	2.73	3.50	4.15	7.00		.12	9.5	356.2
L 499	.99	2.05	4.00	9.00		.59	1.9	356.2

morrison formation basic data-continued

SAMPLE	UNIT	LAT	LONG	LOCNO	CEMENTS	FE-OX	QTZ-GR	QZ-RF	CHERT-FR	CHERT-AU
L 500	413010.	38.05	109.30	161.	.00B	.00B	.00B	.00B	.00B	.00B
L 501	413010.	38.05	109.30	161.	.00B	.00B	.00B	.00B	.00B	.00B
L 502	413010.	38.97	110.14	112.	.00B	.00B	.00B	.00B	.00B	.00B
L 503	413010.	38.97	110.14	112.	.00B	.00B	.00B	.00B	.00B	.00B
L 504	413010.	38.97	110.14	112.	.00B	.00B	.00B	.00B	.00B	.00B
L 505	413010.	38.88	109.71	173.	.00B	.00B	.00B	.00B	.00B	.00B
L 506	413010.	38.88	109.71	173.	.00B	.00B	.00B	.00B	.00B	.00B
L 507	413040.	38.88	109.71	173.	.00B	.00B	.00B	.00B	.00B	.00B
L 508	413010.	38.27	108.36	160.	.00B	.00B	.00B	.00B	.00B	.00B
L 509	413010.	38.27	108.36	160.	.00B	.00B	.00B	.00B	.00B	.00B
L 510	413010.	38.27	108.36	160.	.00B	.00B	.00B	.00B	.00B	.00B
L 511	413010.	38.27	108.36	160.	.00B	.00B	.00B	.00B	.00B	.00B
L 527	413010.	38.05	108.10	177.	.00B	.00B	.00B	.00B	.00B	.00B
L 528	413040.	38.05	108.10	177.	1.20	1.20	54.40	.00N	1.40	.00N
L 529	413040.	38.05	108.10	177.	.00B	.00B	.00B	.00B	.00B	.00B
L 533	413010.	39.20	110.38	228.	.00B	.00B	.00B	.00B	.00B	.00B
L 534	413010.	39.20	110.38	228.	.00B	.00B	.00B	.00B	.00B	.00B
L 535	413040.	39.20	110.38	228.	.00B	.00B	.00B	.00B	.00B	.00B
L 536	413040.	39.20	110.38	228.	.00B	.00B	.00B	.00B	.00B	.00B
L 539	413010.	38.29	108.85	182.	.00B	.00B	.00B	.00B	.00B	.00B
L 540	413010.	38.29	108.85	182.	.00B	.00B	.00B	.00B	.00B	.00B
L 541	413010.	38.29	108.85	182.	.00B	.00B	.00B	.00B	.00B	.00B
L 542	413010.	38.29	108.85	182.	.00B	.00B	.00B	.00B	.00B	.00B
L 543	413010.	38.29	108.85	182.	.00B	.00B	.00B	.00B	.00B	.00B
L 544	413010.	38.29	108.85	182.	.00B	.00B	.00B	.00B	.00B	.00B
L 545	413010.	38.29	108.85	182.	.00B	.00B	.00B	.00B	.00B	.00B
L 546	413010.	38.29	108.85	182.	.00B	.00B	.00B	.00B	.00B	.00B
L 547	413010.	38.29	108.85	182.	.00B	.00B	.00B	.00B	.00B	.00B
L 548	413010.	38.29	108.85	182.	.00B	.00B	.00B	.00B	.00B	.00B
L 557	413010.	37.26	107.35	125.	.00B	.00B	.00B	.00B	.00B	.00B
L 558	413010.	37.26	107.35	125.	.00B	.00B	.00B	.00B	.00B	.00B
L 559	413010.	37.26	107.35	125.	.00B	.00B	.00B	.00B	.00B	.00B
L 565	413020.	36.80	109.01	7.	.00N	.00N	79.20	.00N	.80	.00N
L 566	413030.	36.80	109.01	7.	.40	.60	63.40	.00N	.40	4.00
L 568	413040.	36.80	109.01	7.	.20	.20	39.60	.00N	.00N	.00N
L 569	413040.	36.80	109.01	7.	17.40	.00N	62.40	.00N	.20	.00N
L 570	413020.	36.80	109.01	7.	.00N	.00N	84.60	.00N	.20	.00N
L 571	413030.	36.80	109.01	7.	.60	.00N	74.80	.20	.00N	.00N
L 573	413010.	38.50	108.83	14.	.00B	.00B	.00B	.00B	.00B	.00B
L 574	413010.	38.50	108.83	14.	.00B	.00B	.00B	.00B	.00B	.00B
L 575	413010.	38.50	108.83	14.	.00B	.00B	.00B	.00B	.00B	.00B
L 576	413010.	38.29	108.85	182.	.00B	.00B	.00B	.00B	.00B	.00B

morrison formation basic data-continued

SAMPLE	SIL-RF	SIL-LSFR	K-SPAR	NA-SPAR	KAOL	MICA	ILLITE	MTC-RF	HV-MIN	MISC-OP
L 500	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 501	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 502	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 503	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 504	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 505	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 506	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 507	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 508	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 509	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 510	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 511	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 527	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 528	.00N	.00N	.00N	15.80	.40	.00N	.00N	.00N	.00N	.20
L 529	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 533	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 534	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 535	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 536	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 539	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 540	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 541	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 542	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 543	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 544	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 545	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 546	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 547	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 548	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 557	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 558	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 559	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 565	1.00	.00N	4.60	8.60	.00N	.00N	1.60	.00N	.00N	.00N
L 566	.00N	.00N	5.60	13.80	3.40	.00N	.60	.00N	.00N	.00N
L 568	.00N	.00N	6.00	7.80	.20	.20	.00N	.00N	.20	.20
L 569	.00N	.40	3.40	10.00	.20	.00N	.00N	.00N	.00N	.00N
L 570	.20	.00N	8.80	2.20	.00N	.00N	.80	.00N	.20	.20
L 571	.00N	.00N	6.80	8.40	.00N	.20	.00N	.00N	.00N	.00N
L 573	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 574	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 575	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 576	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B

morrison formation basic data-continued

SAMPLE	TUFF-FR	MONT	ASH	CEM-TOT	SIL-TOT	FELD-TOT	MICA-TOT	TUFF-TOT	TEXTURE	FE	PCT
L 500	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 501	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.20
L 502	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.20
L 503	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.20
L 504	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.20
L 505	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.10
L 506	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 507	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.20
L 508	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 509	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.70
L 510	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 511	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.70
L 527	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 528	7.80	.40	17.20	2.40	55.80	16.20	.20	25.40	1.00		1.00
L 529	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		1.50
L 533	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	3.00		1.00
L 534	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	3.00		2.00
L 535	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	3.00		2.00
L 536	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	3.00		.00B
L 539	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 540	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 541	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 542	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 543	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 544	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 545	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 546	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 547	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.20
L 548	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 557	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 558	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		1.00
L 559	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.70
L 565	4.20	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 566	6.80	1.00	.00B	1.00	81.00	13.20	1.60	4.20	1.00		.50
L 568	10.60	35.00	.00B	.40	67.80	22.80	.60	7.80	1.00		.70
L 569	6.00	.00B	.00B	17.40	39.60	13.80	.60	45.60	1.00		1.00
L 570	2.80	.00B	.00B	.00B	63.00	13.60	.00B	6.00	1.00		.50
L 571	8.20	.00B	.00B	.00B	85.00	11.00	1.20	2.80	1.00		.50
L 573	.00B	.00B	.00B	.60	75.00	15.20	.40	8.80	1.00		.50
L 574	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.20
L 575	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 576	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50

morrison formation basic data-continued

SAMPLE	MG	PCT	CA	PCT	T1	PCT	MN	PPM	B	PPM	BA	PPM	BE	PPM	CO	PPM	CR	PPM	CU	PPM
L 500	.50	.50		.50		.05	300.00	50.00		1000.00			.00N		3.00		10.00		10.00	
L 501	.20	.20		.20		.02	100.00	30.00		200.00			.00N		.00N		2.00		2.00	
L 502	.20	2.00		.20		.05	200.00	20.00		50.00			.00N		.00N		5.00		5.00	
L 503	.20	5.00		.20		.05	200.00	20.00		100.00			.00N		.00N		7.00		10.00	
L 504	.20	10.00		.20		.05	500.00	20.00		50.00			.00N		.00N		10.00		5.00	
L 505	.10	10.00		.10		.02	500.00	20.00		70.00			.00N		.00N		5.00		5.00	
L 506	.05	.70		.05		.05	100.00	20.00		5000.00			.00N		.00N		10.00		5.00	
L 507	.10	10.00G		.05		.05	1500.00	20.00		700.00			.00N		.00N		7.00		10.00	
L 508	.20	5.00		.03		.03	100.00	20.00		700.00			.00N		.00N		5.00		5.00	
L 509	.50	5.00		.05		.05	200.00	30.00		700.00			.00N		.00N		7.00		7.00	
L 510	.50	5.00		.05		.05	200.00	20.00		500.00			.00N		.00N		7.00		7.00	
L 511	.20	5.00		.07		.07	200.00	30.00		100.00			.00N		.00N		5.00		5.00	
L 527	.20	1.00		.05		.05	200.00	20.00		300.00			.00N		.00N		5.00		7.00	
L 528	.20	1.50		.20		.20	500.00	30.00		1500.00			.00N		3.00		10.00		5.00	
L 529	.70	10.00G		.10		.10	2000.00	20.00L		300.00			.00N		5.00		30.00		15.00	
L 533	.50	10.00G		.10		.10	300.00	30.00		200.00			.00N		3.00		30.00		15.00	
L 534	1.00	5.00		.20		.20	200.00	50.00		200.00			2.00		10.00		50.00		50.00	
L 535	1.00	7.00		.20		.20	500.00	30.00		200.00			1.00		3.00		20.00		20.00	
L 536	.00B	.00B		.00B		.00B	.00B	.00B		.00B			.00B		.00B		.00B		.00B	
L 539	.50	1.00		.05		.05	100.00	20.00		200.00			.00N		.00N		5.00		7.00	
L 540	.00B	.00B		.00B		.00B	.00B	.00B		.00B			.00B		.00B		.00B		.00B	
L 541	.50	.70		.07		.07	100.00	20.00		200.00			.00N		.00N		10.00		7.00	
L 542	1.00	1.00		.10		.10	100.00	30.00		300.00			.00N		3.00		50.00		10.00	
L 543	.50	1.50		.05		.05	100.00	20.00		200.00			.00N		3.00L		10.00		7.00	
L 544	1.00	2.00		.07		.07	150.00	20.00		150.00			.00N		.00N		50.00		7.00	
L 545	.50	1.00		.07		.07	100.00	30.00		300.00			.00N		.00N		10.00		5.00	
L 546	.50	2.00		.01		.01	200.00	20.00L		50.00			.00N		.00N		5.00		5.00	
L 547	.00B	.00B		.00B		.00B	.00B	.00B		.00B			.00B		.00B		.00B		.00B	
L 548	.70	1.50		.05		.05	200.00	50.00		200.00			.00N		.00N		10.00		5.00	
L 557	.30	.70		.15		.15	50.00	20.00		700.00			.00N		5.00		10.00		15.00	
L 558	.30	.20		.05		.05	200.00	20.00		100.00			.00N		3.00L		10.00		7.00	
L 559	.20	.50		.05		.05	200.00	20.00		500.00			.00N		3.00L		20.00		50.00	
L 565	.20	.50		.02		.02	100.00	20.00		150.00			.00N		.00N		2.00		10.00	
L 566	.20	.50		.20		.20	200.00	20.00L		300.00			.00N		.00N		5.00		10.00	
L 568	.70	.50		.15		.15	500.00	20.00		300.00			.00N		3.00		10.00		7.00	
L 569	.10	10.00		.05		.05	1500.00	20.00L		200.00			.00N		.00N		5.00		5.00	
L 570	.20	.10		.07		.07	200.00	20.00		200.00			.00N		.00N		2.00		7.00	
L 571	.10	.10		.07		.07	100.00	20.00		200.00			.00N		.00N		2.00		5.00	
L 573	.30	.70		.07		.07	70.00	20.00		200.00			.00N		.00N		2.00		7.00	
L 574	.30	2.00		.05		.05	200.00	20.00		500.00			.00N		.00N		30.00		7.00	
L 575	.30	1.00		.20		.20	100.00	100.00		200.00			.00N		.00N		10.00		5.00	
L 576	.50	1.50		.10		.10	100.00	20.00		300.00			.00N		.00N		7.00		10.00	

morrison formation basic data-continued

SAMPLE	LA	PPM	NB	PPM	N1	PPM	PB	PPM	SC	PPM	SR	PPM	V	PPM	Y	PPM	ZN	ZR	PPM
L 500		.00N	10.00L	5.00L		10.00		.00N		100.00		20.00		10.00L		.00N		150.00	
L 501		.00N	10.00L	.00N		.00N		.00N		15.00		50.00		.00N		.00N		50.00	
L 502		.00N	10.00L	.00N		.00N		.00N		50.00		10.00		.00N		10.00		50.00	
L 503		.00N	10.00L	.00N		.00N		.00N		70.00		20.00		.00N		10.00		70.00	
L 504		.00N	10.00L	.00N		.00N		.00N		100.00		20.00		.00N		10.00L		200.00	
L 505		.00N	10.00L	.00N		.00N		.00N		200.00		20.00		.00N		10.00L		70.00	
L 506		.00N	10.00L	.00N		.00N		.00N		50.00		10.00		.00N		.00N		100.00	
L 507		.00N	10.00L	.00N		10.00		.00N		200.00		30.00		.00N		15.00		50.00	
L 508		.00N	10.00L	.00N		10.00L		.00N		200.00		10.00		.00N		.00N		150.00	
L 509		.00N	10.00L	5.00L		10.00		.00N		200.00		20.00		.00N		10.00L		150.00	
L 510		.00N	10.00L	5.00L		.00N		.00N		150.00		20.00		.00N		.00N		150.00	
L 511	50.00	.00N	.00N	5.00L		10.00L		.00N		100.00		20.00		.00N		10.00		50.00	
L 527		.00N	10.00L	5.00L		.00N		.00N		30.00		10.00		.00N		.00N		70.00	
L 528		.00N	10.00L	5.00L		10.00		5.00		200.00		30.00		.00N		10.00		300.00	
L 529	30.00	.00N	10.00L	5.00		10.00		5.00		500.00		50.00		.00N		30.00		100.00	
L 533	30.00	.00N	10.00L	5.00		10.00		5.00		200.00		50.00		.00N		20.00		100.00	
L 534	50.00	.00N	10.00L	10.00		20.00		15.00		100.00		150.00		.00N		20.00		100.00	
L 535	30.00	.00N	10.00L	5.00		20.00		10.00		200.00		50.00		.00N		50.00		100.00	
L 536	.00B	.00B	.00B	.00B		.00B		.00B		.00B		.00B		.00B		.00B		150.00	
L 539	.00N	.00N	10.00L	5.00L		10.00		.00N		30.00		20.00		.00N		.00N		50.00	
L 540	.00B	.00B	.00B	.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B	
L 541	.00N	.00N	10.00L	5.00L		10.00L		.00N		50.00		30.00		.00N		.00N		70.00	
L 542	.00N	.00N	10.00L	5.00		10.00		5.00		70.00		50.00		.00N		10.00		100.00	
L 543	.00N	.00N	10.00L	5.00L		10.00		.00N		100.00		30.00		.00N		.00N		50.00	
L 544	.00N	.00N	10.00L	5.00L		10.00		.00N		50.00		30.00		.00N		.00N		100.00	
L 545	.00N	.00N	10.00L	.00N		10.00L		.00N		50.00		100.00		.00N		.00N		300.00	
L 546	.00N	.00N	10.00L	.00N		10.00L		.00N		20.00		50.00		.00N		.00N		50.00	
L 547	.00B	.00B	.00B	.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B	
L 548	.00N	.00N	10.00L	5.00L		10.00L		.00N		30.00		30.00		.00N		10.00L		200.00	
L 557	.00N	.00N	10.00L	5.00		10.00L		.00N		100.00		30.00		.00N		10.00		100.00	
L 558	.00N	.00N	10.00L	7.00		10.00		.00N		5.00L		10.00		.00N		10.00L		70.00	
L 559	.00N	.00N	10.00L	5.00L		10.00		.00N		.00N		100.00		.00N		10.00		150.00	
L 565	50.00	.00N	10.00L	.00N		10.00		.00N		50.00		20.00		.00N		.00N		50.00	
L 566		.00N	10.00L	.00N		10.00		.00N		5.00L		100.00		.00N		10.00		200.00	
L 568	30.00	.00N	10.00L	5.00		10.00		5.00		5.00		150.00		.00N		20.00		200.00	
L 569	.00N	.00N	10.00L	.00N		10.00L		.00N		5.00L		300.00		.00N		10.00		100.00	
L 570	.00N	.00N	10.00L	.00N		20.00		.00N		.00N		30.00		.00N		.00N		70.00	
L 571	.00N	.00N	10.00L	5.00L		10.00L		.00N		50.00		10.00		.00N		10.00L		50.00	
L 573	.00N	.00N	10.00L	.00N		.00N		.00N		.00N		30.00		.00N		20.00		200.00	
L 574	.00N	.00N	10.00L	5.00L		10.00L		.00N		.00N		70.00		.00N		10.00L		50.00	
L 575	.00N	.00N	10.00L	.00N		10.00L		.00N		.00N		70.00		.00N		15.00		500.00	
L 576	.00N	.00N	10.00L	5.00L		10.00L		.00N		.00N		50.00		.00N		10.00L		100.00	

morrison formation basic data-continued

SAMPLE	HG2	PPM	CU2	PPM	PHI	MEQ	PHI	SD	PHI	SKEW	PHI	KURT	2PHI	PT	SPHI	PT
L 500		.09	10.00L		2.80		.148		1.16	1.60		1.56	1.45		1.63	
L 501		.10	10.00		2.49		.203		.87	1.76		2.11	1.53		1.66	
L 502		.25	10.00		2.57		.203		1.14	1.87		1.83	1.52		1.66	
L 503		.46	30.00		2.41		.217		1.56	1.79		1.46	1.00		1.25	
L 504		.18	30.00		2.94		.148		.89	1.52		1.47	1.93		2.06	
L 505		.44	20.00		2.34		.233		1.13	1.59		1.40	1.22		1.40	
L 506		.12	40.00		2.05		.226		1.10	1.57		1.49	.77		.99	
L 507		.18	30.00		2.97		.148		1.06	1.73		1.43	2.00		2.15	
L 508		.44	15.00		2.94		.165		1.09	1.60		1.46	1.80		1.95	
L 509		.19	40.00		3.57		.088		1.51	1.60		1.09	2.27		2.42	
L 510		.30	30.00		3.16		.125		1.59	1.63		1.12	1.85		2.03	
L 511		.33	20.00		3.59		.088		1.36	1.85		1.49	2.44		2.66	
L 527		.76	15.00		3.46		.105		1.48	1.24		.79	1.70		2.03	
L 528		.80	20.00		3.16		.177		1.66	1.06		.48	1.52		1.75	
L 529		1.00	20.00		4.68		.062		1.82	.69		.15	2.50		2.77	
L 533		.66	40.00		5.88		.062		2.66	.72		.04	3.10		3.30	
L 534		.64	62.00		7.95		.002		2.09	.21		.03	3.50		3.95	
L 535		.68	40.00		7.64		.052		2.73	.22		.09	2.40		2.90	
L 536		.008	.008		7.95		.001		2.42	.28		.04	3.00		3.70	
L 539		.52	15.00		3.17		.105		.81	1.51		1.72	2.15		2.33	
L 540		.008	.008		2.03		.354		1.12	1.25		1.05	.80		.95	
L 541		.40	20.00		3.12		.105		1.04	1.53		1.57	1.80		2.00	
L 542		.12	20.00		3.76		.077		.94	2.06		2.01	2.82		3.03	
L 543		.52	20.00		3.21		.088		.98	1.44		1.61	1.75		2.00	
L 544		.48	30.00		2.92		.149		.96	1.29		1.12	1.85		2.05	
L 545		.72	30.00		2.94		.121		1.01	1.56		1.73	1.60		1.85	
L 546		.64	30.00		2.32		.250		1.35	1.29		.94	1.30		1.42	
L 547		.008	.008		2.69		.177		1.08	1.39		1.11	1.52		1.70	
L 548		.56	30.00		3.18		.122		.84	1.43		1.48	2.25		2.42	
L 557		.76	62.00		4.21		.077		1.44	1.11		.55	2.65		2.95	
L 558		.45	62.00		3.56		.143		1.37	.90		.62	2.15		2.30	
L 559		.34	225.00		3.83		.088		1.19	1.21		.75	2.43		2.65	
L 565		.21	30.00		2.20		.209		.89	1.31		.89	1.00		1.22	
L 566		.50	20.00		2.70		.177		1.07	1.50		1.14	1.55		1.77	
L 568		.66	30.00		3.46		.148		1.48	1.07		.54	2.00		2.17	
L 569		.25	30.00		2.06		.217		.82	1.17		1.20	.90		1.10	
L 570		.24	40.00		2.74		.148		.76	2.40		3.10	2.03		2.15	
L 571		.26	30.00		2.34		.209		.99	2.10		2.68	1.20		1.40	
L 573		1.00	40.00		3.08		.148		2.31	1.44		.98	1.77		2.00	
L 574		.33	60.00		3.29		.125		1.30	1.38		.91	2.00		2.18	
L 575		.52	60.00		3.38		.125		1.20	1.45		1.05	2.20		2.36	
L 576		.23	30.00		3.52		.088		.92	1.90		2.03	2.45		2.65	

morrison formation basic data-continued

SAMPLE	16PHI PT	84PHI PT	95PHI PT	98PHI PT	HM	PCT	ACSD PCT	THKNSS
L 500	2.00	3.37	4.00	6.00		.50	9.8	361.7
L 501	1.83	2.92	3.37	4.00		.30	1.1	361.7
L 502	1.92	2.85	4.00	7.00		.02	5.6	270.4
L 503	1.61	2.70	4.00	10.00		.03	9.2	270.4
L 504	2.31	3.44	4.10	5.50		.08	23.8	270.4
L 505	1.66	2.83	3.70	7.00		.04	30.2	235.2
L 506	1.30	2.46	3.18	6.00		1.34	1.7	235.2
L 507	2.43	3.36	4.10	8.00		.21	28.3	379.1
L 508	2.20	3.43	4.30	6.00		.21	17.5	326.4
L 509	2.75	3.83	6.50	10.50		.85	11.2	326.4
L 510	2.36	3.43	7.00	10.50		.14	11.6	326.4
L 511	2.85	3.66	6.00	10.00		.16	10.5	326.4
L 527	2.50	4.05	6.50	9.00		.13	7.9	380.6
L 528	2.06	1.40	7.00	8.50		.48	5.8	390.0
L 529	3.27	6.35	8.75	10.00		.08	41.7	390.0
L 533	3.70	9.40	11.30	11.80		.008	32.3	350.0
L 534	6.00	10.20	11.50	11.85		.008	12.8	350.0
L 535	4.10	10.10	11.50	11.85		.008	17.7	350.0
L 536	4.60	10.60	11.70	11.90		.008	34.8	350.0
L 539	2.65	3.47	3.94	4.50		.18	6.9	374.1
L 540	1.20	2.93	3.65	4.50		.08	5.0	374.1
L 541	2.40	3.57	4.15	6.00		.15	5.1	374.1
L 542	3.28	3.94	5.00	8.00		.11	7.3	374.1
L 543	2.50	3.63	4.15	6.00		.24	7.3	374.1
L 544	2.35	3.37	4.05	5.50		.40	9.9	374.1
L 545	2.24	3.39	3.83	5.50		.35	6.4	374.1
L 546	1.68	2.75	3.75	6.50		.14	11.0	374.1
L 547	1.98	3.20	4.30	7.00		.26	22.7	374.1
L 548	2.67	3.57	4.15	5.50		.21	7.9	374.1
L 557	3.28	5.15	7.50	9.00		.15	5.6	252.0
L 558	2.60	4.40	6.25	8.00		.10	9.0	252.0
L 559	3.05	4.38	6.30	8.00		.18	17.6	252.0
L 565	1.55	2.68	3.22	4.25		.10	1.9	220.0
L 566	2.05	3.00	4.50	6.75		.17	4.0	165.0
L 568	2.43	4.40	6.50	8.50		.04	8.1	88.0
L 569	1.46	2.44	2.90	4.00		.11	22.0	88.0
L 570	2.36	3.06	3.38	4.25		.29	1.4	220.0
L 571	1.77	2.70	3.15	4.25		.15	3.3	165.0
L 573	2.25	3.55	5.50	8.50		.12	5.0	.08
L 574	2.48	3.70	6.00	8.50		.41	8.9	.08
L 575	2.66	3.80	5.50	8.00		.70	5.3	.08
L 576	3.00	3.77	4.40	7.00		.09	9.5	374.1

morrison formation basic data-continued

SAMPLE	UNIT	LAT	LONG	LOCNO	CEMENTS	FE-OX	QTZ-GR	OZ-RF	CHERT-FR	CHERT-AU
L 577	413010.	38. 29	108. 85	182.	.00B	.00B	.00B	.00B	.00B	.00B
L 578	413010.	38. 29	108. 85	182.	.00B	.00B	.00B	.00B	.00B	.00B
L 579	413010.	38. 29	108. 85	182.	.00B	.00B	.00B	.00B	.00B	.00B
L 580	413010.	38. 29	108. 85	182.	.00B	.00B	.00B	.00B	.00B	.00B
L 581	413010.	38. 29	108. 85	182.	.00B	.00B	.00B	.00B	.00B	.00B
L 582	413010.	38. 29	108. 85	182.	.00B	.00B	.00B	.00B	.00B	.00B
L 583	413010.	38. 29	108. 85	182.	.00B	.00B	.00B	.00B	.00B	.00B
L 584	413010.	38. 29	108. 85	182.	.00B	.00B	.00B	.00B	.00B	.00B
L 585	413010.	38. 29	108. 85	182.	.00B	.00B	.00B	.00B	.00B	.00B
L 586	413010.	38. 29	108. 85	182.	.00B	.00B	.00B	.00B	.00B	.00B
L 587	413010.	38. 29	108. 85	182.	.00B	.00B	.00B	.00B	.00B	.00B
L 588	413010.	38. 29	108. 85	182.	.00B	.00B	.00B	.00B	.00B	.00B
L 589	413010.	38. 29	108. 85	182.	.00B	.00B	.00B	.00B	.00B	.00B
L 590	413010.	38. 29	108. 85	182.	.00B	.00B	.00B	.00B	.00B	.00B
L 591	413010.	38. 29	108. 85	182.	.00B	.00B	.00B	.00B	.00B	.00B
L 592	413010.	38. 29	108. 85	182.	.00B	.00B	.00B	.00B	.00B	.00B
L 593	413010.	38. 29	108. 85	182.	.00B	.00B	.00B	.00B	.00B	.00B
L 594	413010.	38. 29	108. 85	182.	.00B	.00B	.00B	.00B	.00B	.00B
L 595	413010.	38. 29	108. 85	182.	.00B	.00B	.00B	.00B	.00B	.00B
L 596	413010.	38. 29	108. 85	182.	.00B	.00B	.00B	.00B	.00B	.00B
L 597	413010.	38. 29	108. 85	182.	.00B	.00B	.00B	.00B	.00B	.00B
L 598	413010.	38. 29	108. 85	182.	.00B	.00B	.00B	.00B	.00B	.00B
L 599	413010.	38. 29	108. 85	182.	.00B	.00B	.00B	.00B	.00B	.00B
L 600	413010.	38. 29	108. 85	182.	.00B	.00B	.00B	.00B	.00B	.00B
L 601	413010.	38. 29	108. 85	182.	.00B	.00B	.00B	.00B	.00B	.00B
L 602	413010.	38. 29	108. 85	182.	.00B	.00B	.00B	.00B	.00B	.00B
L 603	413010.	38. 29	108. 85	182.	.00B	.00B	.00B	.00B	.00B	.00B
L 604	413010.	38. 29	108. 85	182.	.00B	.00B	.00B	.00B	.00B	.00B
L 605	413010.	37. 35	107. 61	121.	.00B	.00B	.00B	.00B	.00B	.00B
L 606	413010.	37. 35	107. 61	121.	.00B	.00B	.00B	.00B	.00B	.00B
L 607	413010.	37. 35	107. 61	121.	.00N	.60	92. 40	.00N	.20	.00N
L 608	413010.	37. 31	107. 88	3.	.00B	.00B	.00B	.00B	.00B	.00B
L 609	413010.	37. 31	107. 88	3.	.00B	.00B	.00B	.00B	.00B	.00B
L 610	413010.	37. 31	107. 88	3.	.00B	.00B	.00B	.00B	.00B	.00B
L 611	413010.	38. 05	111. 07	189.	.00B	.00B	.00B	.00B	.00B	.00B
L 612	413010.	38. 05	111. 07	189.	.00B	.00B	.00B	.00B	.00B	.00B
L 613	413010.	38. 05	111. 07	189.	24. 80	.00N	46. 00	.60	1. 80	.60
L 614	413010.	38. 05	111. 07	189.	.00N	.00N	5. 20	.40	22. 80	.00N
L 615	413010.	37. 70	110. 74	181.	.20	.00N	52. 00	.40	.20	25. 50
L 616	413010.	37. 70	110. 74	181.	.00B	.00B	.00B	.00B	.00B	.00B
L 617	413010.	37. 70	110. 74	181.	.00B	.00B	.00B	.00B	.00B	.00B
L 618	413020.	36. 37	109. 76	230.	.00N	.00N	77. 40	.00N	.60	.00N

morrison formation basic data-continued

SAMPLE	SIL-RF	SIL-LSFR	K-SPAR	NA-SPAR	KAOL	MICA	ILLITE	MIC-RF	HV-MIN	MISC-OP
L 577	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 578	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 579	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 580	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 581	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 582	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 583	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 584	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 585	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 586	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 587	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 588	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 589	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 590	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 591	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 592	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 593	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 594	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 595	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 596	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 597	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 598	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 599	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 600	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 601	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 602	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 603	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 604	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 605	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 606	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 607	.00N	.00N	2.40	.20	3.40	.00N	.00N	.00N	.00N	.20
L 608	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 609	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 610	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 611	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 612	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 613	6.00	3.80	6.40	.60	.00N	.00B	.00B	.00B	.00B	.20
L 614	27.80	25.40	1.20	.20	.00N	.00N	.60	.00N	.00N	.00N
L 615	.00N	2.00	4.00	.40	3.50	.00N	.00N	.00N	.20	.00N
L 616	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 617	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 618	.00N	.00N	8.00	3.00	.20	.00N	9.80	.00N	.00N	.00N

morrison formation basic data-continued

SAMPLE	TUFF-FR	MONT	ASH	CEM-TOT	SIL-TOT	FELD-TOT	MICA-TOT	TUFF-TOT	TEXTURE	FE	PCT
L 577	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 578	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 579	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 580	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.30
L 581	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 582	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 583	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 584	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 585	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 586	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 587	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 588	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 589	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 590	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 591	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.20
L 592	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 593	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.10
L 594	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.20
L 595	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.20
L 596	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.20
L 597	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.20
L 598	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.20
L 599	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 600	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.20
L 601	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 602	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.20
L 603	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 604	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.20
L 605	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.20
L 606	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 607	.40	.20	.00N	.60	92.60	6.00	.20	.60	1.00		.50
L 608	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 609	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.70
L 610	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 611	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.20
L 612	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.20
L 613	8.60	.00N	.00N	24.80	58.80	7.00	.80	8.60	1.00		.50
L 614	16.80	.20	.00N	.00N	81.60	1.40	.00N	17.00	1.00		.50
L 615	11.20	.20	.00N	.20	80.10	7.90	.40	11.40	1.00		.20
L 616	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.20
L 617	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 618	1.00	.00N	.00N	.00N	78.00	11.20	9.80	1.00	1.00		.50

morrison formation basic data-continued

SAMPLE	MG	PCT	CA	PCT	T1	PCT	MN	PPM	B	PPM	BA	PPM	BE	PPM	CO	PPM	CR	PPM	CU	PPM
L 577	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 578	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 579	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 580	.50	.70	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 581	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 582	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 583	1.00	2.00	2.00	2.00	.02	.02	300.00	20.00	20.00	20.00	150.00	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 584	.70	2.00	2.00	2.00	.05	.05	200.00	20.00	20.00	20.00	300.00	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 585	1.00	2.00	2.00	2.00	.05	.05	300.00	20.00	20.00	20.00	300.00	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 586	1.00	2.00	2.00	2.00	.05	.05	300.00	20.00	20.00	20.00	500.00	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 587	1.00	2.00	2.00	2.00	.05	.05	200.00	20.00	20.00	20.00	500.00	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 588	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 589	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 590	.50	.70	.00B	.00B	.00B	.00B	100.00	30.00	30.00	30.00	200.00	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 591	1.00	5.00	5.00	5.00	.02	.02	500.00	20.00	20.00	20.00	150.00	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 592	7.00	1.00	1.00	1.00	.07	.07	100.00	20.00	20.00	20.00	500.00	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 593	1.00	2.00	2.00	2.00	.02	.02	200.00	20.00	20.00	20.00	100.00	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 594	1.00	2.00	2.00	2.00	.02	.02	200.00	20.00	20.00	20.00	100.00	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 595	1.00	2.00	2.00	2.00	.02	.02	200.00	20.00	20.00	20.00	100.00	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 596	1.00	2.00	2.00	2.00	.02	.02	200.00	20.00	20.00	20.00	300.00	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 597	.50	1.00	1.00	1.00	.07	.07	100.00	20.00	20.00	20.00	200.00	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 598	.50	1.00	1.00	1.00	.07	.07	100.00	20.00	20.00	20.00	200.00	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 599	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 600	1.00	2.00	2.00	2.00	.02	.02	200.00	20.00	20.00	20.00	70.00	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 601	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 602	1.50	5.00	5.00	5.00	.01	.01	500.00	.00B	.00B	.00B	70.00	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 603	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 604	1.00	2.00	2.00	2.00	.03	.03	200.00	20.00	20.00	20.00	700.00	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 605	.10	1.50	1.50	1.50	.03	.03	200.00	20.00	20.00	20.00	150.00	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 606	.10	5.00	5.00	5.00	.02	.02	200.00	20.00	20.00	20.00	200.00	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 607	.10	.20	.20	.20	.10	.10	100.00	20.00	20.00	20.00	300.00	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 608	.15	1.00	1.00	1.00	.05	.05	100.00	20.00	20.00	20.00	100.00	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 609	.20	.50	.50	.50	.10	.10	100.00	20.00	20.00	20.00	100.00	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 610	.20	1.00	1.00	1.00	.05	.05	200.00	20.00	20.00	20.00	100.00	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 611	.10	10.00	10.00	10.00	.02	.02	200.00	20.00	20.00	20.00	150.00	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 612	.05	10.00G	10.00G	10.00G	.02	.02	500.00	20.00	20.00	20.00	100.00	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 613	.30	10.00	10.00	10.00	.02	.02	1000.00	20.00	20.00	20.00	150.00	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 614	.10	.20	.20	.20	.07	.07	50.00	50.00	50.00	50.00	300.00	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 615	.10	.20	.20	.20	.10	.10	50.00	20.00	20.00	20.00	200.00	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 616	.10	2.00	2.00	2.00	.07	.07	100.00	20.00	20.00	20.00	150.00	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 617	.15	5.00	5.00	5.00	.02	.02	200.00	20.00	20.00	20.00	150.00	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 618	.20	.20	.20	.20	.05	.05	50.00	20.00	20.00	20.00	200.00	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B

SAMPLE	LA	PPM	NB	NI	PPM	PB	PPM	SC	PPM	SR	PPM	V	PPM	Y	PPM	ZN	PPM	ZR	PPM
L 577	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B		.00B	.00B	.00B		.00B		.00B
L 578	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B		.00B	.00B	.00B		.00B		.00B
L 579	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B		.00B	.00B	.00B		.00B		.00B
L 580	.00N	10.00L	10.00L	5.00L	10.00L	10.00L	10.00L	.00N	.00N	30.00	.00B		20.00	10.00L	.00B		.00B		.00B
L 581	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B		.00B	.00B	.00B		.00B		.00B
L 582	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B		.00B	.00B	.00B		.00B		.00B
L 583	.00N	10.00L	10.00L	5.00L	10.00L	10.00L	10.00L	.00N	.00N	30.00	.00B		20.00	10.00L	.00B		.00B		.00B
L 584	.00N	10.00L	10.00L	5.00L	10.00L	10.00L	10.00L	.00N	.00N	100.00	.00B		20.00	10.00L	.00N		.00N		20.00
L 585	.00N	10.00L	10.00L	.00N	10.00L	10.00L	10.00L	.00N	.00N	50.00	.00B		20.00	10.00L	.00N		.00N		100.00
L 586	.00N	.00N	.00N	5.00	.00N	.00N	.00N	.00N	.00N	70.00	.00B		20.00	10.00L	.00N		.00N		100.00
L 587	.00N	.00N	.00N	5.00L	10.00L	10.00L	10.00L	.00N	.00N	150.00	.00B		20.00	.00N	.00N		.00N		50.00
L 588	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B		.00B	.00B	.00B		.00B		.00B
L 589	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B		.00B	.00B	.00B		.00B		.00B
L 590	.00N	10.00L	10.00L	5.00L	10.00L	10.00L	10.00L	.00N	.00N	100.00	.00B		50.00	10.00L	.00B		.00B		.00B
L 591	.00N	10.00L	10.00L	5.00L	10.00L	10.00L	10.00L	.00N	.00N	30.00	.00B		50.00	10.00L	.00N		.00N		150.00
L 592	.00N	10.00L	10.00L	5.00L	10.00L	10.00L	10.00L	.00N	.00N	50.00	.00B		70.00	.00N	.00N		.00N		20.00
L 593	.00N	10.00L	10.00L	5.00L	10.00L	10.00L	10.00L	.00N	.00N	20.00	.00B		50.00	10.00L	.00N		.00N		100.00
L 594	.00N	10.00L	10.00L	5.00L	10.00L	10.00L	10.00L	.00N	.00N	50.00	.00B		10.00	10.00L	.00N		.00N		20.00
L 595	.00N	10.00L	10.00L	5.00L	10.00L	10.00L	10.00L	.00N	.00N	20.00	.00B		10.00	10.00L	.00N		.00N		20.00
L 596	50.00	10.00L	10.00L	5.00L	10.00L	10.00L	10.00L	.00N	.00N	50.00	.00B		10.00	15.00	.00N		.00N		20.00
L 597	.00N	10.00L	10.00L	5.00L	10.00L	10.00L	10.00L	.00N	.00N	30.00	.00B		10.00	10.00	.00N		.00N		100.00
L 598	.00N	10.00L	10.00L	5.00L	10.00L	10.00L	10.00L	.00N	.00N	50.00	.00B		10.00	10.00L	.00N		.00N		200.00
L 599	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B		.00B	.00B	.00B		.00B		.00B
L 600	.00N	10.00L	10.00L	5.00L	10.00L	10.00L	10.00												

morrison formation basic data-continued

SAMPLE	HG2	PPM	CU2	PPM	PHI	MEAN	MODE	MM	PHI	MED	PHI	SD	PHI	SKEW	PHI	KURT	2PHI	PT	5PHI	PT
L 577	.008	.008		.008	3.51	.088				3.38		.92		1.99		2.21		2.42		2.63
L 578	.008	.008		.008	2.92	.134				2.80		.98		1.68		1.75		1.77		1.99
L 579	.008	.008		.008	3.21	.088				3.18		1.00		1.32		1.42		1.70		1.98
L 580	.36	.008	60.00	.008	3.08	.125				2.99		.94		1.90		2.20		2.02		2.22
L 581	.008	.008		.008	2.00	.352				1.75		1.02		1.00		.70		.80		.94
L 582	.008	.008		.008	3.37	.088				3.28		.75		1.75		2.21		2.40		2.60
L 583	.19	.008	30.00	.008	3.08	.125				2.91		1.16		1.90		1.74		2.05		2.22
L 584	.17	.008	30.00	.008	2.99	.125				2.91		.83		1.68		1.83		2.05		2.25
L 585	.24	.008	40.00	.008	2.81	.134				2.76		.64		1.16		.96		2.00		2.12
L 586	.15	.008	20.00	.008	2.97	.141				2.81		1.02		2.02		2.13		2.00		2.13
L 587	.15	.008	15.00	.008	2.92	.125				2.89		.70		1.39		1.34		2.20		2.30
L 588	.008	.008		.008	3.51	.088				3.32		.88		2.00		2.31		2.53		2.72
L 589	.008	.008		.008	3.18	.121				3.08		.75		1.01		.95		2.30		2.48
L 590	.46	.008	60.00	.008	3.08	.125				2.99		.86		1.55		1.58		2.10		2.28
L 591	.76	.008	60.00	.008	2.66	.177				2.48		.78		2.41		3.00		1.90		2.02
L 592	.68	.008	150.00	.008	3.06	.105				2.99		1.08		1.58		1.62		1.72		1.90
L 593	.44	.008	60.00	.008	2.34	.230				2.10		1.15		1.86		1.90		1.40		1.53
L 594	.20	.008	20.00	.008	2.27	.287				1.94		1.27		1.65		1.48		1.10		1.25
L 595	.28	.008	40.00	.008	2.25	.217				2.08		.94		1.63		1.74		1.07		1.47
L 596	.25	.008	40.00	.008	2.29	.233				2.11		1.08		1.73		1.84		1.14		1.32
L 597	.76	.008	30.00	.008	2.53	.189				2.40		.93		1.47		1.53		1.35		1.52
L 598	.84	.008	40.00	.008	3.06	.108				2.98		.94		1.73		2.03		1.90		2.10
L 599	.008	.008		.008	2.41	.217				2.23		.83		1.27		1.23		1.60		1.75
L 600	.17	.008	40.00	.008	2.76	.241				2.49		1.29		1.18		.91		1.33		1.52
L 601	.008	.008		.008	2.27	.250				2.08		1.02		1.40		1.30		1.12		1.32
L 602	.27	.008	30.00	.008	2.73	.250				2.06		1.15		1.89		1.94		1.27		1.42
L 603	.008	.008		.008	2.41	.233				2.17		1.04		1.24		1.04		1.32		1.48
L 604	.56	.008	40.00	.008	2.45	.210				2.14		.74		.96		.83		1.32		1.48
L 605	.60	.008	60.00	.008	3.29	.125				2.94		1.35		1.29		.83		2.00		2.12
L 606	.76	.008	40.00	.008	3.11	.165				2.73		1.46		1.20		.75		1.60		1.77
L 607	.76	.008	60.00	.008	3.35	.137				2.97		1.45		1.17		.75		2.00		2.12
L 608	.52	.008	60.00	.008	3.21	.148				2.88		1.32		1.27		.91		1.80		2.00
L 609	.34	.008	60.00	.008	3.66	.125				3.28		1.52		1.18		.65		2.18		2.28
L 610	1.30	.008	75.00	.008	3.28	.138				2.89		1.34		1.32		.93		1.90		2.10
L 611	.56	.008	40.00	.008	2.30	.250				2.17		.81		.27		.00		1.20		1.35
L 612	.23	.008	60.00	.008	1.97	.250				1.92		.65		.40		.12		1.00		1.22
L 613	.33	.008	40.00	.008	2.04	.250				1.97		.68		.45		.13		1.15		1.33
L 614	.09	.008	60.00	.008	.38	1.400				.05		1.39		1.01		.63		-1.15		-1.05
L 615	.12	.008	40.00	.008	2.86	.203				2.27		1.83		1.05		.44		1.00		1.32
L 616	.08	.008	40.00	.008	3.16	.125				2.93		1.31		1.62		1.36		1.80		2.04
L 617	.10	.008	30.00	.008	2.62	.218				2.32		1.31		1.30		.94		1.20		1.40
L 618	.10	.008	30.00	.008	2.67	.144				2.57		1.15		1.58		1.66		1.20		1.42

morrison formation basic data-continued

SAMPLE	16PHI PT	84PHI PT	95PHI PT	98PHI PT	HM	PCT	ACSO PCT	THKNESS
L 577	2.99	3.73	4.35	6.50		.12	6.9	374.1
L 578	2.28	3.40	4.10	6.00		.40	10.3	374.1
L 579	2.46	3.63	4.17	6.00		.21	6.6	374.1
L 580	2.53	3.42	3.90	5.00		.08	5.4	374.1
L 581	1.24	2.85	3.65	4.25		.06	4.1	374.1
L 582	5.90	3.60	4.00	4.50		.50	9.5	374.1
L 583	2.50	3.37	4.00	8.00		.21	16.3	374.1
L 584	2.55	3.40	3.85	4.50		.20	11.2	374.1
L 585	2.37	3.18	3.60	4.25		.45	10.6	374.1
L 586	2.40	3.32	3.85	7.00		.18	12.2	374.1
L 587	2.55	3.33	3.77	4.30		.65	10.0	374.1
L 588	3.00	3.72	4.25	6.00		.84	11.0	374.1
L 589	2.73	3.58	4.12	5.00		.17	7.4	374.1
L 590	2.55	3.50	4.00	5.00		.81	5.3	374.1
L 591	2.18	2.88	3.60	5.00		.09	14.1	374.1
L 592	2.33	3.45	4.00	6.00		.92	5.8	374.1
L 593	1.75	2.75	3.75	5.50		.01	8.6	374.1
L 594	1.45	3.03	3.85	7.00		.07	9.6	374.1
L 595	1.72	2.60	3.50	4.25		.10	8.1	374.1
L 596	1.60	2.77	3.65	5.00		.04	9.4	374.1
L 597	1.90	3.00	3.70	5.00		.27	15.3	374.1
L 598	2.42	3.48	4.00	5.00		.63	5.5	374.1
L 599	1.90	2.80	3.55	4.50		.06	6.5	374.1
L 600	1.80	3.55	4.40	7.00		.24	18.5	374.1
L 601	1.55	2.87	3.65	4.50		.14	14.8	374.1
L 602	1.68	2.68	3.55	6.00		.05	24.5	374.1
L 603	1.73	3.07	3.85	5.50		.04	19.4	374.1
L 604	1.73	2.67	3.25	4.00		.37	11.6	374.1
L 605	2.40	4.00	6.00	8.00		.03	6.0	175.0
L 606	2.12	3.93	6.00	8.50		.03	10.3	175.0
L 607	2.40	4.05	6.50	8.75		.11	3.8	175.0
L 608	2.30	3.95	5.75	7.50		.10	5.0	27.0
L 609	2.63	4.50	7.00	9.00		.09	.2*	27.0
L 610	2.40	4.00	5.75	7.50		.07	6.5	27.0
L 611	1.60	3.10	3.00	3.50		.07	29.7	243.7
L 612	1.50	2.46	3.00	3.50		.07	29.7	243.7
L 613	1.56	2.53	3.17	3.82		.03	20.3	243.7
L 614	1.72	1.30	3.00	4.50		.02	1.2	243.7
L 615	1.75	3.70	7.50	8.75		.20	3.1	512.3
L 616	2.40	3.62	4.50	8.50		.15	7.7	512.3
L 617	1.70	3.35	4.35	7.50		.03	13.3	512.3
L 618	1.83	3.30	4.00	6.00		.12	1.8	680.4

morrison formation basic data-continued

SAMPLE	UNIT	LAT	LONG	LOCNO	CEMENTS	FE-OX	QTZ-GR	QZ-RF	CHERT-FR	CHERT-AU
L 619	413020.	36.37	109.76	230.	.00B	.00B	.00B	.00B	.00B	.00B
L 620	413020.	36.37	109.76	230.	.20	.00N	67.40	.00N	.20	.00N
L 621	413010.	39.25	110.45	199.	.00B	.00B	.00B	.00B	.00B	.00B
L 622	413010.	39.25	110.45	199.	.00B	.00B	.00B	.00B	.00B	.00B
L 623	413010.	39.25	110.45	199.	.00B	.00B	.00B	.00B	.00B	.00B
L 624	413010.	39.25	110.45	199.	.00B	.00B	.00B	.00B	.00B	.00B
L 625	413010.	39.40	110.56	146.	.00B	.00B	.00B	.00B	.00B	.00B
L 626	413010.	39.40	110.56	146.	19.60	.00N	64.40	.00N	4.80	.00N
L 627	413010.	39.40	110.56	146.	.00B	.00B	.00B	.00B	.00B	.00B
L 628	413010.	38.96	111.04	59.	.00B	.00B	.00B	.00B	.00B	.00B
L 629	413010.	38.96	111.04	59.	.00B	.00B	.00B	.00B	.00B	.00B
L 630	413010.	38.96	111.04	59.	.00B	.00B	.00B	.00B	.00B	.00B
L 631	413010.	37.83	110.94	86.	.00B	.00B	.00B	.00B	.00B	.00B
L 632	413010.	37.83	110.94	86.	.00B	.00B	.00B	.00B	.00B	.00B
L 633	413010.	37.83	110.94	86.	.00B	.00B	.00B	.00B	.00B	.00B
L 634	413010.	37.82	109.28	215.	.00B	.00B	.00B	.00B	.00B	.00B
L 635	413010.	37.82	109.28	215.	.00B	.00B	.00B	.00B	.00B	.00B
L 636	413010.	38.67	111.28	107.	.00B	.00B	.00B	.00B	.00B	.00B
L 637	413010.	37.83	110.94	86.	.00B	.00B	.00B	.00B	.00B	.00B
L 638	413020.	36.23	108.89	209.	.00B	.00B	.00B	.00B	.00B	.00B
L 639	413020.	36.23	108.89	209.	.00B	.00B	.00B	.00B	.00B	.00B
L 640	413020.	36.23	108.89	209.	.00B	.00B	.00B	.00B	.00B	.00B
L 641	413030.	36.23	108.89	209.	.00B	.00B	.00B	.00B	.00B	.00B
L 642	413030.	36.23	108.89	209.	.00B	.00B	.00B	.00B	.00B	.00B
L 643	413020.	35.96	108.96	210.	.00B	.00B	.00B	.00B	.00B	.00B
L 644	413030.	35.96	108.96	210.	.00B	.00B	.00B	.00B	.00B	.00B
L 645	413030.	35.96	108.96	210.	.00B	.00B	.00B	.00B	.00B	.00B
L 646	413030.	35.96	108.96	210.	.00N	.60	50.00	.00N	.60	.00N
L 647	413030.	35.75	109.00	78.	.00B	.00B	.00B	.00B	.00B	.00B
L 648	413030.	35.75	109.00	78.	.00B	.00B	.00B	.00B	.00B	.00B
L 649	413030.	35.75	109.00	78.	.00B	.00B	.00B	.00B	.00B	.00B
L 650	413020.	35.75	109.00	78.	.00B	.00B	.00B	.00B	.00B	.00B
L 651	413020.	35.75	109.00	78.	.00B	.00B	.00B	.00B	.00B	.00B
L 652	413020.	35.75	109.00	78.	.00B	.00B	.00B	.00B	.00B	.00B
L 653	413030.	35.37	109.06	128.	.00B	.00B	.00B	.00B	.00B	.00B
L 654	413030.	35.37	109.06	128.	.00N	.00N	77.60	.40	.40	.00N
L 655	413020.	35.37	109.06	128.	.00B	.00B	.00B	.00B	.00B	.00B
L 656	413020.	35.37	109.06	128.	1.00	.00N	76.00	.00N	.20	.00N
L 657	413010.	38.68	106.83	2.	.80	.00N	80.20	.00N	1.00	.00N
L 658	413010.	38.68	106.83	2.	.00B	.00B	.00B	.00B	.00B	.00B
L 659	413010.	38.68	106.83	2.	.00B	.00B	.00B	.00B	.00B	.00B
L 664	413040.	38.10	109.00	130.	.00B	.00B	.00B	.00B	.00B	.00B

morrison formation basic data-continued

SAMPLE	SIL-RF	SIL-LSFR	K-SPAR	NA-SPAR	KAOL	MICA	ILLITE	MIC-RF	HV-MIN	MISC-OP
L 619	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 620	.40	.00N	12.80	6.00	.40	.00N	7.40	.00N	.40	.20
L 621	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 622	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 623	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 624	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 625	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 626	1.00	2.00	.00N	6.40	.00N	.00N	.60	.00N	.20	.00N
L 627	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 628	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 629	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 630	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 631	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 632	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 633	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 634	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 635	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 636	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 637	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 638	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 639	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 640	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 641	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 642	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 643	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 644	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 645	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 646	.00N	.00N	19.80	1.20	6.80	.00N	15.20	.00B	.00B	.00B
L 647	.00B	.00B	.00B	.00B	.00B	.00B	.00B	2.20	.00N	.00N
L 648	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 649	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 650	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 651	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 652	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 653	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 654	.00N	.00N	10.40	5.00	.00N	.20	4.40	.00N	.00N	.20
L 655	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 656	.00N	.00N	8.20	2.00	.00N	.20	.00N	.00N	.00N	1.00
L 657	4.20	.80	.00N	1.40	.20	.40	1.40	.20	.00N	.00N
L 658	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 659	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 664	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B

morrison formation basic data-continued

SAMPLE	TUFF-FR	MONT	ASH	CEM-TOT	SIL-TOT	FELD-TOT	MICA-TOT	TUFF-TOT	TEXTURE	FE	PCT
L 619	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 620	4.00	.60	.00N	.20	68.00	19.20	8.00	4.60	1.00		.70
L 621	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.20
L 622	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.20
L 623	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.10
L 624	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 625	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 626	1.00	.00N	.00N	19.60	72.20	6.40	.80	1.00	1.00		.20
L 627	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.30
L 628	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.10
L 629	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.20
L 630	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.20
L 631	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.20
L 632	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 633	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 634	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 635	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 636	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.10
L 637	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 638	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.70
L 639	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.70
L 640	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.70
L 641	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.70
L 642	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 643	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.70
L 644	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 645	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 646	4.20	.40	1.00	.60	50.60	27.80	15.40	5.60	1.00		.50
L 647	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.20
L 648	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 649	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 650	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		1.00
L 651	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.20
L 652	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		1.00
L 653	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.20
L 654	1.00	.40	.00N	.00N	78.40	15.40	4.80	1.40	1.00		.70
L 655	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.70
L 656	2.80	8.60	.00N	1.00	76.20	10.20	1.20	11.40	1.00		.50
L 657	.00N	9.20	.00N	.80	86.20	1.80	2.00	9.20	1.00		.20
L 658	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.70
L 659	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.10
L 664	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.20

morrison formation basic data-continued

SAMPLE	MG	PCT	CA	PCT	T1	PCT	MN	PPM	B	PPM	BA	PPM	BE	PPM	CO	PPM	CR	PPM	CU	PPM
L 619	.30	1.00	.05	100.00	20.00	200.00	.00N	.00N	3.00L	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
L 620	.30	.20	.10	100.00	20.00	300.00	.00N	.00N	3.00L	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00
L 621	.20	1.00	.07	100.00	20.00	100.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N
L 622	.10	10.00	.02	500.00	20.00	100.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N
L 623	.20	10.00	.02	200.00	20.00	1000.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N
L 624	1.00	10.00G	.07	1500.00	.00N	100.00	.00N	.00N	3.00	10.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
L 625	.50	7.00	.05	200.00	20.00	200.00	.00N	.00N	3.00L	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
L 626	.20	10.00	.02	300.00	20.00	100.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N
L 627	.20	7.00	.02	500.00	50.00	100.00	.00N	.00N	3.00	10.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
L 628	.10	10.00G	.02	500.00	30.00	500.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N
L 629	.10	10.00G	.02	700.00	20.00	300.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N
L 630	.10	10.00	.07	500.00	20.00	150.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N
L 631	.10	7.00	.07	200.00	20.00	200.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N
L 632	.10	5.00	.05	100.00	20.00	200.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N
L 633	.10	10.00	.02	700.00	20.00L	100.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N
L 634	1.00	2.00	.05	100.00	20.00	500.00	.00N	.00N	3.00	3.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00
L 635	.20	5.00	.07	100.00	20.00	200.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N
L 636	.10	10.00	.02	1500.00	20.00	1000.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N
L 637	.10	.20	.05	100.00	20.00	200.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N
L 638	.10	.50	.10	100.00	20.00	500.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N
L 639	.20	5.00	.07	200.00	20.00	300.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N
L 640	.20	.70	.05	200.00	20.00	500.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N
L 641	.10	.50	.05	200.00	20.00	700.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N
L 642	.10	1.50	.05	700.00	20.00	500.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N
L 643	.20	.50	.07	200.00	20.00	300.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N
L 644	.15	10.00	.05	50.00	20.00	500.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N
L 645	.10	.20	.07	50.00	20.00	500.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N
L 646	.10	.05	.20	20.00	20.00	300.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N
L 647	.10	.05	.15	70.00	20.00	500.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N
L 648	.10	.20	.10	100.00	20.00	500.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N
L 649	.20	1.00	.15	500.00	20.00	500.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N
L 650	.50	2.00	.15	200.00	50.00	500.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N
L 651	.10	7.00	.03	2000.00	20.00L	5000.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N
L 652	.20	10.00	.07	1000.00	20.00L	500.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N
L 653	.10	.05	.05	20.00	20.00	200.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N
L 654	.10	.10	.07	100.00	20.00	200.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N
L 655	.20	5.00	.10	200.00	20.00	300.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N
L 656	.20	.70	.03	100.00	20.00	500.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N
L 657	.10	.50	.10	20.00	50.00	5000.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N
L 658	.10	.10	.15	.00N	50.00	5000.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N
L 659	.10	.50	.05	.00N	100.00	1000.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N
L 664	.10	2.00	.05	200.00	20.00	200.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N

morrison formation basic data-continued

SAMPLE	LA	PPM	NB	PPM	N1	PPM	PB	PPM	SC	PPM	SR	PPM	U	PPM	Y	PPM	ZR	PPM
L 619	.00N	10.00L	5.00L	10.00	.00N	70.00	20.00	.00N	20.00	.00N	20.00	.00N	20.00	.00N	20.00	.00N	20.00	.00N
L 620	.00N	10.00L	5.00L	10.00	.00N	100.00	30.00	.00N	30.00	.00N	100.00	.00N	10.00	.00N	10.00	.00N	100.00	.00N
L 621	.00N	10.00L	5.00L	10.00L	.00N	10.00L	10.00	.00N	30.00	.00N	10.00L	.00N	10.00L	.00N	10.00L	.00N	50.00	.00N
L 622	.00N	10.00L	5.00L	10.00L	.00N	100.00	10.00	.00N	10.00	.00N	100.00	.00N	10.00	.00N	10.00	.00N	20.00	.00N
L 623	.00N	10.00L	5.00L	10.00L	.00N	150.00	10.00	.00N	10.00	.00N	150.00	.00N	10.00L	.00N	10.00L	.00N	100.00	.00N
L 624	.00N	10.00L	5.00	10.00L	.00N	500.00	30.00	.00N	30.00	.00N	500.00	.00N	10.00	.00N	10.00	.00N	50.00	.00N
L 625	.00N	10.00L	5.00L	10.00L	.00N	200.00	10.00	.00N	10.00	.00N	200.00	.00N	10.00	.00N	10.00	.00N	100.00	.00N
L 626	.00N	10.00L	5.00L	10.00L	.00N	70.00	10.00	.00N	10.00	.00N	70.00	.00N	10.00L	.00N	10.00L	.00N	20.00	.00N
L 627	.00N	10.00L	5.00L	10.00L	.00N	70.00	10.00	.00N	10.00	.00N	70.00	.00N	10.00	.00N	10.00	.00N	50.00	.00N
L 628	.00N	10.00L	5.00L	.00N	.00N	150.00	50.00	.00N	50.00	.00N	150.00	.00N	10.00	.00N	10.00	.00N	50.00	.00N
L 629	.00N	10.00L	5.00L	10.00L	.00N	100.00	10.00	.00N	10.00	.00N	100.00	.00N	10.00	.00N	10.00	.00N	20.00	.00N
L 630	.00N	10.00L	.00N	.00N	.00N	50.00	10.00	.00N	10.00	.00N	50.00	.00N	10.00	.00N	10.00	.00N	50.00	.00N
L 631	.00N	10.00L	5.00L	10.00	.00N	70.00	20.00	.00N	20.00	.00N	70.00	.00N	10.00L	.00N	10.00L	.00N	100.00	.00N
L 632	50.00	10.00L	5.00	10.00L	.00N	30.00	20.00	.00N	20.00	.00N	30.00	.00N	10.00	.00N	10.00	.00N	100.00	.00N
L 633	.00N	10.00L	5.00	10.00L	.00N	50.00	20.00	.00N	20.00	.00N	50.00	.00N	20.00	.00N	20.00	.00N	30.00	.00N
L 634	.00N	10.00L	5.00	10.00L	.00N	50.00	20.00	.00N	20.00	.00N	50.00	.00N	20.00	.00N	20.00	.00N	30.00	.00N
L 635	.00N	10.00L	5.00L	10.00	.00N	50.00	10.00	.00N	10.00	.00N	50.00	.00N	10.00L	.00N	10.00L	.00N	150.00	.00N
L 636	.00N	10.00L	5.00L	10.00L	.00N	70.00	30.00	.00N	30.00	.00N	70.00	.00N	10.00	.00N	10.00	.00N	20.00	.00N
L 637	.00N	10.00L	5.00L	10.00L	.00N	30.00	20.00	.00N	20.00	.00N	30.00	.00N	10.00	.00N	10.00	.00N	50.00	.00N
L 638	.00N	10.00L	5.00L	10.00	.00N	100.00	30.00	.00N	30.00	.00N	100.00	.00N	30.00	.00N	30.00	.00N	50.00	.00N
L 639	.00N	10.00L	5.00	10.00	.00N	150.00	30.00	.00N	30.00	.00N	150.00	.00N	30.00	.00N	20.00	.00N	50.00	.00N
L 640	.00N	10.00L	.00N	10.00	.00N	200.00	20.00	.00N	20.00	.00N	200.00	.00N	20.00	.00N	20.00	.00N	30.00	.00N
L 641	30.00	10.00L	.00N	10.00	.00N	150.00	30.00	.00N	30.00	.00N	150.00	.00N	10.00	.00N	10.00	.00N	50.00	.00N
L 642	.00N	10.00L	5.00L	10.00	.00N	100.00	30.00	.00N	30.00	.00N	100.00	.00N	10.00L	.00N	10.00L	.00N	50.00	.00N
L 643	.00N	10.00L	5.00L	10.00	.00N	70.00	20.00	.00N	20.00	.00N	70.00	.00N	10.00	.00N	10.00	.00N	50.00	.00N
L 644	50.00	10.00L	.00N	10.00	.00N	150.00	30.00	.00N	30.00	.00N	150.00	.00N	30.00	.00N	50.00	.00N	30.00	.00N
L 645	.00N	10.00L	5.00L	10.00	.00N	100.00	30.00	.00N	30.00	.00N	100.00	.00N	30.00	.00N	10.00	.00N	70.00	.00N
L 646	50.00	10.00L	.00N	20.00	.00N	30.00	30.00	.00N	30.00	.00N	30.00	.00N	30.00	.00N	30.00	.00N	200.00	.00N
L 647	.00N	10.00L	.00N	10.00	.00N	20.00	30.00	.00N	30.00	.00N	20.00	.00N	30.00	.00N	10.00L	.00N	200.00	.00N
L 648	.00N	10.00L	5.00L	10.00	.00N	50.00	30.00	.00N	30.00	.00N	50.00	.00N	30.00	.00N	30.00	.00N	30.00	.00N
L 649	.00N	10.00L	5.00L	10.00	.00N	150.00	30.00	.00N	30.00	.00N	150.00	.00N	30.00	.00N	10.00L	.00N	100.00	.00N
L 650	.00N	10.00L	5.00	10.00	.00N	200.00	20.00	.00N	20.00	.00N	200.00	.00N	20.00	.00N	10.00	.00N	200.00	.00N
L 651	.00N	10.00L	5.00L	10.00L	.00N	200.00	10.00	.00N	10.00	.00N	200.00	.00N	10.00	.00N	10.00	.00N	100.00	.00N
L 652	.00N	10.00L	5.00	10.00L	.00N	200.00	30.00	.00N	30.00	.00N	200.00	.00N	30.00	.00N	10.00	.00N	200.00	.00N
L 653	.00N	10.00L	5.00L	10.00L	.00N	20.00	10.00	.00N	10.00	.00N	20.00	.00N	10.00	.00N	10.00	.00N	50.00	.00N
L 654	.00N	10.00L	7.00	10.00	.00N	20.00	20.00	.00N	20.00	.00N	20.00	.00N	20.00	.00N	10.00	.00N	50.00	.00N
L 655	.00N	10.00L	5.00L	10.00	.00N	100.00	10.00	.00N	10.00	.00N	100.00	.00N	20.00	.00N	10.00	.00N	200.00	.00N
L 656	.00N	.00N	5.00L	10.00	.00N	70.00	10.00	.00N	10.00	.00N	70.00	.00N	10.00	.00N	10.00	.00N	50.00	.00N
L 657	.00N	10.00L	.00N	10.00L	.00N	150.00	10.00	.00N	10.00	.00N	150.00	.00N	10.00	.00N	10.00	.00N	200.00	.00N
L 658	.00N	10.00L	.00N	10.00L	.00N	100.00	50.00	.00N	50.00	.00N	100.00	.00N	10.00L	.00N	10.00L	.00N	200.00	.00N
L 659	.00N	.00N	.00N	.00N	.00N	150.00	10.00	.00N	10.00	.00N	150.00	.00N	10.00	.00N	10.00L	.00N	100.00	.00N
L 664	.00N	10.00L	5.00L	.00N	.00N	20.00	.00N	.00N	30.00	.00N	20.00	.00N	10.00L	.00N	10.00L	.00N	50.00	.00N

morrison formation basic data-continued

SAMPLE	HG2	PPH	CU2	PPH	PHI	MEAN	MODE	MM	PHI	MED	PHI	SD	PHI	SKEW	PHI	KURT	2PHI	PT	SPHI	PT
L 619	.10		150.00			2.67	.125			2.76		.71		.68		.60		1.50	1.75	
L 620	.10		125.00			3.11	.125			2.97		1.06		1.92		2.09		2.05	2.33	
L 621	.10		40.00			3.15	.125			3.02		.84		1.49		1.51		2.30	2.50	
L 622	.04		150.00			1.83	.296			1.70		.79		1.24		1.06		.90	1.06	
L 623	.10		75.00			2.14	.277			2.02		1.13		.92		.81		.50	.80	
L 624	.20		60.00			6.49	.046			5.79		3.28		-.05		-.07		-.50	.65	
L 625	.07		15.00			4.04	.083			3.64		1.32		1.39		.87		2.85	3.03	
L 626	.27		15.00			2.86	.134			2.59		1.48		1.39		1.01		1.35	1.55	
L 627	.22		15.00			2.60	.210			2.18		1.39		1.18		.73		1.22	1.40	
L 628	.06		20.00			1.58	.500			1.19		1.63		.92		.66		-.90	-.30	
L 629	.10		20.00			3.15	.125			2.99		1.17		1.65		1.47		1.85	2.20	
L 630	.11		30.00			2.35	.176			2.28		1.13		1.23		1.38		.63	.99	
L 631	.15		30.00			3.01	.108			3.01		.71		.39		.35		1.80	2.00	
L 632	.33		20.00			2.82	.129			2.72		1.25		1.42		1.17		1.25	1.52	
L 633	.36		40.00			1.74	.296			1.61		1.03		2.02		2.18		.60	.88	
L 634	.16		40.00			2.04	.273			1.86		1.03		1.72		1.68		1.05	1.20	
L 635	.23		30.00			3.17	.125			3.00		1.09		1.77		1.61		2.17	2.35	
L 636	.21		20.00			2.23	.352			1.74		1.82		.97		.55		.00	.40	
L 637	.28		20.00			3.08	.125			2.92		1.38		1.43		1.13		1.33	1.66	
L 638	.09		30.00			2.97	.125			2.88		.94		2.09		2.49		2.05	2.22	
L 639	.18		30.00			3.51	.088			3.32		1.08		1.88		1.78		2.42	2.60	
L 640	.12		20.00			2.68	.209			2.36		1.53		1.59		1.31		1.20	1.42	
L 641	.31		30.00			1.96	.296			1.68		1.90		.98		.60		-.66	-.22	
L 642	.17		30.00			2.35	.250			2.04		1.69		1.28		.86		.33	.70	
L 643	.09		40.00			2.86	.129			2.75		1.26		1.53		1.44		1.27	1.53	
L 644	.24		30.00			2.81	.148			2.58		1.48		1.52		1.16		1.15	1.45	
L 645	.17		30.00			1.63	.352			1.97		1.65		1.43		1.07		-.20	.12	
L 646	.21		40.00			2.67	.250			1.37		2.30		1.17		.51		.60	.90	
L 647	.11		40.00			2.51	.250			2.06		1.84		1.39		.86		.77	1.10	
L 648	.09		60.00			2.64	.203			2.34		1.42		1.48		1.10		1.15	1.45	
L 649	.22		30.00			3.02	.154			2.60		1.87		1.55		1.03		1.22	1.62	
L 650	.24		30.00			3.76	.086			3.54		1.00		2.42		2.63		3.00	3.22	
L 651	.09		40.00			2.72	.148			2.60		1.33		2.23		2.21		1.68	1.82	
L 652	.14		20.00			3.11	.121			3.28		1.43		1.77		1.67		1.40	1.70	
L 653	.17		30.00			2.98	.134			2.73		1.64		1.97		1.57		1.77	1.99	
L 654	.42		60.00			2.78	.138			2.64		1.42		1.78		1.71		1.20	1.40	
L 655	.29		75.00			3.28	.088			3.06		1.58		1.16		.67		1.50	1.70	
L 656	.12		40.00			2.95	.154			2.59		1.47		1.84		1.32		2.00	2.05	
L 657	.46		125.00			2.77	.210			2.46		1.29		1.51		1.18		1.40	1.60	
L 658	.30		60.00			3.61	.125			3.05		1.76		1.31		.67		2.36	2.55	
L 659	.16		60.00			2.69	.210			2.19		1.65		1.72		1.29		1.55	1.72	
L 664	.09		60.00			1.72	.418			1.41		1.19		2.03		2.20		.70	.85	

Morrison formation basic data-continued

SAMPLE	16PHI PT	84PHI PT	95PHI PT	98PHI PT	HM	PCT	ACSO PCT	THKNSS
L 619	2.13	3.13	3.50	4.00		.14	1.7	680.4
L 620	2.66	3.50	4.20	6.50		.32	3.3	680.4
L 621	2.72	3.50	4.10	5.50		.13	6.9	192.4
L 622	1.30	2.30	3.10	4.00		.07	16.7	192.4
L 623	1.25	2.97	3.70	4.50		.27	16.8	192.4
L 624	4.00	11.25	13.00	13.50		.08	83.3	192.4
L 625	3.30	4.55	7.00	9.00		.23	21.8	222.7
L 626	1.90	3.50	5.00	8.00		.12	17.3	222.7
L 627	1.70	3.50	5.00	7.50		.02	15.5	222.7
L 628	.44	3.10	3.75	5.00		.09	38.6	188.8
L 629	2.55	3.58	4.35	8.00		.09	32.1	188.8
L 630	1.50	3.05	3.70	4.40		.13	18.2	188.8
L 631	2.45	3.51	3.90	4.30		.16	15.1	323.6
L 632	1.98	3.33	4.15	7.70		.09	25.3	323.6
L 633	1.22	2.05	2.88	5.00		.04	22.9	323.6
L 634	1.44	2.48	3.50	4.75		.23	9.0	399.9
L 635	2.62	3.55	4.15	8.00		.15	8.7	399.9
L 636	.88	3.55	5.50	9.00		.64	23.1	10.3
L 637	2.22	3.55	4.77	8.50		.07	1.2	323.6
L 638	2.50	3.35	3.85	5.00		.74	1.1	418.5
L 639	2.90	3.75	4.50	8.00		.32	14.9	418.5
L 640	1.77	3.20	5.00	10.00		.03	2.4	418.5
L 641	.60	3.05	5.50	8.50		.08	3.1	259.0
L 642	1.23	3.05	5.50	9.00		.05	3.9	259.0
L 643	2.00	3.43	4.14	8.00		1.72	1.9	230.2
L 644	1.88	3.33	5.00	8.00		2.00	13.8	330.6
L 645	.60	2.30	4.25	8.00		.15	1.1	330.6
L 646	1.40	3.50	8.50	10.00		.17	4.9	330.6
L 647	1.50	3.10	7.00	9.50		.10	2.4	266.3
L 648	1.83	3.07	5.00	8.00		.05	1.7	266.3
L 649	2.05	3.38	8.00	10.00		.17	4.0	266.3
L 650	3.35	3.95	5.00	8.00		.28	9.8	355.2
L 651	2.10	3.00	3.75	10.00		1.53	18.4	355.2
L 652	2.25	3.58	4.25	10.00		.33	20.0	355.2
L 653	2.27	3.16	4.00	11.00		.21	2.1	94.4
L 654	1.85	3.30	4.00	8.50		.13	2.3	94.4
L 655	2.10	4.00	6.00	9.40		.67	11.3	104.4
L 656	2.22	3.08	5.00	9.65		.93	4.0	104.4
L 657	1.85	1.98	3.24	8.00		.89	1.7	32.0
L 658	2.80	3.95	8.00	10.50		.78	2.7	32.0
L 659	1.93	2.85	5.50	10.25		.21	1.6	32.0
L 664	1.05	2.12	3.10	5.00		.11	4.6	415.6

morrison formation basic data-continued

SAMPLE	UNIT	LAT	LONG	LOGNO	CEMENTS	FE-0X	QTZ-GR	QZ-RF	CHERT-FR	CHERT-AU
L 665	413040.	39.40	110.56	146.	20.40	.20	55.00	.00N	8.40	.00N
L 666	413040.	39.40	110.56	146.	.00B	.00B	.00B	.00B	.00B	.00B
L 672	413040.	39.96	111.04	59.	8.60	1.40	59.20	.20	16.20	4.20
L 674	413040.	39.20	110.79	24.	27.80	.00N	48.00	.00N	14.00	2.20
L 676	413040.	38.88	109.71	173.	.00B	.00B	.00B	.00B	.00B	.00B
L 678	413040.	38.97	110.14	112.	16.20	.00N	68.80	.00N	2.60	.00N
L 679	413040.	39.40	110.56	146.	.00B	.00B	.00B	.00B	.00B	.00B
L 680	413040.	38.97	110.14	112.	.00B	.00B	.00B	.00B	.00B	.00B
L 682	413040.	38.68	109.13	161.	.00B	.00B	.00B	.00B	.00B	.00B
L 684	413040.	39.25	110.45	199.	.00B	.00B	.00B	.00B	.00B	.00B
L 685	413040.	38.05	111.07	189.	.00B	.00B	.00B	.00B	.00B	.00B
L 686	413040.	38.05	111.07	189.	23.20	.00N	39.00	.00N	11.80	.00N
L 687	413040.	37.83	110.94	86.	.00B	.00B	.00B	.00B	.00B	.00B
L 688	413040.	37.70	110.74	181.	17.40	1.00	64.60	.40	.80	.00N
L 691	413040.	37.46	109.62	28.	.00B	.00B	.00B	.00B	.00B	.00B
L 692	413040.	37.46	109.62	28.	.00B	.00B	.00B	.00B	.00B	.00B
L 693	413040.	37.46	109.62	28.	.00B	.00B	.00B	.00B	.00B	.00B
L 694	413040.	38.40	109.42	31.	.00B	.00B	.00B	.00B	.00B	.00B
L 695	413040.	38.40	109.42	31.	22.40	.20	56.60	.20	7.80	.20
L 698	413040.	38.05	109.30	37.	17.60	.20	40.80	1.00	8.00	.60
L 702	413020.	36.37	109.76	230.	.00B	.00B	.00B	.00B	.00B	.00B
L 703	413020.	36.37	109.76	230.	.00B	.00B	.00B	.00B	.00B	.00B
L 704	413030.	36.37	109.76	230.	.00N	.60	71.40	.00N	.80	.00N
L 705	413030.	36.37	109.76	230.	.00N	.00N	68.40	.60	.80	.00N
L 706	413020.	36.37	109.76	230.	.00B	.00B	.00B	.00B	.00B	.00B
L 707	413020.	36.17	109.74	114.	.00B	.00B	.00B	.00B	.00B	.00B
L 708	413020.	36.17	109.74	114.	.00B	.00B	.00B	.00B	.00B	.00B
L 709	413020.	36.17	109.74	114.	.00B	.00B	.00B	.00B	.00B	.00B
L 710	413020.	36.17	109.74	114.	.00B	.00B	.00B	.00B	.00B	.00B
L 711	413030.	36.03	109.85	172.	.00B	.00B	.00B	.00B	.00B	.00B
L 712	413030.	36.03	109.85	172.	.00N	1.40	71.80	.20	.20	.00N
L 713	413030.	36.03	109.85	172.	.00B	.00B	.00B	.00B	.00B	.00B
L 714	413020.	35.79	109.77	195.	.00B	.00B	.00B	.00B	.00B	.00B
L 715	413030.	35.79	109.77	195.	.00B	.00B	.00B	.00B	.00B	.00B
L 716	413020.	36.72	109.04	151.	.00B	.00B	.00B	.00B	.00B	.00B
L 717	413030.	36.72	109.04	151.	.00B	.00B	.00B	.00B	.00B	.00B
L 720	413020.	36.72	109.04	151.	.00B	.00B	.00B	.00B	.00B	.00B
L 721	413030.	35.02	107.25	140.	12.60	.00N	41.80	.20	.80	.00N
L 722	413020.	35.02	107.25	140.	3.40	.00N	51.00	.00N	.00N	.20
L 725	413030.	35.66	106.90	49.	.00N	.00N	62.60	.20	.00N	.00N
L 726	413030.	35.66	106.90	49.	.00B	.00B	.00B	.00B	.00B	.00B
L 727	413030.	35.79	109.77	195.	.00B	.00B	.00B	.00B	.00B	.00B

morrison formation basic data-continued

SAMPLE	SIL-RF	SIL-LSFR	K-SPAR	NA-SPAR	KAOL	MICA	ILLITE	MIC-RF	HV-MIN	MISC-OP
L 665	.60	.00N	.00N	12.80	1.00	.00N	.00N	.00N	.00N	.40
L 666	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 672	1.00	.20	.00N	4.20	2.40	.00N	.20	.20	.00N	.00N
L 674	2.60	.00B	3.20	1.00	.00N	.00N	.00N	.00N	.00N	.00N
L 676	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 678	.20	3.80	.00N	3.60	.00N	.00N	.00N	.00N	.00N	.00N
L 679	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 680	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 682	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 684	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 685	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 686	3.80	6.80	1.20	.40	.00N	.00B	.00B	.00B	.00B	.00B
L 687	.00B	.00B	.00B	.00B	.00N	.20	.00N	.00N	.00N	.00N
L 688	.60	.00N	2.80	.40	7.80	.00B	.00B	.00B	.00B	.00B
L 691	.00B	.00B	.00B	.00B	.00B	.00N	.00N	.00N	.00N	.20
L 692	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 693	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 694	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 695	2.20	1.80	.80	.60	2.60	.00B	.00B	.00B	.00B	.00B
L 698	13.00	9.60	1.80	.80	1.40	.20	.00N	.00N	.00N	.00N
L 702	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 703	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 704	.00N	.00N	10.00	1.00	11.00	.00N	.00B	.00B	.00B	.00B
L 705	.00N	.00N	5.40	1.40	5.00	.00N	1.00	.00N	.00N	.00N
L 706	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00N	.00N	.00N
L 707	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 708	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 709	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 710	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 711	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 712	.00N	.00N	14.80	4.00	2.20	.20	2.20	.00N	.00N	.00N
L 713	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 714	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 715	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 716	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 717	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 720	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 721	.00N	.00N	10.20	17.40	.20	.00B	.00B	.00B	.00B	.00B
L 722	.00N	.00N	16.60	9.00	1.40	.20	6.00	.00N	.20	.00N
L 725	.00N	.00N	18.40	11.00	1.40	.20	5.20	.00N	.20	.40
L 726	.00B	.00B	.00B	.00B	.00B	.00B	1.20	.00N	.20	.00N
L 727	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B

morrison formation basic data-continued

SAMPLE	TUFF-FR	MONT	ASH	CEM-TOT	SIL-TOT	FELD-TOT	MICA-TOT	TUFF-TOT	TEXTURE	FE	PCT
L 665	1.00	.00N	.00N	20.60	64.00	13.80	.60	1.00	1.00		.50
L 666	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		1.00
L 672	1.00	1.00	.00N	10.00	81.00	6.60	.40	2.00	1.00		.20
L 674	.20	.20	.00N	27.80	67.60	4.20	.00N	.40	1.00		.20
L 676	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 678	4.40	.40	.00N	16.20	75.40	3.60	.00N	4.80	1.00		.20
L 679	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	3.00		1.50
L 680	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.20
L 682	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.20
L 684	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 685	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		1.00
L 686	12.60	1.00	.00N	23.20	61.40	1.60	.20	13.60	1.00		.70
L 687	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 688	3.40	.60	.00N	18.40	66.40	11.00	.20	4.00	1.00		1.00
L 691	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	3.00		1.00
L 692	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	3.00		2.00
L 693	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	4.00		1.00
L 694	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 695	4.40	.20	.00N	22.60	68.80	4.00	.00N	4.60	1.00		.30
L 698	4.60	.40	.00N	17.80	73.00	4.00	.20	5.00	1.00		.50
L 702	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.30
L 703	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.20
L 704	1.66	2.60	.00N	.60	72.20	22.00	1.00	4.20	1.00		.50
L 705	7.60	10.80	.00N	.00N	69.80	11.80	.00N	18.40	1.00		.50
L 706	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.20
L 707	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 708	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.10
L 709	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.20
L 710	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.10
L 711	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	4.00		3.00
L 712	2.60	.40	.00N	1.40	72.20	21.00	2.40	3.00	1.00		1.00
L 713	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		1.00
L 714	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		1.00
L 715	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		5.00
L 716	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 717	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.20
L 720	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.10
L 721	2.00	.60	.00N	12.60	42.80	35.60	6.40	2.60	1.00		.50
L 722	12.40	.00N	.00N	3.40	51.20	27.00	6.00	12.40	1.00		1.00
L 725	4.80	.00N	.00N	.00N	62.80	30.80	1.60	4.80	1.00		.20
L 726	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.20
L 727	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		1.00

morrison formation basic data-continued

SAMPLE	MG	PCT	CA	PCT	T1	PCT	MN	PPM	B	PPM	BA	PPM	BE	PPM	CO	PPM	CR	PPM	CU	PPM
L 665		.30		7.00		.05	500.00		20.00L	50.00		.00N		.00N		.00N	10.00		7.00	
L 666		.50		.70		.07	100.00		20.00	1500.00		.00N		.00N		3.00	20.00		10.00	
L 672		.10		2.00		.05	2000.00		20.00	15000.00		.00N		.00N		.00N	10.00		5.00	
L 674		.10		10.00		.05	500.00		20.00L	500.00		.00N		.00N		.00N	10.00		5.00	
L 676		.10		10.00		.05	500.00		20.00L	300.00		.00N		.00N		.00N	10.00		10.00	
L 678		.10		5.00		.02	500.00		20.00	500.00		.00N		.00N		.00N	5.00		5.00	
L 679		.20		.50		.05	100.00		20.00	100.00		2.00		.00N		3.00	2.00		5.00	
L 680		.20		.20		.07	20.00		20.00	500.00		.00N		.00N		3.00L	5.00		5.00	
L 682		.10		10.00		.05	1000.00		20.00	300.00		.00N		.00N		.00N	10.00		5.00	
L 684		.20		10.00		.05	1000.00		20.00	100.00		.00N		.00N		3.00	30.00		5.00	
L 685		.20		1.00		.07	500.00		50.00	500.00		.00N		.00N		3.00L	30.00		20.00	
L 686		.20		.50		.07	50.00		50.00	200.00		.00N		.00N		.00N	7.00		10.00	
L 687		.10		.20		.10	100.00		20.00	200.00		.00N		.00N		3.00L	5.00		5.00	
L 688	1.00			5.00		.10	500.00		20.00L	100.00		.00N		.00N		5.00	10.00		5.00	
L 691		.50		1.00		.15	50.00		20.00	500.00		5.00		.00N		5.00	5.00		10.00	
L 692	1.00			1.00		.20	200.00		20.00	300.00		3.00		5.00		5.00	5.00		10.00	
L 693		.50		.20		.15	500.00		100.00	500.00		2.00		5.00		5.00	10.00		20.00	
L 694		.50		1.50		.05	200.00		20.00	500.00		.00N		5.00		3.00	200.00		5.00	
L 695		.20		7.00		.05	1000.00		20.00L	150.00		.00N		.00N		3.00	10.00		10.00	
L 698		.20		10.00		.05	1000.00		20.00	15000.00		.00N		.00N		.00N	50.00		15.00	
L 702		.20		.50		.07	100.00		20.00L	300.00		.00N		.00N		.00N	5.00		2.00	
L 703		.10		.05		.05	50.00		20.00L	200.00		.00N		.00N		.00N	2.00		2.00	
L 704		.10		.02		.07	20.00		20.00L	500.00		.00N		.00N		.00N	2.00		7.00	
L 705		.10		.02		.07	20.00		20.00L	500.00		.00N		.00N		.00N	2.00		7.00	
L 706		.10		.02		.07	30.00		20.00L	200.00		.00N		.00N		.00N	2.00		3.00	
L 707		.20		.10		.10	100.00		20.00	300.00		.00N		.00N		.00N	5.00		5.00	
L 708		.10		.05		.02	30.00		20.00L	200.00		.00N		.00N		.00N	2.00		3.00	
L 709		.20		10.00		.10	1000.00		20.00	500.00		.00N		.00N		.00N	7.00		5.00	
L 710		.10		10.00G		.01	500.00		.00N	50.00		.00N		.00N		.00N	5.00		2.00	
L 711		.10		.20		.10	500.00		20.00L	500.00		.00N		.00N		5.00	20.00		10.00	
L 712		.20		.10		.10	200.00		20.00	300.00		.00N		.00N		.00N	5.00		10.00	
L 713		.10		.10		.07	200.00		20.00L	300.00		.00N		.00N		.00N	5.00		5.00	
L 714		.10		.10		.10	100.00		50.00	300.00		2.00		.00N		3.00	10.00		7.00	
L 715		.20		.20		.05	100.00		20.00L	200.00		.00N		.00N		.00N	2.00		3.00	
L 716		.10		.10		.07	100.00		20.00L	500.00		.00N		.00N		.00N	2.00		3.00	
L 717		.10		.50		.05	100.00		20.00L	200.00		.00N		.00N		.00N	2.00		2.00	
L 720		.15		.70		.20	200.00		20.00	200.00		.00N		.00N		.00N	2.00		2.00	
L 721		.15		3.00		.15	200.00		20.00L	300.00		.00N		.00N		3.00L	7.00		10.00	
L 722		.30		7.00		.20	500.00		20.00L	200.00		.00N		.00N		.00N	10.00		5.00	
L 725		.10		.10		.10	50.00		20.00	300.00		.00N		.00N		.00N	5.00		7.00	
L 726		.10		.10		.07	50.00		20.00	200.00		.00N		.00N		3.00L	5.00		5.00	
L 727		.10		.05		.10	200.00		20.00	200.00		.00N		.00N		.00N	5.00		2.00	

morrison formation basic data-continued

SAMPLE	LA	PPM	NB	PPM	N1	PPM	PB	PPM	SC	PPM	SR	PPM	U	PPM	Y	PPM	ZN	PPM	ZR	PPM
L 665	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	150.00	10.00	10.00	10.00	10.00	.00N	.00N	.00N	100.00	.00N
L 666	30.00	10.00L	.00N	10.00	5.00L	.00N	10.00	.00N	.00N	.00N	70.00	20.00	20.00	20.00	20.00	.00N	.00N	.00N	150.00	.00N
L 672	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	100.00	10.00	10.00	10.00	10.00	.00N	.00N	.00N	50.00	.00N
L 674	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	150.00	10.00	10.00	10.00	10.00	.00N	.00N	.00N	20.00	.00N
L 676	.00N	.00N	.00N	.00N	.00N	.00N	10.00	.00N	.00N	.00N	200.00	10.00	10.00	10.00	10.00L	.00N	.00N	.00N	100.00	.00N
L 678	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	70.00	10.00	10.00	10.00	10.00L	.00N	.00N	.00N	20.00	.00N
L 679	50.00	10.00	.00N	20.00	.00N	.00N	.00N	.00N	.00N	5.00	200.00	20.00	20.00	20.00	20.00	.00N	.00N	.00N	100.00	.00N
L 680	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	30.00	20.00	20.00	20.00	20.00	.00N	.00N	.00N	50.00	.00N
L 682	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	200.00	20.00	20.00	20.00	10.00L	.00N	.00N	.00N	30.00	.00N
L 684	.00N	.00N	.00N	.00N	5.00	.00N	.00N	.00N	.00N	.00N	150.00	20.00	20.00	20.00	10.00	.00N	.00N	.00N	60.00	.00N
L 685	50.00	.00N	.00N	10.00	10.00	.00N	10.00	.00N	.00N	.00N	200.00	50.00	50.00	50.00	30.00	.00N	.00N	.00N	100.00	.00N
L 686	.00N	.00N	.00N	.00N	5.00L	.00N	.00N	.00N	.00N	.00N	50.00	30.00	30.00	30.00	10.00	.00N	.00N	.00N	50.00	.00N
L 687	.00N	.00N	.00N	.00N	5.00L	.00N	10.00L	.00N	.00N	.00N	20.00	20.00	20.00	20.00	.00N	.00N	.00N	.00N	200.00	.00N
L 688	.00N	.00N	.00N	.00N	10.00	.00N	10.00	.00N	.00N	.00N	150.00	50.00	50.00	50.00	.00N	.00N	.00N	.00N	20.00	.00N
L 691	30.00	10.00	.00N	10.00	5.00L	.00N	10.00	.00N	.00N	5.00	200.00	20.00	20.00	20.00	30.00	.00N	.00N	.00N	200.00	.00N
L 692	50.00	10.00	10.00	10.00	.00N	.00N	20.00	.00N	10.00	10.00	200.00	30.00	30.00	30.00	50.00	.00N	.00N	.00N	300.00	.00N
L 693	.00N	.00N	.00N	10.00L	10.00	.00N	10.00	.00N	.00N	5.00	300.00	100.00	100.00	100.00	10.00	.00N	.00N	.00N	100.00	.00N
L 694	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	50.00	150.00	150.00	150.00	.00N	.00N	.00N	.00N	50.00	.00N
L 695	.00N	.00N	.00N	.00N	5.00L	.00N	.00N	.00N	.00N	.00N	100.00	20.00	20.00	20.00	15.00	.00N	.00N	.00N	50.00	.00N
L 698	.00N	.00N	.00N	.00N	5.00	.00N	10.00L	.00N	.00N	.00N	300.00	50.00	50.00	50.00	15.00	.00N	.00N	.00N	50.00	.00N
L 702	.00N	.00N	10.00L	10.00L	.00N	.00N	10.00L	.00N	.00N	.00N	50.00	20.00	20.00	20.00	.00N	.00N	.00N	.00N	100.00	.00N
L 703	.00N	.00N	10.00L	10.00L	.00N	.00N	10.00L	.00N	.00N	.00N	20.00	20.00	20.00	20.00	.00N	.00N	.00N	.00N	50.00	.00N
L 704	50.00	.00N	.00N	.00N	.00N	.00N	10.00L	.00N	.00N	.00N	20.00	20.00	20.00	20.00	50.00	.00N	.00N	.00N	70.00	.00N
L 705	50.00	.00N	.00N	.00N	.00N	.00N	10.00	.00N	.00N	.00N	20.00	20.00	20.00	20.00	50.00	.00N	.00N	.00N	100.00	.00N
L 706	.00N	.00N	.00N	.00N	.00N	.00N	10.00L	.00N	.00N	.00N	30.00	20.00	20.00	20.00	.00N	.00N	.00N	.00N	50.00	.00N
L 707	.00N	.00N	.00N	.00N	5.00L	.00N	10.00	.00N	.00N	.00N	50.00	20.00	20.00	20.00	10.00L	.00N	.00N	.00N	100.00	.00N
L 708	.00N	.00N	.00N	.00N	.00N	.00N	10.00L	.00N	.00N	.00N	15.00	7.00L	7.00L	7.00L	10.00	.00N	.00N	.00N	50.00	.00N
L 709	.00N	.00N	.00N	.00N	.00N	.00N	10.00	.00N	.00N	.00N	200.00	200.00	200.00	200.00	10.00	.00N	.00N	.00N	100.00	.00N
L 710	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	200.00	100.00	100.00	100.00	.00N	.00N	.00N	.00N	150.00	.00N
L 711	.00N	.00N	.00N	.00N	5.00L	.00N	10.00	.00N	.00N	5.00L	100.00	50.00	50.00	50.00	15.00	.00N	.00N	.00N	100.00	.00N
L 712	.00N	.00N	.00N	.00N	.00N	.00N	10.00	.00N	.00N	.00N	50.00	20.00	20.00	20.00	10.00	.00N	.00N	.00N	100.00	.00N
L 713	.00N	.00N	.00N	.00N	.00N	.00N	10.00	.00N	.00N	.00N	50.00	20.00	20.00	20.00	10.00	.00N	.00N	.00N	100.00	.00N
L 714	.00N	.00N	.00N	.00N	5.00L	.00N	10.00	.00N	.00N	5.00	70.00	30.00	30.00	30.00	10.00	.00N	.00N	.00N	100.00	.00N
L 715	.00N	.00N	.00N	.00N	.00N	.00N	10.00L	.00N	.00N	.00N	50.00	10.00	10.00	10.00	.00N	.00N	.00N	.00N	100.00	.00N
L 716	.00N	.00N	.00N	.00N	.00N	.00N	10.00	.00N	.00N	.00N	50.00	20.00	20.00	20.00	.00N	.00N	.00N	.00N	200.00	.00N
L 717	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	50.00	20.00	20.00	20.00	.00N	.00N	.00N	.00N	50.00	.00N
L 720	.00N	.00N	10.00L	10.00L	.00N	.00N	10.00	.00N	.00N	.00N	100.00	20.00	20.00	20.00	10.00	.00N	.00N	.00N	200.00	.00N
L 721	50.00	.00N	10.00L	10.00L	5.00L	.00N	10.00	.00N	.00N	.00N	150.00	50.00	50.00	50.00	20.00	.00N	.00N	.00N	200.00	.00N
L 722	30.00	.00N	10.00L	10.00L	5.00L	.00N	20.00	.00N	.00N	5.00L	100.00	30.00	30.00	30.00	20.00	.00N	.00N	.00N	100.00	.00N
L 725	.00N	.00N	.00N	.00N	.00N	.00N	10.00L	.00N	.00N	5.00L	50.00	20.00	20.00	20.00	.00N	.00N	.00N	.00N	200.00	.00N
L 726	.00N	.00N	.00N	.00N	.00N	.00N	10.00	.00N	.00N	.00N	50.00	20.00	20.00	20.00	.00N	.00N	.00N	.00N	100.00	.00N
L 727	.00N	.00N	.00N	.00N	5.00L	.00N	10.00	.00N	.00N	.00N	30.00	10.00	10.00	10.00	.00N	.00N	.00N	.00N	100.00	.00N

morrison formation basic data-continued

SAMPLE	HC2	PPM	CU2	PPM	PHI	MEAN	MODE	MM	PHI	MED	PHI	SD	PHI	SKEW	PHI	KURT	2PHI	PT	5PHI	PT
L 665	.80	60.00		60.00	3.96	.086			1.32	3.57			1.40	1.40	.88		2.77		2.95	
L 666	.30	40.00		40.00	3.35	.105			1.71	3.01			1.26	1.26	.77		1.50		1.77	
L 672	1.00	30.00		30.00	2.90	.203			1.57	2.47			1.24	1.24	.77		1.30		1.50	
L 674	.27	40.00		40.00	2.62	.105			1.93	2.78			.38	.38	.33		-2.00		-60	
L 676	.14	40.00		40.00	3.61	.080			2.08	3.25			1.27	1.27	.68		1.00		1.80	
L 678	.37	60.00		60.00	1.91	.250			.76	1.90			1.34	1.34	1.15		1.17		1.21	
L 679	.07	75.00		75.00	.008	.008			.008	.008			.008	.008	.008		.008		.008	
L 680	.30	20.00		20.00	2.65	.210			1.34	2.12			1.78	1.78	1.65		.85		1.25	
L 682	.29	30.00		30.00	1.59	.352			1.53	1.44			1.76	1.76	1.69		-.55		-.05	
L 684	.31	30.00		30.00	2.12	.134			1.49	2.20			.61	.61	.59		-1.00		-.25	
L 685	.60	60.00		60.00	.47	1.185			1.98	-.04			1.45	1.45	1.01		-1.20		-1.10	
L 686	.22	40.00		40.00	1.39	.297			1.65	1.48			.98	.98	.93		-1.25		-1.00	
L 687	.29	40.00		40.00	2.67	.210			1.29	2.35			1.26	1.26	.94		1.25		1.45	
L 688	.18	60.00		60.00	2.53	.218			1.46	2.17			1.39	1.39	.84		1.37		1.53	
L 691	.12	40.00		40.00	.008	.008			.008	.008			.008	.008	.008		.008		.008	
L 692	.11	30.00		30.00	.008	.008			.008	.008			.008	.008	.008		.008		.008	
L 693	.58	30.00		30.00	.008	.008			.008	.008			.008	.008	.008		.008		.008	
L 694	.30	20.00		20.00	2.44	.210			1.25	2.25			1.55	1.55	1.33		1.00		1.25	
L 695	.21	40.00		40.00	1.85	.296			1.79	1.68			1.36	1.36	.72		-1.00		-50	
L 698	.24	40.00		40.00	1.28	.352			1.33	1.28			.89	.89	.88		-1.00		-.65	
L 702	.12	40.00		40.00	2.94	.125			1.73	2.72			1.36	1.36	.88		.75		1.25	
L 703	.09	60.00		60.00	3.13	.125			1.47	2.92			1.84	1.84	1.49		1.85		2.08	
L 704	.22	60.00		60.00	2.60	.210			1.75	2.22			1.59	1.59	1.04		1.10		1.32	
L 705	.25	60.00		60.00	2.50	.297			2.06	1.87			1.24	1.24	.57		.80		.97	
L 706	.07	20.00		20.00	2.32	.250			1.83	1.95			1.39	1.39	.88		.15		.70	
L 707	.33	20.00		20.00	3.21	.125			1.17	3.03			2.00	2.00	2.08		2.00		2.30	
L 708	.39	40.00		40.00	2.06	.341			1.37	1.68			2.01	2.01	2.18		.80		.93	
L 709	.31	40.00		40.00	3.62	.088			1.14	3.41			1.64	1.64	1.27		2.60		2.80	
L 710	.13	40.00		40.00	3.22	.117			1.30	3.03			1.53	1.53	1.21		1.75		2.00	
L 711	.13	40.00		40.00	3.50	.125			2.19	2.82			1.19	1.19	.49		1.77		1.97	
L 712	.19	40.00		40.00	3.21	.125			1.18	3.03			1.99	1.99	2.04		2.00		2.25	
L 713	.22	40.00		40.00	3.03	.125			1.50	2.77			1.85	1.85	1.47		1.80		2.00	
L 714	.08	40.00		40.00	3.92	.122			2.05	3.37			1.30	1.30	.63		2.30		2.60	
L 715	.13	40.00		40.00	2.45	.353			2.04	1.68			1.63	1.63	1.00		1.08		1.18	
L 716	.38	40.00		40.00	2.44	.210			.96	2.29			1.64	1.64	1.68		1.37		1.53	
L 717	.23	40.00		40.00	2.22	.210			.82	2.14			1.26	1.26	1.33		1.20		1.35	
L 720	.22	40.00		40.00	2.90	.121			.81	2.89			1.41	1.41	1.70		1.80		2.00	
L 721	.44	40.00		40.00	2.46	.242			1.45	2.10			1.29	1.29	.78		1.00		1.25	
L 722	.27	40.00		40.00	2.13	.250			1.09	1.97			1.11	1.11	2.51		1.05		1.25	
L 725	.52	40.00		40.00	3.01	.130			1.24	2.81			1.91	1.91	1.69		1.95		2.15	
L 726	.25	40.00		40.00	2.77	.177			1.18	2.49			1.63	1.63	1.36		1.55		1.77	
L 727	.11	40.00		40.00	2.97	.125			1.61	2.72			1.69	1.69	1.37		1.30		1.55	

morrison formation basic data-continued

SAMPLE	16PHI PT	84PHI PT	95PHI PT	98PHI PT	HM	PCT	ACSO PCT	THKNSS
L 665	3.20	4.38	7.00	8.75		.20	17.3	268.3
L 666	2.15	4.00	7.25	9.00		.28	30.0	268.3
L 672	1.83	3.73	6.00	8.50		2.65	8.4	324.7
L 674	.95	3.85	5.25	8.00		.32	28.5	308.8
L 676	2.50	3.83	10.00	13.00		.38	32.6	379.1
L 678	1.51	2.30	2.90	4.00		.04	12.9	261.9
L 679	.008	.008	.008	.008		.008	.08	.08
L 680	1.70	2.57	4.00	7.50		.05	1.5	261.9
L 682	.83	1.93	3.35	8.00		.10	21.0	323.1
L 684	1.00	3.00	4.00	7.00		.63	21.9	239.6
L 685	.82	1.30	4.00	8.00		.01	1.6	160.2
L 686	1.05	3.50	3.50	6.00		.03	1.5	160.2
L 687	1.80	3.50	4.50	7.50		.27	2.5	142.3
L 688	1.75	2.87	6.50	8.00		.23	18.8	164.3
L 691	.008	.008	.008	.008		.008	.08	213.2
L 692	.008	.008	.008	.008		.008	.08	231.2
L 693	.008	.008	.008	.008		.008	.08	231.2
L 694	1.62	2.95	3.83	7.50		.05	4.4	373.3
L 695	.73	2.62	5.00	8.00		.03	17.4	373.3
L 698	.25	2.00	3.00	4.00		4.96	18.5	334.2
L 702	1.88	3.50	6.00	11.00		.22	2.2	680.4
L 703	2.42	3.43	4.50	11.00		.16	2.1	680.4
L 704	1.67	2.87	8.00	10.00		.09	.2	147.6
L 705	1.30	3.03	8.50	9.50		.10	1.6	147.6
L 706	1.30	2.80	7.00	9.25		.08	.1	680.4
L 707	2.64	3.53	4.00	8.00		.14	.9	480.1
L 708	1.17	2.77	3.25	5.00		.04	.7	480.1
L 709	2.80	3.00	5.00	8.50		.69	17.2	480.1
L 710	2.50	3.60	4.75	9.00		.32	89.9	480.1
L 711	2.30	4.25	10.00	12.00		4.56	3.0	295.0
L 712	2.67	3.50	4.00	8.00		2.29	1.1	295.0
L 713	2.30	3.30	4.20	10.00		1.32	1.0	295.0
L 714	2.88	4.20	10.00	15.00		.21	2.5	128.0
L 715	1.38	2.92	10.00	14.00		.17	.2	110.0
L 716	1.83	2.90	3.50	5.00		.34	.8	243.5
L 717	1.65	2.70	3.20	4.00		.18	1.8	243.5
L 720	2.30	3.35	3.70	4.00		1.42	3.3	191.6
L 721	1.55	3.10	5.50	8.00		.16	5.5	58.5
L 722	1.55	2.65	3.25	4.00		2.25	23.6	31.1
L 725	2.42	3.33	4.25	8.00		1.72	2.0	171.3
L 726	2.08	3.17	4.75	7.00		.12	2.2	171.3
L 727	2.00	3.42	4.75	10.00		1.30	6.4	110.0

morrison formation basic data-continued

SAMPLE	UNIT	LAT	LONG	LOCNO	CEMENTS	FE-OX	QTZ-GR	QZ-RF	CHERT-FR	CHERT-AU
L 731	413010.	37.56	111.36	40.	.00B	.00B	.00B	.00B	.00B	.00B
L 732	413010.	37.56	111.36	40.	.00B	.00B	.00B	.00B	.00B	.00B
L 734	413040.	37.90	111.64	159.	7.40	1.20	74.20	.00N	.60	3.20
L 735	413040.	37.90	111.64	159.	.60	.20	67.40	.00N	4.40	.80
L 736	413010.	37.90	111.64	159.	.00B	.00B	.00B	.00B	.00B	.00B
L 737	413010.	37.90	111.64	159.	.00B	.00B	.00B	.00B	.00B	.00B
L 742	413020.	35.96	108.96	210.	.00N	5.20	56.20	.00B	.00B	.00B
L 743	413010.	36.49	109.01	175.	.00B	.00B	.00B	.00B	.20	.00N
L 744	413010.	36.49	109.01	175.	29.00	.00N	57.20	.00N	.00B	.00B
L 745	413020.	36.49	109.01	175.	.00B	.00B	.00B	.00B	.00B	.00B
L 746	413020.	36.49	109.01	175.	.00B	.00B	.00B	.00B	.00B	.00B
L 747	413020.	36.49	109.01	175.	.00B	.00B	.00B	.00B	.00B	.00B
L 748	413020.	36.49	109.01	175.	.40	.00N	71.40	.20	.00B	.00B
L 749	413030.	36.49	109.01	175.	.00B	.00B	.00B	.00B	.60	.00N
L 750	413030.	36.49	109.01	175.	.00N	.00N	63.40	.00B	.00B	.00B
L 751	413030.	36.49	109.01	175.	.00B	.00B	.00B	.60	.20	.00N
L 752	413030.	36.49	109.01	175.	.00B	.00B	.00B	.00B	.00B	.00B
L 753	413020.	36.03	109.85	172.	.00B	.00B	.00B	.00B	.00B	.00B
L 754	413020.	36.03	109.85	172.	.80	.00N	91.40	.20	.60	.00N
L 758	413020.	36.57	110.50	222.	.00B	.00B	.00B	.00B	.00B	.00B
L 759	413020.	36.57	110.50	222.	16.20	.00N	64.80	.20	.00N	.00N
L 760	413020.	36.57	110.50	222.	4.80	.00N	66.80	.20	.20	.00N
L 761	413030.	36.57	110.50	222.	.00B	.00B	.00B	.00B	.00B	.00B
L 762	413030.	36.57	110.50	222.	.00B	.00B	.00B	.00B	.00B	.00B
L 763	413030.	36.57	110.50	222.	.20	.00N	84.40	.00N	.20	.00N
L 767	413020.	35.54	108.56	79.	.00B	.00B	.00B	.00B	.00B	.00B
L 768	413020.	35.54	108.56	79.	.00B	.00B	.00B	.00B	.00B	.00B
L 769	413020.	35.54	108.56	79.	.00B	.00B	.00B	.00B	.00B	.00B
L 770	413020.	35.54	108.56	79.	20.00	.00N	66.80	.00B	.00B	.00B
L 771	413020.	35.43	108.17	207.	.00B	.00B	.00B	.00B	.80	.00N
L 772	413020.	35.43	108.17	207.	.00B	.00B	.00B	.00B	.00B	.00B
L 773	413030.	35.43	108.17	207.	.00B	.00B	.00B	.00B	.00B	.00B
L 774	413030.	35.43	108.17	207.	.00B	.00B	.00B	.00B	.00B	.00B
L 775	413030.	35.43	108.17	207.	.00B	.00B	.00B	.00B	.00B	.00B
L 776	413020.	35.43	108.17	207.	.00B	.00B	.00B	.00B	.00B	.00B
L 777	413030.	35.54	108.56	79.	.00N	.00N	62.20	.00B	.00B	.00B
L 778	413030.	35.54	108.56	79.	.00B	.00B	.00B	.60	1.00	.00N
L 781	413020.	35.36	107.92	92.	10.60	.00N	75.00	.00B	.00B	.00B
L 782	413020.	35.36	107.92	92.	6.60	.00N	67.80	.20	1.40	.00N
L 783	413020.	35.36	107.92	92.	25.00	.00N	53.40	.20	1.00	.40
L 784	413030.	35.36	107.92	92.	.20	.80	47.00	.00N	.40	.00N
L 785	413030.	35.36	107.92	92.	.00N	.40	45.20	.40	.20	.00N

morrison formation basic data-continued

SAMPLE	SIL-RF	SIL-LSFR	K-SPAR	NA-SPAR	KAOL	MICA	ILLITE	MIC-RF	HV-MIN	MISC-OP
L 731	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 732	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 734	2.00	4.00	2.60	.60	.80	.00N	.00N	.00N	.00N	.00N
L 735	3.80	.40	7.00	.40	2.60	.00N	.20	.00N	.00N	.00N
L 736	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 737	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 742	.00N	.00N	9.00	5.80	1.40	.20	.20	.00N	.20	1.40
L 743	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 744	.00N	.00N	8.00	2.20	.00N	.00N	.00N	.40	.00N	.80
L 745	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 746	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 747	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 748	.00N	.00N	11.80	3.60	.00N	.20	6.40	.00N	.00N	.00N
L 749	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 750	.00N	.00N	19.00	6.40	.80	.00N	1.80	.20	.00N	.00N
L 751	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 752	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 753	.20	.00N	1.80	1.40	.40	.00N	1.20	.00N	.00N	.00N
L 754	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 758	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 759	.00N	.00N	11.20	3.20	.20	.00N	.20	.00N	.20	.40
L 760	.00N	.00N	12.20	1.60	6.00	.20	1.20	.00N	.00N	.60
L 761	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 762	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 763	1.00	.00N	5.60	.60	2.60	.00N	.60	.00N	.00N	.20
L 767	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 768	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 769	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 770	.00N	.00N	7.00	1.40	1.00	.00N	.80	.00N	.00N	.00N
L 771	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 772	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 773	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 774	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 775	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 776	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 777	.00N	.00N	14.40	6.40	3.40	.20	.40	.00N	.00N	.00N
L 778	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 781	1.80	.00N	6.00	.20	1.60	.00N	.00N	.20	.00N	.00N
L 782	.00N	.00N	7.80	1.20	.00N	.00N	11.20	.00N	.00N	.00N
L 783	.00N	.00N	5.20	4.80	.00N	.20	6.60	.00N	.00N	.20
L 784	.00N	.00N	16.80	14.00	3.60	.40	2.00	.00N	.00N	.00N
L 785	.00N	.00N	21.00	17.80	3.60	.00N	1.60	.00N	.00N	.00N

morrison formation basic data-continued

SAMPLE	TUFF-FR	MONT	ASH	CEM-TOT	SIL-TOT	FELD-TOT	MICA-TOT	TUFF-TOT	TEXTURE	FE	PCT
L 731	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	4.00		.20
L 732	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.20
L 734	2.40	1.00	.00N	8.60	84.00	4.00	.00N	3.40	1.00		.50
L 735	8.20	3.80	.00B	.80	76.80	10.20	.20	12.00	1.00		.50
L 736	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.20
L 737	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.10
L 742	2.60	17.60	.00N	5.20	56.40	16.20	2.00	20.20	1.00		1.50
L 743	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 744	2.40	.00N	.00N	29.00	57.20	10.20	1.20	2.40	1.00		.50
L 745	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		1.00
L 746	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		1.00
L 747	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.70
L 748	4.60	.80	.00N	.40	72.20	15.40	6.60	5.40	1.00		.50
L 749	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 750	6.80	.80	.00N	.00N	64.20	26.20	2.00	7.60	1.00		.50
L 751	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.20
L 752	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.20
L 753	2.00	.00N	.00N	.80	92.40	3.60	1.20	2.00	1.00		.20
L 754	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		1.00
L 758	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.20
L 759	2.40	1.00	.00N	16.20	65.00	14.60	.80	3.40	1.00		.20
L 760	6.00	.20	.00N	4.80	67.20	19.80	2.00	6.20	1.00		.50
L 761	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		1.00
L 762	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.20
L 763	4.60	.00N	.00N	.20	85.60	8.80	.80	.00B	1.00		.10
L 767	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		1.00
L 768	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.30
L 769	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.30
L 770	1.80	.40	.00N	20.00	67.60	9.40	.80	2.20	1.00		.50
L 771	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 772	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 773	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 774	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.70
L 775	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 776	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		1.00
L 777	11.20	.20	.00N	.00N	63.80	24.20	.60	11.40	1.00		.50
L 778	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		1.50
L 781	3.00	.00N	.00N	10.60	78.40	7.80	.20	3.00	1.00		.20
L 782	3.80	.00N	.00N	6.60	69.40	9.00	11.20	3.80	1.00		.20
L 783	3.80	.00N	.00N	25.00	54.20	10.00	7.00	3.80	1.00		.20
L 784	14.60	.20	.00N	1.00	47.40	34.40	2.40	14.80	1.00		.70
L 785	9.80	.00N	.00N	.40	45.80	42.40	1.60	9.80	1.00		.70

morrison formation basic data-continued

SAMPLE	MG	PCT	CA	PCT	T1	PCT	MN	PPM	B	PPM	BA	PPM	BE	PPM	CD	PPM	CR	PPM	CU	PPM
L 731	.15	10.00	.05	1000.00	.00N	100.00	20.00L	.00N	100.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	20.00	5.00		
L 732	.10	10.00	.05	1000.00	20.00L	200.00	20.00	.00N	200.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	5.00	5.00		
L 734	.10	3.00	.02	500.00	20.00	150.00	20.00	.00N	150.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	5.00	5.00		
L 735	.10	1.50	.05	100.00	20.00	200.00	20.00	.00N	100.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	5.00	5.00		
L 736	.05	10.00G	.02	200.00	.00N	100.00	20.00	.00N	100.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	5.00	5.00		
L 737	.07	7.00	.02	500.00	20.00L	100.00	20.00	.00N	100.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	5.00	3.00		
L 742	.20	2.00	.50	100.00	20.00	300.00	20.00	1.00	300.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	20.00	20.00		
L 743	.20	5.00	.10	200.00	30.00	200.00	30.00	.00N	200.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	10.00	10.00		
L 744	.10	10.00	.05	1000.00	20.00	150.00	20.00	.00N	150.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	20.00	10.00		
L 745	.50	.50	.10	100.00	20.00	300.00	20.00	.00N	300.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	5.00	5.00		
L 746	.20	.70	.10	200.00	20.00L	500.00	20.00	.00N	500.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	5.00	5.00		
L 747	.20	5.00	.05	1000.00	20.00	200.00	20.00	.00N	200.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	2.00	5.00		
L 748	.20	.20	.05	100.00	20.00L	300.00	20.00	.00N	300.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	2.00	5.00		
L 749	.15	.15	.05	100.00	20.00L	500.00	20.00	.00N	500.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	5.00	3.00		
L 750	.15	.15	.05	100.00	20.00L	500.00	20.00	.00N	500.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	2.00	3.00		
L 751	.15	.15	.05	50.00	20.00L	200.00	20.00	.00N	200.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	2.00	5.00		
L 752	.20	.10	.07	100.00	50.00	300.00	50.00	.00N	300.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	100.00	3.00		
L 753	.10	.30	.05	50.00	20.00	200.00	20.00	.00N	200.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	2.00	3.00		
L 754	.50	5.00	.20	200.00	50.00	300.00	50.00	.00N	300.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	20.00	10.00		
L 758	.20	10.00G	.10	700.00	20.00L	500.00	20.00	.00N	500.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	30.00	7.00		
L 759	.20	5.00	.10	500.00	20.00L	300.00	20.00	.00N	300.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	10.00	5.00		
L 760	.20	2.00	.10	500.00	20.00	300.00	20.00	.00N	300.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	5.00	5.00		
L 761	.20	.70	.15	200.00	20.00L	300.00	20.00	.00N	300.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	5.00	5.00		
L 762	.10	.10	.10	20.00	20.00L	150.00	20.00	.00N	150.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	5.00	5.00		
L 763	.10	.20	.10	20.00	50.00	200.00	50.00	.00N	200.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	10.00	5.00		
L 767	.20	2.00	.10	500.00	20.00	300.00	20.00	.00N	300.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	5.00	5.00		
L 768	.20	.20	.02	50.00	20.00L	300.00	20.00	.00N	300.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	2.00	5.00		
L 769	.15	.70	.07	500.00	20.00	200.00	20.00	.00N	200.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	3.00	7.00		
L 770	.10	10.00	.05	3000.00	20.00L	200.00	20.00	.00N	200.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	5.00	5.00		
L 771	.10	10.00	.15	1000.00	20.00L	200.00	20.00	.00N	200.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	30.00	5.00		
L 772	.20	1.00	.07	100.00	20.00	2000.00	20.00	.00N	2000.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	2.00	5.00		
L 773	.20	.20	.07	70.00	20.00	500.00	20.00	.00N	500.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	2.00	5.00		
L 774	.10	.10	.15	100.00	20.00	500.00	20.00	.00N	500.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	5.00	5.00		
L 775	.20	.20	.15	150.00	20.00	500.00	20.00	.00N	500.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	5.00	5.00		
L 776	.30	.20	.15	50.00	20.00	300.00	20.00	.00N	300.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	5.00	5.00		
L 777	.10	.10	.15	100.00	20.00	500.00	20.00	.00N	500.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	7.00	5.00		
L 778	.20	.10	.10	200.00	20.00	700.00	20.00	2.00	700.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	5.00	5.00		
L 781	.10	10.00	.05	500.00	20.00	150.00	20.00	.00N	150.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	5.00	2.00		
L 782	.20	7.00	.10	500.00	50.00	200.00	50.00	.00N	200.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	5.00	2.00		
L 783	.20	10.00G	.02	1500.00	20.00L	200.00	20.00	.00N	200.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	5.00	5.00		
L 784	.20	.20	.07	70.00	20.00	500.00	20.00	.00N	500.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	5.00	5.00		
L 785	.20	.20	.07	200.00	20.00L	700.00	20.00	.00N	700.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	2.00	5.00		

morrison formation basic data-continued

SAMPLE	LA	PPM	NB	PPM	N1	PPM	PB	PPM	SC	PPM	SR	PPM	U	PPM	Y	PPM	ZN	PPM	ZR	PPM
L 731	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	200.00	.00N	30.00	30.00	10.00L	.00N	.00N	.00N	20.00	.00N
L 732	.00N	.00N	.00N	.00N	.00N	.00N	10.00L	.00N	.00N	.00N	150.00	.00N	20.00	20.00	10.00	.00N	.00N	.00N	100.00	.00N
L 734	.00N	.00N	.00N	.00N	.00N	.00N	10.00L	.00N	.00N	.00N	30.00	.00N	20.00	20.00	10.00	.00N	.00N	.00N	50.00	.00N
L 735	.00N	.00N	.00N	.00N	.00N	.00N	10.00L	.00N	.00N	.00N	50.00	.00N	20.00	20.00	10.00	.00N	.00N	.00N	50.00	.00N
L 736	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	100.00	.00N	20.00	20.00	.00N	.00N	.00N	.00N	200.00	.00N
L 737	.00N	.00N	.00N	.00N	.00N	.00N	10.00L	.00N	.00N	.00N	70.00	.00N	10.00	10.00	.00N	.00N	.00N	.00N	20.00	.00N
L 742	.00N	.00N	10.00L	.00N	5.00L	5.00L	10.00	.00N	.00N	5.00	70.00	.00N	50.00	50.00	50.00	.00N	.00N	.00N	700.00	.00N
L 743	.00N	.00N	.00N	.00N	5.00	.00N	10.00L	.00N	.00N	.00N	150.00	.00N	30.00	30.00	.00N	.00N	.00N	.00N	50.00	.00N
L 744	.00N	.00N	.00N	.00N	.00N	.00N	10.00L	.00N	.00N	.00N	150.00	.00N	20.00	20.00	10.00	.00N	.00N	.00N	70.00	.00N
L 745	.00N	.00N	.00N	.00N	.00N	.00N	10.00	.00N	.00N	.00N	100.00	.00N	50.00	50.00	10.00	.00N	.00N	.00N	200.00	.00N
L 746	.00N	.00N	.00N	.00N	.00N	.00N	10.00	.00N	.00N	.00N	150.00	.00N	100.00	100.00	10.00	.00N	.00N	.00N	50.00	.00N
L 747	.00N	.00N	.00N	.00N	.00N	.00N	10.00L	.00N	.00N	.00N	150.00	.00N	30.00	30.00	.00N	.00N	.00N	.00N	100.00	.00N
L 748	.00N	.00N	.00N	.00N	.00N	.00N	10.00	.00N	.00N	.00N	70.00	.00N	10.00	10.00	.00N	.00N	.00N	.00N	30.00	.00N
L 749	.00N	.00N	.00N	.00N	.00N	.00N	10.00L	.00N	.00N	.00N	100.00	.00N	20.00	20.00	.00N	.00N	.00N	.00N	50.00	.00N
L 750	.00N	.00N	.00N	.00N	.00N	.00N	10.00L	.00N	.00N	.00N	70.00	.00N	20.00	20.00	10.00	.00N	.00N	.00N	50.00	.00N
L 751	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	30.00	.00N	10.00	10.00	.00N	.00N	.00N	.00N	30.00	.00N
L 752	.00N	.00N	10.00L	.00N	7.00	.00N	.00N	.00N	.00N	.00N	30.00	.00N	10.00	10.00	10.00	.00N	.00N	.00N	30.00	.00N
L 753	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	20.00	.00N	10.00	10.00	.00N	.00N	.00N	.00N	50.00	.00N
L 754	.00N	.00N	.00N	.00N	5.00	.00N	20.00	.00N	.00N	5.00L	150.00	.00N	30.00	30.00	20.00	.00N	.00N	.00N	150.00	.00N
L 758	.00N	.00N	.00N	.00N	5.00	.00N	10.00	.00N	.00N	.00N	150.00	.00N	50.00	50.00	20.00	.00N	.00N	.00N	200.00	.00N
L 759	.00N	.00N	.00N	.00N	.00N	.00N	10.00	.00N	.00N	.00N	150.00	.00N	30.00	30.00	20.00	.00N	.00N	.00N	150.00	.00N
L 760	.00N	.00N	.00N	.00N	.00N	.00N	10.00	.00N	.00N	.00N	100.00	.00N	30.00	30.00	10.00	.00N	.00N	.00N	70.00	.00N
L 761	.00N	.00N	.00N	.00N	.00N	.00N	10.00	.00N	.00N	.00N	50.00	.00N	30.00	30.00	10.00	.00N	.00N	.00N	700.00	.00N
L 762	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	10.00	.00N	20.00	20.00	.00N	.00N	.00N	.00N	150.00	.00N
L 763	.00N	.00N	.00N	.00N	.00N	.00N	10.00	.00N	.00N	.00N	20.00	.00N	10.00	10.00	10.00L	.00N	.00N	.00N	200.00	.00N
L 767	.00N	.00N	.00N	.00N	.00N	.00N	10.00	.00N	.00N	.00N	100.00	.00N	20.00	20.00	10.00	.00N	.00N	.00N	70.00	.00N
L 768	.00N	.00N	.00N	.00N	.00N	.00N	10.00L	.00N	.00N	.00N	70.00	.00N	10.00	10.00	.00N	.00N	.00N	.00N	50.00	.00N
L 769	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	50.00	.00N	20.00	20.00	.00N	.00N	.00N	.00N	50.00	.00N
L 770	.00N	.00N	.00N	.00N	.00N	.00N	10.00	.00N	.00N	.00N	200.00	.00N	20.00	20.00	10.00	.00N	.00N	.00N	100.00	.00N
L 771	50.00	.00N	10.00L	.00N	.00N	.00N	10.00L	.00N	.00N	.00N	200.00	.00N	30.00	30.00	20.00	.00N	.00N	.00N	200.00	.00N
L 772	30.00	.00N	.00N	.00N	.00N	.00N	10.00	.00N	.00N	.00N	200.00	.00N	20.00	20.00	10.00	.00N	.00N	.00N	100.00	.00N
L 773	.00N	.00N	.00N	.00N	.00N	.00N	10.00	.00N	.00N	.00N	100.00	.00N	30.00	30.00	10.00	.00N	.00N	.00N	200.00	.00N
L 774	30.00	.00N	10.00L	.00N	.00N	.00N	10.00L	.00N	.00N	.00N	70.00	.00N	50.00	50.00	10.00	.00N	.00N	.00N	100.00	.00N
L 775	30.00	.00N	10.00L	.00N	.00N	.00N	20.00	.00N	.00N	.00N	100.00	.00N	50.00	50.00	15.00	.00N	.00N	.00N	100.00	.00N
L 776	.00N	.00N	.00N	.00N	5.00L	.00N	10.00	.00N	.00N	.00N	100.00	.00N	20.00	20.00	10.00	.00N	.00N	.00N	100.00	.00N
L 777	.00N	.00N	10.00L	.00N	.00N	.00N	10.00	.00N	.00N	.00N	50.00	.00N	50.00	50.00	.00N	.00N	.00N	.00N	100.00	.00N
L 778	.00N	.00N	10.00L	.00N	5.00L	.00N	20.00	.00N	.00N	.00N	70.00	.00N	70.00	70.00	50.00	.00N	.00N	.00N	70.00	.00N
L 781	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	70.00	.00N	20.00	20.00	10.00	.00N	.00N	.00N	150.00	.00N
L 782	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	100.00	.00N	30.00	30.00	10.00	.00N	.00N	.00N	70.00	.00N
L 783	.00N	.00N	.00N	.00N	.00N	.00N	10.00L	.00N	.00N	.00N	200.00	.00N	30.00	30.00	10.00	.00N	.00N	.00N	50.00	.00N
L 784	.00N	.00N	.00N	.00N	5.00L	.00N	10.00	.00N	.00N	.00N	70.00	.00N	50.00	50.00	10.00	.00N	.00N	.00N	50.00	.00N
L 785	30.00	.00N	.00N	.00N	5.00L	.00N	30.00	.00N	.00N	.00N	100.00	.00N	50.00	50.00	15.00	.00N	.00N	.00N	100.00	.00N

morrison formation basic data-continued

SAMPLE	HG2	PPM	CU2	PPM	PHI	MEAN	MODE	MM	PHI	MED	PHI	SD	PHI	SKEW	KURT	2PHI	PT	SPHI	PT
L 731		.44	40.00		3.20	.075			3.13	1.34	1.31		1.14	1.31	1.14	1.50		1.70	
L 732		.20	75.00		3.02	.125			3.01	.57	.13		-.07	.13	-.07	2.15		2.32	
L 734		.68	75.00		2.29	.225			2.17	1.14	1.41		1.52	1.41	1.44	.75		1.12	
L 735		.40	30.00		2.97	.125			2.82	1.40	1.69		1.40	1.69	1.44	1.55		1.77	
L 736		.18	30.00		2.46	.195			2.41	.69	.12		.04	.12	.04	1.30		1.50	
L 737		.19	30.00		2.64	.125			2.65	.57	.31		.15	.31	.15	1.70		1.90	
L 742		.07	150.00		3.51	.125			2.98	1.89	.89		.31	.89	.31	1.20		1.65	
L 743		.17	75.00		3.68	.080			3.57	1.08	1.68		1.72	1.68	1.72	1.80		2.40	
L 744		.20	60.00		3.41	.102			3.29	.88	1.67		1.94	1.67	1.94	2.25		2.50	
L 745		.08	40.00		2.82	.125			2.68	1.56	1.19		.88	1.19	.88	.50		1.10	
L 746		.12	15.00		2.72	.177			2.46	1.34	2.03		1.98	2.03	1.98	1.50		1.72	
L 747		.10	75.00		2.77	.130			2.68	1.16	2.49		2.69	2.49	2.69	1.93		2.10	
L 748		.13	60.00		2.78	.143			2.63	1.18	2.01		1.90	2.01	1.90	1.65		1.85	
L 749		.09	60.00		1.84	.353			1.46	1.81	1.83		1.43	1.83	1.43	.45		.62	
L 750		.07	60.00		1.98	.250			1.87	1.40	1.58		1.62	1.58	1.62	-.25		.62	
L 751		.15	40.00		2.66	.177			2.41	.99	2.44		2.64	2.44	2.64	1.85		2.00	
L 752		.12	40.00		2.31	.218			2.03	1.56	1.73		1.31	1.73	1.31	.95		1.13	
L 753		.09	75.00		2.01	.250			1.85	1.23	2.54		3.17	2.54	3.17	.95		1.13	
L 754		.06	60.00		3.51	.072			3.25	1.79	1.21		.75	1.21	.75	1.45		1.68	
L 758		.10	60.00		3.97	.065			3.81	1.09	2.02		1.94	2.02	1.94	3.10		3.30	
L 759		.13	60.00		3.08	.122			2.99	1.06	2.10		2.49	2.10	2.49	1.95		2.13	
L 760		.17	30.00		3.29	.125			2.93	1.57	1.57		1.00	1.57	1.00	2.10		2.28	
L 761		.11	30.00		3.08	.144			2.67	1.83	1.44		.83	1.44	.83	1.40		1.75	
L 762		.11	75.00		2.17	.250			1.93	1.33	1.81		1.51	1.81	1.51	1.00		1.25	
L 763		.21	40.00		2.76	.177			2.53	1.38	2.14		2.15	2.14	2.15	1.53		1.73	
L 767		.11	75.00		2.86	.176			2.63	1.38	1.67		1.45	1.67	1.45	1.35		1.57	
L 768		.09	40.00		2.59	.209			2.29	1.43	2.23		2.14	2.23	2.14	1.50		1.70	
L 769		.18	40.00		2.57	.210			2.26	1.24	2.23		2.32	2.23	2.32	1.60		1.77	
L 770		.12	30.00		2.62	.196			2.42	1.24	1.13		2.30	1.13	2.30	1.43		1.60	
L 771		.09	60.00		2.87	.177			2.53	1.71	1.46		1.09	1.46	1.09	1.00		1.25	
L 772		.12	15.00		1.91	.500			1.56	1.85	1.74		1.45	1.74	1.45	.15		.45	
L 773		.12	20.00		2.66	.196			2.42	1.38	2.06		1.87	2.06	1.87	1.55		1.73	
L 774		.34	20.00		2.02	.287			1.78	1.48	1.76		1.54	1.76	1.54	.60		.80	
L 775		.18	30.00		1.51	.353			1.18	1.76	1.54		1.10	1.54	1.10	-.40		.08	
L 776		.10	10.00		3.00	.134			2.81	1.26	1.80		1.73	1.80	1.73	1.60		1.90	
L 777		.13	15.00		2.41	.218			2.09	1.76	1.60		1.22	1.60	1.22	.60		.97	
L 778		.18	10.00		1.78	.500			1.28	2.05	1.15		.60	1.15	.60	-.60		-.20	
L 781		.07	40.00		2.34	.210			2.10	1.55	2.19		2.21	2.19	2.21	.97		1.20	
L 782		.09	20.00		2.34	.210			2.18	1.15	2.27		2.56	2.27	2.56	.85		1.17	
L 783		.13	30.00		2.45	.210			2.22	1.40	2.38		2.66	2.38	2.66	1.30		1.50	
L 784		.13	30.00		2.37	.277			1.97	1.75	2.38		1.97	2.38	1.97	.90		1.09	
L 785		.18	30.00		1.54	.553			1.10	1.86	1.47		.95	1.47	.95	-.15		.10	

morrison formation basic data-continued

SAMPLE	16PHI PT	84PHI PT	95PHI PT	98PHI PT	HM	PCT	ACSO PCT	THKNSS
L 731	2.13	3.95	4.60	9.00		.47	76.1	220.3
L 732	2.52	3.48	3.84	4.10		.11	33.4	220.3
L 734	1.50	2.95	3.55	4.50		.07	8.0	63.1
L 735	2.12	3.45	4.50	9.00		.09	4.6	63.1
L 736	1.85	3.05	3.55	4.00		.07	25.9	168.2
L 737	2.15	3.08	3.50	4.00		.13	19.3	168.2
L 742	2.23	4.45	8.00	9.50		1.02	2.9	230.2
L 743	3.23	4.00	4.75	8.00		.25	13.6	52.4
L 744	2.85	3.77	4.25	5.50		.44	24.8	52.4
L 745	1.83	3.45	5.50	8.00		1.17	2.2	472.2
L 746	2.00	3.05	4.00	8.00		.89	1.3	472.2
L 747	2.33	3.00	3.55	8.00		.24	3.7	472.2
L 748	2.15	3.07	4.00	9.00		.07	.3	472.2
L 749	.90	2.17	4.00	12.00		.04	.0	283.6
L 750	1.30	2.43	3.50	8.00		.03	1.0	283.6
L 751	2.30	2.77	3.50	7.00		.03	.5	283.6
L 752	1.48	2.58	4.00	9.00		.07	.5	283.6
L 753	1.40	2.35	2.95	4.00		.05	1.1	168.4
L 754	2.20	4.30	7.00	11.00		.28	10.8	168.4
L 758	3.50	4.20	5.00	9.00		.24	29.9	222.0
L 759	2.52	3.42	3.85	5.00		.18	12.8	222.0
L 760	2.50	3.50	7.50	10.00		.18	5.6	222.0
L 761	2.13	3.30	8.25	10.00		.25	4.0	41.1
L 762	1.50	2.50	3.50	8.00		.07	1.1	41.1
L 763	2.03	3.13	3.73	10.00		.05	2.1	41.1
L 767	2.00	3.43	4.25	8.50		.42	3.1	60.0
L 768	1.95	2.80	3.35	10.00		.02	1.6	60.0
L 769	1.95	2.75	3.40	8.00		.07	1.4	60.0
L 770	1.94	3.00	3.75	7.00		.09	14.6	60.0
L 771	1.70	3.66	5.25	11.00		.61	17.6	208.8
L 772	.85	2.50	4.00	10.00		.26	3.9	208.8
L 773	2.00	2.90	3.75	9.00		.09	2.5	181.0
L 774	1.15	2.50	3.50	8.50		.22	1.6	181.0
L 775	.55	1.90	5.00	8.50		.39	1.4	181.0
L 776	2.30	3.53	4.40	8.00		.26	1.4	208.0
L 777	1.40	2.90	5.00	10.00		.21	2.4	218.0
L 778	.50	2.70	7.00	9.00		.11	2.2	218.0
L 781	1.55	2.66	3.33	8.00		.07	12.0	188.0
L 782	1.55	2.77	3.45	5.00		.09	10.4	188.0
L 783	1.80	2.70	3.40	7.00		.20	24.7	188.0
L 784	1.40	2.90	5.00	10.00		.08	2.3	151.9
L 785	.52	2.12	5.00	9.00		.81	1.3	151.9

morrison formation basic data-continued

SAMPLE	UNIT	LAT	LONG	LOCNO	CEMENTS	FE-0X	QTZ-CR	QZ-RF	CHERT-FR	CHERT-AU
L 786	413030.	35.36	107.92	92.	.00N	.20	60.20	.20	.60	.00N
L 787	413020.	36.35	106.48	83.	.00B	.00B	.00B	.00B	.00B	.00B
L 788	413020.	36.35	106.48	83.	.00B	.00B	.00B	.00B	.00B	.00B
L 789	413020.	36.35	106.48	83.	.40	.00N	64.60	.40	.00N	.00N
L 790	413030.	36.35	106.48	83.	.00B	.00B	.00B	.00B	.00B	.00B
L 791	413030.	36.35	106.48	83.	.00B	.00B	.00B	.00B	.00B	.00B
L 792	413030.	36.35	106.48	83.	21.60	.00N	59.80	.20	.00N	.00N
L 793	413020.	36.35	106.48	83.	.00B	.00B	.00B	.00B	.00B	.00B
L 794	413020.	36.35	106.48	83.	.00B	.00B	.00B	.00B	.00B	.00B
L 795	413000.	37.77	107.95	64.	.00B	.00B	.00B	.00B	.00B	.00B
L 796	413010.	37.77	107.95	64.	.00B	.00B	.00B	.00B	.00B	.00B
L 797	413010.	37.77	107.95	64.	.00B	.00B	.00B	.00B	.00B	.00B
L 798	413010.	37.77	107.95	64.	.00B	.00B	.00B	.00B	.00B	.00B
L 799	413010.	37.60	108.25	197.	.00B	.00B	.00B	.00B	.00B	.00B
L 800	413010.	37.60	108.25	197.	.00B	.00B	.00B	.00B	.00B	.00B
L 801	413010.	37.60	108.25	197.	.00B	.00B	.00B	.00B	.00B	.00B
L 802	413010.	37.50	108.52	234.	.00N	2.40	56.20	.00N	1.00	5.60
L 803	413010.	37.50	108.52	234.	.00N	1.00	74.80	.00N	.80	.00N
L 804	413010.	38.52	110.49	75.	.00B	.00B	.00B	.00B	.00B	.00B
L 805	413010.	38.52	110.49	75.	.00B	.00B	.00B	.00B	.00B	.00B
L 806	413010.	38.52	110.49	75.	.00B	.00B	.00B	.00B	.00B	.00B
L 807	413010.	38.52	110.49	75.	.00B	.00B	.00B	.00B	.00B	.00B
L 808	413010.	38.08	110.67	45.	38.00	.00N	48.40	.00N	1.20	.00N
L 809	413010.	38.08	110.67	45.	.00B	.00B	.00B	.00B	.00B	.00B
L 810	413010.	38.08	110.67	45.	.00B	.00B	.00B	.00B	.00B	.00B
L 811	413010.	38.08	110.67	45.	.00B	.00B	.00B	.00B	.00B	.00B
L 812	413010.	38.52	110.93	73.	.00B	.00B	.00B	.00B	.00B	.00B
L 813	413010.	38.52	110.93	73.	.00B	.00B	.00B	.00B	.00B	.00B
L 814	413010.	38.52	110.93	73.	.00B	.00B	.00B	.00B	.00B	.00B
L 815	413040.	38.52	110.93	73.	33.60	.00N	51.40	.00N	1.20	.00N
L 816	413010.	38.38	111.01	29.	.00B	.00B	.00B	.00B	.00B	.00B
L 817	413010.	38.38	111.01	29.	.00B	.00B	.00B	.00B	.00B	.00B
L 818	413010.	38.38	111.01	29.	.00B	.00B	.00B	.00B	.00B	.00B
L 819	413010.	38.38	111.01	29.	.00B	.00B	.00B	.00B	.00B	.00B
L 820	413010.	38.05	111.07	189.	.00B	.00B	.00B	.00B	.00B	.00B
L 821	413010.	37.56	111.36	40.	.00B	.00B	.00B	.00B	.00B	.00B
L 822	413010.	37.56	111.36	40.	.00B	.00B	.00B	.00B	.00B	.00B
L 823	413010.	37.56	111.36	40.	1.60	.40	79.00	.00N	1.60	.20
L 824	413010.	37.56	111.36	40.	.00B	.00B	.00B	.00B	.00B	.00B
L 825	413010.	37.26	111.01	148.	21.00	.20	67.80	.00N	.20	.00N
L 826	413010.	37.26	111.01	148.	6.60	.40	81.80	.00N	.40	.20
L 827	413010.	37.26	111.01	148.	.00B	.00B	.00B	.00B	.00B	.00B

morrison formation basic data-continued

SAMPLE	SIL-RF	SIL-LSFR	K-SPAR	NA-SPAR	KAOL	MICA	ILLITE	MIC-RF	HV-MIN	MISC-OP
L 786	.00N	.40	10.00	12.40	7.40	.00N	.60	.00N	.00N	.20
L 787	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 788	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 789	.00N	.00N	18.40	7.20	.60	.20	3.60	.00N	.00N	.40
L 790	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 791	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 792	.00N	.20	12.00	4.00	.00N	.20	.40	.00N	.00N	.00N
L 793	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 794	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 795	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 796	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 797	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 798	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 799	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 800	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 801	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 802	.00N	.00N	.00N	2.80	20.20	.60	.00N	.60	.00N	.00N
L 803	.00N	.40	.00N	1.60	14.40	.80	.60	.00N	.20	.60
L 804	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 805	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 806	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 807	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 808	.00N	.80	7.60	1.40	.00N	.20	.00N	.00N	.00N	.00N
L 809	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 810	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 811	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 812	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 813	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 814	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 815	.00N	.00N	7.80	4.80	.00N	.00N	.00N	.00N	.00N	.00N
L 816	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 817	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 818	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 819	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 820	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 821	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 822	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 823	.00N	.00N	5.40	1.80	3.20	.00N	.80	.60	.00N	.20
L 824	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 825	.40	.20	5.80	.40	.80	.00N	.60	.00N	.00N	.00N
L 826	.40	.60	3.80	1.00	2.00	.00N	.00N	.00N	.00N	.00N
L 827	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B

morrison formation basic data-continued

SAMPLE	TUFF-FR	MONT	ASH	CEM-TOT	SIL-TOT	FELD-TOT	MICA-TOT	TUFF-TOT	TEXTURE	FE	PCT
L 786	7.20	.60	.00N	.20	61.40	29.80	.80	7.80	1.00		.70
L 787	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		1.50
L 788	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		1.00
L 789	4.20	.00N	.00N	.40	65.00	26.20	4.20	4.20	1.00		.70
L 790	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		1.00
L 791	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		1.00
L 792	1.60	.00N	.00N	21.60	60.20	16.00	.60	.00B	1.00		1.00
L 793	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.20
L 794	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.10
L 795	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 796	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		2.00
L 797	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.10
L 798	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 799	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.20
L 800	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.30
L 801	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.20
L 802	1.40	9.20	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.20
L 803	1.80	3.00	.00N	2.40	62.80	23.00	1.20	10.60	1.00		.50
L 804	.00B	.00B	.00B	1.00	76.00	16.00	2.20	4.80	1.00		.70
L 805	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.10
L 806	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.10
L 807	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 808	1.80	.60	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.20
L 809	.00B	.00B	.00N	38.00	50.40	9.00	.20	2.40	1.00		.20
L 810	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.20
L 811	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.10
L 812	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.10
L 813	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.10
L 814	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.20
L 815	1.20	.00N	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.20
L 816	.00B	.00B	.00N	33.60	52.60	12.60	.00N	1.20	1.00		.20
L 817	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.20
L 818	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.10
L 819	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.20
L 820	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.20
L 821	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.20
L 822	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.20
L 823	4.00	1.20	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.20
L 824	.00B	.00B	.00N	2.00	80.80	10.40	1.60	.00B	1.00		.50
L 825	2.20	.40	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 826	2.80	.00N	.00N	21.20	68.60	7.00	.60	2.60	1.00		.20
L 827	.00B	.00B	.00B	7.00	83.40	6.80	.00N	2.80	1.00		.30
			.00B	.00B	.00B	.00B	.00B	.00B	1.00		.30

morrison formation basic data-continued

SAMPLE	MG	PCT	CA	PCT	T1	PCT	MN	PPM	B	PPM	BA	PPM	BE	PPM	CO	PPM	CR	PPM	CU	PPM
L 786	.20	.20		.20		.50	100.00	20.00L	300.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	10.00	5.00		
L 787	.50	.50		.50		.15	100.00	20.00	300.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	20.00	10.00		
L 788	.30	1.00				.15	200.00	50.00	300.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	50.00	5.00		
L 789	.30	.70		.70		.15	100.00	20.00	1500.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	5.00	5.00		
L 790	.30	.70		.70		.15	100.00	20.00	1000.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	2.00	7.00		
L 791	.20	.70		.70		.20	200.00	20.00	700.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	5.00	5.00		
L 792	.15	10.00		10.00		.05	1000.00	.00N	20000.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	5.00	2.00		
L 793	1.00	5.00		5.00		.20	500.00	20.00	500.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	20.00	10.00		
L 794	.20	10.00G		10.00G		.05	700.00	.00N	200.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	5.00	10.00		
L 795	.20	7.00		7.00		.10	1000.00	20.00	300.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	5.00	50.00		
L 796	.03	.30		.30		.07	100.00	20.00L	200.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	2.00	3.00		
L 797	.20	5.00		5.00		.07	500.00	50.00	100.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	10.00	7.00		
L 798	.20	1.00		1.00		.10	200.00	50.00	300.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	5.00	7.00		
L 799	.20	10.00		10.00		.05	1000.00	.00N	500.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	2.00	5.00		
L 800	.20	2.00		2.00		.07	200.00	20.00L	150.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	3.00	10.00		
L 801	.20	.15		.15		.05	100.00	20.00L	100.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	2.00	5.00		
L 802	.20	.05		.05		.15	100.00	20.00	30.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	7.00	20.00		
L 803	.05	.05		.05		.20	200.00	20.00	50.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	7.00	5.00		
L 804	.10	7.00		7.00		.03	200.00	20.00L	100.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	30.00	5.00		
L 805	.05	2.00		2.00		.05	700.00	20.00L	700.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	2.00	2.00		
L 806	.10	5.00		5.00		.07	200.00	20.00	150.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	10.00	5.00		
L 807	.10	10.00G		10.00G		.02	300.00	20.00L	100.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	5.00	5.00		
L 808	.10	3.00		3.00		.05	200.00	20.00	150.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	10.00	5.00		
L 809	.10	3.00		3.00		.05	200.00	20.00L	150.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	7.00	5.00		
L 810	.02	2.00		2.00		.05	100.00	20.00L	200.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	5.00	5.00		
L 811	.05	3.00		3.00		.05	200.00	20.00L	200.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	5.00	5.00		
L 812	.05	10.00		10.00		.02	500.00	20.00L	100.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	5.00	5.00		
L 813	.20	2.00		2.00		.05	100.00	20.00L	200.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	5.00	10.00		
L 814	.10	1.00		1.00		.05	100.00	20.00L	150.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	5.00	7.00		
L 815	.10	10.00		10.00		.10	1000.00	20.00L	200.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	10.00	5.00		
L 816	.05	10.00G		10.00G		.01	200.00	.00N	150.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	7.00	5.00		
L 817	.10	5.00		5.00		.05	100.00	20.00L	200.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	10.00	5.00		
L 818	.10	2.00		2.00		.03	100.00	20.00L	150.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	5.00	3.00		
L 819	.10	5.00		5.00		.07	200.00	20.00L	200.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	10.00	5.00		
L 820	.10	7.00		7.00		.05	500.00	.00N	200.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	5.00	5.00		
L 821	.10	5.00		5.00		.05	200.00	20.00L	200.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	10.00	7.00		
L 822	.10	10.00		10.00		.02	500.00	20.00L	200.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	5.00	7.00		
L 823	.10	1.00		1.00		.07	100.00	20.00L	10000.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	10.00	7.00		
L 824	.10	.50		.50		.05	50.00	50.00	200.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	3.00	3.00		
L 825	.10	10.00		10.00		.05	200.00	20.00	200.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	10.00	5.00		
L 826	.10	2.00		2.00		.05	100.00	20.00L	100.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	5.00	10.00		
L 827	.10	5.00		5.00		.05	100.00	20.00L	100.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	7.00	2.00		

morrison formation basic data-continued

SAMPLE	LA	PPM	NB	PPM	NI	PPM	PB	PPM	SC	PPM	SR	PPM	V	PPM	Y	PPM	ZN	PPM	ZR	PPM
L 786	70.00	.00N	10.00	.00N	5.00L	15.00	.00N	.00N	5.00L	.00N	70.00	50.00	50.00	30.00	.00N	.00N	.00N	.00N	500.00	.00N
L 787	.00N	.00N	10.00L	.00N	5.00	15.00	.00N	5.00L	.00N	.00N	100.00	20.00	20.00	10.00	.00N	.00N	.00N	.00N	100.00	.00N
L 788	.00N	.00N	10.00L	.00N	5.00L	10.00	.00N	.00N	.00N	.00N	70.00	20.00	20.00	10.00	.00N	.00N	.00N	.00N	200.00	.00N
L 789	.00N	.00N	10.00L	.00N	.00N	10.00	.00N	.00N	.00N	.00N	150.00	20.00	20.00	10.00	.00N	.00N	.00N	.00N	200.00	.00N
L 790	.00N	.00N	10.00L	.00N	.00N	10.00	.00N	.00N	.00N	.00N	100.00	30.00	30.00	.00N	.00N	.00N	.00N	.00N	50.00	.00N
L 791	.00N	.00N	10.00L	.00N	5.00L	10.00	.00N	.00N	.00N	.00N	70.00	20.00	20.00	10.00	.00N	.00N	.00N	.00N	100.00	.00N
L 792	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	50.00	20.00	20.00	10.00	.00N	.00N	.00N	.00N	20.00	.00N
L 793	.00N	.00N	10.00L	.00N	5.00L	20.00	.00N	5.00	.00N	.00N	150.00	100.00	100.00	20.00	.00N	.00N	.00N	.00N	200.00	.00N
L 794	.00N	.00N	.00N	.00N	5.00L	10.00	.00N	.00N	.00N	.00N	200.00	20.00	20.00	10.00L	.00N	.00N	.00N	.00N	50.00	.00N
L 795	.00N	.00N	.00N	.00N	5.00	10.00	.00N	.00N	.00N	.00N	300.00	30.00	30.00	20.00	.00N	.00N	.00N	.00N	100.00	.00N
L 796	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	20.00	7.00L	7.00L	10.00L	.00N	.00N	.00N	.00N	50.00	.00N
L 797	.00N	.00N	.00N	.00N	5.00L	10.00	.00N	.00N	.00N	.00N	50.00	30.00	30.00	10.00L	.00N	.00N	.00N	.00N	100.00	.00N
L 798	.00N	.00N	.00N	.00N	5.00L	10.00L	.00N	.00N	.00N	.00N	50.00	20.00	20.00	10.00	.00N	.00N	.00N	.00N	50.00	.00N
L 799	.00N	.00N	.00N	.00N	.00N	10.00L	.00N	.00N	.00N	.00N	100.00	30.00	30.00	10.00	.00N	.00N	.00N	.00N	100.00	.00N
L 800	.00N	.00N	.00N	.00N	5.00L	100.00	.00N	.00N	.00N	.00N	100.00	20.00	20.00	10.00	.00N	.00N	.00N	.00N	200.00	.00N
L 801	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	5.00	20.00	20.00	.00N	.00N	.00N	.00N	.00N	500.00	.00N
L 802	30.00	.00N	.00N	.00N	5.00L	.00N	.00N	5.00	.00N	.00N	70.00	20.00	20.00	15.00	.00N	.00N	.00N	.00N	200.00	.00N
L 803	.00N	.00N	.00N	.00N	.00N	.00N	.00N	5.00	.00N	.00N	50.00	30.00	30.00	20.00	.00N	.00N	.00N	.00N	500.00	.00N
L 804	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	50.00	10.00	10.00	.00N	.00N	.00N	.00N	.00N	200.00	.00N
L 805	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	30.00	7.00	7.00	.00N	.00N	.00N	.00N	.00N	50.00	.00N
L 806	.00N	.00N	.00N	.00N	.00N	10.00L	.00N	.00N	.00N	.00N	100.00	30.00	30.00	10.00L	.00N	.00N	.00N	.00N	200.00	.00N
L 807	.00N	.00N	.00N	.00N	.00N	10.00L	.00N	.00N	.00N	.00N	100.00	20.00	20.00	.00N	.00N	.00N	.00N	.00N	100.00	.00N
L 808	.00N	.00N	.00N	.00N	5.00L	10.00L	.00N	.00N	.00N	.00N	100.00	20.00	20.00	10.00	.00N	.00N	.00N	.00N	200.00	.00N
L 809	.00N	.00N	.00N	.00N	5.00L	.00N	.00N	.00N	.00N	.00N	100.00	20.00	20.00	10.00	.00N	.00N	.00N	.00N	100.00	.00N
L 810	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	50.00	50.00	50.00	.00N	.00N	.00N	.00N	.00N	100.00	.00N
L 811	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	50.00	10.00	10.00	10.00L	.00N	.00N	.00N	.00N	100.00	.00N
L 812	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	70.00	10.00	10.00	10.00L	.00N	.00N	.00N	.00N	70.00	.00N
L 813	.00N	.00N	.00N	.00N	.00N	10.00L	.00N	.00N	.00N	.00N	30.00	20.00	20.00	610.00	.00N	.00N	.00N	.00N	300.00	.00N
L 814	.00N	.00N	.00N	.00N	.00N	10.00L	.00N	.00N	.00N	.00N	50.00	10.00	10.00	10.00	.00N	.00N	.00N	.00N	150.00	.00N
L 815	.00N	.00N	.00N	.00N	.00N	10.00L	.00N	.00N	.00N	.00N	100.00	20.00	20.00	10.00	.00N	.00N	.00N	.00N	100.00	.00N
L 816	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	100.00	10.00	10.00	.00N	.00N	.00N	.00N	.00N	70.00	.00N
L 817	.00N	.00N	.00N	.00N	.00N	10.00L	.00N	.00N	.00N	.00N	50.00	10.00	10.00	10.00L	.00N	.00N	.00N	.00N	200.00	.00N
L 818	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	50.00	10.00	10.00	.00N	.00N	.00N	.00N	.00N	30.00	.00N
L 819	.00N	.00N	.00N	.00N	.00N	10.00L	.00N	.00N	.00N	.00N	50.00	10.00	10.00	10.00L	.00N	.00N	.00N	.00N	200.00	.00N
L 820	.00N	.00N	.00N	.00N	.00N	10.00L	.00N	.00N	.00N	.00N	70.00	20.00	20.00	10.00L	.00N	.00N	.00N	.00N	100.00	.00N
L 821	.00N	.00N	.00N	.00N	.00N	10.00L	.00N	.00N	.00N	.00N	50.00	20.00	20.00	10.00L	.00N	.00N	.00N	.00N	50.00	.00N
L 822	.00N	.00N	.00N	.00N	5.00L	10.00L	.00N	.00N	.00N	.00N	70.00	20.00	20.00	10.00L	.00N	.00N	.00N	.00N	20.00	.00N
L 823	.00N	.00N	.00N	.00N	.00N	10.00L	.00N	.00N	.00N	.00N	70.00	20.00	20.00	10.00L	.00N	.00N	.00N	.00N	200.00	.00N
L 824	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	10.00	10.00	10.00	.00N	.00N	.00N	.00N	.00N	200.00	.00N
L 825	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	50.00	30.00	30.00	10.00	.00N	.00N	.00N	.00N	200.00	.00N
L 826	.00N	.00N	.00N	.00N	.00N	10.00L	.00N	.00N	.00N	.00N	30.00	10.00	10.00	10.00	.00N	.00N	.00N	.00N	200.00	.00N
L 827	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	30.00	20.00	20.00	.00N	.00N	.00N	.00N	.00N	200.00	.00N

morrison formation basic data-continued

SAMPLE	HG2	PPM	CU2	PPM	PHI	MEAN	MODE	MM	PHI	MED	PHI	SD	PHI	SKEW	KURT	2PHI	PT	5PHI	PT
L 786	.19		20.00		2.05		.352		1.73		1.43		1.28		.86		.50		.75
L 787	.09		40.00		3.61		.088		3.43		.97		1.76		1.60		2.75		2.88
L 788	.13		30.00		3.21		.125		3.09		.85		1.86		2.29		2.35		2.53
L 789	.25		30.00		3.10		.125		2.98		1.02		2.28		2.82		2.30		2.45
L 790	.07		60.00		2.60		.225		2.08		2.06		1.68		1.12		1.15		1.35
L 791	.10		30.00		2.73		.177		2.60		.79		2.08		2.62		1.83		2.00
L 792	.06		75.00		2.76		.203		2.54		1.06		1.78		1.82		1.60		1.82
L 793	.13		75.00		3.82		.088		3.51		1.24		1.64		1.22		2.75		2.90
L 794	.10		60.00		3.90		.105		3.44		1.81		1.42		.79		2.45		2.63
L 795	.48		60.00		2.86		.210		2.42		1.63		1.25		.78		1.15		1.35
L 796	.58		60.00		2.64		.177		2.41		.92		2.01		1.96		1.80		1.93
L 797	.18		40.00		3.51		.105		3.22		1.41		1.86		1.69		2.20		2.45
L 798	.26		40.00		3.33		.125		3.05		1.30		1.50		1.19		2.05		2.22
L 799	.36		40.00		2.97		.148		2.73		1.16		1.42		1.11		1.77		1.92
L 800	.18		40.00		2.92		.148		2.64		1.42		1.49		1.11		1.55		1.73
L 801	.32		40.00		2.39		.210		2.17		1.18		1.75		1.63		1.35		1.50
L 802	.24		40.00		4.54		.105		4.32		2.32		.74		.13		2.40		2.60
L 803	.23		60.00		3.08		.154		2.58		1.94		.92		.30		1.15		1.33
L 804	.17		40.00		2.69		.177		2.48		1.06		1.72		1.70		1.55		1.72
L 805	.19		40.00		2.62		.177		2.47		1.22		1.87		1.85		1.33		1.53
L 806	.22		40.00		3.96		.088		3.55		1.52		1.65		1.14		2.75		2.95
L 807	.62		40.00		2.85		.171		2.62		1.05		2.29		1.85		1.80		1.95
L 808	.19		30.00		3.02		.125		2.91		1.14		2.07		2.19		1.95		2.20
L 809	.18		450.00		3.32		.109		3.09		1.36		1.51		1.17		1.60		2.00
L 810	.48		300.00		2.29		.210		2.08		1.20		1.93		1.84		1.25		1.40
L 811	.17		300.00		2.55		.218		2.18		1.44		1.70		1.35		1.38		1.55
L 812	.15		300.00		2.41		.210		2.18		1.28		1.69		1.79		.80		1.22
L 813	.19		10.00		3.13		.105		3.02		1.32		1.58		1.21		1.55		1.75
L 814	.14		20.00		2.53		.228		2.18		1.43		1.63		1.31		1.30		1.44
L 815	.15		40.00		3.79		.074		3.57		1.17		2.16		2.06		2.90		3.08
L 816	.16		300.00		1.71		.352		1.55		.85		1.09		.95		.60		.80
L 817	.42		60.00		3.15		.125		2.92		1.38		1.56		1.26		1.70		1.90
L 818	.20		40.00		2.54		.210		2.34		1.12		1.48		1.57		1.10		1.35
L 819	.16		60.00		3.49		.102		3.26		1.00		2.23		2.69		2.50		2.72
L 820	.58		15.00		3.03		.125		2.88		1.10		2.19		2.50		2.00		2.20
L 821	.33		30.00		1.94		.419		1.39		1.45		1.36		1.24		.50		.77
L 822	.37		225.00		2.89		.144		2.72		1.14		2.21		2.48		1.80		2.00
L 823	.20		30.00		2.69		.177		2.50		1.22		1.39		1.24		1.15		1.50
L 824	.39		30.00		3.44		.121		3.21		1.09		1.33		1.04		2.40		2.55
L 825	.31		40.00		2.85		.144		2.68		1.36		1.67		1.49		1.40		1.60
L 826	.26		30.00		2.48		.203		2.27		1.33		1.73		1.57		1.10		1.32
L 827	.25		30.00		2.51		.210		2.28		1.12		1.79		1.75		1.40		1.55

morrison formation basic data-continued

SAMPLE	16PHI PT	84PHI PT	95PHI PT	98PHI PT	HM	PCT	ACSO PCT	THKNESS
L 786	1.10	2.63	5.00	7.75		.67	1.6	151.9
L 787	3.05	3.82	5.50	7.75		.74	3.1	210.5
L 788	2.80	3.52	3.90	5.00		1.00	2.1	210.5
L 789	2.68	3.38	3.93	5.00		1.13	1.2	210.5
L 790	1.62	2.80	7.00	14.00		.94	5.2	96.8
L 791	2.20	3.10	3.65	4.25		.81	2.0	96.8
L 792	2.08	3.18	4.15	6.00		3.09	12.0	96.8
L 793	3.12	4.00	6.50	8.50		.23	7.9	210.5
L 794	2.92	4.06	8.75	11.00		.81	67.4	210.5
L 795	1.75	3.70	6.00	8.00		.85	7.6	300.0
L 796	2.11	2.80	3.75	7.00		.01	7	300.0
L 797	2.75	3.90	5.00	9.00		.58	14.2	300.0
L 798	2.55	3.65	5.60	7.25		.17	5.1	300.0
L 799	2.18	3.45	5.00	7.00		.54	14.7	250.0
L 800	2.05	3.40	5.50	8.50		.06	7.6	250.0
L 801	1.75	2.73	4.00	7.00		.14	1.3	250.0
L 802	2.90	7.20	9.70	11.00		.17	3.7	200.0
L 803	1.63	3.90	7.75	8.75		1.89	2.1	4.5
L 804	2.05	3.13	3.90	7.00		.10	14.4	4.5
L 805	1.90	3.03	3.75	7.50		.11	5.7	334.9
L 806	3.20	4.15	7.75	10.00		.34	14.8	4.5
L 807	2.20	3.25	4.00	7.00		.17	35.2	4.5
L 808	2.55	3.22	3.90	8.00		.21	34.6	350.0
L 809	2.75	3.60	5.00	9.00		.29	7.6	350.0
L 810	1.68	2.50	3.30	8.00		.14	4.5	350.0
L 811	1.80	3.00	4.25	9.00		.08	7.0	350.0
L 812	1.60	3.00	4.00	6.00		.06	25.8	292.8
L 813	2.12	3.78	4.50	8.00		.16	5.6	292.8
L 814	1.72	3.08	4.25	8.50		.03	1.8	292.8
L 815	3.30	4.00	4.75	10.00		.50	31.6	292.8
L 816	1.10	2.20	3.20	4.00		.05	33.6	243.3
L 817	2.20	3.70	4.70	8.70		.25	10.3	243.3
L 818	1.80	3.13	4.00	5.00		.06	7.4	243.3
L 819	2.95	3.70	4.35	7.00		.28	8.9	243.3
L 820	2.46	3.40	4.00	6.00		.09	19.7	243.7
L 821	.90	3.18	3.65	4.25		.06	8.6	220.3
L 822	2.25	3.25	3.80	7.00		.02	18.1	220.3
L 823	1.93	3.25	4.00	8.00		.14	2.8	220.3
L 824	2.80	3.95	5.25	7.00		.19	4.0	220.3
L 825	2.00	3.35	4.20	9.00		.12	10.0	616.0
L 826	1.65	2.98	3.90	8.00		.04	10.0	616.0
L 827	1.83	2.95	3.60	7.50		.03	8.4	616.0

morrison formation basic data-continued

SAMPLE	UNIT	LAT	LONG	LOCNO	CEMENTS	FE-OX	QTZ-GR	QZ-RF	CHERT-FR	CHERT-AU
L 828	413010.	37. 26	111. 01	148.	20. 00	. 00N	64. 60	. 00N	2. 20	1. 40
L 829	413010.	37. 26	111. 01	148.	. 008	. 008	. 008	. 008	. 008	. 008
L 830	413010.	37. 26	111. 01	148.	. 008	. 008	. 008	. 008	. 008	. 008
L 831	413010.	37. 04	111. 50	222.	8. 00	. 00N	66. 20	. 00N	5. 80	. 60
L 832	413010.	37. 04	111. 50	222.	. 008	. 008	. 008	. 008	. 008	. 008
L 833	413010.	37. 04	111. 50	222.	. 20	. 00N	76. 00	. 40	1. 20	. 00N
L 834	413010.	38. 55	111. 41	81.	. 008	. 008	. 008	. 008	. 008	. 008
L 835	413010.	38. 55	111. 41	81.	. 008	. 008	. 008	. 008	. 008	. 008
L 836	413010.	38. 55	111. 41	81.	. 008	. 008	. 008	. 008	. 008	. 008
L 837	413020.	35. 66	106. 90	49.	. 008	. 008	. 008	. 008	. 008	. 008
L 838	413020.	35. 66	106. 90	49.	. 80	. 40	60. 00	. 00N	. 00N	. 00N
L 839	413020.	35. 66	106. 90	49.	. 008	. 008	. 008	. 008	. 008	. 008
L 840	413030.	35. 66	106. 90	49.	. 008	. 008	. 008	. 008	. 008	. 008
L 843	413010.	38. 67	111. 28	107.	. 008	. 008	. 008	. 008	. 008	. 008
L 844	413010.	38. 67	111. 28	107.	78. 40	. 00N	4. 00	. 20	10. 80	. 20
L 845	413010.	38. 39	110. 74	88.	. 008	. 008	. 008	. 008	. 008	. 008
L 846	413010.	38. 39	110. 74	88.	. 008	. 008	. 008	. 008	. 008	. 008
L 847	413010.	38. 39	110. 74	88.	. 008	. 008	. 008	. 008	. 008	. 008
L 848	413010.	38. 39	110. 74	88.	. 008	. 008	. 008	. 008	. 008	. 008
L 849	413010.	38. 39	110. 74	88.	. 008	. 008	. 008	. 008	. 008	. 008
L 850	413010.	37. 90	111. 64	159.	. 008	. 008	. 008	. 008	. 008	. 008
L 851	413010.	37. 90	111. 64	159.	. 008	. 008	. 008	. 008	. 008	. 008
L 852	413010.	37. 90	111. 64	159.	. 00N	1. 00	75. 40	. 20	10. 80	. 00N
L 853	413040.	38. 39	110. 74	88.	. 008	. 008	. 008	. 008	. 008	. 008
L 854	413010.	36. 50	109. 04	6.	. 008	. 008	. 008	. 008	. 008	. 008
L 855	413020.	36. 50	109. 04	6.	. 008	. 008	. 008	. 008	. 008	. 008
L 856	413020.	36. 50	109. 04	6.	. 008	. 008	. 008	. 008	. 008	. 008
L 857	413010.	36. 50	109. 04	6.	. 008	. 008	. 008	. 008	. 008	. 008
L 858	413020.	36. 50	109. 04	6.	. 008	. 008	. 008	. 008	. 008	. 008
L 859	413010.	36. 50	109. 04	6.	. 008	. 008	. 008	. 008	. 008	. 008
L 860	413020.	36. 50	109. 04	6.	. 008	. 008	. 008	. 008	. 008	. 008
L 863	413030.	36. 17	109. 74	114.	. 008	. 008	. 008	. 008	. 008	. 008
L 977	413010.	37. 94	108. 76	99.	. 008	. 008	. 008	. 008	. 008	. 008
L 978	413010.	37. 94	108. 76	99.	. 008	. 008	. 008	. 008	. 008	. 008
L 979	413040.	37. 94	108. 76	99.	. 008	. 008	. 008	. 008	. 008	. 008
L 1135	413010.	38. 06	108. 72	130.	. 008	. 008	. 008	. 008	. 008	. 008
L 1136	413010.	38. 06	108. 72	130.	. 008	. 008	. 008	. 008	. 008	. 008
L 1137	413010.	38. 06	108. 72	130.	. 008	. 008	. 008	. 008	. 008	. 008
L 1138	413010.	38. 06	108. 72	130.	. 008	. 008	. 008	. 008	. 008	. 008
L 1139	413010.	38. 06	108. 72	130.	. 008	. 008	. 008	. 008	. 008	. 008
L 1140	413010.	38. 06	108. 72	130.	. 008	. 008	. 008	. 008	. 008	. 008
L 1141	413010.	38. 06	108. 73	130.	. 008	. 008	. 008	. 008	. 008	. 008

morrison formation basic data-continued

SAMPLE	SIL-RF	SIL-LSFR	K-SPAR	NA-SPAR	KAOL	MICA	ILLITE	MIC-RF	HV-MIN	MISC-OP
L 828	6.40	.40	2.80	.20	.60	.00N	.40	.00N	.00N	.00N
L 829	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 830	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 831	5.80	2.20	2.40	.40	1.40	.00N	3.00	.00N	.00N	.00N
L 832	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 833	.40	.40	7.40	2.00	2.60	.00N	.80	.00N	.00N	.00N
L 834	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 835	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 836	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 837	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 838	.20	.00N	14.20	7.00	1.40	.40	6.20	.00N	.00N	1.40
L 839	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 840	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 843	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 844	2.40	2.60	.80	.40	.00N	.00N	.00N	.20	.00N	.00N
L 845	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 846	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 847	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 848	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 849	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 850	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 851	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 852	2.20	.40	2.80	.60	.00N	.00N	.00N	.00N	.00B	.00B
L 853	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00N
L 854	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 855	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 856	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 857	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 858	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 859	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 860	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 863	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 977	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 978	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 979	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1135	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1136	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1137	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1138	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1139	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1140	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1141	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B

morrisson formation basic data-continued

SAMPLE	TUFF-FR	MONT	ASH	CEM-TOT	SIL-TOT	FELD-TOT	MICA-TOT	TUFF-TOT	TEXTURE	FE	PCT
L 828	1.00	.00N	.00N	20.00	75.00	3.60	.40	1.00	1.00		.50
L 829	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.20
L 830	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.20
L 831	3.80	.40	.00N	8.00	80.60	4.20	3.00	4.20	1.00		.50
L 832	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.20
L 833	3.20	5.40	.00N	.20	78.40	12.00	.80	8.60	1.00		.70
L 834	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.20
L 835	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.20
L 836	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.20
L 837	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.70
L 838	7.60	.40	.00N	1.20	60.20	22.60	8.00	8.00	1.00		1.00
L 839	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		1.00
L 840	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.70
L 843	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.20
L 844	.00N	.00N	.00N	78.40	20.20	1.20	.20	.00N	4.00		.20
L 845	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.10
L 846	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 847	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 848	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.20
L 849	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.20
L 850	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.20
L 851	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.20
L 852	7.20	2.60	.00N	1.00	85.80	3.40	.00N	9.80	1.00		.10
L 853	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 854	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 855	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.70
L 856	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 857	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.30
L 858	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 859	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 860	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.70
L 863	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 977	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 978	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 979	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.70
L 1135	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 1136	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 1137	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 1138	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 1139	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 1140	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 1141	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B

morrison formation basic data-continued

SAMPLE	MG	PCT	CA	PCT	T1	PCT	MN	PPM	B	PPM	BA	PPM	BE	PPM	CO	PPM	CR	PPM	CU
L 828	.20	5.00	.03	200.00	20.00L	150.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	7.00	5.00	
L 829	.10	.20	.07	100.00	20.00	200.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	3.00	2.00	
L 830	.10	.10	.05	500.00	20.00L	200.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	2.00	2.00	
L 831	.10	2.00	.05	500.00	20.00L	200.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	7.00	7.00	
L 832	.10	.20	.10	50.00	20.00	200.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	5.00	5.00	
L 833	.20	.10	.10	20.00	20.00	200.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	5.00	5.00	
L 834	.30	10.00	.05	200.00	20.00L	150.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	10.00	10.00	
L 835	.20	10.00G	.07	500.00	20.00L	200.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	10.00	5.00	
L 836	.10	10.00G	.02	500.00	20.00L	1500.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	5.00	5.00	
L 837	.50	5.00	.10	500.00	20.00	1000.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	10.00	5.00	
L 838	.50	.70	.15	100.00	20.00L	500.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	5.00	5.00	
L 839	.20	2.00	.20	500.00	20.00L	200.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	5.00	5.00	
L 840	.20	2.00	.10	500.00	20.00	500.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	5.00	5.00	
L 843	.10	10.00G	.05	1000.00	30.00	200.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	30.00	15.00	
L 844	.10	10.00	.07	1000.00	20.00	200.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	7.00	7.00	
L 845	.05	7.00	.02	500.00	20.00	100.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	5.00	3.00	
L 846	.05	.20	.03	500.00	20.00	300.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	5.00	10.00	
L 847	.50	10.00G	.05	500.00	20.00	200.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	20.00	10.00	
L 848	.10	10.00	.02	500.00	20.00	300.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	5.00	10.00	
L 849	.10	10.00	.02	500.00	20.00	150.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	10.00	7.00	
L 850	.10	10.00	.05	500.00	20.00	200.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	30.00	5.00	
L 851	.10	2.00	.05	50.00	50.00	200.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	2.00	5.00	
L 852	.10	10.00G	.01	1000.00	20.00L	300.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	20.00	5.00	
L 853	.20	.20	.05	500.00	20.00	150.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	10.00	7.00	
L 854	.30	.30	.10	200.00	20.00	300.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	10.00	10.00	
L 855	.20	10.00	.07	500.00	20.00	200.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	5.00	10.00	
L 856	.20	.70	.07	100.00	20.00	200.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	5.00	10.00	
L 857	.20	.50	.05	100.00	30.00	200.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	20.00	5.00	
L 858	.20	.50	.05	100.00	30.00	300.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	2.00	3.00	
L 859	.50	5.00	.10	500.00	20.00L	500.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	5.00	5.00	
L 860	.20	.70	.20	200.00	30.00	300.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	10.00	10.00	
L 863	.20	.10	.20	200.00	20.00L	1000.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	5.00	5.00	
L 977	.50	5.00	.05	200.00	20.00	500.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	5.00	10.00	
L 978	.50	2.00	.05	200.00	20.00	500.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	2.00	5.00	
L 979	.20	.50	.07	150.00	20.00L	200.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	5.00	5.00	
L 1135	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1136	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1137	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1138	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1139	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1140	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1141	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B

morrison formation basic data-continued

SAMPLE	LA	PPM	NB	PPM	N1	PPM	PB	PPM	SC	PPM	SR	PPM	V	PPM	Y	PPM	ZN	PPM	ZR	PPM
L 828	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	50.00	20.00	20.00	10.00L	10.00L	20.00	.00N	.00N	20.00	.00N
L 829	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	20.00	10.00	10.00	.00N	.00N	10.00	.00N	.00N	70.00	.00N
L 830	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	20.00	20.00	20.00	.00N	.00N	10.00	.00N	.00N	100.00	.00N
L 831	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	50.00	20.00	20.00	.00N	.00N	20.00	.00N	.00N	50.00	.00N
L 832	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	10.00	10.00	10.00	10.00L	10.00L	10.00	.00N	.00N	200.00	.00N
L 833	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	20.00	20.00	20.00	10.00	10.00	20.00	.00N	.00N	70.00	.00N
L 834	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	100.00	100.00	20.00	10.00L	10.00L	20.00	.00N	.00N	20.00	.00N
L 835	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	150.00	20.00	20.00	10.00L	10.00L	20.00	.00N	.00N	100.00	.00N
L 836	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	150.00	20.00	20.00	10.00L	10.00L	20.00	.00N	.00N	50.00	.00N
L 837	30.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	200.00	20.00	20.00	10.00	10.00	20.00	.00N	.00N	100.00	.00N
L 838	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	100.00	100.00	30.00	10.00L	10.00L	30.00	.00N	.00N	200.00	.00N
L 839	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	70.00	70.00	30.00	20.00	20.00	30.00	.00N	.00N	500.00	.00N
L 840	50.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	100.00	100.00	20.00	5.00L	20.00	20.00	.00N	.00N	100.00	.00N
L 843	30.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	70.00	70.00	30.00	10.00	15.00	30.00	.00N	.00N	150.00	.00N
L 844	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	100.00	100.00	30.00	20.00	20.00	30.00	.00N	.00N	150.00	.00N
L 845	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	50.00	50.00	7.00	.00N	.00N	7.00	.00N	.00N	20.00	.00N
L 846	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	20.00	20.00	20.00	15.00	15.00	20.00	.00N	.00N	30.00	.00N
L 847	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	300.00	100.00	10.00	15.00	15.00	20.00	.00N	.00N	50.00	.00N
L 848	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	100.00	100.00	10.00	10.00	10.00	10.00	.00N	.00N	100.00	.00N
L 849	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	100.00	100.00	10.00	10.00	10.00	10.00	.00N	.00N	50.00	.00N
L 850	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	100.00	100.00	50.00	10.00	10.00	50.00	.00N	.00N	100.00	.00N
L 851	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	10.00	10.00	10.00	10.00L	10.00L	10.00	.00N	.00N	50.00	.00N
L 852	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	200.00	20.00	20.00	10.00L	10.00L	20.00	.00N	.00N	30.00	.00N
L 853	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	50.00	50.00	20.00	15.00	15.00	20.00	.00N	.00N	50.00	.00N
L 854	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	100.00	100.00	30.00	10.00	10.00	30.00	.00N	.00N	200.00	.00N
L 855	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	150.00	150.00	30.00	10.00	10.00	30.00	.00N	.00N	50.00	.00N
L 856	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	30.00	30.00	20.00	10.00L	10.00L	20.00	.00N	.00N	200.00	.00N
L 857	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	30.00	30.00	20.00	.00N	.00N	20.00	.00N	.00N	50.00	.00N
L 858	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	50.00	50.00	10.00	.00N	.00N	10.00	.00N	.00N	50.00	.00N
L 859	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	100.00	100.00	20.00	15.00	15.00	20.00	.00N	.00N	200.00	.00N
L 860	50.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	100.00	100.00	30.00	20.00	20.00	30.00	.00N	.00N	200.00	.00N
L 863	30.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	70.00	70.00	30.00	15.00	15.00	30.00	.00N	.00N	100.00	.00N
L 977	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	100.00	100.00	30.00	101.00L	101.00L	30.00	.00N	.00N	100.00	.00N
L 978	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	100.00	100.00	10.00	10.00L	10.00L	10.00	.00N	.00N	20.00	.00N
L 979	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	70.00	70.00	20.00	10.00	10.00	20.00	.00N	.00N	70.00	.00N
L 1135	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1136	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1137	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1138	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1139	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1140	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1141	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B

morrison formation basic data-continued

SAMPLE	HG2	PPH	CU2	PPH	PHI	MEAN	MODE	MM	PHI	MED	PHI	SD	PHI	SKEW	PHI	KURT	2PHI	PT	SPHI	PT
L 828		.20	75.00			2.18		.259		2.04		1.11		1.34		1.25		.75		1.13
L 829		.37	60.00			2.45		.177		2.35		1.15		1.73		1.73		1.05		1.28
L 830		.28	60.00			2.93		.183		2.60		1.44		1.67		1.27		1.60		1.80
L 831		.46	75.00			2.03		.296		1.80		1.34		1.62		1.44		.50		.80
L 832		.22	40.00			2.91		.125		2.86		1.05		1.49		1.46		1.50		1.75
L 833		.44	40.00			1.96		.125		2.79		1.42		1.27		.95		1.20		1.50
L 834		.39	40.00			3.35		.148		2.87		1.71		1.22		.65		1.70		1.90
L 835		.40	20.00			3.86		.088		3.52		1.25		1.81		1.46		2.80		3.00
L 836		.19	30.00			3.43		.102		3.27		1.31		1.82		1.61		2.10		2.30
L 837		.12	40.00			3.76		.105		3.22		1.78		1.31		.65		2.35		2.50
L 838		.34	30.00			3.88		.105		3.05		2.47		1.22		.46		2.20		2.37
L 839		.40	30.00			2.56		.209		2.36		1.07		2.36		3.00		1.55		1.75
L 840		.70	60.00			2.77		.210		2.36		1.70		1.70		1.28		1.30		1.50
L 843		.30	40.00			2.42		.250		2.03		1.77		1.08		.67		.20		.60
L 844		.26	40.00			1.75		.352		1.42		1.34		1.57		1.31		.55		.68
L 845		.20	40.00			3.44		.105		3.17		1.05		1.86		1.81		2.50		2.65
L 846		.19	40.00			1.80		.352		1.59		.71		1.09		.71		.95		.65
L 847		.16	40.00			4.04		.088		3.59		1.57		1.25		.64		2.50		1.08
L 848		.56	30.00			2.32		.210		2.14		1.37		1.04		.91		.00		.92
L 849		.29	30.00			2.69		.105		2.69		1.57		.65		.71		-1.00		.20
L 850		.23	75.00			3.43		.105		3.22		1.21		1.92		1.87		2.00		2.28
L 851		.32	75.00			2.55		.177		2.46		.82		2.04		2.68		1.45		1.70
L 852		.32	60.00			1.91		.352		1.55		1.28		1.77		1.58		.75		.90
L 853		.52	40.00			2.16		.242		1.93		1.61		1.58		1.22		.25		.75
L 854		.84	60.00			3.68		.105		3.32		1.10		1.80		1.64		2.55		2.78
L 855		.76	60.00			2.69		.125		2.60		1.46		1.04		.74		.35		.85
L 856		1.40	60.00			3.18		.105		3.08		.85		1.15		1.43		1.75		2.37
L 857		.78	60.00			2.72		.125		2.80		.55		.89		.55		2.00		2.12
L 858		1.70	40.00			3.11		.125		3.00		.85		1.65		1.70		2.35		2.48
L 859		.90	60.00			2.93		.125		2.87		.88		1.63		1.60		2.00		2.15
L 860		.96	400.00			3.06		.125		2.98		.84		1.70		1.84		2.26		2.40
L 863		1.40	15.00			2.51		.296		1.76		2.33		1.07		3.83		.52		.65
L 977		.74	15.00			3.05		.125		2.73		1.39		1.63		1.20		1.90		2.06
L 978		.50	15.00			3.02		.125		2.80		1.26		1.35		.98		1.65		1.73
L 979		.58	20.00			2.10		.296		1.82		1.21		1.80		1.66		1.00		1.17
L 1135		.008	.008			2.35		.226		2.12		1.20		1.73		1.59		1.19		1.34
L 1136		.008	.008			2.65		.179		2.39		1.24		1.54		1.22		1.30		1.53
L 1137		.008	.008			2.30		.236		2.08		1.03		1.45		1.27		1.42		1.55
L 1138		.008	.008			2.94		.125		2.78		1.10		1.53		1.33		1.68		1.92
L 1139		.008	.008			3.01		.136		2.71		1.39		1.64		1.27		1.78		1.95
L 1140		.008	.008			2.80		.134		2.64		1.13		1.57		1.44		1.50		1.71
L 1141		.008	.008			2.32		.234		2.07		1.20		1.71		1.53		1.37		1.51

morrison formation basic data-continued

SAMPLE	16PHI PT	84PHI PT	95PHI PT	98PHI PT	HM	PCT	ACSD PCT	THKNSS
L 828	1.55	2.65	3.50	6.00		.06	10.0	616.0
L 829	1.65	2.95	3.50	6.00		.25	1.2	616.0
L 830	2.10	3.28	5.00	9.00		.15	1.0	616.0
L 831	1.25	2.60	3.50	8.00		.02	3.9	20.0
L 832	2.22	3.38	3.90	7.00		.17	.8	20.0
L 833	2.00	3.55	5.90	8.00		.15	1.4	20.0
L 834	2.20	4.10	7.50	10.00		.12	28.1	26.0
L 835	3.20	4.10	6.00	10.00		.17	42.4	26.0
L 836	2.70	3.70	4.50	10.00		.76	39.5	26.0
L 837	2.83	4.15	9.00	10.50		.82	12.1	276.4
L 838	2.64	4.00	15.00	19.00		1.37	4.2	276.4
L 839	2.00	2.88	3.50	5.00		.34	4.6	276.4
L 840	1.90	3.05	6.00	10.00		.07	4.8	171.3
L 843	1.17	3.50	5.50	8.75		.09	31.9	10.3
L 844	.95	2.30	4.00	6.50		.06	61.0	10.3
L 845	2.90	3.70	4.50	8.00		.81	32.4	266.0
L 846	1.28	2.30	3.12	3.50		.02	14.3	266.0
L 847	3.00	4.44	8.00	10.00		.15	39.7	266.0
L 848	1.42	3.00	4.25	7.00		.16	20.6	266.0
L 849	1.70	3.45	4.50	8.00		.57	22.9	266.0
L 850	2.72	3.70	4.35	9.00		.33	29.0	168.2
L 851	2.05	2.90	3.25	4.00		.16	.2	168.2
L 852	1.12	2.40	4.00	7.00		.03	.6	168.2
L 853	1.35	2.45	4.25	8.75		.03	6.4	262.6
L 854	3.05	4.00	5.00	8.00		.21	9.0	220.0
L 855	1.65	3.30	5.00	8.00		1.56	13.1	191.0
L 856	2.76	3.43	4.00	4.75		.79	4.0	191.0
L 857	2.39	3.08	3.45	4.00		2.72	2.0	220.0
L 858	2.73	3.38	3.90	6.00		.23	2.5	191.0
L 859	2.45	3.27	4.00	6.00		.45	5.0	220.0
L 860	2.65	3.38	3.90	5.00		1.49	4.1	191.0
L 863	1.10	3.20	3.40	5.00		1.37	1.9	161.0
L 977	2.26	3.33	6.00	9.00		.29	10.5	321.1
L 978	2.20	3.46	5.50	8.00		.10	7.5	321.1
L 979	1.42	2.62	3.75	7.00		.40	2.1	321.6
L 1135	1.64	2.70	3.85	6.50		.06	3.6	300.0
L 1136	1.88	3.01	4.70	7.60		.13	4.1	300.0
L 1137	1.74	2.76	3.77	5.45		.04	32.1	300.0
L 1138	2.23	3.33	4.60	8.00		.06	14.7	300.0
L 1139	2.23	3.45	5.67	8.75		.39	14.6	300.0
L 1140	2.06	3.26	4.32	6.50		.14	17.8	300.0
L 1141	1.72	2.63	4.15	6.65		.27	5.7	300.0

morrison formation basic data-continued

SAMPLE	SIL-RF	SIL-LSFR	K-SPAR	NA-SPAR	KAOL	MICA	ILLITE	MIC-RF	HV-MIN	MISC-OP
L 1142	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1143	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1144	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1145	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1146	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1191	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1192	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1193	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1194	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1195	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1196	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1197	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1198	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1199	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1200	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1201	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1202	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1203	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1204	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1205	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1206	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1207	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1208	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1209	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1210	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1211	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1212	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1213	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1214	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1215	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1216	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1217	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1218	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1219	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1220	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1221	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1222	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1223	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1224	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1225	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1226	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1227	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B

morrison formation basic data-continued

SAMPLE	TUFF-FR	MONT	ASH	CEM-TOT	SIL-TOT	FELD-TOT	MICA-TOT	TUFF-TOT	TEXTURE	FE	PCT
L 1142	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 1143	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 1144	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 1145	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 1146	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 1191	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 1192	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 1193	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 1194	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 1195	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 1196	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 1197	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 1198	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 1199	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 1200	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 1201	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 1202	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 1203	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 1204	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 1205	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 1206	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 1207	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 1208	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 1209	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 1210	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 1211	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 1212	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 1213	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 1214	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 1215	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 1216	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 1217	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 1218	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 1219	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 1220	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 1221	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 1222	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 1223	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 1224	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 1225	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 1226	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 1227	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B

[illegible]

SAMPLE	LA	PPM	NB	PPM	N1	PPM	PB	PPM	SC	PPM	SR	PPM	U	PPM	Y	PPM	ZN	PPM	ZR	PPM
L 1142		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1143		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1144		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1145		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1146		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1191		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1192		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1193		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1194		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1195		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1196		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1197		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1198		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1199		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1200		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1201		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1202		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1203		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1204		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1205		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1206		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1207		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1208		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1209		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1210		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1211		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1212		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1213		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1214		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1215		.00B		.00B		.00B		.00B		.00										

morrison formation basic data--continued

SAMPLE	HG2	PPM	CU2	PPM	PHI	MEAN	MODE	MM	PHI	MED	PHI	SD	PHI	SKEW	KURT	2PHI	PT	SPHI	PT
L 1142	.008			.008	2.72	.193		.193	2.48		.97	1.43	1.24	1.65	1.82				
L 1143	.008			.008	2.40	.242		.242	2.12		1.21	1.54	1.38	1.28	1.42				
L 1144	.008			.008	2.69	.177		.177	2.46		1.08	2.00	2.02	1.70	1.85				
L 1145	.008			.008	2.79	.149		.149	2.58		1.36	2.00	1.86	1.55	1.77				
L 1146	.008			.008	2.67	.189		.189	2.42		1.02	2.13	2.37	1.73	1.85				
L 1191	.008			.008	3.22	.113		.113	3.06		.98	1.19	.95	1.97	2.26				
L 1192	.008			.008	2.75	.141		.141	2.63		.89	1.46	1.39	1.68	1.85				
L 1193	.008			.008	2.47	.194		.194	2.30		.96	1.54	1.45	1.37	1.55				
L 1194	.008			.008	2.54	.203		.203	2.27		1.02	1.22	1.01	1.47	1.62				
L 1195	.008			.008	2.61	.236		.236	2.28		1.27	1.15	.79	1.28	1.43				
L 1196	.008			.008	2.45	.245		.245	2.03		1.44	1.35	.90	1.16	1.32				
L 1197	.008			.008	2.37	.287		.287	1.97		1.00	1.38	.88	.96	1.13				
L 1198	.008			.008	2.36	.297		.297	1.93		1.54	1.35	.83	.96	1.12				
L 1199	.008			.008	2.57	.213		.213	2.32		1.25	1.45	1.13	1.34	1.51				
L 1200	.008			.008	3.25	.096		.096	2.90		1.85	1.00	.45	1.30	1.46				
L 1201	.008			.008	4.19	.083		.083	3.57		1.92	.75	.20	1.75	2.16				
L 1202	.008			.008	2.44	.268		.268	1.98		1.48	1.25	.75	1.12	1.26				
L 1203	.008			.008	2.59	.203		.203	2.35		1.07	1.32	1.05	1.43	1.62				
L 1204	.008			.008	2.39	.218		.218	2.14		1.01	1.35	1.13	1.41	1.57				
L 1205	.008			.008	2.34	.230		.230	2.08		1.09	1.32	1.01	1.27	1.42				
L 1206	.008			.008	2.20	.250		.250	1.98		1.02	1.44	1.24	1.20	1.33				
L 1207	.008			.008	2.06	.268		.268	1.85		1.04	1.61	1.39	1.08	1.22				
L 1208	.008			.008	2.38	.230		.230	2.12		1.28	1.55	1.22	1.11	1.27				
L 1209	.008			.008	3.25	.116		.116	2.78		2.04	.99	.38	1.08	1.32				
L 1210	.008			.008	2.77	.117		.117	2.62		1.08	1.43	1.07	1.59	1.79				
L 1211	.008			.008	2.88	.119		.119	2.72		1.10	1.53	1.25	1.70	1.88				
L 1212	.008			.008	2.96	.122		.122	2.78		1.11	1.46	1.18	1.77	1.94				
L 1213	.008			.008	2.59	.194		.194	2.37		1.07	1.49	1.23	1.45	1.63				
L 1214	.008			.008	3.49	.237		.237	2.49		2.57	.78	.12	1.30	1.45				
L 1215	.008			.008	2.51	.233		.233	2.14		1.46	1.53	1.11	1.36	1.48				
L 1216	.008			.008	2.66	.177		.177	2.48		1.00	1.50	1.32	1.54	1.73				
L 1217	.008			.008	2.63	.200		.200	2.38		1.15	1.48	1.26	1.41	1.60				
L 1218	.008			.008	3.15	.118		.118	2.99		.93	1.26	1.01	2.07	2.24				
L 1219	.008			.008	4.06	.083		.083	3.55		1.48	1.39	.80	2.86	2.98				
L 1220	.008			.008	2.91	.118		.118	2.78		1.06	1.23	.92	1.63	1.83				
L 1221	.008			.008	2.87	.121		.121	2.70		1.39	1.36	.97	1.33	1.52				
L 1222	.008			.008	3.05	.165		.165	2.84		.93	1.16	.87	1.93	2.07				
L 1223	.008			.008	2.84	.134		.134	2.71		.85	1.29	.97	1.85	2.02				
L 1224	.008			.008	2.95	.121		.121	2.86		.85	1.59	1.45	2.15	2.30				
L 1225	.008			.008	3.02	.118		.118	2.88		.91	1.54	1.51	2.02	2.19				
L 1226	.008			.008	3.25	.117		.117	3.08		.97	1.27	.97	2.18	2.36				
L 1227	.008			.008	3.05	.125		.125	2.87		1.01	1.35	1.02	1.96	2.11				

morrison formation basic data-continued

SAMPLE	16PHI PT	84PHI PT	95PHI PT	98PHI PT	HM	PCT	ACSO PCT	THKNESS
L 1142	2.07	3.12	4.32	5.75		.09	6.6	300.0
L 1143	1.64	3.07	3.82	6.15		.25	4.0	300.0
L 1144	2.08	2.95	4.10	6.80		.19	14.4	300.0
L 1145	2.07	3.10	3.92	8.75		.14	5.7	300.0
L 1146	2.06	2.97	3.70	5.95		.04	2.4	300.0
L 1191	2.62	3.58	4.60	6.50		.008	2.1	350.0
L 1192	2.15	3.15	3.97	5.50		.008	1.9	350.0
L 1193	1.84	2.83	3.65	5.65		.008	7.7	350.0
L 1194	1.85	3.12	4.02	5.55		.008	1.1	350.0
L 1195	1.72	3.33	4.50	7.00		.008	3.7	350.0
L 1196	1.57	3.24	4.85	7.85		.008	1.7	350.0
L 1197	1.41	3.01	5.37	8.60		.008	2.9	350.0
L 1198	1.40	3.03	5.40	8.50		.008	2.6	350.0
L 1199	1.79	3.05	4.60	7.50		.008	1.9	350.0
L 1200	1.82	4.08	7.75	9.50		.008	6.6	350.0
L 1201	2.73	5.75	8.60	10.25		.008	9.9	350.0
L 1202	1.48	3.28	5.35	7.95		.008	2.7	350.0
L 1203	1.88	3.08	4.30	6.25		.008	2.0	350.0
L 1204	1.80	2.77	4.10	5.65		.008	.6	350.0
L 1205	1.68	2.84	4.15	5.65		.008	.7	350.0
L 1206	1.57	2.66	3.85	5.25		.008	2.0	350.0
L 1207	1.43	2.45	3.73	5.50		.008	3.5	350.0
L 1208	1.55	2.82	4.30	7.40		.008	7.5	350.0
L 1209	1.71	4.17	8.40	10.75		.008	4.9	350.0
L 1210	2.07	3.14	4.70	7.25		.008	7.0	350.0
L 1211	2.20	3.22	4.50	7.40		.008	5.4	350.0
L 1212	2.25	3.32	4.75	7.40		.008	7.7	350.0
L 1213	1.91	2.98	4.15	6.65		.008	6.1	350.0
L 1214	1.73	6.75	9.79	10.50		.008	7.4	350.0
L 1215	1.68	2.98	5.15	8.45		.008	6.6	350.0
L 1216	2.02	3.05	4.12	6.25		.008	3.2	350.0
L 1217	1.88	3.09	4.30	6.50		.008	4.3	350.0
L 1218	2.54	3.58	4.50	6.10		.008	5.1	350.0
L 1219	3.18	4.53	7.55	9.75		.008	3.7	350.0
L 1220	2.20	3.35	4.60	6.35		.008	3.5	350.0
L 1221	1.92	3.40	5.25	8.10		.008	7.6	350.0
L 1222	2.32	3.58	4.50	5.75		.008	2.2	350.0
L 1223	2.27	3.25	4.27	5.60		.008	5.8	350.0
L 1224	2.52	3.27	4.17	5.50		.008	7.3	350.0
L 1225	2.50	3.42	4.35	5.75		.008	9.3	350.0
L 1226	2.68	3.62	4.62	6.55		.008	12.9	350.0
L 1227	2.38	3.46	4.67	6.55		.008	14.8	350.0

morrison formation basic data-continued

SAMPLE	SIL-RF	SIL-LSFR	K-SPAR	NA-SPAR	KADL	MICA	ILLITE	MIC-RF	HV-MIN	MISC-OP
L 1228	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1229	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1230	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1231	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1232	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1233	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1234	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1235	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1236	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1237	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1238	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1239	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1240	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1241	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1242	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1243	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1244	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1245	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1246	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1247	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1248	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1249	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1250	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1251	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1252	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1253	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1254	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1255	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1256	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1257	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1258	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1259	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1260	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1261	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1262	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1263	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1264	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1265	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1266	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1267	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1268	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1269	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B

morrison formation basic data-continued

SAMPLE	TUFF-FR	MONT	ASH	CEM-TOT	SIL-TOT	FELD-TOT	MICA-TOT	TUFF-TOT	TEXTURE	FE	PCT
L 1228	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 1229	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 1230	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	3.00		.00B
L 1231	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 1232	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 1233	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 1234	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 1235	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	3.00		.00B
L 1236	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	3.00		.00B
L 1237	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	3.00		.00B
L 1238	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	3.00		.00B
L 1239	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	3.00		.00B
L 1240	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 1241	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 1242	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 1243	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 1244	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 1245	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 1246	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 1247	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 1248	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 1249	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 1250	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 1251	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	3.00		.00B
L 1252	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	3.00		.00B
L 1253	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	3.00		.00B
L 1254	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	3.00		.00B
L 1255	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	3.00		.00B
L 1256	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	3.00		.00B
L 1257	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	2.00		.00B
L 1258	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 1259	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	3.00		.00B
L 1260	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	3.00		.00B
L 1261	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	3.00		.00B
L 1262	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	3.00		.00B
L 1263	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	3.00		.00B
L 1264	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	3.00		.00B
L 1265	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	3.00		.00B
L 1266	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 1267	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 1268	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 1269	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	3.00		.00B

SAMPLE	MG	PCT	CA	T1	PCT	MN	PPM	B	PPM	BA	PPM	BE	PPM	CO	PPM	CR	PPM	CU	PPM
L 1228		.00B			.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1229		.00B			.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1230		.00B			.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1231		.00B			.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1232		.00B			.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1233		.00B			.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1234		.00B			.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1235		.00B			.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1236		.00B			.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1237		.00B			.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1238		.00B			.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1239		.00B			.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1240		.00B			.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1241		.00B			.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1242		.00B			.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1243		.00B			.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1244		.00B			.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1245		.00B			.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1246		.00B			.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1247		.00B			.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1248		.00B			.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1249		.00B			.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1250		.00B			.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1251		.00B			.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1252		.00B			.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1253		.00B			.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1254		.00B			.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1255		.00B			.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1256		.00B			.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1257		.00B			.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1258		.00B			.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1259		.00B			.00B		.00B		.										

SAMPLE	LA	PPM	NB	PPM	N1	PPM	PB	PPM	SC	PPM	SR	PPM	U	PPM	Y	PPM	ZN	PPM	ZR	PPM
L 1228		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1229		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1230		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1231		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1232		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1233		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1234		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1235		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1236		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1237		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1238		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1239		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1240		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1241		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1242		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1243		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1244		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1245		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1246		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1247		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1248		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1249		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1250		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1251		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1252		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1253		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1254		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1255		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1256		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1257		.00B		.00B		.00B		.00B		.00										

morrison formation basic data-continued

SAMPLE	HG2	PPM	CU2	PPM	PHI	MEQ	PHI	SD	PHI	SKEW	PHI	KURT	2PHI	PT	SPHI	PT
L 1228	.008			.008	2.94	2.72		1.04		1.27		.93	1.82		1.97	
L 1229	.008			.008	3.44	3.13		1.19		1.34		.90	2.27		2.46	
L 1230	.008			.008	4.79	3.97		2.27		.92		.24	2.82		2.97	
L 1231	.008			.008	3.02	3.54		1.57		1.27		.68	2.57		2.77	
L 1232	.008			.008	2.72	3.48		1.12		1.22		.85	2.50		2.68	
L 1233	.008			.008	2.74	3.41		1.25		1.23		.95	2.47		2.64	
L 1234	.008			.008	5.94	4.71		2.89		.32		-.10	2.60		2.82	
L 1235	.008			.008	5.71	4.37		2.77		.48		-.05	2.88		3.10	
L 1236	.008			.008	8.26	8.42		2.57		-.17		-.07	3.26		3.75	
L 1237	.008			.008	7.80	8.02		2.69		-.08		-.08	2.93		3.24	
L 1238	.008			.008	8.36	8.43		2.43		-.09		-.06	3.37		3.97	
L 1239	.008			.008	7.73	8.05		3.07		.05		-.13	2.65		3.12	
L 1240	.008			.008	2.90	2.77		1.19		1.55		1.29	1.63		1.82	
L 1241	.008			.008	4.07	3.36		2.04		1.00		.32	2.38		2.55	
L 1242	.008			.008	4.31	3.67		1.86		1.06		.38	2.62		2.82	
L 1243	.008			.008	5.10	4.08		2.30		.70		.05	3.02		3.16	
L 1244	.008			.008	2.95	2.77		1.17		1.60		1.22	1.90		2.06	
L 1245	.008			.008	3.90	3.23		1.82		1.15		.48	2.52		2.66	
L 1246	.008			.008	2.94	2.68		1.39		1.31		.82	1.51		1.68	
L 1247	.008			.008	3.03	2.77		1.32		1.57		1.00	2.22		2.40	
L 1248	.008			.008	2.72	2.44		1.27		1.28		.82	1.53		1.67	
L 1249	.008			.008	3.09	2.88		1.23		1.36		.92	1.87		2.02	
L 1250	.008			.008	3.06	2.57		1.70		1.27		.72	1.46		1.66	
L 1251	.008			.008	6.17	5.17		2.48		.42		-.05	3.29		3.53	
L 1252	.008			.008	6.92	6.57		2.47		.20		-.10	3.40		3.72	
L 1253	.008			.008	7.41	7.23		2.54		.17		-.09	3.73		4.01	
L 1254	.008			.008	5.68	4.56		2.41		.40		-.07	2.86		3.08	
L 1255	.008			.008	5.02	4.11		2.18		.67		.03	2.89		3.05	
L 1256	.008			.008	7.22	6.95		2.97		.17		-.12	3.04		3.47	
L 1257	.008			.008	4.64	3.90		1.96		.95		.26	3.01		3.13	
L 1258	.008			.008	3.94	3.38		1.57		1.27		.67	2.53		2.73	
L 1259	.008			.008	4.95	3.97		2.37		.67		.05	2.52		2.76	
L 1260	.008			.008	5.58	4.39		2.59		.61		.02	3.14		3.32	
L 1261	.008			.008	6.43	5.99		2.82		.15		-.10	2.15		2.62	
L 1262	.008			.008	6.04	6.07		2.55		.08		-.11	2.06		2.45	
L 1263	.008			.008	6.07	5.74		2.54		.12		-.11	2.19		2.62	
L 1264	.008			.008	6.30	5.58		2.71		.24		-.09	2.55		2.85	
L 1265	.008			.008	6.23	5.44		2.73		.26		-.09	2.51		2.83	
L 1266	.008			.008	4.05	3.41		1.87		.98		.34	2.27		2.46	
L 1267	.008			.008	4.41	3.66		1.97		.87		.23	2.58		2.77	
L 1268	.008			.008	4.23	3.52		1.82		1.02		.35	2.62		2.82	
L 1269	.008			.008	5.29	4.22		2.41		.46		.43	2.57		2.86	

morrison formation basic data-continued

SAMPLE	16PHI PT	84PHI PT	95PHI PT	98PHI PT	HM	PCT	ACSD PCT	THKNESS
L 1228	2.20	3.43	4.65	6.35		.008	16.9	350.0
L 1229	2.76	3.73	5.80	7.85		.008	1.6	350.0
L 1230	3.27	6.25	11.05	13.00		.008	9.9	350.0
L 1231	3.04	4.56	7.85	10.90		.008	16.6	350.0
L 1232	2.95	4.27	5.55	7.55		.008	3.2	350.0
L 1233	2.92	4.28	6.15	8.40		.008	8.9	350.0
L 1234	3.23	9.67	12.15	13.20		.008	2.7	350.0
L 1235	3.45	9.45	12.50	14.40		.008	9.1	350.0
L 1236	5.12	10.92	12.58	13.55		.008	6.3	350.0
L 1237	4.30	10.64	12.28	13.40		.008	7.3	350.0
L 1238	5.80	10.93	12.65	13.70		.008	9.3	350.0
L 1239	3.93	11.15	13.15	14.40		.008	2.7	350.0
L 1240	2.18	3.28	4.75	7.50		.008	28.0	350.0
L 1241	2.82	4.83	9.60	11.07		.008	9.5	350.0
L 1242	3.17	4.96	9.50	11.10		.008	8.6	350.0
L 1243	3.43	7.90	11.95	14.47		.008	2.1	350.0
L 1244	2.28	3.27	4.90	7.55		.008	2.4	350.0
L 1245	2.88	4.38	8.65	10.55		.008	1.5	350.0
L 1246	2.04	3.37	6.00	8.15		.008	6.3	350.0
L 1247	2.58	3.28	5.99	8.40		.008	21.4	350.0
L 1248	1.88	3.17	5.15	7.65		.008	14.9	350.0
L 1249	2.41	3.37	5.60	7.83		.008	21.4	350.0
L 1250	1.98	3.82	6.85	9.70		.008	23.7	350.0
L 1251	3.96	9.12	11.55	13.15		.008	4.9	350.0
L 1252	4.28	9.86	12.05	13.35		.008	5.7	350.0
L 1253	4.61	10.25	12.20	13.45		.008	5.2	350.0
L 1254	3.54	8.84	11.70	13.65		.008	6.6	350.0
L 1255	3.33	7.70	10.59	12.58		.008	15.0	350.0
L 1256	4.07	10.80	13.41	15.10		.008	3.4	350.0
L 1257	3.37	5.95	10.26	12.85		.008	5.7	350.0
L 1258	3.05	4.43	7.90	9.04		.008	6.5	350.0
L 1259	3.26	7.99	12.19	14.95		.008	8.1	350.0
L 1260	3.62	8.94	12.60	15.05		.008	3.5	350.0
L 1261	3.34	9.69	12.35	13.92		.008	3.2	350.0
L 1262	3.15	8.82	11.31	12.68		.008	5.3	350.0
L 1263	3.30	9.08	11.55	12.96		.008	2.6	350.0
L 1264	3.60	9.60	12.05	13.58		.008	7.9	350.0
L 1265	3.53	9.50	12.10	13.67		.008	13.9	350.0
L 1266	2.82	5.06	8.75	10.80		.008	17.1	350.0
L 1267	3.07	6.03	9.42	11.41		.008	11.7	350.0
L 1268	3.04	5.13	8.86	10.91		.008	14.8	350.0
L 1269	3.31	8.43	10.85	12.48		.008	5.5	350.0

morrison formation basic data-continued

SAMPLE	UNIT	LAT	LONG	LOCNO	CEMENTS	FE-0X	QTZ-GR	OZ-RF	CHERT-FR	CHERT-AU
L 1270	413040.	38.31	108.75	119.	.008	.008	.008	.008	.008	.008
L 1271	413040.	38.31	108.75	119.	.008	.008	.008	.008	.008	.008
L 1272	413040.	38.31	108.75	119.	.008	.008	.008	.008	.008	.008
L 1273	413040.	38.31	108.75	119.	.008	.008	.008	.008	.008	.008
L 1274	413040.	38.31	108.75	119.	.008	.008	.008	.008	.008	.008
L 1275	413040.	38.31	108.75	119.	.008	.008	.008	.008	.008	.008
L 1276	413040.	38.31	108.75	119.	.008	.008	.008	.008	.008	.008
L 1277	413040.	38.31	108.75	119.	.008	.008	.008	.008	.008	.008
L 1278	413010.	38.31	108.75	119.	.008	.008	.008	.008	.008	.008
L 1279	413010.	38.31	108.75	119.	.008	.008	.008	.008	.008	.008
L 1280	413010.	38.31	108.75	119.	.008	.008	.008	.008	.008	.008
L 1281	413010.	38.31	108.75	119.	.008	.008	.008	.008	.008	.008
L 1282	413010.	38.31	108.75	119.	.008	.008	.008	.008	.008	.008
L 1283	413010.	38.31	108.75	119.	.008	.008	.008	.008	.008	.008
L 1284	413010.	38.31	108.75	119.	.008	.008	.008	.008	.008	.008
L 1285	413010.	38.31	108.75	119.	.008	.008	.008	.008	.008	.008
L 1286	413010.	38.31	108.75	119.	.008	.008	.008	.008	.008	.008
L 1287	413010.	38.31	108.75	119.	.008	.008	.008	.008	.008	.008
L 1288	413010.	38.31	108.75	119.	.008	.008	.008	.008	.008	.008
L 1289	413010.	38.31	108.75	119.	.008	.008	.008	.008	.008	.008
L 1290	413010.	38.31	108.75	119.	.008	.008	.008	.008	.008	.008
L 1291	413010.	38.31	108.75	119.	.008	.008	.008	.008	.008	.008
L 1292	413010.	38.31	108.75	119.	.008	.008	.008	.008	.008	.008
L 1293	413010.	38.31	108.75	119.	.008	.008	.008	.008	.008	.008
L 1294	413010.	38.31	108.75	119.	.008	.008	.008	.008	.008	.008
L 1295	413010.	38.31	108.75	119.	.008	.008	.008	.008	.008	.008
L 1296	413010.	38.31	108.75	119.	.008	.008	.008	.008	.008	.008
L 1297	413010.	38.31	108.75	119.	.008	.008	.008	.008	.008	.008
L 1298	413010.	38.31	108.75	119.	.008	.008	.008	.008	.008	.008
L 1299	413010.	38.31	108.75	119.	.008	.008	.008	.008	.008	.008
L 1300	413010.	38.31	108.75	119.	.008	.008	.008	.008	.008	.008
L 1301	413010.	38.31	108.75	119.	.008	.008	.008	.008	.008	.008
L 1302	413010.	38.31	108.75	119.	.008	.008	.008	.008	.008	.008
L 1303	413010.	38.31	108.75	119.	.008	.008	.008	.008	.008	.008
L 1304	413010.	38.31	108.75	119.	.008	.008	.008	.008	.008	.008
L 1305	413010.	38.31	108.75	119.	.008	.008	.008	.008	.008	.008
L 1361	413010.	38.41	108.70	56.	.008	.008	.008	.008	.008	.008
L 1362	413010.	38.41	108.70	56.	.008	.008	.008	.008	.008	.008
L 1363	413010.	38.41	108.70	56.	.008	.008	.008	.008	.008	.008
L 1364	413010.	38.41	108.70	56.	.008	.008	.008	.008	.008	.008
L 1365	413010.	38.87	110.35	178.	.008	.008	.008	.008	.008	.008
L 1366	413010.	38.87	110.35	178.	.008	.008	.008	.008	.008	.008

[illegible]

morrison formation basic data-continued

SAMPLE	TUFF-FR	MONT	ASH	CEM-TOT	SIL-TOT	FELD-TOT	MICA-TOT	TUFF-TOT	TEXTURE	FE	PCT
L 1270	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	3.00		.00B
L 1271	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	3.00		.00B
L 1272	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	3.00		.00B
L 1273	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	3.00		.00B
L 1274	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	3.00		.00B
L 1275	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	3.00		.00B
L 1276	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	3.00		.00B
L 1277	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	3.00		.00B
L 1278	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 1279	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 1280	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 1281	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 1282	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 1283	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 1284	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 1285	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 1286	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 1287	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 1288	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 1289	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 1290	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 1291	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 1292	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 1293	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 1294	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 1295	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 1296	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 1297	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 1298	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 1299	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 1300	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 1301	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 1302	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 1303	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 1304	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 1305	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 1361	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.15
L 1362	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 1363	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.20
L 1364	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.20
L 1365	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.20
L 1366	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.15

SAMPLE	MG	PCT	CA	T1	PCT	MIN	PPM	B	PPM	BA	PPM	BE	PPM	CO	PPM	CR	PPM	CU	PPM
L 1270	.00B	.00B			.00B		.00B		.00B		.00B	.00B	.00B		.00B				.00B
L 1271	.00B	.00B			.00B		.00B		.00B		.00B	.00B	.00B		.00B				.00B
L 1272	.00B	.00B			.00B		.00B		.00B		.00B	.00B	.00B		.00B				.00B
L 1273	.00B	.00B			.00B		.00B		.00B		.00B	.00B	.00B		.00B				.00B
L 1274	.00B	.00B			.00B		.00B		.00B		.00B	.00B	.00B		.00B				.00B
L 1275	.00B	.00B			.00B		.00B		.00B		.00B	.00B	.00B		.00B				.00B
L 1276	.00B	.00B			.00B		.00B		.00B		.00B	.00B	.00B		.00B				.00B
L 1277	.00B	.00B			.00B		.00B		.00B		.00B	.00B	.00B		.00B				.00B
L 1278	.00B	.00B			.00B		.00B		.00B		.00B	.00B	.00B		.00B				.00B
L 1279	.00B	.00B			.00B		.00B		.00B		.00B	.00B	.00B		.00B				.00B
L 1280	.00B	.00B			.00B		.00B		.00B		.00B	.00B	.00B		.00B				.00B
L 1281	.00B	.00B			.00B		.00B		.00B		.00B	.00B	.00B		.00B				.00B
L 1282	.00B	.00B			.00B		.00B		.00B		.00B	.00B	.00B		.00B				.00B
L 1283	.00B	.00B			.00B		.00B		.00B		.00B	.00B	.00B		.00B				.00B
L 1284	.00B	.00B			.00B		.00B		.00B		.00B	.00B	.00B		.00B				.00B
L 1285	.00B	.00B			.00B		.00B		.00B		.00B	.00B	.00B		.00B				.00B
L 1286	.00B	.00B			.00B		.00B		.00B		.00B	.00B	.00B		.00B				.00B
L 1287	.00B	.00B			.00B		.00B		.00B		.00B	.00B	.00B		.00B				.00B
L 1288	.00B	.00B			.00B		.00B		.00B		.00B	.00B	.00B		.00B				.00B
L 1289	.00B	.00B			.00B		.00B		.00B		.00B	.00B	.00B		.00B				.00B
L 1290	.00B	.00B			.00B		.00B		.00B		.00B	.00B	.00B		.00B				.00B
L 1291	.00B	.00B			.00B		.00B		.00B		.00B	.00B	.00B		.00B				.00B
L 1292	.00B	.00B			.00B		.00B		.00B		.00B	.00B	.00B		.00B				.00B
L 1293	.00B	.00B			.00B		.00B		.00B		.00B	.00B	.00B		.00B				.00B
L 1294	.00B	.00B			.00B		.00B		.00B		.00B	.00B	.00B		.00B				.00B
L 1295	.00B	.00B			.00B		.00B		.00B		.00B	.00B	.00B		.00B				.00B
L 1296	.00B	.00B			.00B		.00B		.00B		.00B	.00B	.00B		.00B				.00B
L 1297	.00B	.00B			.00B		.00B		.00B		.00B	.00B	.00B		.00B				.00B
L 1298	.00B	.00B			.00B		.00B		.00B		.00B	.00B	.00B		.00B				.00B
L 1299	.00B	.00B			.00B		.00B		.00B		.00B	.00B	.00B		.00B				.00B
L 1300	.00B	.00B			.00B		.00B		.00										

morrison formation basic data-continued

SAMPLE	LA	NB	PPM	NI1	PPM	PB	PPM	SC	PPM	SR	PPM	V	PPM	Y	PPM	ZN	PPM	ZR	PPM
L 1270	.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1271	.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1272	.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1273	.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1274	.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1275	.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1276	.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1277	.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1278	.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1279	.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1280	.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1281	.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1282	.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1283	.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1284	.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1285	.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1286	.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1287	.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1288	.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1289	.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1290	.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1291	.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1292	.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1293	.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1294	.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1295	.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1296	.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1297	.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1298	.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1299	.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1300	.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1301	.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1302	.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1303	.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1304	.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1305	.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B		.00B
L 1361	.00N	10.00L		5.00L	.00B	20.00	.00B		.00B	30.00	.00B	700.00	.00N		.00B		.00B	100.00	.00N
L 1362	.00N	10.00L		10.00L	.00B	10.00	.00B	5.00L	.00N	70.00	.00B	20.00	.00N	10.00L	.00N		.00B	70.00	.00N
L 1363	.00N	10.00L		5.00L	.00B	5.00L	.00B		.00B	200.00	.00B	20.00L	.00N	10.00L	.00N		.00B	20.00	.00N
L 1364	.00N	10.00L		10.00L	.00B	10.00L	.00B		.00B	20.00	.00B	10.00	.00N	.00N	.00N		.00B	70.00	.00N
L 1365	.00N	10.00L		5.00L	.00B	10.00L	.00B		.00B	50.00	.00B	10.00	.00N	.00N	.00N		.00B	50.00	.00N
L 1366	.00N	10.00L		5.00L	.00B	5.00L	.00B		.00B	100.00	.00B	10.00	.00N	.00N	.00N		.00B	200.00	.00N

morrison formation basic data-continued

SAMPLE	HG2	PPM	CU2	PPM	PHI MEAN	MODE MM	PHI MED	PHI	SD	PHI SKEW	PHI KURT	2PHI	PT	5PHI	PT
L 1270	.008	.008		.008	5.49	.071	4.44		2.36	.48	-.04		2.95	3.19	3.19
L 1271	.008	.008		.008	6.51	.060	6.14		2.65	.18	-.10		2.76	3.02	3.02
L 1272	.008	.008		.008	6.36	.036	5.54		2.34	.38	-.05		3.17	3.66	3.66
L 1273	.008	.008		.008	6.88	.036	6.55		2.33	.19	-.09		3.49	3.77	3.77
L 1274	.008	.008		.008	8.04	.036	8.37		3.07	-.01	-.12		3.20	3.63	3.63
L 1275	.008	.008		.008	6.62	.061	5.45		3.09	.32	-.09		2.92	3.17	3.17
L 1276	.008	.008		.008	8.35	.003	8.25		2.54	.02	-.10		3.78	4.50	4.50
L 1277	.008	.008		.008	5.79	.037	5.11		2.49	.23	-.10		2.10	2.54	2.54
L 1278	.008	.008		.008	2.81	.128	2.72		.97	1.64	1.43		1.77	1.93	1.93
L 1279	.008	.008		.008	2.99	.121	2.85		1.01	1.48	1.13		1.97	2.11	2.11
L 1280	.008	.008		.008	3.36	.114	3.08		1.14	1.28	.70		2.24	2.62	2.62
L 1281	.008	.008		.008	2.63	.206	2.47		1.13	1.50	1.21		1.46	1.61	1.61
L 1282	.008	.008		.008	2.74	.123	2.60		1.13	1.56	1.31		1.51	1.69	1.69
L 1283	.008	.008		.008	2.65	.177	2.49		1.02	1.59	1.39		1.53	1.73	1.73
L 1284	.008	.008		.008	2.75	.149	2.58		1.02	1.62	1.33		1.73	1.88	1.88
L 1285	.008	.008		.008	2.80	.174	2.55		1.17	1.62	1.29		1.68	1.88	1.88
L 1286	.008	.008		.008	2.80	.125	2.68		.99	1.64	1.37		1.80	1.98	1.98
L 1287	.008	.008		.008	2.58	.194	2.37		1.06	1.37	1.05		1.44	1.60	1.60
L 1288	.008	.008		.008	2.60	.192	2.42		1.03	1.54	1.40		1.48	1.66	1.66
L 1289	.008	.008		.008	2.56	.196	2.37		1.07	1.49	1.23		1.43	1.58	1.58
L 1290	.008	.008		.008	2.54	.200	2.35		1.08	1.43	1.18		1.36	1.52	1.52
L 1291	.008	.008		.008	2.48	.196	2.33		.97	1.34	1.14		1.33	1.52	1.52
L 1292	.008	.008		.008	2.48	.203	2.32		1.04	1.37	1.13		1.30	1.48	1.48
L 1293	.008	.008		.008	2.55	.200	2.32		1.19	1.54	1.28		1.34	1.52	1.52
L 1294	.008	.008		.008	2.56	.196	2.39		.98	1.41	1.21		1.53	1.80	1.80
L 1295	.008	.008		.008	2.59	.193	2.42		1.03	1.42	1.17		1.48	1.63	1.63
L 1296	.008	.008		.008	2.64	.193	2.47		1.04	1.47	1.20		1.53	1.73	1.73
L 1297	.008	.008		.008	2.64	.183	2.47		1.08	1.48	1.19		1.45	1.63	1.63
L 1298	.008	.008		.008	2.68	.171	2.53		1.02	1.43	1.17		1.54	1.72	1.72
L 1299	.008	.008		.008	2.83	.125	2.68		1.16	1.57	1.25		1.58	1.80	1.80
L 1300	.008	.008		.008	3.10	.119	2.86		1.28	1.42	.91		1.91	2.08	2.08
L 1301	.008	.008		.008	2.75	.125	2.63		.96	1.71	1.52		1.77	1.92	1.92
L 1302	.008	.008		.008	2.64	.134	2.55		.95	1.44	1.29		1.48	1.67	1.67
L 1303	.008	.008		.008	2.61	.200	2.36		1.14	1.42	1.04		1.46	1.63	1.63
L 1304	.008	.008		.008	2.53	.203	2.27		1.10	1.43	1.11		1.45	1.60	1.60
L 1305	.008	.008		.008	2.34	.218	2.14		1.03	1.47	1.26		1.35	1.48	1.48
L 1361	.17	.008	20.00	.008	2.76	.185	2.46		1.49	1.57	1.14		1.34	1.52	1.52
L 1362	.20	.008	30.00	.008	3.90	.078	3.48		1.59	1.44	.82		2.53	2.77	2.77
L 1363	.22	.008	30.00	.008	3.06	.149	2.78		1.32	1.87	1.61		1.97	2.12	2.12
L 1364	.24	.008	20.00	.008	2.81	.170	2.48		1.11	1.90	1.74		1.78	1.95	1.95
L 1365	.24	.008	30.00	.008	1.82	.236	1.87		1.65	.55	.51		-1.45	-1.05	-1.05
L 1366	.15	.008	30.00	.008	3.03	.149	2.77		1.26	1.74	1.62		1.71	1.97	1.97

morrison formation basic data-continued

SAMPLE	16PHI PT	84PHI PT	95PHI PT	98PHI PT	HM	PCT	ACSD PCT	THKNSS
L 1270	3.57	8.66	11.14	12.88		.008	8.6	350.0
L 1271	3.76	9.54	11.79	13.19		.008	10.6	350.0
L 1272	4.29	9.12	11.28	12.60		.008	16.1	350.0
L 1273	4.43	9.51	11.27	12.40		.008	10.4	350.0
L 1274	4.43	12.10	14.78	16.45		.008	7	350.0
L 1275	3.74	10.18	13.78	15.80		.008	13.6	350.0
L 1276	5.52	11.32	13.25	14.45		.008	21.1	350.0
L 1277	3.28	8.77	11.17	12.65		.008	2.1	350.0
L 1278	2.20	3.14	4.03	6.50		.008	4.1	350.0
L 1279	2.38	3.30	4.55	6.78		.008	3.9	350.0
L 1280	2.73	3.73	5.68	7.45		.008	3.2	350.0
L 1281	1.92	3.04	4.32	7.40		.008	5.4	350.0
L 1282	2.02	3.12	4.12	7.18		.008	3.6	350.0
L 1283	2.02	3.02	3.90	6.70		.008	4.2	350.0
L 1284	2.14	3.07	4.33	6.75		.008	4.9	350.0
L 1285	2.08	3.13	4.65	7.40		.008	3.7	350.0
L 1286	2.23	3.11	4.38	6.50		.008	5.3	350.0
L 1287	1.88	2.98	4.32	6.65		.008	3.9	350.0
L 1288	1.96	2.97	4.00	6.55		.008	4.0	350.0
L 1289	1.87	2.98	3.92	6.60		.008	3.6	350.0
L 1290	1.83	3.00	3.90	6.50		.008	3.7	350.0
L 1291	1.81	2.93	3.78	5.65		.008	3.6	350.0
L 1292	1.78	2.93	3.95	6.20		.008	3.6	350.0
L 1293	1.78	2.98	4.28	7.25		.008	3.4	350.0
L 1294	1.92	2.98	3.87	6.05		.008	4.7	350.0
L 1295	1.92	3.02	4.02	6.45		.008	2.4	350.0
L 1296	1.96	3.03	4.10	6.50		.008	4.2	350.0
L 1297	1.94	3.04	4.15	7.05		.008	2.8	350.0
L 1298	2.02	3.09	4.15	6.50		.008	3.6	350.0
L 1299	2.13	3.17	4.50	7.55		.008	3.5	350.0
L 1300	2.42	3.45	5.85	7.95		.008	3.6	350.0
L 1301	2.18	3.07	3.91	6.50		.008	4.8	350.0
L 1302	2.02	3.06	3.82	6.10		.008	4.1	350.0
L 1303	1.91	2.98	4.50	7.15		.008	20.4	350.0
L 1304	1.87	2.89	4.30	6.65		.008	21.9	350.0
L 1305	1.72	2.73	3.90	6.05		.008	19.2	350.0
L 1361	1.87	3.22	5.50	8.85		.008	2.0	335.0
L 1362	3.07	4.08	8.45	10.45		.008	6.9	335.0
L 1363	2.36	3.39	4.78	8.90		.008	31.3	335.0
L 1364	2.19	3.12	4.13	7.65		.008	6.9	335.0
L 1365	.69	2.68	4.07	7.00		.008	16.4	191.0
L 1366	2.32	3.58	4.45	7.75		.008	27.1	191.0

morrison formation basic data--continued

SAMPLE	UNIT	LAT	LONG	LOCNO	CEMENTS	FE-OX	QTZ-GR	QZ-RF	CHERT-FR	CHERT-AU
L 1367	413010.	38. 87	110. 35	178.	. 00B	. 00B	. 00B	. 00B	. 00B	. 00B
L 1368	413010.	37. 37	108. 73	214.	. 00B	. 00B	. 00B	. 00B	. 00B	. 00B
L 1369	413010.	38. 64	109. 81	415.	. 00B	. 00B	. 00B	. 00B	. 00B	. 00B
L 1370	413010.	37. 37	108. 73	214.	. 00B	. 00B	. 00B	. 00B	. 00B	. 00B
L 1371	413010.	37. 37	108. 73	214.	. 00B	. 00B	. 00B	. 00B	. 00B	. 00B
L 1372	413010.	36. 64	110. 41	135.	. 00B	. 00B	. 00B	. 00B	. 00B	. 00B
L 1373	413010.	36. 64	110. 41	135.	. 00B	. 00B	. 00B	. 00B	. 00B	. 00B
L 1374	413010.	37. 75	111. 10	416.	. 00B	. 00B	. 00B	. 00B	. 00B	. 00B
L 1375	413010.	37. 75	111. 10	416.	. 00B	. 00B	. 00B	. 00B	. 00B	. 00B
L 1376	413010.	37. 54	109. 66	28.	. 00B	. 00B	. 00B	. 00B	. 00B	. 00B
L 1377	413010.	37. 54	109. 66	28.	. 00B	. 00B	. 00B	. 00B	. 00B	. 00B
L 1378	413010.	37. 54	109. 66	28.	. 00B	. 00B	. 00B	. 00B	. 00B	. 00B
L 1380	413040.	38. 41	108. 70	56.	. 00B	. 00B	. 00B	. 00B	. 00B	. 00B
L 1391	413010.	38. 87	110. 35	178.	. 00B	. 00B	. 00B	. 00B	. 00B	. 00B
L 1405	413040.	37. 37	108. 73	214.	. 00B	. 00B	. 00B	. 00B	. 00B	. 00B
L 1494	413040.	38. 19	108. 63	61.	. 00B	. 00B	. 00B	. 00B	. 00B	. 00B
L 1563	413040.	38. 31	108. 75	119.	. 00B	. 00B	. 00B	. 00B	. 00B	. 00B
L 1564	413040.	38. 31	108. 75	119.	. 00B	. 00B	. 00B	. 00B	. 00B	. 00B
L 1565	413040.	38. 31	108. 75	119.	. 00B	. 00B	. 00B	. 00B	. 00B	. 00B
L 1566	413040.	38. 31	108. 75	119.	. 00B	. 00B	. 00B	. 00B	. 00B	. 00B
L 1567	413040.	38. 31	108. 75	119.	. 00B	. 00B	. 00B	. 00B	. 00B	. 00B
L 1568	413040.	38. 31	108. 75	119.	. 00B	. 00B	. 00B	. 00B	. 00B	. 00B
L 1569	413010.	38. 31	108. 75	119.	. 00B	. 00B	. 00B	. 00B	. 00B	. 00B
L 1570	413010.	38. 31	108. 75	119.	. 00B	. 00B	. 00B	. 00B	. 00B	. 00B
L 1582	413010.	38. 27	108. 70	119.	. 00B	. 00B	. 00B	. 00B	. 00B	. 00B
L 1583	413010.	38. 27	108. 70	119.	. 00B	. 00B	. 00B	. 00B	. 00B	. 00B
L 1584	413010.	38. 27	108. 70	119.	. 00B	. 00B	. 00B	. 00B	. 00B	. 00B
L 1585	413010.	38. 27	108. 70	119.	. 00B	. 00B	. 00B	. 00B	. 00B	. 00B
L 1586	413010.	38. 27	108. 70	119.	. 00B	. 00B	. 00B	. 00B	. 00B	. 00B
L 1587	413010.	38. 27	108. 70	119.	. 00B	. 00B	. 00B	. 00B	. 00B	. 00B
L 1588	413010.	38. 27	108. 70	119.	. 00B	. 00B	. 00B	. 00B	. 00B	. 00B
L 1589	413010.	38. 27	108. 70	119.	. 00B	. 00B	. 00B	. 00B	. 00B	. 00B
L 1590	413010.	38. 27	108. 70	119.	. 00B	. 00B	. 00B	. 00B	. 00B	. 00B
L 1591	413010.	38. 27	108. 70	119.	. 00B	. 00B	. 00B	. 00B	. 00B	. 00B
L 1592	413010.	38. 27	108. 70	119.	. 00B	. 00B	. 00B	. 00B	. 00B	. 00B
L 1593	413010.	38. 27	108. 70	119.	. 00B	. 00B	. 00B	. 00B	. 00B	. 00B
L 1594	413010.	38. 27	108. 70	119.	. 00B	. 00B	. 00B	. 00B	. 00B	. 00B
L 1595	413010.	38. 27	108. 70	119.	. 00B	. 00B	. 00B	. 00B	. 00B	. 00B
L 1596	413010.	38. 27	108. 70	119.	. 00B	. 00B	. 00B	. 00B	. 00B	. 00B
L 1597	413010.	38. 27	108. 70	119.	. 00B	. 00B	. 00B	. 00B	. 00B	. 00B
L 1598	413010.	38. 27	108. 70	119.	. 00B	. 00B	. 00B	. 00B	. 00B	. 00B
L 1599	413010.	38. 27	108. 70	119.	. 00B	. 00B	. 00B	. 00B	. 00B	. 00B

morrison formation basic data-continued

SAMPLE	SIL-RF	SIL-LSFR	K-SPAR	NA-SPAR	KAOL	MICA	ILLITE	MIC-RF	HV-MIN	MISC-OP
L 1367	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1368	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1369	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1370	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1371	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1372	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1373	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1374	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1375	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1376	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1377	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1378	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1380	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1391	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1405	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1494	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1563	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1564	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1565	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1566	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1567	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1568	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1569	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1570	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1582	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1583	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1584	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1585	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1586	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1587	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1588	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1589	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1590	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1591	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1592	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1593	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1594	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1595	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1596	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1597	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1598	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1599	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B

morrison formation basic data-continued

SAMPLE	TUFF-FR	MONT	ASH	CEM-TOT	SIL-TOT	FELD-TOT	MICA-TOT	TUFF-TOT	TEXTURE	FE	PCT
L 1367	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.20
L 1368	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 1369	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 1370	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.20
L 1371	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.70
L 1372	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 1373	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.20
L 1374	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		1.00
L 1375	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 1376	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.20
L 1377	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.20
L 1378	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.10
L 1380	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 1391	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.20
L 1405	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 1494	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		1.50
L 1563	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	2.00		1.00
L 1564	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	3.00		1.50
L 1565	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	3.00		1.50
L 1566	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	3.00		.00B
L 1567	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	3.00		.00B
L 1568	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	2.00		.00B
L 1569	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.30
L 1570	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 1582	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 1583	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 1584	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 1585	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 1586	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 1587	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.70
L 1588	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.70
L 1589	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 1590	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 1591	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		1.00
L 1592	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 1593	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 1594	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 1595	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	3.00		.00B
L 1596	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B
L 1597	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	3.00		.00B
L 1598	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	2.00		.00B
L 1599	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.00B

morrison formation basic data-continued

SAMPLE	MG	PCT	CA	PCT	T1	PCT	MN	PPM	B	PPM	BA	PPM	BE	PPM	CO	PPM	CR	PPM	CU	PPM
L 1367		.20		.50		.05		70.00	20.00	200.00				.00N		.00N		2.00		5.00
L 1368		.20		.70		.10		100.00	50.00	200.00				.00N		.00N		5.00		5.00
L 1369		.10		2.00		.07		300.00	20.00L	100.00				.00N		3.00		5.00		5.00
L 1370		.05		.20		.07		50.00	20.00L	150.00				.00N		.00N		2.00		5.00
L 1371		.50		3.00		.05		500.00	20.00	1000.00				.00N		5.00		5.00		10.00
L 1372		.10		.15		.10		50.00	20.00L	150.00				.00N		3.00		5.00		5.00
L 1373		.10		5.00		.03		200.00	20.00L	200.00				.00N		.00N		5.00		5.00
L 1374		.10		7.00		.05		1500.00	20.00	1000.00				.00N		.00N		30.00		20.00
L 1375		.10		.20		.05		50.00	20.00	200.00				.00N		.00N		5.00		5.00
L 1376		.10		.15		.05		100.00	20.00	200.00				.00N		.00N		5.00		10.00
L 1377		.05		7.00		.05		500.00	20.00L	1000.00				.00N		.00N		5.00		5.00
L 1378		.05		5.00		.05		500.00	20.00L	500.00				.00N		.00N		2.00		5.00
L 1380		.20		1.00		.07		150.00	20.00	300.00				.00N		.00N		10.00		10.00
L 1391		.20		.70		.05		100.00	20.00	150.00				.00N		.00N		20.00		7.00
L 1405		.10		.50		.10		100.00	20.00	700.00				.00N		.00N		3.00		5.00
L 1494		.70		.50		.20		100.00	100.00	150.00				.00N		5.00		30.00		30.00
L 1563		2.00		5.00		.10		500.00	20.00	200.00				.00N		3.00		30.00		30.00
L 1564		2.00		5.00		.15		500.00	20.00	200.00				.00N		5.00		30.00		50.00
L 1565		2.00		2.00		.20		200.00	20.00	200.00			1.00	.00N		20.00		30.00		50.00
L 1566		.00B		.00B		.00B		.00B	.00B	.00B				.00B		.00B		.00B		.00B
L 1567		.00B		.00B		.00B		.00B	.00B	.00B				.00B		.00B		.00B		.00B
L 1568		.00B		.00B		.00B		.00B	.00B	.00B				.00B		.00B		.00B		.00B
L 1569		.05		.05		.05		20.00	20.00L	150.00				.00N		.00N		2.00		5.00
L 1570		.00B		.00B		.00B		.00B	.00B	.00B				.00B		.00B		.00B		.00B
L 1582		.70		5.00		.10		200.00	20.00	200.00				.00N		3.00		30.00		5.00
L 1583		1.00		5.00		.10		200.00	20.00L	200.00				.00N		3.00		10.00		5.00
L 1584		1.00		5.00		.10		50.00	20.00L	1000.00				.00N		3.00		5.00		5.00
L 1585		.50		5.00		.10		100.00	20.00L	700.00				.00N		20.00		10.00		20.00
L 1586		.00B		.00B		.00B		.00B	.00B	.00B				.00B		.00B		.00B		.00B
L 1587		1.00		2.00		.07		200.00	20.00	500.00				.00N		10.00		5.00		150.00
L 1588		1.00		2.00		.07		200.00	20.00	700.00				.00N		20.00		10.00		20.00
L 1589		.00B		.00B		.00B		.00B	.00B	.00B				.00B		.00B		.00B		.00B
L 1590		.50		3.00		.05		200.00	20.00	500.00				.00N		10.00		10.00		50.00
L 1591		1.00		5.00		.07		200.00	20.00	1500.00				.00N		10.00		20.00		50.00
L 1592		.00B		.00B		.00B		.00B	.00B	.00B				.00B		.00B		.00B		.00B
L 1593		.00B		.00B		.00B		.00B	.00B	.00B				.00B		.00B		.00B		.00B
L 1594		.00B		.00B		.00B		.00B	.00B	.00B				.00B		.00B		.00B		.00B
L 1595		.00B		.00B		.00B		.00B	.00B	.00B				.00B		.00B		.00B		.00B
L 1596		.00B		.00B		.00B		.00B	.00B	.00B				.00B		.00B		.00B		.00B
L 1597		.00B		.00B		.00B		.00B	.00B	.00B				.00B		.00B		.00B		.00B
L 1598		.00B		.00B		.00B		.00B	.00B	.00B				.00B		.00B		.00B		.00B
L 1599		.00B		.00B		.00B		.00B	.00B	.00B				.00B		.00B		.00B		.00B

morrison formation basic data-continued

SAMPLE	LA	PPM	NB	PPM	N1	PPM	PB	PPM	SC	PPM	SR	PPM	V	PPM	Y	PPM	ZN	PPM	ZR	PPM
L 1367	.00N	10.00L	.00N	5.00L	.00N	20.00	20.00	10.00	.00N	.00N	50.00	.00N	10.00	.00N	.00N	.00N	.00N	.00N	50.00	.00N
L 1368	.00N	10.00L	5.00L	10.00	.00N	70.00	70.00	20.00	.00N	.00N	200.00	.00N	20.00	.00N	10.00	.00N	.00N	.00N	200.00	.00N
L 1369	.00N	10.00L	5.00L	5.00L	.00N	20.00	20.00	10.00	.00N	.00N	70.00	.00N	10.00	.00N	10.00L	.00N	.00N	.00N	200.00	.00N
L 1370	.00N	10.00L	5.00L	10.00	.00N	10.00	10.00	10.00	.00N	.00N	20.00	.00N	20.00	.00N	10.00L	.00N	.00N	.00N	50.00	.00N
L 1371	.00N	10.00L	5.00L	10.00	.00N	200.00	200.00	20.00	.00N	.00N	50.00	.00N	20.00	.00N	10.00L	.00N	.00N	.00N	100.00	.00N
L 1372	.00N	10.00L	5.00	5.00L	.00N	10.00	10.00	10.00	.00N	.00N	50.00	.00N	20.00	.00N	10.00L	.00N	.00N	.00N	50.00	.00N
L 1373	.00N	10.00L	5.00L	5.00L	.00N	70.00	70.00	20.00	.00N	.00N	200.00	.00N	20.00	.00N	10.00L	.00N	.00N	.00N	50.00	.00N
L 1374	50.00	10.00L	5.00	10.00	.00N	200.00	200.00	20.00	.00N	.00N	70.00	.00N	10.00	.00N	30.00	.00N	.00N	.00N	50.00	.00N
L 1375	.00N	10.00L	5.00	5.00L	.00N	10.00	10.00	10.00	.00N	.00N	20.00	.00N	20.00	.00N	10.00L	.00N	.00N	.00N	50.00	.00N
L 1376	.00N	10.00L	5.00	5.00L	.00N	10.00	10.00	10.00	.00N	.00N	20.00	.00N	20.00	.00N	10.00L	.00N	.00N	.00N	50.00	.00N
L 1377	.00N	10.00L	5.00L	5.00L	.00N	70.00	70.00	20.00	.00N	.00N	200.00	.00N	20.00	.00N	10.00L	.00N	.00N	.00N	100.00	.00N
L 1378	.00N	10.00L	5.00L	5.00L	.00N	70.00	70.00	20.00	.00N	.00N	200.00	.00N	20.00	.00N	10.00L	.00N	.00N	.00N	50.00	.00N
L 1380	.00N	10.00L	5.00	.00N	.00N	50.00	50.00	30.00	.00N	.00N	30.00	.00N	10.00	.00N	10.00	.00N	.00N	.00N	70.00	.00N
L 1391	.00N	10.00L	5.00L	.00N	.00N	30.00	30.00	10.00	.00N	.00N	10.00	.00N	10.00	.00N	30.00	.00N	.00N	.00N	70.00	.00N
L 1405	.00N	10.00L	5.00L	.00N	.00N	50.00	50.00	50.00	.00N	.00N	20.00	.00N	20.00	.00N	30.00	.00N	.00N	.00N	100.00	.00N
L 1494	30.00	10.00L	10.00	10.00	.00N	100.00	100.00	100.00	.00N	.00N	70.00	.00N	70.00	.00N	20.00	.00N	.00N	.00N	200.00	.00N
L 1563	30.00	10.00L	10.00	10.00	.00N	100.00	100.00	100.00	.00N	.00N	50.00	.00N	50.00	.00N	15.00	.00N	.00N	.00N	100.00	.00N
L 1564	30.00	10.00L	10.00	10.00	.00N	150.00	150.00	150.00	.00N	.00N	50.00	.00N	50.00	.00N	20.00	.00N	.00N	.00N	100.00	.00N
L 1565	30.00	10.00L	10.00	10.00	.00N	150.00	150.00	150.00	.00N	.00N	70.00	.00N	70.00	.00N	30.00	.00N	.00N	.00N	150.00	.00N
L 1566	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1567	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1568	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1569	.00N	.00N	.00N	.00N	.00N	10.00	10.00	10.00	.00N	.00N	100.00	.00N	100.00	.00N	.00N	.00N	.00N	.00N	20.00	.00N
L 1570	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1582	.00N	10.00L	5.00	20.00	.00N	500.00	500.00	500.00	.00N	.00N	700.00	.00N	700.00	.00N	10.00	.00N	.00N	.00N	200.00	.00N
L 1583	50.00	10.00L	5.00	10.00	.00N	200.00	200.00	200.00	.00N	.00N	1000.00	.00N	1000.00	.00N	10.00	.00N	.00N	.00N	100.00	.00N
L 1584	.00N	10.00L	7.00	10.00	.00N	500.00	500.00	500.00	.00N	.00N	5000.00	.00N	5000.00	.00N	.00N	.00N	.00N	.00N	20.00	.00N
L 1585	.00N	10.00L	10.00	30.00	.00N	500.00	500.00	500.00	.00N	.00N	3000.00	.00N	3000.00	.00N	.00N	.00N	.00N	.00N	50.00	.00N
L 1586	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1587	30.00	10.00L	7.00	70.00	.00N	200.00	200.00	200.00	.00N	.00N	2000.00	.00N	2000.00	.00N	20.00	.00N	.00N	.00N	50.00	.00N
L 1588	30.00	.00N	20.00	50.00	.00N	200.00	200.00	200.00	.00N	.00N	2000.00	.00N	2000.00	.00N	10.00	.00N	.00N	.00N	50.00	.00N
L 1589	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1590	.00N	10.00L	10.00	10.00	.00N	200.00	200.00	200.00	.00N	.00N	1500.00	.00N	1500.00	.00N	.00N	.00N	.00N	.00N	20.00	.00N
L 1591	30.00	10.00L	5.00	70.00	.00N	500.00	500.00	500.00	.00N	.00N	3000.00	.00N	3000.00	.00N	20.00	.00N	.00N	.00N	50.00	.00N
L 1592	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1593	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1594	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1595	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1596	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1597	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1598	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1599	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B

morrison formation basic data-continued

SAMPLE	HG2	PPM	CU2	PPM	PHI	MEAN	MODE	MM	PHI	MED	PHI	SD	PHI	SKEW	PHI	KURT	2PHI	PT	SPHI	PT
L 1367	.14	30.00		2.85	.196	2.40		1.59	1.47	.88	1.63	1.77								
L 1368	.16	15.00		3.49	.100	3.18		1.23	1.68	1.42	2.38	2.55								
L 1369	.24	30.00		2.54	.168	2.33		1.26	1.78	1.65	1.38	1.55								
L 1370	.13	30.00		2.42	.230	2.20		1.12	1.25	1.08	1.27	1.43								
L 1371	.14	20.00		3.44	.125	3.05		1.48	1.40	.91	2.20	2.63								
L 1372	.30	75.00		3.08	.166	2.61		1.62	1.49	.90	1.78	1.93								
L 1373	.24	40.00		2.55	.165	2.48		.81	1.32	1.39	1.51	1.70								
L 1374	.52	60.00		.83	.500	.54		1.87	1.11	.77	-1.40	-1.23								
L 1375	.40	10.00		2.04	.239	1.92		1.16	2.18	2.61	.81	1.12								
L 1376	.19	30.00		2.79	.149	2.63		1.12	2.10	2.37	1.68	1.83								
L 1377	.18	30.00		2.70	.203	2.38		1.38	1.54	1.21	1.44	1.60								
L 1378	.20	40.00		2.47	.199	2.26		1.04	2.17	2.46	1.52	1.70								
L 1380	.40	15.00		1.98	.254	1.78		1.83	.87	.54	-1.23	-.67								
L 1391	.22	15.00		2.70	.250	2.36		1.60	1.37	.92	1.07	1.35								
L 1405	.14	15.00		2.47	.250	2.18		1.46	1.04	.59	.67	.94								
L 1494	1.40	60.00		3.29	.109	3.05		1.56	.79	.33	.95	1.52								
L 1563	3.50	60.00		4.92	.058	4.19		1.99	.86	.19	3.13	3.32								
L 1564	.58	40.00		5.88	.038	4.73		2.28	.51	-.04	3.62	3.77								
L 1565	3.40	112.00		7.00	.033	6.27		2.45	.13	-.15	3.75	3.97								
L 1566	.008	.008		7.55	.013	7.90		2.52	-.01	-.13	3.13	3.75								
L 1567	.008	.008		7.82	.037	8.17		2.34	-.14	-.14	3.84	4.09								
L 1568	.008	.008		4.49	.075	3.79		1.93	1.08	.36	2.98	3.11								
L 1569	1.40	40.00		2.61	.211	2.19		1.31	.52	1.44	1.44	1.58								
L 1570	.008	.008		3.06	.177	2.73		1.46	1.59	1.22	1.58	1.85								
L 1582	3.50	40.00		3.70	.106	3.16		1.84	1.17	.54	1.94	2.22								
L 1583	1.90	30.00		3.28	.178	2.74		1.91	1.31	.64	1.71	1.88								
L 1584	3.80	20.00		3.07	.126	2.79		1.31	1.64	1.30	1.87	2.07								
L 1585	5.60	20.00		3.04	.149	2.74		1.59	1.40	.94	1.31	1.60								
L 1586	.008	.008		2.87	.126	2.58		1.72	1.23	.74	1.07	1.26								
L 1587	2.80	60.00		2.99	.126	2.77		1.63	1.17	.71	1.19	1.37								
L 1588	4.20	60.00		3.39	.354	2.59		2.64	.78	1.45	.83	1.05								
L 1589	.008	.008		3.09	.354	2.14		2.58	.79	.17	.63	.84								
L 1590	2.70	20.00		2.46	.353	1.79		2.00	1.32	.72	.78	.96								
L 1591	4.80	60.00		2.65	.354	1.63		2.46	1.04	.34	.71	.88								
L 1592	.008	.008		2.63	.354	1.97		1.84	1.12	.56	.93	1.08								
L 1593	.008	.008		2.32	.354	1.82		1.48	1.19	.79	.82	.99								
L 1594	.008	.008		3.19	.126	3.01		1.37	1.04	.77	1.19	1.62								
L 1595	.008	.008		5.28	.075	4.28		2.72	.31	-.07	1.07	1.41								
L 1596	.008	.008		3.39	.106	3.39		1.56	1.35	.73	2.70	2.87								
L 1597	.008	.008		4.28	.075	4.28		2.56	.38	-.06	1.89	2.93								
L 1598	.008	.008		4.56	.075	4.00		1.69	.76	.33	2.86	3.08								
L 1599	.008	.008		4.07	.106	3.58		1.89	.90	.35	1.72	2.08								

morrison formation basic data-continued

SAMPLE	16PHI PT	84PHI PT	95PHI PT	98PHI PT	HM	PCT	ACSO PCT	THKNSS
L 1367	1.98	3.07	7.30	8.90		.008	2.1	191.0
L 1368	2.78	3.68	5.50	8.50		.008	3.5	269.6
L 1369	1.82	2.90	4.03	7.45		.008	5.5	225.0
L 1370	1.73	2.82	4.25	6.50		.008	1.0	269.6
L 1371	2.57	3.93	6.50	9.25		.008	15.6	269.6
L 1372	2.22	3.38	7.20	9.35		.008	2.4	105.1
L 1373	1.98	3.02	3.56	4.25		.008	13.7	105.1
L 1374	1.63	1.87	4.05	7.25		.008	20.1	300.0
L 1375	1.48	2.34	3.08	5.00		.008	.5	300.0
L 1376	2.14	3.17	3.66	6.60		.008	.3	200.0
L 1377	1.87	3.21	4.75	7.90		.008	10.4	200.0
L 1378	1.92	2.67	3.30	6.25		.008	12.5	200.0
L 1380	.92	2.79	5.65	7.90		.008	2.6	366.0
L 1391	1.73	3.34	5.27	8.81		.008	4.0	191.0
L 1405	1.44	3.28	5.18	7.45		.008	1.8	194.1
L 1494	2.08	4.25	6.05	8.60		.02	5.6	350.0
L 1563	3.64	6.61	10.17	10.68		.008	17.4	350.0
L 1564	4.08	9.07	12.22	14.29		.008	22.3	350.0
L 1565	4.69	11.68	14.80	16.88		.008	11.9	350.0
L 1566	4.62	11.45	13.85	15.35		.008	2.3	350.0
L 1567	4.96	12.14	14.70	16.30		.008	1.3	350.0
L 1568	3.35	5.12	11.38	13.60		.008	.5	350.0
L 1569	1.84	3.21	4.55	7.57		.008	1.2	350.0
L 1570	2.18	3.55	5.53	9.48		.008	.9	350.0
L 1582	2.62	4.19	8.72	11.65		.008	18.3	370.0
L 1583	2.18	3.63	8.82	12.13		.008	19.4	370.0
L 1584	2.36	3.18	5.50	8.36		.008	19.7	370.0
L 1585	2.06	3.53	6.48	9.50		.008	2.4	370.0
L 1586	1.58	3.64	6.41	9.57		.008	12.7	370.0
L 1587	1.74	3.77	6.17	8.88		.008	19.0	370.0
L 1588	1.38	5.40	10.94	14.15		.008	21.7	370.0
L 1589	1.18	5.14	9.68	12.57		.008	16.8	370.0
L 1590	1.22	3.22	7.72	11.68		.008	18.1	370.0
L 1591	1.20	3.87	9.42	13.05		.008	20.3	370.0
L 1592	1.32	3.82	6.63	9.47		.008	23.0	370.0
L 1593	1.27	3.36	4.91	6.99		.008	13.5	370.0
L 1594	2.22	3.97	5.39	7.46		.008	21.6	370.0
L 1595	3.12	8.55	12.00	14.13		.008	25.2	370.0
L 1596	3.04	4.24	8.06	10.23		.008	21.1	370.0
L 1597	3.31	8.75	12.03	14.02		.008	8.0	370.0
L 1598	3.37	5.75	8.54	10.85		.008	22.5	370.0
L 1599	2.71	5.17	8.64	11.28		.008	11.9	370.0

morrison formation basic data--continued

SAMPLE	UNIT	LAT	LONG	LOCNO	CEMENTS	FE-OX	QTZ-GR	QZ-RF	CHERT-FR	CHERT-AU
L 1600	413010.	38.27	108.70	119.	.00B	.00B	.00B	.00B	.00B	.00B
L 1601	413010.	38.27	108.70	119.	.00B	.00B	.00B	.00B	.00B	.00B
L 1602	413010.	38.27	108.70	119.	.00B	.00B	.00B	.00B	.00B	.00B
L 1603	413010.	38.27	108.70	119.	.00B	.00B	.00B	.00B	.00B	.00B
L 1604	413010.	38.27	108.70	119.	.00B	.00B	.00B	.00B	.00B	.00B
L 1605	413010.	38.27	108.70	119.	.00B	.00B	.00B	.00B	.00B	.00B
L 1606	413010.	38.27	108.70	119.	.00B	.00B	.00B	.00B	.00B	.00B
L 1607	413010.	38.27	108.70	119.	.00B	.00B	.00B	.00B	.00B	.00B
L 1608	413010.	38.27	108.70	119.	.00B	.00B	.00B	.00B	.00B	.00B
L 1609	413010.	38.27	108.70	119.	.00B	.00B	.00B	.00B	.00B	.00B
L 1610	413010.	38.27	108.70	119.	.00B	.00B	.00B	.00B	.00B	.00B
L 1611	413010.	38.27	108.70	119.	.00B	.00B	.00B	.00B	.00B	.00B
L 1612	413010.	38.27	108.70	119.	.00B	.00B	.00B	.00B	.00B	.00B
L 1613	413010.	38.27	108.70	119.	.00B	.00B	.00B	.00B	.00B	.00B
L 1614	413010.	38.27	108.70	119.	.00B	.00B	.00B	.00B	.00B	.00B
L 1615	413010.	38.27	108.70	119.	.00B	.00B	.00B	.00B	.00B	.00B
L 1616	413010.	38.27	108.70	119.	.00B	.00B	.00B	.00B	.00B	.00B
L 1617	413010.	38.27	108.70	119.	.00B	.00B	.00B	.00B	.00B	.00B
L 1618	413010.	38.27	108.70	119.	.00B	.00B	.00B	.00B	.00B	.00B
L 1619	413010.	38.27	108.70	119.	.00B	.00B	.00B	.00B	.00B	.00B
L 1620	413010.	38.27	108.70	119.	.00B	.00B	.00B	.00B	.00B	.00B
L 1621	413010.	38.27	108.70	119.	.00B	.00B	.00B	.00B	.00B	.00B
L 1622	413010.	38.27	108.70	119.	.00B	.00B	.00B	.00B	.00B	.00B
L 2317	413040.	40.60	109.47	221.	.00N	.00N	10.00	.00N	71.40	.00N
L 2762	413010.	37.81	111.62	71.	39.60	.00N	40.00	.00N	.60	.00N
L 2763	413010.	37.81	111.62	71.	18.80	.00N	62.20	.20	1.80	.00N
L 2793	413010.	39.21	110.73	25.	4.40	.00N	78.00	.00N	.20	.00N
L 2794	413010.	39.21	110.73	25.	23.40	.00N	63.00	.00N	.20	.00N
L 2795	413010.	39.21	110.73	25.	27.20	.20	57.20	.00N	.20	.00N
L 2796	413010.	39.21	110.73	25.	18.20	.00N	31.60	.00N	.20	.00N
L 2807	413010.	38.35	109.07	105.	2.60	2.00	50.60	.00N	.80	.00N
L 2808	413010.	38.35	109.07	105.	31.40	.20	25.20	.00N	.40	.00N
L 2809	413010.	38.35	109.07	105.	17.60	1.00	34.20	.00N	.80	.00N
L 2810	413010.	38.35	109.07	105.	26.60	.00N	36.20	.00N	.60	.00N
L 2955	413010.	37.90	111.64	159.	24.20	.00N	60.00	.20	1.80	.00N
L 3447	413010.	39.19	108.82	115.	33.00	1.00	41.60	.20	.40	.00N
L 3448	413010.	39.19	108.82	115.	91.40	.00N	2.40	.00N	.00N	.00N
L 3449	413010.	39.19	108.82	115.	31.00	.20	41.60	.00N	.60	.00N
L 3450	413040.	39.19	108.82	115.	26.40	.00N	47.40	.60	6.80	.20
L 3451	413040.	39.19	108.82	115.	.00N	.00N	2.40	.00N	.00N	.00N
L 3536	413010.	40.54	109.58	221.	.00B	.00B	.00B	.00B	.00B	.00B
L 3537	413010.	40.54	109.58	221.	.00B	.00B	.00B	.00B	.00B	.00B

morrison formation basic data-continued

SAMPLE	SIL-RF	SIL-LSFR	K-SPAR	NA-SPAR	KAOL	MICA	ILLITE	MIC-RF	HV-MIN	MISC-OP
L 1600	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1601	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1602	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1603	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1604	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1605	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1606	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1607	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1608	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1609	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1610	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1611	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1612	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1613	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1614	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1615	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1616	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1617	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1618	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1619	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1620	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1621	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1622	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 2317	2.60	15.80	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N
L 2762	.20	.00N	9.20	6.20	.00N	.00N	.40	.20	.20	.20
L 2763	.40	2.20	6.40	4.20	.20	.00N	.20	.00N	.00N	.00N
L 2793	.00N	1.00	7.40	2.40	.20	.00N	5.40	.00N	.40	.20
L 2794	.00N	.40	7.00	5.00	.00N	.40	.00N	.00N	.00N	.20
L 2795	.00N	.00N	6.40	6.40	.00N	.20	.00N	.00N	.20	.40
L 2796	.00N	.00N	3.00	2.80	.00N	.00N	44.20	.00N	.00N	.00N
L 2807	.00N	.00N	23.20	6.20	.00N	.40	13.20	.00N	.40	.60
L 2808	.00N	.00N	15.20	2.80	.00N	.00N	23.40	.00N	.20	1.00
L 2809	.00N	.00N	9.60	.80	.00N	.00N	35.40	.00N	.00N	.00N
L 2810	.00N	.00N	17.60	8.00	.00N	.00N	9.80	.00N	.40	.40
L 2955	.40	.00N	8.80	1.20	.00N	.00N	.00N	.00N	.00N	.00N
L 3447	.00N	.00N	10.20	4.00	.00N	.20	.80	.00N	.00N	.00N
L 3448	.00N	.00N	.40	.40	.00N	.00N	.00N	.00N	.00N	.00N
L 3449	.40	.00N	6.40	3.00	.00N	.00N	.00N	.00N	.00N	.00N
L 3450	4.40	.80	.00N	5.80	.00N	.00N	.00N	.00N	.00N	.20
L 3451	.00N	.00N	.40	.00N	.00N	.00N	.00N	.00N	.00N	.00N
L 3536	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 3537	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B

morrison formation basic data-continued

SAMPLE	TUFF-FR	MONT	ASH	CEM-TOT	SIL-TOT	FELD-TOT	MICA-TOT	TUFF-TOT	TEXTURE	FE	PCT
L 1600	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00	.00B	.00B
L 1601	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00	.00B	.00B
L 1602	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00	.00B	.00B
L 1603	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	2.00	.00B	.00B
L 1604	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	3.00	.00B	.00B
L 1605	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00	.00B	.00B
L 1606	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00	.00B	.00B
L 1607	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00	.00B	.00B
L 1608	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	3.00	.00B	.00B
L 1609	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00	.00B	.00B
L 1610	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00	.00B	.00B
L 1611	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00	.00B	.00B
L 1612	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00	.00B	.00B
L 1613	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	3.00	.00B	.00B
L 1614	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	3.00	.00B	.00B
L 1615	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	3.00	.00B	.00B
L 1616	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00	.00B	.00B
L 1617	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	3.00	.00B	.00B
L 1618	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00	.00B	.00B
L 1619	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	3.00	.00B	.00B
L 1620	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	3.00	.00B	.00B
L 1621	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00	.00B	.00B
L 1622	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	3.00	.00B	.00B
L 2317	.20	.00N	.00N	.00N	99.80	.00N	.00N	.20	1.00	.20	.20
L 2762	3.20	.00N	.00N	39.60	40.80	15.40	1.00	3.20	2.00	.50	.50
L 2763	3.40	.00N	.00N	18.80	66.80	10.80	.20	3.40	1.00	.20	.20
L 2793	.40	.00N	.00N	4.40	79.20	10.00	6.00	.40	1.00	.50	.50
L 2794	.40	.00N	.00N	23.40	63.60	12.00	.60	.40	2.00	.50	.50
L 2795	1.00	.00N	.00N	27.40	58.00	12.80	.80	1.00	2.00	.50	.50
L 2796	.00N	.00N	.00N	18.20	31.80	5.80	44.20	.00N	3.00	2.00	2.00
L 2807	.00N	.00N	.00N	4.60	51.40	29.40	14.60	.00N	2.00	2.00	2.00
L 2808	.20	.00N	.00N	31.60	25.60	18.00	24.60	.20	2.00	2.00	2.00
L 2809	.60	.00N	.00N	18.60	35.00	10.40	35.40	.60	3.00	1.00	1.00
L 2810	.40	.00N	.00N	26.60	36.80	25.60	10.60	.40	2.00	.70	.70
L 2955	2.00	1.40	.00N	24.20	62.40	10.00	.00N	3.40	1.00	.20	.20
L 3447	1.20	7.40	.00N	34.00	42.20	14.20	1.00	8.60	1.00	2.00	2.00
L 3448	.00N	5.40	.00N	91.40	2.40	.80	.00N	5.40	4.00	.50	.50
L 3449	1.60	15.20	.00N	31.20	42.60	9.40	.00N	16.80	1.00	.50	.50
L 3450	7.20	.20	.00N	26.40	60.20	5.80	.20	7.40	1.00	.20	.20
L 3451	.40	96.80	.00N	.00N	2.40	.40	.00N	9.72	3.00	3.00	3.00
L 3536	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00	.20	.20
L 3537	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00	.20	.20

morrison formation basic data--continued

SAMPLE	HG	PCT	CA	PCT	T1	PCT	MN	PPM	B	PPM	BA	PPM	BE	PPM	CR	PPM	CU	PPM
L 1600	.00B	.00B		.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1601	.00B	.00B		.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1602	.00B	.00B		.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1603	.00B	.00B		.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1604	.00B	.00B		.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1605	.00B	.00B		.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1606	.00B	.00B		.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1607	.00B	.00B		.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1608	.00B	.00B		.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1609	.00B	.00B		.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1610	.00B	.00B		.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1611	.00B	.00B		.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1612	.00B	.00B		.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1613	.00B	.00B		.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1614	.00B	.00B		.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1615	.00B	.00B		.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1616	.00B	.00B		.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1617	.00B	.00B		.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1618	.00B	.00B		.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1619	.00B	.00B		.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1620	.00B	.00B		.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1621	.00B	.00B		.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 1622	.00B	.00B		.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 2317	.05	.10		.10	.05	.05	20.00	.00B	100.00	.00B	300.00	.00B	.00N	.00N	30.00	.00N	7.00	.00B
L 2762	.20	10.00G		10.00G	.07	.07	500.00	.00B	20.00	.00B	200.00	.00B	.00N	.00N	20.00	.00N	7.00	.00B
L 2763	.20	7.00		7.00	.05	.05	200.00	.00B	20.00	.00B	200.00	.00B	.00N	.00N	5.00	.00N	3.00	.00B
L 2793	.70	1.00		1.00	.07	.07	100.00	.00B	20.00	.00B	1500.00	.00B	.00N	.00N	200.00	.00N	200.00	.00B
L 2794	.50	7.00		7.00	.10	.10	500.00	.00B	20.00	.00B	1000.00	.00B	.00N	.00N	30.00	.00N	50.00	.00B
L 2795	.50	7.00		7.00	.10	.10	500.00	.00B	20.00	.00B	500.00	.00B	.00N	.00N	20.00	.00N	20.00	.00B
L 2796	5.00	7.00		7.00	.20	.20	500.00	.00B	50.00	.00B	200.00	.00B	1.00	.00N	70.00	.00N	20.00	.00B
L 2807	1.00	1.00		1.00	.20	.20	200.00	.00B	50.00	.00B	500.00	.00B	1.00	.00N	70.00	.00N	20.00	.00B
L 2808	1.00	5.00		5.00	.20	.20	200.00	.00B	100.00	.00B	300.00	.00B	1.00	.00N	70.00	.00N	10.00	.00B
L 2809	.50	10.00		10.00	.10	.10	200.00	.00B	20.00	.00B	200.00	.00B	1.00	.00N	50.00	.00N	30.00	.00B
L 2810	.50	10.00G		10.00G	.10	.10	1000.00	.00B	20.00	.00B	200.00	.00B	.00N	.00N	30.00	.00N	10.00	.00B
L 2955	.10	10.00		10.00	.02	.02	500.00	.00B	20.00L	.00B	100.00	.00B	.00N	.00N	5.00	.00N	3.00	.00B
L 3447	1.50	10.00		10.00	.05	.05	500.00	.00B	20.00L	.00B	500.00	.00B	.00N	.00N	20.00	.00N	10.00	.00B
L 3448	.50	10.00G		10.00G	.05	.05	500.00	.00B	.00N	.00B	100.00	.00B	.00N	.00N	20.00	.00N	5.00	.00B
L 3449	.20	10.00		10.00	.07	.07	500.00	.00B	20.00	.00B	200.00	.00B	.00N	.00N	10.00	.00N	50.00	.00B
L 3450	.20	10.00G		10.00G	.05	.05	1000.00	.00B	20.00L	.00B	1000.00	.00B	.00N	.00N	7.00	.00N	10.00	.00B
L 3451	1.00	.20		.20	.20	.20	100.00	.00B	50.00	.00B	200.00	.00B	2.00	.00N	30.00	.00N	20.00	.00B
L 3536	.20	10.00		10.00	.02	.02	500.00	.00B	20.00	.00B	500.00	.00B	.00N	.00N	5.00	.00N	5.00	.00B
L 3537	.20	5.00		5.00	.05	.05	200.00	.00B	20.00	.00B	200.00	.00B	.00N	.00N	5.00	.00N	3.00	.00B

SAMPLE	LA	NB	PPM	N1	PPM	PB	PPM	SC	PPM	SR	PPM	V	PPM	Y	PPM	ZN	PPM	ZR	PPM
L 1600	.00B		.00B		.00B		.00B		.00B	.00B	.00B		.00B		.00B		.00B		.00B
L 1601	.00B		.00B		.00B		.00B		.00B	.00B	.00B		.00B		.00B		.00B		.00B
L 1602	.00B		.00B		.00B		.00B		.00B	.00B	.00B		.00B		.00B		.00B		.00B
L 1603	.00B		.00B		.00B		.00B		.00B	.00B	.00B		.00B		.00B		.00B		.00B
L 1604	.00B		.00B		.00B		.00B		.00B	.00B	.00B		.00B		.00B		.00B		.00B
L 1605	.00B		.00B		.00B		.00B		.00B	.00B	.00B		.00B		.00B		.00B		.00B
L 1606	.00B		.00B		.00B		.00B		.00B	.00B	.00B		.00B		.00B		.00B		.00B
L 1607	.00B		.00B		.00B		.00B		.00B	.00B	.00B		.00B		.00B		.00B		.00B
L 1608	.00B		.00B		.00B		.00B		.00B	.00B	.00B		.00B		.00B		.00B		.00B
L 1609	.00B		.00B		.00B		.00B		.00B	.00B	.00B		.00B		.00B		.00B		.00B
L 1610	.00B		.00B		.00B		.00B		.00B	.00B	.00B		.00B		.00B		.00B		.00B
L 1611	.00B		.00B		.00B		.00B		.00B	.00B	.00B		.00B		.00B		.00B		.00B
L 1612	.00B		.00B		.00B		.00B		.00B	.00B	.00B		.00B		.00B		.00B		.00B
L 1613	.00B		.00B		.00B		.00B		.00B	.00B	.00B		.00B		.00B		.00B		.00B
L 1614	.00B		.00B		.00B		.00B		.00B	.00B	.00B		.00B		.00B		.00B		.00B
L 1615	.00B		.00B		.00B		.00B		.00B	.00B	.00B		.00B		.00B		.00B		.00B
L 1616	.00B		.00B		.00B		.00B		.00B	.00B	.00B		.00B		.00B		.00B		.00B
L 1617	.00B		.00B		.00B		.00B		.00B	.00B	.00B		.00B		.00B		.00B		.00B
L 1618	.00B		.00B		.00B		.00B		.00B	.00B	.00B		.00B		.00B		.00B		.00B
L 1619	.00B		.00B		.00B		.00B		.00B	.00B	.00B		.00B		.00B		.00B		.00B
L 1620	.00B		.00B		.00B		.00B		.00B	.00B	.00B		.00B		.00B		.00B		.00B
L 1621	.00B		.00B		.00B		.00B		.00B	.00B	.00B		.00B		.00B		.00B		.00B
L 1622	.00B		.00B		.00B		.00B		.00B	.00B	.00B		.00B		.00B		.00B		.00B
L 2317	30.00	10.00L	10.00	10.00	7.00		7.00		30.00		30.00		30.00		30.00		30.00		50.00
L 2762	.00N	.00N	5.00	5.00	5.00	10.00	5.00		5.00	200.00	200.00		30.00	10.00	10.00		.00N		50.00
L 2763	.00N	.00N	.00N	.00N	.00N	5.00L	.00N		.00N	70.00	70.00		20.00	10.00L	10.00L		.00N		150.00
L 2793	.00N	10.00L	10.00	10.00	5.00L	300.00	5.00L		5.00L	100.00	100.00		1000.00	10.00L	10.00L		.00N		100.00
L 2794	.00N	10.00L	7.00	7.00	.00N	50.00	.00N		.00N	150.00	150.00		1000.00	10.00	10.00		.00N		200.00
L 2795	.00N	.																	

morrison formation basic data-continued

SAMPLE	HG2	PPM	CU2	PPM	PHI	MEAN	MODE	MM	PHI	MED	PHI	SD	PHI	SKEW	PHI	KURT	2PHI	PT	SPHI	PT
L 1600	.008		.008		4.46	.075		1.79	3.90	1.45	.91	.31	2.61	2.81						
L 1601	.008		.008		3.99	.089		1.45	3.56	1.30	.76	.76	2.62	2.80						
L 1602	.008		.008		3.31	.126		1.43	3.92	1.40	.91	.91	2.13	2.23						
L 1603	.008		.008		5.01	.075		1.99	4.37	.63	2.50	3.04	2.50	3.04						
L 1604	.008		.008		7.22	.016		2.37	7.19	-.13	1.80	3.55	1.80	3.55						
L 1605	.008		.008		2.81	.212		1.34	2.37	1.64	1.70	1.84	1.70	1.84						
L 1606	.008		.008		3.00	.126		1.61	2.71	1.35	1.37	1.57	1.37	1.57						
L 1607	.008		.008		3.95	.211		2.67	2.84	.62	1.30	1.49	1.30	1.49						
L 1608	.008		.008		5.49	.038		2.82	4.81	.27	1.68	1.96	1.68	1.96						
L 1609	.008		.008		3.86	.126		2.22	3.07	.86	1.58	1.88	1.58	1.88						
L 1610	.008		.008		4.99	.089		2.41	3.86	.61	2.77	2.92	2.77	2.92						
L 1611	.008		.008		4.37	.106		2.09	3.44	.96	2.75	2.88	2.75	2.88						
L 1612	.008		.008		4.32	.106		2.03	3.44	1.00	2.76	2.88	2.76	2.88						
L 1613	.008		.008		5.38	.063		2.21	4.39	.56	3.12	3.28	3.12	3.28						
L 1614	.008		.008		6.89	.056		2.37	6.77	.08	3.38	3.65	3.38	3.65						
L 1615	.008		.008		5.80	.063		2.61	4.76	.31	2.53	2.88	2.53	2.88						
L 1616	.008		.008		5.59	.106		2.47	4.54	.42	2.87	3.03	2.87	3.03						
L 1617	.008		.008		6.02	.045		2.24	5.21	.38	3.08	3.46	3.08	3.46						
L 1618	.008		.008		3.23	.178		1.54	2.73	1.25	1.82	1.98	1.82	1.98						
L 1619	.008		.008		5.73	.106		2.65	4.78	.26	2.45	2.72	2.45	2.72						
L 1620	.008		.008		7.84	.004		2.30	8.14	-.30	2.94	3.64	2.94	3.64						
L 1621	.008		.008		4.36	.075		1.64	3.80	1.09	2.89	3.06	2.89	3.06						
L 1622	.008		.008		6.00	.053		2.49	4.74	.35	3.21	3.42	3.21	3.42						
L 2317	.28		20.00		1.36	.500		1.96	.96	1.51	1.12	1.44	1.12	1.44						
L 2762	.04		15.00		4.65	.064		1.99	3.94	1.03	3.02	3.08	3.02	3.08						
L 2763	.15		40.00		3.40	.131		1.70	2.98	1.45	1.73	2.05	1.73	2.05						
L 2793	.20		150.00		4.81	.064		2.14	4.00	.96	3.02	3.08	3.02	3.08						
L 2794	3.30		75.00		4.67	.065		1.74	4.11	1.03	3.01	3.07	3.01	3.07						
L 2795	1.00		75.00		4.58	.064		1.57	4.20	1.17	3.03	3.10	3.03	3.10						
L 2796	1.90		60.00		7.59	.005		2.19	7.59	-.00	3.64	3.83	3.64	3.83						
L 2807	.07		60.00		5.22	.049		1.94	4.64	.71	3.03	3.15	3.03	3.15						
L 2808	.11		40.00		5.20	.050		2.11	4.57	.63	2.36	2.92	2.36	2.92						
L 2809	.15		60.00		5.33	.076		2.48	4.43	.45	2.13	2.47	2.13	2.47						
L 2810	.19		60.00		4.82	.054		1.78	4.38	.87	2.53	3.04	2.53	3.04						
L 2955	.15		60.00		2.78	.153		1.19	2.57	2.55	1.43	2.01	1.43	2.01						
L 3447	.13		60.00		3.77	.089		1.19	3.56	1.14	2.14	2.36	2.14	2.36						
L 3448	.25		60.00		7.03	.001		2.94	7.49	-.07	2.29	2.89	2.29	2.89						
L 3449	.21		75.00		3.85	.107		1.75	3.41	1.08	2.06	2.16	2.06	2.16						
L 3450	.30		75.00		2.28	.241		1.42	2.13	1.72	1.59	1.02	1.59	1.02						
L 3451	.36		75.00		6.69	.001		2.65	6.94	-.62	2.10	2.39	2.10	2.39						
L 3536	.15		60.00		1.77	.657		2.38	1.38	.70	-1.74	-1.35	-1.74	-1.35						
L 3537	.23		75.00		3.16	.123		.78	3.17	2.34	2.04	2.12	2.04	2.12						

morrison formation basic data-continued

SAMPLE	16PHI PT	84PHI PT	95PHI PT	98PHI PT	HM	PCT	ACSO PCT	THKNSS
L 1600	3.12	5.65	8.78	11.36		.008	25.1	370.0
L 1601	3.07	4.54	7.41	9.11		.008	20.1	370.0
L 1602	2.44	3.92	6.36	8.70		.008	33.1	370.0
L 1603	3.48	6.92	9.55	11.36		.008	16.0	370.0
L 1604	3.82	10.40	12.60	13.90		.008	11.9	370.0
L 1605	2.07	3.07	5.75	7.93		.008	22.9	370.0
L 1606	1.96	3.52	6.51	9.55		.008	20.4	370.0
L 1607	1.86	7.09	10.65	12.92		.008	15.5	370.0
L 1608	2.62	9.42	12.91	15.10		.008	11.2	370.0
L 1609	2.38	5.62	9.65	12.30		.008	18.9	370.0
L 1610	3.15	8.13	11.92	14.42		.008	5.1	370.0
L 1611	3.06	5.67	10.75	13.70		.008	24.9	370.0
L 1612	3.06	5.42	9.99	13.20		.008	21.2	370.0
L 1613	3.57	8.07	11.08	12.96		.008	28.2	370.0
L 1614	4.16	10.44	12.93	14.52		.008	16.9	370.0
L 1615	3.33	9.36	12.45	14.32		.008	5.0	370.0
L 1616	3.35	8.85	11.83	13.72		.008	14.7	370.0
L 1617	4.03	8.80	11.58	13.27		.008	13.0	370.0
L 1618	2.19	4.12	6.57	8.80		.008	14.3	370.0
L 1619	3.09	9.08	12.00	13.75		.008	5.5	370.0
L 1620	3.29	11.14	13.04	14.22		.008	3.2	370.0
L 1621	3.28	5.17	8.52	10.37		.008	21.4	370.0
L 1622	3.79	9.42	12.87	14.85		.008	4.3	370.0
L 2317	.21	2.16	4.01	12.30		.75	4	473.0
L 2762	3.29	5.42	10.26	10.70		.04	32.1	210.6
L 2763	2.27	3.99	6.95	10.40		.10	16.2	210.6
L 2793	3.30	6.41	10.42	11.47		.10	5.9	126.8
L 2794	3.31	5.80	8.64	11.05		.11	21.5	126.8
L 2795	3.36	5.52	8.17	10.21		.08	25.1	126.8
L 2796	5.25	9.90	11.44	11.78		.15	36.9	126.8
L 2807	3.57	6.96	10.13	10.65		.10	7.4	363.7
L 2808	3.43	7.37	10.27	10.71		.10	11.7	363.7
L 2809	3.20	8.52	10.48	10.79		.16	33.3	363.7
L 2810	3.39	6.11	9.28	10.50		.21	46.6	363.7
L 2955	2.14	2.99	3.96	6.84		.03	26.2	168.2
L 3447	3.03	4.40	5.93	8.10		.12	35.0	185.5
L 3448	3.49	10.38	10.81	10.92		.10	89.2	185.5
L 3449	2.52	4.72	8.24	9.93		.09	26.8	185.5
L 3450	1.30	2.83	4.18	7.97		.97	37.3	263.0
L 3451	3.44	10.03	10.70	10.88		.05	5.0	263.0
L 3536	2.36	3.69	6.34	9.71		.12	25.2	285.0
L 3537	2.39	3.76	3.95	4.11		.10	9.7	285.0

morrison formation basic data-continued

SAMPLE	UNIT	LAT	LONG	LOCNO	CEMENTS	FE-OX	QTZ-GR	QZ-RF	CHERT-FR	CHERT-AU
L 3538	413010.	40.54	109.58	221.	.00B	.00B	.00B	.00B	.00B	.00B
L 3539	413010.	40.54	109.58	221.	.00B	.00B	.00B	.00B	.00B	.00B
L 3540	413040.	40.54	109.58	221.	.00B	.00B	.00B	.00B	.00B	.00B
L 3544	413040.	40.54	109.58	221.	.00B	.00B	.00B	.00B	.00B	.00B
L 3545	413040.	40.54	109.58	221.	.00B	.00B	.00B	.00B	.00B	.00B
L 3776	413040.	37.81	111.62	71.	.00N	.00N	75.40	.20	2.40	.00N
L 3777	413040.	37.81	111.62	71.	.20	1.40	36.00	.00N	13.60	.20
L 3779	413030.	37.57	109.51	224.	.00B	.00B	.00B	.00B	.00B	.00B
L 3780	413030.	37.57	109.51	28.	.00B	.00B	.00B	.00B	.00B	.00B
L 3781	413030.	37.57	109.51	28.	.00B	.00B	.00B	.00B	.00B	.00B
L 3782	413030.	37.57	109.51	28.	.00B	.00B	.00B	.00B	.00B	.00B
L 3872	413040.	38.97	110.14	112.	.00B	.00B	.00B	.00B	.00B	.00B
L 4109	413040.	37.63	109.57	23.	.00B	.00B	.00B	.00B	.00B	.00B
L 4110	413040.	37.63	109.57	23.	.00B	.00B	.00B	.00B	.00B	.00B
L 4111	413040.	37.63	109.57	23.	.00B	.00B	.00B	.00B	.00B	.00B
L 4112	413040.	37.63	109.57	23.	.00B	.00B	.00B	.00B	.00B	.00B
L 4113	413040.	37.63	109.57	23.	.00B	.00B	.00B	.00B	.00B	.00B
L 4114	413040.	37.63	109.57	23.	.00B	.00B	.00B	.00B	.00B	.00B
L 4115	413040.	37.63	109.57	23.	.00B	.00B	.00B	.00B	.00B	.00B
L 4116	413030.	37.57	109.51	224.	.00B	.00B	.00B	.00B	.00B	.00B
L 4117	413030.	37.57	109.51	224.	.00B	.00B	.00B	.00B	.00B	.00B
L 4118	413030.	37.57	109.51	224.	.00B	.00B	.00B	.00B	.00B	.00B
L 4119	413030.	37.57	109.51	224.	.00B	.00B	.00B	.00B	.00B	.00B
L 4120	413020.	37.32	109.43	163.	.00B	.00B	.00B	.00B	.00B	.00B
L 4121	413020.	37.32	109.43	163.	.00B	.00B	.00B	.00B	.00B	.00B
L 4122	413020.	37.32	109.43	163.	.00B	.00B	.00B	.00B	.00B	.00B
L 4123	413020.	37.32	109.43	163.	.00B	.00B	.00B	.00B	.00B	.00B
L 4126	413010.	38.81	109.95	64.	.00B	.00B	.00B	.00B	.00B	.00B
L 4127	413010.	38.81	109.95	64.	.00B	.00B	.00B	.00B	.00B	.00B
L 4128	413010.	38.81	109.95	64.	.00B	.00B	.00B	.00B	.00B	.00B
L 4129	413010.	38.81	109.95	64.	.00B	.00B	.00B	.00B	.00B	.00B
L 4130	413010.	38.81	109.95	64.	.00B	.00B	.00B	.00B	.00B	.00B
L 4131	413010.	38.81	109.95	64.	.00B	.00B	.00B	.00B	.00B	.00B
L 4149	413040.	37.92	107.13	140.	.00B	.00B	.00B	.00B	.00B	.00B
CD 4538	413010.	39.04	108.62	102.	.00B	.00B	.00B	.00B	.00B	.00B
CD 4539	413010.	39.04	108.62	102.	.00B	.00B	.00B	.00B	.00B	.00B
CD 4540	413010.	39.04	108.62	102.	.00B	.00B	.00B	.00B	.00B	.00B
CD 4541	413010.	39.04	108.62	102.	.00B	.00B	.00B	.00B	.00B	.00B
CD 4542	413010.	39.04	108.62	102.	.00B	.00B	.00B	.00B	.00B	.00B
CD 4543	413010.	39.19	108.82	115.	.00B	.00B	.00B	.00B	.00B	.00B
CD 4544	413010.	39.19	108.82	115.	.00B	.00B	.00B	.00B	.00B	.00B
CD 4545	413010.	39.19	108.82	115.	.00B	.00B	.00B	.00B	.00B	.00B

morrison formation basic data-continued

SAMPLE	SIL-RF	SIL-LSFR	K-SPAR	NA-SPAR	KAOL	MICA	ILLITE	MIC-RF	HV-MIN	MISC-OP
L 3538	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 3539	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 3540	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 3544	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 3545	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 3776	6.20	2.40	1.40	.40	2.20	.00N	.00N	.00N	.00N	.20
L 3777	22.00	7.40	2.00	.00N	2.60	.00N	.00N	.00N	.00N	.20
L 3779	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 3780	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 3781	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 3782	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 3872	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 4109	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 4110	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 4111	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 4112	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 4113	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 4114	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 4115	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 4116	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 4117	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 4118	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 4119	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 4120	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 4121	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 4122	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 4123	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 4126	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 4127	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 4128	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 4129	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 4130	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 4131	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
L 4149	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
CD 4538	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
CD 4539	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
CD 4540	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
CD 4541	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
CD 4542	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
CD 4543	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
CD 4544	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
CD 4545	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B

morrison formation basic data-continued

SAMPLE	TUFF-FR	MONT	ASH	CEM-TOT	SIL-TOT	FELD-TOT	MICA-TOT	TUFF-TOT	TEXTURE	FE	PCT
L 3538	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 3539	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 3540	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	3.00		3.00
L 3544	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.20
L 3545	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.70
L 3776	9.00	.20	.00N	.00N	86.60	4.00	.20	9.20	1.00		.20
L 3777	14.00	.40	.00N	1.60	79.20	4.60	.20	14.40	1.00		.50
L 3779	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 3780	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		2.00
L 3781	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	3.00		2.00
L 3782	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 3872	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	3.00		1.00
L 4109	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	2.00		1.50
L 4110	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	2.00		3.00
L 4111	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		1.00
L 4112	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	3.00		2.00
L 4113	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 4114	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		2.00
L 4115	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	3.00		3.00
L 4116	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.20
L 4117	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		2.00
L 4118	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		1.00
L 4119	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00	.00B		2.00
L 4120	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	3.00		5.00
L 4121	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.20
L 4122	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		2.00
L 4123	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.20
L 4126	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	3.00		2.00
L 4127	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	3.00		5.00
L 4128	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.30
L 4129	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.50
L 4130	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.20
L 4131	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		5.00
L 4149	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.20
CD 4538	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	3.00		7.00
CD 4539	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		1.50
CD 4540	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.70
CD 4541	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.70
CD 4542	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	2.00		.70
CD 4543	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.70
CD 4544	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		1.00
CD 4545	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	4.00		.70

morrison formation basic data-continued

SAMPLE	MG	PCT	CA	PCT	T1	PCT	MN	PPM	B	PPM	BA	PPM	BE	PPM	CO	PPM	CR	PPM	CU	PPM
L 3538	.20	10.00G		.05	1000.00	20.00L	150.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	20.00	20.00	5.00	5.00
L 3539	.20	5.00		.05	500.00	20.00	200.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	20.00	20.00	5.00	5.00
L 3540	1.50	.50		.20	150.00	20.00L	500.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	20.00	20.00	10.00	10.00
L 3544	.20	10.00G		.05	10000.00	20.00L	300.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	20.00	20.00	20.00	20.00
L 3545	.20	10.00		.05	1500.00	20.00	300.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	30.00	30.00	7.00	7.00
L 3776	.10	.20		.05	20.00	20.00	300.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	10.00	10.00	7.00	7.00
L 3777	.10	.05		.05	7.00	50.00	300.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	10.00	10.00	10.00	10.00
L 3779	.20	.20		.07	50.00	20.00	200.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	5.00	5.00	5.00	5.00
L 3780	1.50	.50		.20	100.00	50.00	200.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	10.00	10.00	30.00	30.00
L 3781	1.50	.50		.20	100.00	50.00	300.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	20.00	20.00	20.00	20.00
L 3782	.20	.50		.10	100.00	20.00	200.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	2.00	2.00	5.00	5.00
L 3872	1.50	.50		.15	100.00	20.00	300.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	2.00	2.00	10.00	10.00
L 4109	.50	.50		.20	70.00	50.00	700.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	20.00	20.00	10.00	10.00
L 4110	1.50	.70		.20	200.00	20.00	150.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	10.00	10.00	20.00	20.00
L 4111	.50	2.00		.15	1000.00	20.00L	2000.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	5.00	5.00	10.00	10.00
L 4112	1.00	.50		.30	100.00	20.00	500.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	5.00	5.00	20.00	20.00
L 4113	.50	1.00		.10	1000.00	20.00	70000.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	7.00	7.00	5.00	5.00
L 4114	1.00	.15		.20	200.00	50.00	500.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	10.00	10.00	20.00	20.00
L 4115	.50	.15		.20	100.00	20.00	500.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	30.00	30.00	20.00	20.00
L 4116	.20	.50		.10	50.00	20.00	200.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	2.00	2.00	5.00	5.00
L 4117	1.50	.10		.30	100.00	50.00	300.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	10.00	10.00	20.00	20.00
L 4118	.50	.10		.20	100.00	20.00	500.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	10.00	10.00	10.00	10.00
L 4119	1.50	.50		.15	200.00	20.00	2000.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	5.00	5.00	10.00	10.00
L 4120	2.00	.50		.20	200.00	50.00	200.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	50.00	50.00	70.00	70.00
L 4121	.20	.20		.05	50.00	20.00L	200.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	2.00	2.00	2.00	2.00
L 4122	1.00	.10		.20	100.00	50.00	500.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	15.00	15.00	20.00	20.00
L 4123	.20	.10		.07	50.00	20.00	200.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	2.00	2.00	20.00	20.00
L 4126	1.00	10.00G		.15	500.00	50.00	200.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	50.00	50.00	20.00	20.00
L 4127	1.00	10.00G		.20	100.00	50.00	200.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	50.00	50.00	50.00	50.00
L 4128	.50	2.00		.05	100.00	20.00	500.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	5.00	5.00	15.00	15.00
L 4129	.50	1.00		.10	100.00	20.00	500.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	5.00	5.00	10.00	10.00
L 4130	1.50	2.00		.20	200.00	100.00	200.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	50.00	50.00	50.00	50.00
L 4131	1.50	10.00		.20	200.00	50.00	200.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	50.00	50.00	50.00	50.00
L 4149	.20	.20		.10	20.00	20.00	200.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	5.00	5.00	5.00	5.00
CO 4538	1.50	1.00		.50	150.00	70.00	300.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	70.00	70.00	15.00	15.00
CO 4539	.70	10.00G		.15	1500.00	30.00	700.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	30.00	30.00	10.00	10.00
CO 4540	.30	10.00G		.07	1500.00	.00N	1000.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	15.00	15.00	5.00	5.00
CO 4541	.30	10.00G		.15	2000.00	.00N	300.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	15.00	15.00	3.00	3.00
CO 4542	.50	10.00G		.07	1500.00	.00N	100.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	15.00	15.00	3.00	3.00
CO 4543	.20	10.00G		.07	700.00	.00L	700.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	15.00	15.00	7.00	7.00
CO 4544	1.50	10.00		.05	500.00	30.00	300.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	15.00	15.00	5.00	5.00
CO 4545	.50	10.00G		.07	1500.00	.00N	70.00	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	20.00	20.00	15.00	15.00

morrison formation basic data-continued

SAMPLE	LA	PPM	NB	PPM	N1	PPM	PB	PPM	SC	PPM	SR	PPM	V	PPM	Y	PPM	ZN	PPM	ZR	PPM
L 3538	.00N	.00N	.00N	.00N	5.00	.00N	.00N	150.00	.00N	.00N	20.00	20.00	.00N	.00N	.00N	.00N	.00N	.00N	70.00	.00N
L 3539	.00N	.00N	.00N	.00N	20.00	10.00	10.00	100.00	.00N	.00N	10.00	10.00	.00N	.00N	.00N	.00N	.00N	.00N	100.00	.00N
L 3540	50.00	10.00L	10.00L	10.00L	10.00	10.00	10.00	200.00	10.00	.00N	30.00	30.00	50.00	50.00	50.00	50.00	50.00	50.00	200.00	.00
L 3544	.00N	.00N	.00N	.00N	5.00L	5.00L	5.00L	200.00	.00N	.00N	20.00	20.00	15.00	15.00	15.00	15.00	.00	.00	100.00	.00
L 3545	.00N	10.00L	10.00L	10.00L	20.00	10.00	10.00	150.00	5.00L	.00N	20.00	20.00	20.00	20.00	20.00	20.00	.00	.00	50.00	.00
L 3776	30.00	.00N	10.00L	10.00L	5.00L	10.00L	10.00L	50.00	.00N	.00N	20.00	20.00	10.00L	10.00L	10.00L	10.00L	.00N	.00N	50.00	.00N
L 3777	.00N	.00N	10.00L	10.00L	5.00L	10.00L	10.00L	50.00	.00N	.00N	30.00	30.00	10.00L	10.00L	10.00L	10.00L	.00N	.00N	50.00	.00N
L 3779	.00N	.00N	10.00L	10.00L	5.00L	10.00L	10.00L	20.00	.00N	.00N	20.00	20.00	.00N	.00N	.00	.00	.00	.00	50.00	.00
L 3780	50.00	.00N	10.00L	10.00L	7.00	20.00	20.00	300.00	10.00	.00N	50.00	50.00	50.00	50.00	50.00	50.00	.00	.00	200.00	.00
L 3781	50.00	.00N	10.00	10.00	7.00	20.00	20.00	200.00	10.00	.00N	50.00	50.00	50.00	50.00	50.00	50.00	.00	.00	200.00	.00
L 3782	.00N	.00N	.00N	.00N	5.00L	.00N	.00N	50.00	.00N	.00N	20.00	20.00	10.00	10.00	10.00	10.00	.00	.00	100.00	.00
L 3872	50.00	.00N	10.00	10.00	5.00	20.00	20.00	200.00	5.00	.00N	30.00	30.00	50.00	50.00	50.00	50.00	.00	.00	200.00	.00
L 4109	100.00	.00N	10.00	10.00	10.00	20.00	20.00	200.00	5.00	.00N	70.00	70.00	70.00	70.00	70.00	70.00	.00N	.00N	200.00	.00
L 4110	50.00	.00N	10.00L	10.00L	10.00	20.00	20.00	500.00	10.00	.00N	30.00	30.00	50.00	50.00	50.00	50.00	.00N	.00N	200.00	.00
L 4111	.00N	.00N	10.00L	10.00L	5.00	10.00	10.00	200.00	5.00	.00N	10.00L	10.00L	10.00L	10.00L	10.00L	10.00L	.00N	.00N	50.00	.00
L 4112	50.00	.00N	10.00	10.00	5.00	20.00	20.00	200.00	10.00	.00N	50.00	50.00	50.00	50.00	50.00	50.00	.00N	.00N	200.00	.00
L 4113	.00N	.00N	.00N	.00N	5.00	10.00	10.00	1000.00	5.00L	.00N	20.00	20.00	20.00	20.00	20.00	20.00	.00N	.00N	100.00	.00
L 4114	50.00	.00N	10.00	10.00	7.00	20.00	20.00	500.00	10.00	.00N	50.00	50.00	50.00	50.00	50.00	50.00	.00N	.00N	200.00	.00
L 4115	50.00	.00N	10.00L	10.00L	10.00	20.00	20.00	200.00	7.00	.00N	30.00	30.00	30.00	30.00	30.00	30.00	.00N	.00N	200.00	.00
L 4116	.00N	.00N	10.00L	10.00L	5.00L	.00N	.00N	20.00	.00N	.00N	10.00	10.00	10.00L	10.00L	10.00L	10.00L	.00N	.00N	100.00	.00
L 4117	50.00	.00N	10.00L	10.00L	10.00	20.00	20.00	100.00	10.00	.00N	50.00	50.00	50.00	50.00	50.00	50.00	.00N	.00N	200.00	.00
L 4118	.00N	.00N	10.00L	10.00L	.00N	10.00	10.00	70.00	5.00	.00N	30.00	30.00	30.00	30.00	30.00	30.00	.00N	.00N	200.00	.00
L 4119	30.00	.00N	10.00L	10.00L	5.00L	10.00L	10.00L	300.00	7.00	.00N	100.00	100.00	100.00	100.00	100.00	100.00	.00N	.00N	200.00	.00
L 4120	50.00	.00N	10.00L	10.00L	20.00	50.00	50.00	500.00	20.00	.00N	10.00	10.00	10.00	10.00	10.00	10.00	.00N	.00N	200.00	.00
L 4121	.00N	.00N	10.00L	10.00L	5.00L	.00N	.00N	30.00	.00N	.00N	10.00	10.00	10.00	10.00	10.00	10.00	.00N	.00N	100.00	.00
L 4122	30.00	.00N	10.00L	10.00L	10.00	20.00	20.00	70.00	10.00	.00N	50.00	50.00	50.00	50.00	50.00	50.00	.00N	.00N	200.00	.00
L 4123	.00N	.00N	10.00L	10.00L	5.00L	5.00L	5.00L	20.00	.00N	.00N	10.00	10.00	10.00	10.00	10.00	10.00	.00N	.00N	200.00	.00
L 4126	30.00	.00N	10.00L	10.00L	10.00	10.00	10.00	500.00	10.00	.00N	100.00	100.00	100.00	100.00	100.00	100.00	.00N	.00N	100.00	.00
L 4127	30.00	.00N	10.00L	10.00L	20.00	20.00	20.00	500.00	10.00	.00N	20.00	20.00	20.00	20.00	20.00	20.00	.00N	.00N	100.00	.00
L 4128	.00N	.00N	10.00L	10.00L	5.00	5.00L	5.00L	70.00	.00N	.00N	20.00	20.00	20.00	20.00	20.00	20.00	.00N	.00N	100.00	.00
L 4129	.00N	.00N	10.00L	10.00L	5.00	.00N	.00N	50.00	.00N	.00N	20.00	20.00	20.00	20.00	20.00	20.00	.00N	.00N	200.00	.00
L 4130	30.00	.00N	10.00	10.00	20.00	10.00	10.00	200.00	10.00	.00N	50.00	50.00	50.00	50.00	50.00	50.00	.00N	.00N	200.00	.00
L 4131	50.00	.00N	10.00L	10.00L	20.00	10.00	10.00	500.00	15.00	.00N	100.00	100.00	100.00	100.00	100.00	100.00	.00N	.00N	100.00	.00
L 4149	.00N	.00N	10.00L	10.00L	.00N	5.00L	5.00L	20.00	.00N	.00N	20.00	20.00	20.00	20.00	20.00	20.00	.00N	.00N	200.00	.00
CD 4538	70.00	.00N	15.00	15.00	30.00	15.00	15.00	150.00	15.00	.00N	70.00	70.00	70.00	70.00	70.00	70.00	.00N	.00N	150.00	.00
CD 4539	30.00	.00N	.00N	.00N	15.00	10.00	10.00	150.00	7.00	.00N	30.00	30.00	30.00	30.00	30.00	30.00	.00N	.00N	150.00	.00
CD 4540	.00N	.00N	.00N	.00N	5.00	.00N	.00N	150.00	.00N	.00N	15.00	15.00	15.00	15.00	15.00	15.00	.00N	.00N	150.00	.00
CD 4541	30.00	.00N	.00N	.00N	7.00	.00N	.00N	200.00	.00N	.00N	15.00	15.00	15.00	15.00	15.00	15.00	.00N	.00N	100.00	.00
CD 4542	30.00	.00N	.00N	.00N	5.00	.00N	.00N	500.00	.00N	.00N	15.00	15.00	15.00	15.00	15.00	15.00	.00N	.00N	30.00	.00
CD 4543	.00N	.00N	.00N	.00N	3.00	10.00	10.00	150.00	.00N	.00N	10.00	10.00	10.00	10.00	10.00	10.00	.00N	.00N	70.00	.00
CD 4544	.00N	.00N	.00N	.00N	3.00	15.00	15.00	150.00	.00N	.00N	10.00	10.00	10.00	10.00	10.00	10.00	.00N	.00N	300.00	.00
CD 4545	.00N	.00N	.00N	.00N	7.00	10.00	10.00	500.00	5.00	.00N	15.00	15.00	15.00	15.00	15.00	15.00	.00N	.00N	30.00	.00

morrison formation basic data-continued

SAMPLE	HC2	PPM	CU2	PPM	PHI	MEAN	MODE	MM	PHI	SD	PHI	SKEW	PHI	KURT	2PHI	PT	5PHI	PT
L 3538	.10		40.00		3.01		.156		2.73	1.54		1.42		1.03	1.06		1.28	
L 3539	.17		40.00		1.72		.383		1.50	1.38		2.09		2.19	.12		3.30	
L 3540	.38		60.00		7.86		.003		7.88	2.38		-.07		-.06	3.15		3.79	
L 3544	.15		40.00		3.54		.114		3.28	1.52		1.58		1.09	2.05		2.14	
L 3545	.27		60.00		.96		.521		.87	1.73		1.17		.71	-2.20		-1.18	
L 3776	.19		40.00		1.70		.227		1.69	2.03		.87		.65	-1.92		-1.39	
L 3777	.11		60.00		1.33		.419		1.24	1.70		1.36		1.21	-1.48		-.79	
L 3779	.15		30.00		2.77		.205		2.49	1.60		2.05		1.80	1.14		1.37	
L 3780	.15		10.00		5.53		.083		4.77	2.68		.42		-.03	2.04		2.27	
L 3781	.14		30.00		5.47		.085		4.71	2.62		.43		-.02	2.08		2.29	
L 3782	.04		10.00		2.39		.216		2.30	1.11		1.57		1.71	1.00		1.09	
L 3872	.08		30.00		.022		.077		5.92	2.06		.34		.00	3.03		3.32	
L 4109	.12		30.00		4.78		.012		4.27	1.94		.76		.23	2.19		2.50	
L 4110	.14		30.00		5.86		.204		5.84	2.05		.20		-.02	2.31		2.79	
L 4111	.09		20.00		2.63		.006		2.48	1.10		1.94		1.88	1.14		1.36	
L 4112	.10		15.00		6.58		.141		6.66	2.42		.06		-.06	2.16		2.58	
L 4113	.08		15.00		3.10		.094		2.70	1.66		1.91		1.56	1.44		2.01	
L 4114	.85		15.00		4.36		.043		3.76	2.08		.77		.23	1.69		2.10	
L 4115	.10		10.00		6.21		.145		5.55	2.32		.38		-.05	3.12		3.31	
L 4116	.12		15.00		2.72		.150		2.60	.86		2.73		4.21	1.40		2.00	
L 4117	.10		20.00		4.21		.161		3.52	2.39		.67		.13	1.16		1.48	
L 4118	.04		20.00		2.79		.170		2.60	1.11		1.69		1.74	1.16		1.46	
L 4119	.10		50.00		2.97		.046		2.64	1.46		1.33		.91	1.12		1.34	
L 4120	.06		30.00		6.65		.182		6.14	2.74		.18		-.11	2.42		3.03	
L 4121	.07		10.00		2.59		.080		2.50	.98		2.72		3.99	1.16		1.39	
L 4122	.08		30.00		4.29		.186		3.86	1.64		.84		.33	2.09		2.32	
L 4123	.06		20.00		2.62		.051		2.49	1.16		2.25		2.55	1.11		1.32	
L 4126	.08		20.00		5.72		.206		4.72	2.69		.46		-.04	2.21		2.65	
L 4127	.10		20.00		6.24		.140		6.07	2.69		.17		-.09	2.13		2.51	
L 4128	.12		10.00		2.45		.086		2.26	1.34		1.65		1.55	1.01		1.09	
L 4129	.05		20.00		3.00		.008		2.83	1.09		1.68		1.82	1.29		1.73	
L 4130	.12		20.00		4.68		.008		3.91	2.09		.75		.17	2.13		2.40	
L 4131	.10		20.00		2.97		.008		4.00	2.29		.57		.05	2.12		2.37	
L 4149	.20		30.00		.008		.008		.008	.008		.008		.008	.008		.008	
CD 4538	.01		10.00L		.008		.008		.008	.008		.008		.008	.008		.008	
CD 4539	.01		10.00L		.008		.008		.008	.008		.008		.008	.008		.008	
CD 4540	.02		10.00L		.008		.008		.008	.008		.008		.008	.008		.008	
CD 4541	.04		10.00L		.008		.008		.008	.008		.008		.008	.008		.008	
CD 4542	.01		10.00L		.008		.008		.008	.008		.008		.008	.008		.008	
CD 4543	.01		10.00L		.008		.008		.008	.008		.008		.008	.008		.008	
CD 4544	.12		10.00L		.008		.008		.008	.008		.008		.008	.008		.008	
CD 4545	.01		10.00L		.008		.008		.008	.008		.008		.008	.008		.008	

morrison formation basic data-continued

SAMPLE	16PHI PT	84PHI PT	95PHI PT	98PHI PT	HM	PCT	ACSO PCT	THKNSS
L 3538	2.02	3.74	5.70	9.36		.48	44.4	285.0
L 3539	.97	2.10	3.64	6.63		.21	17.3	285.0
L 3540	5.38	11.02	11.69	11.88		.31	473.0	473.0
L 3544	2.45	3.94	6.56	10.20		.29	42.2	473.0
L 3545	.08	1.68	3.35	6.30		.17	20.6	473.0
L 3776	.04	2.80	3.97	9.67		.05	1.8	60.5
L 3777	.14	1.98	3.49	8.02		.30	1.5	60.5
L 3779	2.03	2.94	5.53	10.94		.10	1.9	279.2
L 3780	3.07	8.64	11.28	11.71		.11	4.9	279.2
L 3781	3.04	8.48	11.13	11.65		.25	5.0	279.2
L 3782	1.43	2.96	3.99	5.33		.16	2.1	279.2
L 3872	4.24	8.81	10.45	11.41		.09	4.3	261.9
L 4109	3.18	6.41	8.81	10.94		.16	4.6	350.0
L 4110	3.56	7.84	9.60	10.79		.04	9.2	350.0
L 4111	2.03	2.93	4.01	6.93		1.35	6.8	350.0
L 4112	3.98	8.91	11.15	11.66		.56	4.7	350.0
L 4113	2.18	3.68	5.04	11.12		17.35	5.8	350.0
L 4114	2.62	6.11	8.73	10.94		.32	7.5	350.0
L 4115	4.00	8.98	10.95	11.58		.11	11.0	350.0
L 4116	2.15	3.21	3.82	3.98		.09	1.3	279.2
L 4117	2.23	6.57	10.14	10.97		.32	4.4	279.2
L 4118	2.09	3.44	4.48	6.55		.45	3.4	279.2
L 4119	2.03	3.80	5.82	8.13		.55	6.2	279.2
L 4120	3.79	10.05	11.50	11.80		.07	9.0	183.4
L 4121	2.04	2.96	3.72	4.04		.24	.5	183.4
L 4122	3.05	5.52	7.97	9.64		.23	4.5	183.4
L 4123	2.02	2.97	3.82	7.26		.06	.7	183.4
L 4126	3.35	8.96	11.38	11.75		.09	38.6	216.1
L 4127	3.37	9.15	11.25	11.70		.01	36.7	216.1
L 4128	1.38	3.23	3.98	7.11		.20	6.4	216.1
L 4129	2.18	3.72	4.36	6.26		.29	4.7	216.1
L 4130	3.10	6.72	9.36	11.05		.07	10.6	216.1
L 4131	3.10	7.56	9.81	11.18		.02	23.3	216.1
L 4149	.008	.008	.008	.008		.008	.08	.08
CD 4538	.008	.008	.008	.008		.008	.08	188.6
CD 4539	.008	.008	.008	.008		.008	.08	188.6
CD 4540	.008	.008	.008	.008		.008	.08	188.6
CD 4541	.008	.008	.008	.008		.008	.08	188.6
CD 4542	.008	.008	.008	.008		.008	.08	188.6
CD 4543	.008	.008	.008	.008		.008	.08	185.5
CD 4544	.008	.008	.008	.008		.008	.08	185.5
CD 4545	.008	.008	.008	.008		.008	.08	185.5

morrison formation basic data-continued

SAMPLE	UNIT	LAT	LONG	LOCNO	CEMENTS	FE-OX	QTZ-GR	OZ-RF	CHERT-FR	CHERT-AU
CD 4546	413010.	39. 19	108. 82	115.	. 008	. 008	. 008	. 008	. 008	. 008
CD 4547	413010.	39. 19	108. 82	115.	. 008	. 008	. 008	. 008	. 008	. 008
CD 4548	413010.	39. 19	108. 82	115.	. 008	. 008	. 008	. 008	. 008	. 008
CD 4549	413010.	39. 19	108. 82	115.	. 008	. 008	. 008	. 008	. 008	. 008
CD 4550	413010.	39. 19	108. 82	115.	. 008	. 008	. 008	. 008	. 008	. 008
CD 4551	413010.	38. 81	109. 95	64.	. 008	. 008	. 008	. 008	. 008	. 008
CD 4552	413010.	38. 81	109. 95	64.	. 008	. 008	. 008	. 008	. 008	. 008
CD 4553	413010.	38. 81	109. 95	64.	. 008	. 008	. 008	. 008	. 008	. 008
CD 4554	413010.	38. 81	109. 95	64.	. 008	. 008	. 008	. 008	. 008	. 008
CD 4555	413010.	38. 81	109. 95	64.	. 008	. 008	. 008	. 008	. 008	. 008
CD 4556	413010.	38. 81	109. 95	64.	. 008	. 008	. 008	. 008	. 008	. 008
CD 4557	413010.	38. 87	110. 35	178.	. 008	. 008	. 008	. 008	. 008	. 008
CD 4558	413010.	38. 87	110. 35	178.	. 008	. 008	. 008	. 008	. 008	. 008
CD 4559	413010.	38. 87	110. 35	178.	. 008	. 008	. 008	. 008	. 008	. 008
CD 4560	413010.	38. 87	110. 35	178.	. 008	. 008	. 008	. 008	. 008	. 008
CD 4562	413010.	36. 37	110. 38	228.	. 008	. 008	. 008	. 008	. 008	. 008
CD 4563	413010.	36. 37	110. 38	228.	. 008	. 008	. 008	. 008	. 008	. 008
CD 4564	413010.	36. 37	110. 38	228.	. 008	. 008	. 008	. 008	. 008	. 008
CD 4565	413010.	36. 37	110. 38	228.	. 008	. 008	. 008	. 008	. 008	. 008
CD 4566	413010.	36. 37	110. 38	228.	. 008	. 008	. 008	. 008	. 008	. 008
CD 4567	413010.	36. 37	110. 38	228.	. 008	. 008	. 008	. 008	. 008	. 008
CD 4570	413010.	39. 20	110. 79	24.	. 008	. 008	. 008	. 008	. 008	. 008
CD 4571	413010.	39. 20	110. 79	24.	. 008	. 008	. 008	. 008	. 008	. 008
CD 4572	413010.	39. 20	110. 79	24.	. 008	. 008	. 008	. 008	. 008	. 008
CD 4573	413010.	39. 20	110. 79	24.	. 008	. 008	. 008	. 008	. 008	. 008
CD 4574	413010.	39. 20	110. 79	24.	. 008	. 008	. 008	. 008	. 008	. 008
CD 4575	413010.	38. 67	111. 28	107.	. 008	. 008	. 008	. 008	. 008	. 008
CD 4576	413010.	38. 67	111. 28	107.	. 008	. 008	. 008	. 008	. 008	. 008
CD 4577	413010.	38. 67	111. 28	107.	. 008	. 008	. 008	. 008	. 008	. 008
CD 4578	413010.	38. 67	111. 28	107.	. 008	. 008	. 008	. 008	. 008	. 008
CD 4579	413010.	38. 67	111. 28	107.	. 008	. 008	. 008	. 008	. 008	. 008
CD 4665	413010.	40. 54	109. 58	221.	. 008	. 008	. 008	. 008	. 008	. 008
CD 4666	413010.	40. 54	109. 58	221.	. 008	. 008	. 008	. 008	. 008	. 008
CD 4667	413010.	40. 54	109. 58	221.	. 008	. 008	. 008	. 008	. 008	. 008
CD 4668	413010.	40. 54	109. 58	221.	. 008	. 008	. 008	. 008	. 008	. 008
CD 4669	413010.	40. 54	109. 58	221.	. 008	. 008	. 008	. 008	. 008	. 008

morrison formation basic data-continued

SAMPLE	SIL-RF	SIL-LSFR	K-SPAR	NA-SPAR	KAOL	MICA	ILLITE	MIC-RF	HV-MIN	MISC-OP
CD 4546	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
CD 4547	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
CD 4548	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
CD 4549	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
CD 4550	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
CD 4551	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
CD 4552	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
CD 4553	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
CD 4554	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
CD 4555	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
CD 4556	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
CD 4557	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
CD 4558	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
CD 4559	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
CD 4560	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
CD 4562	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
CD 4563	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
CD 4564	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
CD 4565	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
CD 4566	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
CD 4567	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
CD 4570	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
CD 4571	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
CD 4572	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
CD 4573	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
CD 4574	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
CD 4575	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
CD 4576	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
CD 4577	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
CD 4578	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
CD 4579	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
CD 4665	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
CD 4666	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
CD 4667	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
CD 4668	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
CD 4669	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B

morrison formation basic data-continued

SAMPLE	TUFF-FR	MONT	ASH	CEM-TOT	SIL-TOT	FELD-TOT	MICA-TOT	TUFF-TOT	TEXTURE	FE	PCT
CD 4546	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	4.00		.30
CD 4547	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	4.00		.30
CD 4548	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	4.00		.30
CD 4549	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.70
CD 4550	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.70
CD 4551	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00	1.00	1.00
CD 4552	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	4.00		.30
CD 4553	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	2.00		.70
CD 4554	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	2.00		.70
CD 4555	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	2.00		1.50
CD 4556	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.70
CD 4557	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	4.00		.03
CD 4558	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	4.00		.30
CD 4559	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	2.00		.30
CD 4560	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	3.00		1.50
CD 4562	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	3.00		3.00
CD 4563	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		1.50
CD 4564	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	3.00		3.00
CD 4565	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		1.00
CD 4566	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	3.00		2.00
CD 4567	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	2.00		1.50
CD 4570	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	4.00		.70
CD 4571	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	3.00		2.00
CD 4572	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	4.00		1.00
CD 4573	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	4.00		.50
CD 4574	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	3.00		1.00
CD 4575	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	3.00		1.50
CD 4576	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.70
CD 4577	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	3.00		2.00
CD 4578	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		1.50
CD 4579	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		1.50
CD 4665	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	3.00		3.00
CD 4666	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.30
CD 4667	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.70
CD 4668	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.30
CD 4669	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B	1.00		.30

morrison formation basic data-continued

SAMPLE	MG	PCT	CA	PCT	T1	PCT	MN	PPM	B	PPM	BA	PPM	BE	PPM	CD	PPM	CR	PPM	CU	PPM
CD 4546	.30		10.00G	.02			1000.00	.00N			30.00	.00N		.00N		.00N	15.00		2.00	
CD 4547	.30		10.00G	.00			700.00	.00N			30.00	.00N		.00N		.00N	3.00		3.00	
CD 4548	.50		10.00G	.03			1000.00	.00N			300.00	.00N		.00N		.00N	7.00		3.00	
CD 4549	.30		10.00G	.07			1000.00	.00N			200.00	.00N		.00N		.00N	7.00		7.00	
CD 4550	.30		10.00	.07			500.00	20.00			200.00	.00N		.00N		3.00	7.00		100.00	
CD 4551	.70		10.00G	.07			700.00	.00N			150.00	.00N		.00N		3.00	30.00		15.00	
CD 4552	.30		10.00G	.03			700.00	.00N			70.00	.00N		.00N		.00N	15.00		5.00	
CD 4553	.30		10.00G	.07			700.00	.00N			300.00	.00N		.00N		3.00	30.00		7.00	
CD 4554	.30		10.00G	.10			700.00	.00L			700.00	.00N		.00N		3.00	30.00		7.00	
CD 4555	1.50		10.00G	.10			700.00	20.00			300.00	.00N		.00N		7.00	50.00		15.00	
CD 4556	.50		10.00G	.07			700.00	.00L			300.00	.00N		.00N		.00N	30.00		15.00	
CD 4557	.02		10.00G	.00			3.00	.00N			7.00	.00N		.00N		.00N	3.00		.00N	
CD 4558	.07		7.00	.02			700.00	.00N			5000.00	.00N		.00N		.00N	3.00		30.00	
CD 4559	.15		10.00G	.20			700.00	.00N			300.00	.00N		.00N		.00N	7.00		3.00	
CD 4560	.70		10.00G	.10			300.00	.00L			200.00	.00N		.00N		3.00	30.00		15.00	
CD 4562	2.00		1.50	.70			150.00	70.00			300.00	.00N		1.00		15.00	70.00		30.00	
CD 4563	1.50		10.00G	.15			700.00	30.00			300.00	.00N		.00N		15.00	15.00		15.00	
CD 4564	3.00		7.00	.30			300.00	70.00			300.00	.00N		.00N		10.00	70.00		30.00	
CD 4565	7.00		10.00G	.03			700.00	.00N			70.00	.00N		.00N		7.00	15.00		15.00	
CD 4566	1.50		10.00G	.10			300.00	.00L			700.00	.00N		.00N		3.00	15.00		15.00	
CD 4567	1.50		10.00	.07			300.00	20.00			300.00	.00N		.00N		3.00	15.00		15.00	
CD 4570	1.00		10.00G	.03			700.00	.00N			300.00	.00N		.00N		.00N	7.00		7.00	
CD 4571	7.00		10.00	.15			700.00	20.00			300.00	.00N		.00N		7.00	20.00		20.00	
CD 4572	10.00		10.00G	.03			700.00	.00N			70.00	.00N		.00N		7.00	7.00		15.00	
CD 4573	.30		10.00G	.03			300.00	.00L			5000.00	.00N		.00N		.00N	7.00		7.00	
CD 4574	.70		10.00G	.07			700.00	.00N			100.00	.00N		.00N		.00N	15.00		7.00	
CD 4575	2.00		7.00	.20			200.00	30.00			300.00	.00N		.00N		7.00	30.00		15.00	
CD 4576	1.00		10.00	.70			500.00	20.00			700.00	.00N		.00N		10.00	15.00		15.00	
CD 4577	2.00		7.00	.20			200.00	50.00			300.00	.00N		.00N		7.00	30.00		15.00	
CD 4578	1.50		10.00G	.15			1500.00	.00L			300.00	.00N		.00N		.00N	20.00		7.00	
CD 4579	1.50		10.00	.15			300.00	30.00			300.00	.00N		.00N		7.00	30.00		10.00	
CD 4665	1.50		1.50	.30			150.00	30.00			300.00	.00N		.00N		7.00	50.00		30.00	
CD 4666	.30		10.00G	.05			700.00	.00N			150.00	.00N		.00N		.00N	15.00		3.00	
CD 4667	.30		10.00G	.07			1000.00	.00N			200.00	.00N		.00N		.00N	15.00		3.00	
CD 4668	.30		10.00G	.03			1000.00	.00N			300.00	.00N		.00N		3.00	15.00		3.00	
CD 4669	.30		10.00	.07			1000.00	.00L			300.00	.00N		.00N		.00N	15.00		2.00	

morrison formation basic data-continued

SAMPLE	LA	PPM	NB	PPM	N1	PPM	PB	PPM	SC	PPM	SR	PPM	V	PPM	Y	PPM	ZN	PPM	ZR	PPM
CD 4546	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	1000.00	.00N	10.00	.00N		.00N		.00N	30.00	
CD 4547	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	700.00	.00N	7.00	.00N		.00N		.00N	.00N	
CD 4548	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	700.00	.00N	15.00	.00N		.00N		.00N	30.00	
CD 4549	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	150.00	.00N	15.00	.00N	10.00			.00N	50.00	
CD 4550	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	70.00	.00N	15.00	.00N		.00N		.00N	150.00	
CD 4551	30.00	.00N	.00N	.00N	15.00	.00N	10.00	.00N	5.00	.00N	500.00	.00N	30.00	.00N	15.00			.00N	70.00	
CD 4552	.00N	.00N	.00N	.00N	3.00	.00N	.00N	.00N	.00N	.00N	1000.00	.00N	30.00	.00N	10.00			.00N	30.00	
CD 4553	.00N	.00N	.00N	.00N	5.00	.00N	.00N	.00N	.00N	.00N	500.00	.00N	30.00	.00N	15.00			.00N	150.00	
CD 4554	.00N	.00N	.00N	.00N	7.00	.00N	10.00	.00N	.00L	.00L	500.00	.00L	15.00	.00N	15.00			.00N	300.00	
CD 4555	70.00	.00N	.00N	.00N	15.00	.00N	15.00	.00N	7.00	.00N	1000.00	.00N	50.00	.00N	20.00			.00N	150.00	
CD 4556	.00N	.00N	.00N	.00N	3.00	.00N	15.00	.00N	.00N	.00N	300.00	.00N	20.00	.00N	15.00			.00N	150.00	
CD 4557	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	700.00	.00N	.00N	.00N	.00N			.00N	.00N	
CD 4558	.00N	.00N	.00N	.00N	.00N	.00N	30.00	.00N	.00N	.00N	70000.00	.00N	15.00	.00N	.00N			.00N	.00N	
CD 4559	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	.00N	700.00	.00N	10.00	.00N	15.00			.00N	15.00	
CD 4560	.00N	.00N	.00N	.00N	7.00	.00N	15.00	.00N	7.00	.00N	300.00	.00N	30.00	.00N	15.00			.00N	150.00	
CD 4562	70.00	.00N	.00N	.00N	30.00	.00N	15.00	.00N	15.00	.00N	700.00	.00N	150.00	.00N	30.00			.00N	150.00	
CD 4563	30.00	.00N	.00N	.00N	15.00	.00N	15.00	.00N	7.00	.00N	150.00	.00N	30.00	.00N	15.00			.00N	30.00	
CD 4564	70.00	.00N	.00N	.00N	30.00	.00N	15.00	.00N	15.00	.00N	150.00	.00N	150.00	.00N	30.00			.00N	150.00	
CD 4565	.00N	.00N	.00N	.00N	10.00	.00N	15.00	.00N	.00L	.00L	150.00	.00L	15.00	.00N	10.00			.00N	30.00	
CD 4566	.00N	.00N	.00N	.00N	7.00	.00N	15.00	.00N	5.00	.00N	200.00	.00N	30.00	.00N	15.00			.00N	70.00	
CD 4567	.00N	.00N	.00N	.00N	7.00	.00N	15.00	.00N	.00L	.00L	150.00	.00L	20.00	.00N	15.00			.00N	150.00	
CD 4570	.00N	.00N	.00N	.00N	3.00	.00N	.00N	.00N	.00N	.00N	2000.00	.00N	10.00	.00N	10.00L			.00N	30.00	
CD 4571	.00N	.00N	.00N	.00N	15.00	.00N	15.00	.00N	7.00	.00N	700.00	.00N	30.00	.00N	15.00			.00N	150.00	
CD 4572	.00N	.00N	.00N	.00N	10.00	.00N	.00N	.00N	.00N	.00N	150.00	.00N	15.00	.00N	10.00L			.00N	30.00	
CD 4573	.00N	.00N	.00N	.00N	3.00	.00N	.00N	.00N	.00N	.00N	200.00	.00N	10.00	.00N	10.00L			.00N	70.00	
CD 4574	.00N	.00N	.00N	.00N	7.00	.00N	.00N	.00N	5.00	.00N	300.00	.00N	15.00	.00N	10.00			.00N	30.00	
CD 4575	30.00	.00N	.00N	.00N	15.00	.00N	15.00	.00N	7.00	.00N	150.00	.00N	70.00	.00N	15.00			.00N	150.00	
CD 4576	.00N	.00N	.00N	.00N	15.00	.00N	30.00	.00N	.00N	.00N	150.00	.00N	20.00	.00N	15.00			.00N	50.00	
CD 4577	30.00	.00N	.00N	.00N	15.00	.00N	15.00	.00N	10.00	.00N	150.00	.00N	70.00	.00N	30.00			.00N	150.00	
CD 4578	30.00	.00N	.00N	.00N	7.00	.00N	.00N	.00N	5.00	.00N	150.00	.00N	30.00	.00N	30.00			.00N	150.00	
CD 4579	.00N	.00N	.00N	.00N	10.00	.00N	10.00	.00N	5.00	.00N	150.00	.00N	30.00	.00N	15.00			.00N	150.00	
CD 4665	50.00	.00N	10.00	.00N	15.00	.00N	15.00	.00N	15.00	.00N	200.00	.00N	70.00	.00N	20.00			.00N	150.00	
CD 4666	.00N	.00N	.00N	.00N	3.00	.00N	.00N	.00N	.00N	.00N	100.00	.00N	10.00	.00N	10.00L			.00N	150.00	
CD 4667	.00N	.00N	.00N	.00N	3.00	.00N	.00N	.00N	.00N	.00N	100.00	.00N	15.00	.00N	15.00			.00N	150.00	
CD 4668	.00N	.00N	.00N	.00N	5.00	.00N	.00N	.00N	.00N	.00N	100.00	.00N	15.00	.00N	10.00L			.00N	30.00	
CD 4669	.00N	.00N	.00N	.00N	3.00	.00N	.00N	.00N	.00N	.00N	70.00	.00N	7.00	.00N	10.00L			.00N	150.00	

morrison formation basic data-continued

SAMPLE	16PHI PT	84PHI PT	95PHI PT	98PHI PT	HM	PCT	ACSO PCT	THKNSS
CD 4546	.00B	.00B	.00B	.00B	.00B	.00B	.00B	185.5
CD 4547	.00B	.00B	.00B	.00B	.00B	.00B	.00B	185.5
CD 4548	.00B	.00B	.00B	.00B	.00B	.00B	.00B	185.5
CD 4549	.00B	.00B	.00B	.00B	.00B	.00B	.00B	185.5
CD 4550	.00B	.00B	.00B	.00B	.00B	.00B	.00B	185.5
CD 4551	.00B	.00B	.00B	.00B	.00B	.00B	.00B	216.1
CD 4552	.00B	.00B	.00B	.00B	.00B	.00B	.00B	216.1
CD 4553	.00B	.00B	.00B	.00B	.00B	.00B	.00B	216.1
CD 4554	.00B	.00B	.00B	.00B	.00B	.00B	.00B	216.1
CD 4555	.00B	.00B	.00B	.00B	.00B	.00B	.00B	216.1
CD 4556	.00B	.00B	.00B	.00B	.00B	.00B	.00B	216.1
CD 4557	.00B	.00B	.00B	.00B	.00B	.00B	.00B	191.0
CD 4558	.00B	.00B	.00B	.00B	.00B	.00B	.00B	191.0
CD 4559	.00B	.00B	.00B	.00B	.00B	.00B	.00B	191.0
CD 4560	.00B	.00B	.00B	.00B	.00B	.00B	.00B	191.0
CD 4562	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
CD 4563	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
CD 4564	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
CD 4565	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
CD 4566	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
CD 4567	.00B	.00B	.00B	.00B	.00B	.00B	.00B	.00B
CD 4570	.00B	.00B	.00B	.00B	.00B	.00B	.00B	126.8
CD 4571	.00B	.00B	.00B	.00B	.00B	.00B	.00B	126.8
CD 4572	.00B	.00B	.00B	.00B	.00B	.00B	.00B	126.8
CD 4573	.00B	.00B	.00B	.00B	.00B	.00B	.00B	126.8
CD 4574	.00B	.00B	.00B	.00B	.00B	.00B	.00B	126.8
CD 4575	.00B	.00B	.00B	.00B	.00B	.00B	.00B	10.3
CD 4576	.00B	.00B	.00B	.00B	.00B	.00B	.00B	10.3
CD 4577	.00B	.00B	.00B	.00B	.00B	.00B	.00B	10.3
CD 4578	.00B	.00B	.00B	.00B	.00B	.00B	.00B	10.3
CD 4579	.00B	.00B	.00B	.00B	.00B	.00B	.00B	10.3
CD 4665	.00B	.00B	.00B	.00B	.00B	.00B	.00B	285.0
CD 4666	.00B	.00B	.00B	.00B	.00B	.00B	.00B	285.0
CD 4667	.00B	.00B	.00B	.00B	.00B	.00B	.00B	285.0
CD 4668	.00B	.00B	.00B	.00B	.00B	.00B	.00B	285.0
CD 4669	.00B	.00B	.00B	.00B	.00B	.00B	.00B	285.0