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ABUNDANCES OF MAJOR ELEMENTS AND SEDIMENTARY COMPONENTS IN CUTTINGS FROM THE REPETTO, SISQUOC, AND MONTEREY FORMATIONS, OCS P-0188 H-1 AND H-2 WELLS, HONDO OIL FIELD, OFFSHORE SANTA BARBARA-VENTURA BASIN, SOUTHERN CALIFORNIA

by

Caroline M. Isaacs[1]
Janice H. Tomson[1]
Kathleen C. Stewart[2]
Larry L. Jackson[2]

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[1] U.S. Geological Survey
345 Middlefield Road, MS 999
Menlo Park, California 94025

[2] U.S. Geological Survey
Federal Center, Box 25046
Denver, Colorado 80225

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CONTENTS

INTRODUCTION

As both a major petroleum source-rock and reservoir-rock, the Monterey Formation in the offshore Santa Maria basin and Santa Barbara Channel of southern California (Figure 1) has received considerable attention in recent years. For regional synthesis and correlation and for understanding the spatial distribution of high-quality reservoirs, a major need has been the identification of compositional variations and trends, both stratigraphically and laterally. Because of the formation's heterogeneity, however, meaningful identification of stratigraphic trends and compositional comparison of different Monterey sections has been difficult. Analysis of cuttings has proven to be an efficient approach to this problem. As summarized by Isaacs and others (1986) and Isaacs (1987), part of the testing of the cuttings method has been comparison of cuttings in two adjacent wells in the Hondo oil field.

This report presents the detailed compositional data from the two wells OCS P-0188 H-1 (API number 04-311-20325; here designated "H-1") and OCS P-0188 H-2 (API number 04-311-20342; here designated "H-2") in the offshore Hondo oil field (Figure 1). The two wells are located less than a mile apart. In this report, all depths given are measured well depths, not true subseafloor depths. For both wells, depths are given from the kelly bushing, 137 ft above the permanent datum at mean lower low water (MLLW). Water depth is reported at 842 ft in both the H-1 and H-2 wells.

STRATIGRAPHY AND SAMPLING

In the H-1 well, formation and zone tops (as defined by the operator) are as follows: Repetto Formation 2975 ft, Sisquoc Formation 6406 ft, Monterey Formation siliceous zone 8424 ft, Monterey Formation middle shale zone 9325 ft, Monterey Formation massive chert zone 9381 ft, Monterey Formation lower calcareous zone 9734 ft, Monterey shale-sand zone 10117 ft. In this well, cuttings were collected in 10-foot intervals below the depth of 7990 ft, and otherwise in 30-foot intervals. From the interval 8405 ft to the interval 10185 ft, splits of approximately every fourth sample were analyzed, above the interval 8405 ft up to the interval 5935 ft samples were analyzed more selectively (fewer than each fourth sample). One sample was also analyzed from 10325 ft.

In the H-2 well, formation and zone tops (as defined by the operator) are as follows: Repetto Formation 2971 ft, Sisquoc Formation 6880 ft, Monterey Formation siliceous zone 9093 ft, Monterey Formation middle shale zone 9687 ft, Monterey Formation massive chert zone 9771 ft, Monterey Formation lower calcareous zone 10137 ft, Monterey shale-sand zone 10591 ft, Rincon Shale 12430 ft (fault), Vaqueros Formation 12578 ft. In this well, cuttings were collected in 10-foot intervals within the depth range 9010-11,000 ft, and otherwise in 30-foot intervals. From the interval 8785 ft to the interval 10995 ft, all samples were analyzed; between the interval 6985 ft to the interval 8785 ft, approximately every fourth sample was analyzed; and between the interval 10995 ft to the interval 12095 ft, approximately every second sample was analyzed. Between the interval 5185 to the interval 6985 ft, samples were analyzed more selectively (fewer than every fourth sample).

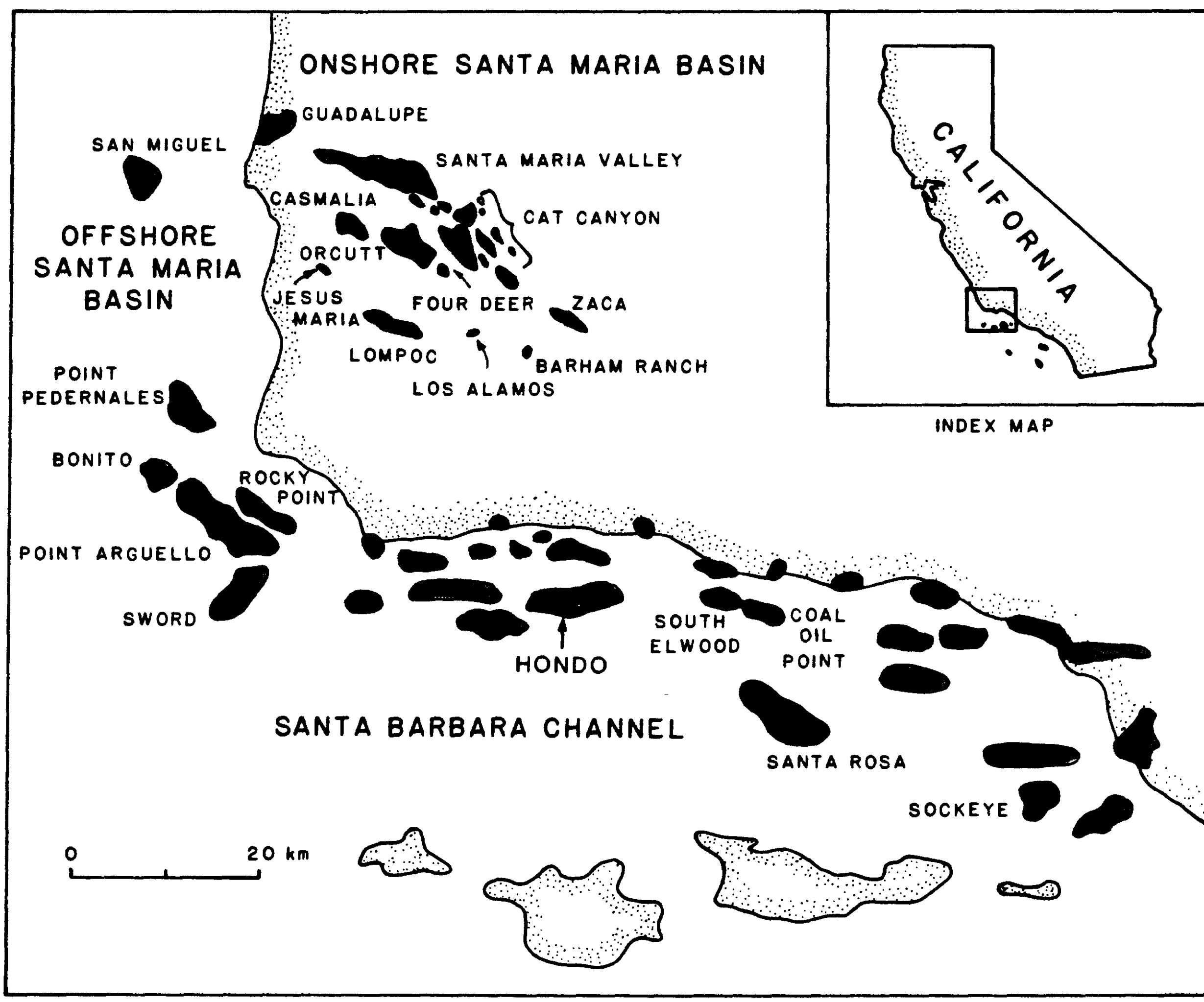

Fig. 1. Location map showing position of the Hondo oil field and other oil and gas fields in the Santa Maria and Santa Barbara-Ventura areas, California. Labeled fields have significant production or potential from Monterey Formation fractured reservoirs. Adapted from California Division of Oil and Gas (1974) and Williams (1985).

METHODS

By permission of the operator, splits of washed cuttings were obtained from the samples deposited by the operator at Minerals Management Service in Los Angeles. After receipt, samples were split with a riffle splitter and submitted for grinding and analysis by the U.S. Geological Survey Branch of Geochemistry. Like samples reported by Isaacs and others (1990) and in contrast to samples reported by Isaacs and others (1989a, 1989b) and Isaacs and Tomson (1990), all analyses reported here were made on powder fractions containing adsorbed water (H_2O^-). Amounts of H_2O^- probably range from about 1 wt% to as much as 5 wt% in clay-rich samples (Isaacs, 1980, appendix A).

Samples from the H-1 well were all analyzed in 1984 and 1985. Samples from the H-2 well were analyzed in 1984, 1985, and 1989; those samples analyzed in 1989 are easily distinguished by not not having carbon analyses.

Analytical Techniques - Major Elements

Samples were analyzed for major elements by X-ray fluorescence spectroscopy, using methods described by Taggart and Wahlberg (1980a, b) and Taggart and others (1981, 1987). Identical methods were used on samples reported by Isaacs and others (1989a, b; 1990) and Isaacs and Tomson (1990). For this analysis, 0.8 g of samples (ground to <100 mesh) was weighed into a tared platinum-gold (95:5) crucible and ignited for 45 minutes at 920 C, after which it was reweighed to determine loss on ignition (LOI). An 8 g charge of lithium tetraborate was then added to the crucible, physically mixed with the sample, and then fused at 1130° C for 40 minutes (Taggart and Wahlberg, 1980a) after which it was cast in a platinum-gold mold (Taggart and Wahlberg, 1980b) and allowed to cool. The disc was then presented to a Phillips PW1600 simultaneous X-ray spectrometer using an on-line Digital Equipment Corporation PDP 11/04 computer to perform a de Jongh matrix correction program (Taggart and others, 1981, 1987).

Analytical Techniques - Carbon

Carbon was measured by methods described by Jackson and others (1987). Identical methods were used on samples reported by Isaacs and others (1989b, 1990) and Isaacs and Tomson (1990). Total carbon abundance was measured by dry combustion with a LECO CR12 automated carbon analyzer (Jackson and others, 1987). Carbonate carbon was measured by automated coulometric titration of perchloric acid-evolved CO2 (Huffman, 1977; Engleman and others, 1985; Jackson and others, 1987). Organic carbon was then determined by difference between total carbon and carbonate carbon.

Determination of Sedimentary Components

The major sedimentary components in the Monterey Formation are termed silica (representing both biogenic and diagenetic silica, including opal-A, opal-CT, and diagenetic quartz), detritus (detrital quartz and aluminosilicate minerals, mainly consisting of mixed layer illite-smectite clay along with minor feldspar and quartz), carbonate minerals (calcite and dolomite), apatite, and organic matter. Abundances of silica and detritus were estimated from elemental abundances of SiO_2 and Al_2O_3 by constants developed for the Monterey Formation in adjacent onshore areas (Table 1). Resulting values are for the most part reliable for Monterey strata but probably underestimate the amount of aluminosilicate material where mica or chlorite is abundant because of their relatively low Al_2O_3 abundance. Values also may underestimate detrital quartz (and thus overestimate biogenous and diagenetic silica) in highly terrigenous samples. Abundances of silica and detritus for non-Monterey strata should therefore be regarded as approximations.

Abundances of calcite, dolomite, and apatite were estimated from abundances of CaO, MgO, and P_2O_5 after adjustment of these values for average abundances in the aluminosilicate fraction (Table 1). Because abundance values were not confirmed by X-ray diffraction analysis, they are preliminary estimates only. Abundances of organic matter were estimated from the abundances of total organic carbon (Table 1).

This method of component determination probably underestimates dolomite relative to calcite inasmuch as dolomite in the Monterey Formation tends to have CaO in excess of the ideal values used here and may also have significant Fe (Murata and others, 1972). Moreover, a previous report noted that bulk X-ray diffraction analysis showed no detectable calcite in a number of dolomite-bearing samples estimated by these conversion parameters (Table 1) as having minor (5-10%) calcite (Isaacs and others, 1989b). However, Isaacs and others (1989a) compared the abundances of carbonate carbon represented by dolomite + calcite as estimated above (0.13 x dolomite + 0.12 x calcite) with the analytical determination of carbonate carbon. In that study, the average difference between each pair of calculated and measured values was 0.13 wt% carbonate carbon (about 1 wt% carbonate minerals), and the maximum difference was 0.30 wt% carbonate carbon (about 2.5 wt% carbonate minerals). These comparisons show that the total abundance of carbonate minerals is reliably estimated from major oxide analyses by the methods used here (see also Figures 2A and 2B).

Another inaccuracy in the determination of sedimentary components is reflected by the presence of some negative numbers for calcite, dolomite, and apatite. Although clearly incorrect, these negative values are highly reproducible, as noted by Isaacs and others (1989a, 1989b) and thus seem likely to reflect errors in the conversion parameters (Table 1). The inaccuracy is probably due to partitioning slightly too much CaO, MgO and P_2O_5 into the aluminosilicate fraction.

Because some samples were not analyzed for organic carbon in the H-2 well, abundances of major sedimentary components (silica, terrigenous detritus, calcite, dolomite, and apatite) were all normalized to sum to 100% on an organic-matter-free basis.

Reproducibility of Analyses of Cuttings

Previous studies (Isaacs and others, 1989a, 1989b) showed that the reproducibility of analytical results is excellent. The relative standard deviation is generally less than 2% of major oxide values (av 1.1%) for blind duplicate powder splits analyzed by the techniques used here. Reproducibility of the abundance of sedimentary components based on major oxide analyses is also excellent, with average standard deviations of 0.5 wt% detritus, 0.4 wt% silica, 0.1 wt% dolomite, 0.2 wt% calcite, and 0.01 wt% apatite. Reproducibility of carbon analyses (total carbon, carbonate carbon, and organic carbon) was not tested for the techniques used here on blind duplicate powder splits, only on duplicate splits of bulk (unpowdered) cuttings (see below).

Because some cuttings samples included individual pieces that were large (2-5 g) relative to sample size (10-15 g), some bias and (or) variability may have been introduced into analytical results by splitting. A previous report studied the additional variability introduced by the inhomogeneous character of cuttings, and showed that this variability results in larger average relative standard deviations - in the range 1-2.6% (av 2.0%) - of major oxides analyzed among blind duplicate splits of the same cuttings materials (Isaacs and others, 1989a). In that study, the average relative standard deviation for organic carbon was 3.5%, and for carbonate carbon 2.9%. Average standard deviations of sedimentary components in blind duplicate bulk (unpowdered) cuttings were 0.7 wt% detritus, 0.7 wt% silica, 0.5 wt% dolomite, 0.1 wt% calcite, 0.01 wt% apatite, and 0.1 wt% organic matter. This reproducibility is so excellent that variation due to analytical methods is negligible for practical purposes.

RESULTS

The abundances of major oxides, organic carbon, and carbonate carbon in cuttings samples from the two Hondo wells are presented in Tables 2a and 2B, and the abundances of major sedimentary components and values of other derived parameters in Tables 3A and 3B. In these tables, derived parameters include the abundance of silica normalized to the sum of silica plus detritus (an indicator of potential fracturability), and the abundance of silica normalized to the sum of silica plus carbonate minerals (an indicator of the character of biogenic input and ocean-surface productivity). Figures 3A and 3B show the abundances of oxides that are present mainly in the detritus fraction (Fe_2O_3, Na_2O, K_2O, and TiO_2) graphed against Al_2O_3, and Figures 4A and 4B show the ratios of these oxides to Al_2O_3 graphed against depth. Figures 5-11 show the abundances of major sedimentary components and values of other derived parameters graphed against depth. In these tables and figures, the depth is given as the mid-point of the interval analyzed; for example, the sample listed at 10955 ft represents the interval 10950-10960 feet.

Table 1. Formulas used to convert elemental abundances to approximate mineral abundances. Formulas for detritus and silica contents and average abundance of major elements in detritus are derived from the evaluation in Isaacs (1980, appendix B) for the Monterey Formation in the western Santa Barbara coastal area. CaO and P2O5 abundances in apatite are based on published references (see Isaacs, 1980, p. 228), and calculations for calcite and dolomite are based on their molecular formulas. See text for comments on the calcite–dolomite partition.

Quantity	Explanation	Formula
Detritus	Equals aluminosilicates + detrital quartz	Al2O3 x 5.6
Aluminosilicates	Based on Al2O3 content	Al2O3 x 4.2
Detrital quartz	Based on a proportion of aluminosiicates	Aluminosilicates ÷ 3
Silica (biogenic and diagenetic)	Based on Si02 content adjusted for amounts in detritus	SiO2 – (3.5 x Al2O3)
Apatite	Based on P2O5 content adjusted for 0.7% P2O5 in aluminosilicates and assuming 42.4% P2O5 in apatite	{P2O5 – (0.032 x Al2O3)} ÷ 0.424
Dolomite	Based on MgO content adjusted for 2.6% MgO in aluminosilicates and assuming 21.9% MgO in dolomite	{MgO – (0.11 x Al2O3)} ÷ 0.219
Calcite	Based on CaO content adjusted for 1.9% Cao in aluminosilicates, 55.5% CaO in apatite, and 30.4% in dolomite, and assuming 56.0% CaO in calcite	{CaO – [(0.08 x Al2O3) – (0.555 x apatite) – (0.304 x dolomite)]} ÷ 0.56
Organic matter	Based on organic carbon content	Organic carbon x 1.5

Table 2A. Elemental abundances in bulk cuttings from Hondo well H-1 (in weight %). Each sample represents a 10-foot or 30-foot interval (see text); the given depth is the mid-point of the interval. "LOI" is loss on ignition at 920°C. Total Fe is reported as Fe2O3. Analysts: K.C. Stewart (oxides and LOI); E.E. Engleman, G. Mason, and H.G. Neiman (carbon).

Depth	SiO2	Al2O3	Fe2O3	MgO	CaO	Na2O	K2O	TiO2	P2O5	MnO	LOI	Organic Carbon	Carbonate Carbon
5935	46.4	10.3	4.42	5.31	9.04	1.93	2.01	0.48	0.42	0.04	15.2	2.39	3.01
6175	50.8	10.1	4.10	4.45	6.95	1.90	1.95	0.46	0.45	0.05	14.2	3.35	2.28
6415	56.4	11.1	4.11	3.08	4.98	2.20	2.09	0.51	0.50	0.03	11.4	3.16	1.36
6625	58.7	12.2	5.32	2.98	3.66	2.32	1.93	0.57	0.36	0.04	9.07	1.39	1.13
6895	59.1	11.9	5.34	3.21	3.78	1.88	1.89	0.57	0.34	0.04	9.17	1.27	1.25
7135	61.4	10.6	4.24	2.60	3.91	1.77	1.77	0.50	0.36	0.02	10.3	2.47	1.11
7375	63.4	10.2	4.42	2.68	3.30	1.63	1.64	0.48	0.32	0.03	9.75	2.06	1.08
7615	68.2	9.65	4.13	2.08	1.84	1.55	1.51	0.45	0.30	0.02	8.53	1.92	0.60
7855	65.7	9.14	4.03	2.64	3.32	1.46	1.43	0.42	0.29	0.03	8.81	1.75	1.17
8085	71.0	8.27	3.40	1.74	2.17	1.34	1.28	0.38	0.34	<0.02	7.53	1.39	0.63
8245	67.6	8.89	3.77	2.28	2.79	1.36	1.37	0.41	0.33	<0.02	8.77	1.83	0.92
8405	56.9	7.53	3.34	2.06	8.73	1.31	1.31	0.36	0.44	<0.02	14.3	4.38	2.04
8445	62.5	6.73	3.35	1.92	6.14	1.20	1.18	0.35	0.47	<0.02	11.6	4.00	1.42
8485	71.5	4.52	2.27	2.17	4.13	0.89	0.79	0.23	0.29	<0.02	9.19	2.60	1.26
8525	70.4	4.14	2.15	2.60	4.97	0.82	0.74	0.22	0.29	<0.02	10.3	2.85	1.57
8565	70.3	4.14	1.97	2.56	5.87	0.83	0.67	0.19	0.27	<0.02	9.13	1.95	1.73
8605	70.9	4.80	2.52	2.28	4.62	0.90	0.83	0.25	0.27	<0.02	9.43	2.73	1.40
8645	74.6	4.04	2.19	1.98	3.80	0.77	0.68	0.21	0.22	<0.02	8.14	2.17	1.17
8695	73.1	2.75	1.60	3.00	5.20	0.65	0.49	0.15	0.22	<0.02	10.3	2.56	1.80
8725	73.4	2.45	1.22	2.96	5.30	0.53	0.40	0.11	0.22	<0.02	9.53	2.11	1.97
8765	77.4	2.08	1.42	2.29	4.05	0.51	0.38	0.11	0.18	<0.02	8.22	2.44	1.39
8815	76.0	3.77	2.18	1.80	3.48	0.78	0.65	0.19	0.21	<0.02	7.89	2.29	1.05
8845	73.2	3.41	1.96	2.08	4.72	0.69	0.59	0.18	0.24	<0.02	8.76	2.41	1.39
8885	68.8	3.35	1.76	3.33	6.05	0.63	0.59	0.15	0.26	<0.02	11.2	2.67	2.07
8925	72.2	2.61	1.60	2.85	5.70	0.60	0.49	0.14	0.24	<0.02	10.3	2.74	1.86
8965	73.6	2.23	1.65	2.23	6.00	0.60	0.43	0.12	0.24	<0.02	9.70	2.71	1.74

Table 2A. continued

Depth	SiO2	Al2O3	Fe2O3	MgO	CaO	Na2O	K2O	TiO2	P2O5	MnO	LOI	Organic Carbon	Carbonate Carbon
9005	78.2	2.03	1.39	1.84	4.14	0.50	0.39	0.12	0.20	<0.02	8.00	2.51	1.30
9045	79.0	2.03	1.20	1.89	3.68	0.46	0.34	0.1	0.18	<0.02	7.55	2.26	1.20
9095	72.3	1.72	1.12	2.69	7.16	0.49	0.32	0.1	0.22	<0.02	11.4	2.73	2.15
9125	68.3	1.99	1.24	2.96	8.44	0.45	0.38	0.11	0.35	<0.02	12.6	3.07	2.47
9165	66.2	2.47	1.32	2.98	9.46	0.55	0.44	0.13	0.22	<0.02	13.8	3.34	2.65
9205	65.8	2.68	1.27	3.47	8.57	0.53	0.41	0.11	0.30	<0.02	13.2	3.00	2.64
9245	61.7	1.91	1.18	4.04	11.4	0.43	0.34	0.10	0.37	<0.02	15.8	2.53	3.68
9295	69.0	2.96	1.52	3.06	6.60	0.64	0.49	0.15	0.34	<0.02	12.2	3.47	2.10
9325	68.8	2.67	1.51	3.12	6.46	0.62	0.45	0.14	0.42	<0.02	12.6	4.14	2.07
9365	62.2	3.83	2.07	3.16	8.25	0.71	0.59	0.18	0.79	<0.02	13.1	4.31	2.32
9405	54.0	4.45	2.84	2.61	12.2	0.86	0.73	0.24	1.18	<0.02	15.7	5.72	2.80
9445	63.8	2.89	1.79	2.33	9.68	0.58	0.49	0.16	0.67	<0.02	13.8	4.52	2.41
9495	67.6	2.79	1.54	2.48	7.76	0.57	0.45	0.15	0.69	<0.02	12.4	4.62	2.07
9525	70.6	2.93	1.45	2.00	6.24	0.55	0.43	0.13	0.52	<0.02	11.0	4.09	1.66
9565	73.8	2.40	1.31	2.05	5.36	0.55	0.39	0.12	0.40	<0.02	10.4	4.25	1.57
9605	75.8	2.75	1.55	1.48	3.59	0.56	0.44	0.14	0.38	<0.02	9.47	3.90	2.01
9645	69.6	2.19	1.24	3.24	6.54	0.48	0.37	0.12	0.38	<0.02	12.6	4.33	2.18
9685	72.1	2.78	1.28	2.61	5.21	0.50	0.40	0.12	0.39	<0.02	10.6	3.75	1.67
9725	74.0	2.28	1.23	2.71	5.15	0.55	0.36	0.12	0.31	<0.02	10.3	3.37	1.74
9765	67.5	3.79	2.26	2.66	6.81	0.77	0.64	0.20	0.76	<0.02	11.2	3.91	1.87
9805	58.3	4.13	2.16	2.33	11.0	0.80	0.73	0.22	1.18	<0.02	14.3	4.90	2.55
9845	58.7	3.87	2.22	2.21	11.7	0.77	0.62	0.18	0.83	<0.02	14.1	4.07	2.72
9885	50.7	4.08	2.61	2.43	14.8	0.83	0.70	0.22	1.13	<0.02	17.1	5.45	3.35
9925	49.9	4.22	3.03	1.93	14.7	0.75	0.77	0.23	0.70	<0.02	17.8	6.23	3.28
9965	53.4	3.80	2.75	1.47	13.9	0.72	0.70	0.21	0.58	<0.02	16.4	5.96	2.98
10005	61.2	3.90	2.88	1.36	9.42	0.66	0.64	0.19	0.44	<0.02	13.2	5.17	2.14
10045	59.1	3.88	2.47	1.18	10.9	0.68	0.68	0.22	0.61	<0.02	15.2	6.31	2.32
10095	54.9	4.75	2.68	1.43	11.8	0.79	0.84	0.26	0.97	<0.02	16.1	6.44	2.46

Table 2A. continued

Depth	SiO2	Al2O3	Fe2O3	MgO	CaO	Na2O	K2O	TiO2	P2O5	MnO	LOI	Organic Carbon	Carbonate Carbon
10135	57.9	5.07	2.70	1.91	9.95	0.86	0.87	0.27	0.85	<0.02	14.3	5.63	2.23
10165	52.9	5.05	2.41	3.92	11.5	0.80	0.76	0.24	0.64	<0.02	16.0	3.85	3.25
10185	55.0	5.64	2.90	2.90	10.3	0.93	0.90	0.30	0.75	<0.02	14.5	5.15	2.57
10325	63.5	6.65	1.88	2.99	7.28	1.43	1.40	0.19	0.33	<0.02	10.2	2.24	2.06

Table 2B. Elemental abundances in bulk cuttings from Hondo well H-2 (in weight %). Each sample represents a 10-foot or 30-foot interval (see text); the given depth is the mid-point of the interval. "LOI" is loss on ignition at 920°C. Total Fe is reported as Fe2O3. Analysts: K.C. Stewart, J.E. Taggart Jr., A.J. Bartel, and D.F. Siems (oxides and LOI); E.E. Engleman, G. Mason, and H.G. Neiman (carbon).

Depth	SiO2	Al2O3	Fe2O3	MgO	CaO	Na2O3	K2O	TiO2	P2O5	MnO	LOI	Organic carbon	Carbonate carbon
5185	49.7	10.9	4.68	3.24	8.83	2.14	2.09	0.50	0.32	0.03	13.2	3.00	1.99
5485	53.5	12.1	4.80	2.83	6.49	2.33	2.40	0.57	0.40	0.03	[illegible].8	2.33	1.57
5785	45.7	9.54	3.88	5.47	10.7	1.85	2.05	0.39	0.32	0.03	16.9	2.17	3.55
6085	34.8	7.78	3.42	5.59	9.19	1.60	1.54	0.35	0.31	0.03	32.4	10.2	3.30
6385	45.8	10.1	4.10	5.69	8.96	1.92	1.94	0.46	0.41	0.03	16.4	2.63	3.15
6685	56.8	11.2	4.15	2.95	4.49	2.12	2.12	0.51	0.49	0.03	11.6	3.62	1.28
6985	56.1	11.0	4.45	3.64	5.15	2.22	1.80	0.50	0.40	0.04	10.9	2.17	1.69
7105	54.6	11.1	4.58	4.10	5.82	2.14	1.81	0.50	0.35	0.04	11.1	1.54	1.97
7225	55.3	11.0	4.57	3.77	5.35	2.09	1.81	0.51	0.36	0.04	11.8	2.58	1.72
7345	53.8	11.0	4.71	4.18	5.93	1.93	1.84	0.50	0.38	0.04	12.0	1.85	1.98
7465	59.7	12.2	4.87	2.87	3.51	2.15	1.97	0.58	0.38	0.03	9.31	1.82	1.03
7585	58.8	11.9	4.84	3.16	3.70	1.88	1.93	0.56	0.38	0.03	10.2	2.04	1.17
7705	61.9	10.9	4.21	2.68	3.44	1.81	1.81	0.51	0.38	0.03	9.79	1.95	0.99
7825	61.9	10.5	4.28	2.84	3.56	1.74	1.78	0.49	0.35	0.03	10.1	2.07	1.15
7945	61.3	11.5	4.72	2.63	3.15	2.05	1.87	0.54	0.36	0.03	9.20	1.69	0.94
8065	60.9	11.2	4.76	2.89	3.43	1.90	1.83	0.53	0.37	0.03	9.16	1.56	1.13
8185	63.2	10.3	4.41	2.75	3.17	1.59	1.63	0.48	0.35	0.03	8.95	1.47	1.06
8305	63.7	11.0	4.61	2.54	2.62	1.83	1.73	0.52	0.33	0.03	8.44	1.17	0.87
8425	63.0	11.3	4.59	2.37	2.60	1.88	1.75	0.53	0.35	0.03	9.33	1.82	0.80
8545	66.3	9.17	3.82	2.34	3.03	1.60	1.45	0.41	0.33	0.02	8.73	1.75	0.97
8665	66.3	10.0	3.99	2.22	2.83	1.64	1.61	0.46	0.42	<0.02	8.23	1.52	0.82
8785	67.3	9.96	3.99	2.04	2.52	1.59	1.60	0.46	0.39	<0.02	8.00	1.74	0.73
8815	65.3	9.78	4.09	2.24	2.86	1.68	1.58	0.46	0.37	0.02	9.89		
8845	65.7	9.98	4.08	2.00	2.55	1.70	1.63	0.47	0.38	<0.02	9.81		
8875	64.3	9.89	4.12	2.31	3.04	1.69	1.61	0.46	0.41	0.02	10.3		
8905	65.6	10.3	4.16	2.10	2.54	1.81	1.65	0.47	0.42	0.02	8.73	1.79	0.74

Table 2B. continued

Depth	SiO2	Al2O3	Fe2O3	MgO	CaO	Na2O3	K2O	TiO2	P2O5	MnO	LOI	Organic carbon	Carbonate carbon
8935	64.4	10.1	4.25	2.31	2.96	1.73	1.62	0.48	0.39	0.02	10.2		
8965	63.0	10.4	4.33	2.16	2.71	1.63	1.76	0.50	0.44	<0.02	11.1	3.58	0.76
8995	63.2	9.03	4.00	1.98	3.04	1.50	1.66	0.46	0.45	<0.02	12.7		
9015	61.9	9.31	4.08	2.03	3.38	1.48	1.71	0.45	0.47	<0.02	12.5	3.98	0.82
9025	61.8	8.91	3.94	1.88	4.40	1.45	1.66	0.46	0.49	<0.02	12.2		
9035	58.8	8.25	3.73	2.05	6.31	1.34	1.55	0.42	0.49	<0.02	13.9		
9045	59.4	7.80	3.58	1.85	6.49	1.25	1.48	0.40	0.47	<0.02	14.4		
9055	61.3	7.66	3.52	1.70	5.51	1.24	1.42	0.38	0.46	<0.02	13.0	4.73	1.26
9065	62.6	7.34	3.54	1.75	5.34	1.23	1.38	0.38	0.46	<0.02	12.8		
9075	63.5	6.92	3.36	1.79	5.33	1.15	1.31	0.36	0.45	<0.02	12.6		
9085	61.6	6.98	3.45	2.10	5.60	1.15	1.32	0.37	0.50	<0.02	13.3		
9095	62.4	6.97	3.35	1.87	5.49	1.17	1.26	0.35	0.53	<0.02	12.5	4.44	1.36
9105	66.9	5.83	2.95	1.90	5.33	1.01	1.09	0.30	0.46	<0.02	10.5		
9115	68.8	5.27	2.61	1.96	4.73	0.96	0.96	0.27	0.42	<0.02	11.0		
9125	69.5	4.71	2.39	2.18	4.89	0.89	0.87	0.24	0.35	<0.02	10.1		
9135	69.2	4.82	2.36	2.22	4.72	0.86	0.86	0.24	0.35	<0.02	9.86	3.26	1.40
9145	69.9	4.87	2.42	2.11	4.52	0.91	0.89	0.26	0.35	<0.02	9.85		
9155	71.1	4.43	2.25	2.07	4.29	0.86	0.81	0.23	0.32	<0.02	9.55		
9165	68.4	4.47	2.24	2.77	5.36	0.83	0.82	0.23	0.31	<0.02	10.8		
9175	67.6	4.48	2.17	2.94	5.54	0.83	0.79	0.22	0.32	<0.02	10.7	3.00	1.83
9185	67.3	4.34	2.26	3.06	5.70	0.80	0.79	0.22	0.31	<0.02	11.2		
9195	63.9	4.66	2.51	3.37	6.37	0.86	0.85	0.24	0.36	<0.02	12.5		
9205	65.8	4.93	2.60	3.03	5.58	0.93	0.89	0.25	0.38	<0.02	11.7		
9215	68.2	4.69	2.36	2.63	4.94	0.94	0.82	0.23	0.34	<0.02	10.1	2.96	1.58
9225	70.0	3.49	2.14	2.69	5.87	0.75	0.62	0.19	0.29	<0.02	10.5		
9235	72.0	3.56	2.01	2.45	5.31	0.79	0.64	0.19	0.29	<0.02	9.56		
9245	66.9	3.79	2.15	3.41	6.69	0.69	0.68	0.19	0.31	<0.02	11.6		
9255	73.1	3.45	1.96	2.20	4.51	0.64	0.59	0.16	0.27	<0.02	8.76	2.81	1.41

Table 2B. continued

Depth	SiO2	Al2O3	Fe2O3	MgO	CaO	Na2O3	K2O	TiO2	P2O5	MnO	LOI	Organic carbon	Carbonate carbon
9265	73.2	3.53	2.09	2.39	4.63	0.74	0.63	0.18	0.26	<0.02	9.23		
9275	72.3	3.45	2.02	2.54	4.91	0.70	0.61	0.18	0.25	<0.02	9.60		
9285	76.7	2.93	1.77	2.06	3.92	0.62	0.52	0.15	0.21	<0.02	8.18		
9295	70.1	4.74	2.36	2.39	4.27	0.87	0.82	0.22	0.29	<0.02	9.03	2.80	1.38
9305	74.5	3.29	1.96	2.31	4.30	0.75	0.58	0.17	0.23	<0.02	8.61		
9315	73.5	3.66	2.03	2.30	4.37	0.75	0.65	0.19	0.25	<0.02	8.60		
9325	68.8	4.02	2.16	3.20	6.14	0.77	0.73	0.20	0.26	<0.02	10.5		
9335	64.0	4.46	2.24	2.74	4.74	1.02	0.73	0.21	0.27	<0.02	15.1	5.33	1.60
9345	64.3	4.38	2.34	3.07	5.43	0.95	0.75	0.22	0.29	<0.02	14.8		
9355	67.4	6.46	2.99	2.32	3.75	1.21	1.08	0.32	0.31	<0.02	11.2		
9365	70.2	5.05	2.38	2.50	4.29	1.00	0.85	0.25	0.33	<0.02	10.0		
9375	68.4	4.56	2.12	2.40	5.42	0.90	0.75	0.21	0.29	<0.02	10.7	2.83	1.72
9385	66.8	3.83	1.88	2.86	7.14	0.83	0.65	0.20	0.29	<0.02	[illegible]2.9		
9395	66.7	3.59	1.80	2.71	6.88	0.78	0.61	0.18	0.28	<0.02	1[illegible].5		
9405	66.3	3.90	1.92	2.82	7.01	0.76	0.66	0.20	0.37	<0.02	13.5		
9415	63.6	3.70	1.76	2.99	7.56	0.66	0.60	0.17	0.33	<0.02	13.8	3.67	2.29
9425	65.2	3.63	1.84	3.09	8.29	0.66	0.59	0.18	0.33	<0.02	13.4		
9435	65.4	3.66	1.84	3.10	8.51	0.70	0.61	0.18	0.32	<0.02	13.1		
9445	65.0	3.77	1.88	2.95	8.51	0.64	0.64	0.19	0.30	<0.02	13.1		
9455	65.7	3.17	1.48	2.78	8.62	0.57	0.49	0.14	0.27	<0.02	12.6	2.55	2.50
9465	64.0	2.61	1.34	3.27	10.5	0.53	0.44	0.12	0.25	<0.02	14.7		
9475	63.6	2.35	1.25	3.35	11.2	0.47	0.39	0.11	0.24	<0.02	14.9		
9485	63.4	2.70	1.37	3.12	10.9	0.51	0.46	0.13	0.31	<0.02	14.7		
9495	62.8	2.71	1.24	3.46	10.3	0.49	0.43	0.12	0.30	<0.02	14.6	2.88	3.04
9505	65.5	2.56	1.27	3.55	8.94	0.50	0.43	0.12	0.29	<0.02	13.9		
9515	64.8	3.21	1.72	3.72	8.18	0.59	0.54	0.15	0.40	<0.02	13.6		
9525	65.0	2.73	1.49	4.02	8.41	0.52	0.46	0.13	0.38	<0.02	14.2		
9535	63.9	2.91	1.43	3.82	8.86	0.57	0.45	0.13	0.43	<0.02	14.0	3.14	2.78

Table 2B. continued

Depth	SiO2	Al2O3	Fe2O3	MgO	CaO	Na2O3	K2O	TiO2	P2O5	MnO	LOI	Organic carbon	Carbonate carbon
9545	63.5	3.18	1.68	3.25	9.52	0.59	0.55	0.15	0.47	<0.02	14.4		
9555	62.3	3.46	1.76	3.47	9.60	0.64	0.57	0.16	0.38	<0.02	14.7		
9565	58.7	3.31	1.62	3.86	11.7	0.61	0.57	0.16	0.45	<0.02	16.5		
9575	60.9	3.35	1.58	3.34	10.3	0.61	0.56	0.15	0.44	<0.02	14.7	3.32	2.98
9585	61.2	2.87	1.52	3.79	10.7	0.56	0.50	0.13	0.40	<0.02	15.4		
9595	63.1	3.41	1.64	3.50	9.61	0.65	0.55	0.16	0.39	<0.02	14.3		
9605	63.9	3.40	1.64	3.29	9.10	0.67	0.57	0.16	0.38	<0.02	13.8		
9615	65.4	3.19	1.42	3.43	7.98	0.62	0.49	0.14	0.35	<0.02	12.9	2.99	2.53
9625	69.9	3.39	1.64	2.88	6.23	0.69	0.56	0.16	0.41	<0.02	11.0		
9635	68.4	3.56	1.71	3.13	6.80	0.72	0.58	0.17	0.41	<0.02	11.8		
9645	66.8	3.19	1.61	3.50	7.38	0.63	0.52	0.15	0.44	<0.02	12.4		
9655	63.1	3.43	1.64	4.16	8.20	0.66	0.53	0.15	0.46	<0.02	13.8	3.14	2.70
9665	64.6	3.81	1.90	3.33	7.67	0.78	0.61	0.18	0.42	<0.02	13.6		
9675	64.3	3.90	1.99	2.69	8.25	0.76	0.63	0.19	0.55	<0.02	13.3		
9685	65.2	3.97	2.07	2.71	7.79	0.77	0.64	0.20	0.62	<0.02	12.6		
9695	62.0	4.43	2.18	3.09	8.23	0.86	0.68	0.21	0.70	<0.02	13.1	3.77	2.31
9705	62.4	4.46	2.38	2.69	8.55	0.88	0.72	0.30	0.84	<0.02	13.2		
9715	61.7	4.51	2.48	2.84	8.69	0.83	0.72	0.24	0.90	<0.02	12.8		
9725	62.2	6.61	2.97	2.88	6.80	1.16	1.03	0.33	0.49	<0.02	11.9		
9735	59.1	6.05	2.72	2.63	8.92	1.10	0.90	0.28	0.68	<0.02	13.0	3.75	2.27
9745	55.9	5.29	2.60	2.14	11.8	0.94	0.84	0.26	0.98	<0.02	15.3		
9755	55.3	5.45	2.83	2.14	11.5	0.97	0.86	0.28	1.14	<0.02	15.4	5.12	2.53
9765	53.1	5.78	3.28	2.07	11.5	1.02	0.90	0.30	1.43	<0.02	16.0		
9775	49.0	5.74	3.18	1.99	13.4	0.97	0.87	0.28	1.62	<0.02	17.0	5.89	2.77
9785	51.6	5.07	2.99	1.72	13.6	0.90	0.83	0.28	1.42	<0.02	16.7	6.19	2.74
9795	54.8	4.18	2.42	1.77	13.5	0.74	0.67	0.22	1.06	<0.02	16.2	5.43	2.89
9805	60.3	3.33	1.96	1.69	11.9	0.60	0.56	0.18	0.72	<0.02	14.8	4.65	2.73
9815	63.6	3.41	1.69	1.80	10.3	0.62	0.52	0.16	0.56	<0.02	13.4	3.72	2.44

Table 2B. continued

Depth	SiO2	Al2O3	Fe2O3	MgO	CaO	Na2O3	K2O	TiO2	P2O5	MnO	LOI	Organic carbon	Carbonate carbon
9825	62.3	3.22	1.73	2.11	11.4	0.57	0.52	0.16	0.56	<0.02	14.5		
9835	61.2	3.09	1.61	2.08	12.5	0.55	0.50	0.15	0.50	<0.02	15.2		
9845	64.2	3.13	1.58	2.23	10.6	0.56	0.51	0.15	0.45	<0.02	13.8		
9855	65.4	4.13	1.87	2.15	8.30	0.75	0.62	0.18	0.53	<0.02	12.3	3.62	2.09
9865	67.2	3.43	1.72	2.71	8.06	0.63	0.55	0.17	0.42	<0.02	12.6		
9875	68.5	3.40	1.75	2.44	7.47	0.61	0.55	0.17	0.43	<0.02	11.4		
9885	67.2	3.86	1.82	2.34	7.71	0.65	0.63	0.18	0.58	<0.02	11.8		
9895	62.8	4.83	2.08	2.43	8.43	0.78	0.79	0.22	0.72	<0.02	12.8	3.77	2.13
9895	66.7	4.18	1.93	2.10	7.53	0.71	0.71	0.20	0.62	<0.02	11.8		
9905	68.7	3.42	1.62	2.19	7.80	0.60	0.57	0.17	0.46	<0.02	11.7		
9915	63.2	6.37	2.97	2.18	5.89	1.13	1.04	0.32	0.94	<0.02	12.2		
9925	68.1	4.84	2.29	2.28	5.18	0.92	0.78	0.24	0.54	<0.02	11.0		
9935	69.2	4.90	2.22	2.18	4.89	0.98	0.76	0.22	0.52	<0.02	10.5	3.97	1.36
9945	68.7	4.92	2.20	2.24	4.97	0.94	0.81	0.24	0.61	<0.02	11.0		
9955	71.6	3.58	1.68	1.89	6.01	0.70	0.58	0.17	0.42	<0.02	10.4		
9965	71.4	3.72	1.67	2.00	6.06	0.69	0.60	0.18	0.46	<0.02	10.5		
9975	70.3	4.40	1.91	2.14	5.39	0.79	0.68	0.20	0.36	<0.02	10.4	3.22	1.53
9985	64.1	4.16	2.25	2.42	5.46	1.72	0.67	0.20	0.36	<0.02	12.2		
9995	67.6	5.79	2.64	1.36	4.98	1.01	0.89	0.28	0.55	<0.02	12.1		
10005	68.7	5.42	2.48	1.17	4.84	0.93	0.84	0.26	0.52	<0.02	12.0		
10015	71.2	4.26	2.02	1.29	4.67	0.78	0.63	0.19	0.45	<0.02	11.2	4.85	1.11
10025	71.4	3.32	1.66	1.64	5.77	0.66	0.51	0.16	0.36	<0.02	11.6		
10035	72.6	3.27	1.62	1.69	5.09	0.60	0.50	0.15	0.33	<0.02	10.9		
10045	74.7	3.19	1.65	1.45	3.88	0.61	0.51	0.15	0.34	<0.02	10.4		
10055	75.4	3.09	1.55	1.47	3.43	0.58	0.48	0.13	0.29	<0.02	9.64	4.38	0.98
10065	76.1	3.26	1.71	1.36	3.41	0.59	0.53	0.16	0.36	<0.02	9.37		
10075	74.9	3.09	1.60	1.66	3.88	0.61	0.50	0.15	0.38	<0.02	9.91		
10085	75.3	2.56	1.37	2.00	4.44	0.52	0.41	0.12	0.40	<0.02	10.0		

Table 2B. continued

Depth	SiO2	Al2O3	Fe2O3	MgO	CaO	Na2O3	K2O	TiO2	P2O5	MnO	LOI	Organic carbon	Carbonate carbon
10095	73.0	3.01	1.42	2.30	4.76	0.59	0.44	0.13	0.42	<0.02	10.2	3.96	1.45
10105	73.3	2.11	1.08	2.87	5.79	0.46	0.33	0.1	0.31	<0.02	11.1		
10115	71.7	2.39	1.24	3.05	6.09	0.51	0.38	0.11	0.34	<0.02	11.6		
10125	71.5	2.73	1.43	2.87	6.07	0.58	0.44	0.14	0.37	<0.02	11.3		
10135	72.0	2.53	1.31	2.51	6.18	0.54	0.37	0.11	0.37	<0.02	10.6	3.12	1.84
10145	69.2	2.93	1.57	2.38	6.99	0.62	0.48	0.15	0.84	<0.02	11.9		
10155	64.6	3.56	1.79	2.14	8.48	0.70	0.61	0.18	1.62	<0.02	12.4		
10165	60.3	4.77	2.18	1.56	9.48	0.81	0.85	0.25	1.88	<0.02	14.0		
10175	55.3	4.80	2.09	1.85	11.8	0.84	0.84	0.24	1.97	<0.02	16.0	5.96	2.30
10185	51.2	4.24	1.91	2.36	14.7	0.74	0.77	0.22	1.71	<0.02	18.2		
10195	46.5	4.55	2.04	1.48	17.2	0.76	0.80	0.24	2.14	<0.02	19.8		
10205	53.3	4.10	1.89	2.03	14.2	0.72	0.72	0.21	1.82	<0.02	17.2		
10215	51.6	4.06	1.78	1.91	14.5	0.68	0.67	0.19	1.26	<0.02	18.7	5.99	3.14
10225	52.8	3.90	1.83	1.65	14.5	0.69	0.66	0.20	1.14	<0.02	18.5		
10235	52.5	4.04	1.89	1.69	14.4	0.71	0.69	0.22	1.25	<0.02	18.6		
10245	49.8	4.35	2.04	1.61	15.2	0.78	0.73	0.22	1.76	<0.02	18.6		
10255	51.9	4.24	1.93	1.77	14.3	0.74	0.68	0.20	1.35	<0.02	18.0	5.85	3.01
10265	51.0	4.27	2.15	1.88	14.9	0.73	0.73	0.21	1.45	<0.02	18.3		
10275	54.9	5.16	2.40	3.77	10.9	0.98	0.84	0.25	0.75	<0.02	15.6		
10285	51.3	5.38	2.73	2.51	14.0	0.99	0.87	0.27	1.08	<0.02	17.0		
10295	45.2	4.96	2.66	2.50	16.4	0.88	0.81	0.23	1.01	<0.02	19.5	5.22	3.76
10305	46.4	5.01	2.81	2.15	16.3	0.90	0.85	0.25	1.09	<0.02	19.5		
10315	46.1	5.02	2.85	2.09	16.7	0.85	0.86	0.25	1.12	<0.02	19.1		
10325	48.0	4.46	2.82	1.96	16.8	0.81	0.77	0.22	0.85	<0.02	18.7		
10335	49.3	3.98	2.51	2.64	16.0	0.65	0.67	0.19	0.65	<0.02	18.3	4.43	3.80
10345	50.0	4.21	2.72	1.90	15.4	0.75	0.73	0.20	0.75	<0.02	17.5		
10355	49.0	4.01	2.60	1.81	17.0	0.70	0.71	0.20	1.32	<0.02	18.0		
10365	42.7	3.99	2.34	1.87	20.0	0.62	0.72	0.21	2.33	<0.02	[illegible]9		

Table 2B. continued

Depth	SIO2	Al2O3	Fe2O3	MgO	CaO	Na2O3	K2O	TiO2	P2O5	MnO	LOI	Organic carbon	Carbonate carbon
10375	43.8	4.05	2.09	1.85	19.0	0.67	0.68	0.19	1.70	<0.02	21.1	5.75	3.92
10385	41.1	4.16	2.18	2.21	20.0	0.66	0.73	0.21	1.68	<0.02	22.7		
10395	39.0	4.50	2.29	1.68	20.7	0.70	0.79	0.23	1.67	<0.02	23.6		
10405	37.5	4.72	2.36	1.45	21.7	0.71	0.83	0.24	1.84	<0.02	23.7		
10415	42.1	4.50	2.15	1.71	19.0	0.72	0.74	0.22	1.62	<0.02	22.0	6.60	3.90
10425	43.0	4.54	2.19	1.56	18.9	0.72	0.78	0.23	1.64	<0.02	21.8		
10435	44.4	4.57	2.22	1.41	18.1	0.75	0.79	0.23	1.62	<0.02	21.5		
10445	50.6	3.95	2.02	1.60	16.0	0.65	0.68	0.20	1.34	<0.02	18.9		
10455	53.5	6.41	2.75	2.86	11.1	1.11	1.02	0.30	0.75	<0.02	15.2	3.81	2.82
10465	55.1	6.81	2.99	2.94	10.1	1.25	1.06	0.33	0.61	<0.02	14.9		
10475	54.2	6.82	2.98	2.39	9.94	1.26	1.04	0.33	0.83	<0.02	15.6		
10485	52.9	6.18	2.78	1.73	12.3	1.09	0.99	0.31	1.08	<0.02	16.3		
10495	50.0	5.06	2.23	1.54	14.5	0.85	0.81	0.24	1.35	<0.02	18.0	5.83	2.97
10505	48.7	5.15	2.37	1.47	15.3	0.84	0.86	0.26	1.63	<0.02	19.0		
10515	48.5	5.18	2.39	1.58	15.4	0.90	0.88	0.26	1.57	<0.02	18.9		
10525	49.6	5.40	2.64	1.66	13.8	1.01	0.91	0.28	1.32	<0.02	18.5		
10535	50.8	5.86	2.74	1.63	12.8	0.97	0.95	0.28	1.23	<0.02	16.9	5.91	2.64
10545	52.7	5.43	2.65	1.87	12.5	0.97	0.93	0.28	1.15	<0.02	16.9		
10555	54.6	4.97	2.49	2.60	12.0	0.82	0.84	0.26	0.92	<0.02	16.4		
10565	53.9	5.18	2.51	2.97	11.9	0.86	0.88	0.27	0.96	<0.02	16.3		
10575	51.8	6.06	2.62	4.35	11.5	1.06	0.94	0.28	0.61	<0.02	16.4	3.24	3.35
10585	53.2	7.01	3.05	3.79	10.5	1.27	1.12	0.34	0.63	<0.02	15.5		
10595	50.4	6.74	2.97	4.63	11.1	1.12	1.01	0.32	0.54	0.02	16.5		
10605	44.3	5.75	2.53	4.36	10.3	1.07	0.87	0.28	0.47	0.02	26.3		
10615	49.0	7.17	2.87	5.01	11.2	1.33	0.98	0.33	0.54	0.03	16.5	2.90	3.43
10625	47.9	6.66	2.79	5.42	12.1	1.22	0.92	0.32	0.51	0.03	18.1		
10635	44.2	6.26	2.65	6.60	14.0	1.24	0.84	0.30	0.49	0.03	19.6		
10645	44.9	6.31	2.75	6.48	13.6	1.19	0.88	0.31	0.48	0.03	19.2		

Table 2B. continued

Depth	SiO2	Al2O3	Fe2O3	MgO	CaO	Na2O3	K2O	TiO2	P2O5	MnO	LOI	Organic carbon	Carbonate carbon
10655	37.5	5.56	2.29	8.44	16.6	1.10	0.69	0.24	0.40	0.04	23.1	1.96	5.70
10665	43.9	6.43	2.70	6.64	13.6	1.26	0.88	0.30	0.44	0.03	19.1		
10675	38.9	5.31	2.33	8.14	16.2	1.03	0.74	0.24	0.36	0.04	22.6		
10685	40.4	5.67	2.27	8.04	15.8	1.20	0.80	0.24	0.33	0.04	21.8		
10695	42.9	6.28	2.31	7.41	14.4	1.31	0.89	0.23	0.34	0.04	19.8	1.66	4.95
10705	44.5	6.43	2.40	6.96	13.8	1.36	0.97	0.25	0.35	0.04	19.2		
10715	46.1	7.28	2.68	6.24	12.3	1.53	1.09	0.30	0.38	0.03	17.8		
10725	45.7	6.80	2.50	6.74	13.1	1.43	1.04	0.27	0.32	0.04	18.4		
10735	48.3	7.47	2.35	6.14	11.7	1.53	1.19	0.25	0.31	0.03	16.2	1.15	3.95
10745	39.1	5.69	2.00	8.52	16.4	1.25	1.03	0.20	0.29	0.04	22.6		
10755	44.3	7.03	2.68	6.89	13.1	1.51	1.24	0.27	0.30	0.04	18.6		
10765	44.0	6.75	2.75	7.05	13.5	1.37	1.18	0.26	0.32	0.04	19.0		
10775	40.3	5.85	2.23	8.11	15.5	1.14	1.01	0.21	0.31	0.04	21.2	1.31	5.40
10785	46.0	8.05	3.29	6.62	11.6	1.52	1.30	0.30	0.32	0.05	16.9		
10795	46.1	8.33	3.41	6.42	11.1	1.56	1.33	0.34	0.38	0.05	16.7		
10805	45.6	8.23	3.68	6.60	11.3	1.53	1.34	0.38	0.32	0.05	16.8		
10815	50.0	9.91	4.03	5.49	8.27	1.75	1.44	0.42	0.36	0.05	12.6	1.41	2.68
10825	49.0	10.2	4.41	5.38	7.96	1.80	1.47	0.47	0.39	0.06	13.6		
10835	44.5	8.20	3.59	6.72	11.7	1.52	1.28	0.36	0.37	0.06	17.6		
10845	48.0	9.14	4.17	5.67	9.20	1.59	1.39	0.43	0.38	0.06	15.8		
10855	44.1	8.20	3.68	6.97	11.6	1.38	1.24	0.36	0.33	0.06	17.8	1.76	3.96
10865	46.5	9.02	4.40	6.39	9.96	1.55	1.37	0.44	0.32	0.07	15.7		
10875	47.8	9.23	4.63	5.92	9.29	1.57	1.43	0.46	0.34	0.07	15.2		
10885	45.8	8.53	4.25	6.46	10.7	1.51	1.36	0.42	0.34	0.07	16.6		
10895	50.4	9.91	4.58	5.43	7.84	1.66	1.55	0.47	0.32	0.07	13.0	1.67	2.56
10905	49.5	9.03	4.28	5.60	8.92	1.48	1.54	0.44	0.34	0.06	14.8		
10915	52.3	8.98	3.92	4.89	7.80	1.57	1.68	0.41	0.32	0.05	13.5		
10925	50.8	8.69	3.71	5.32	8.81	1.56	1.60	0.40	0.30	0.05	14.4		

Table 2B. continued

Depth	SiO2	Al2O3	Fe2O3	MgO	CaO	Na2O3	K2O	TiO2	P2O5	MnO	LOI	Organic carbon	Carbonate carbon
10935	53.8	8.95	3.69	4.72	7.97	1.42	1.62	0.39	0.31	0.04	13.0	1.69	2.58
10945	55.8	9.87	4.30	4.05	6.51	1.57	1.77	0.47	0.35	0.05	11.5		
10955	55.6	9.79	4.05	4.04	6.89	1.54	1.85	0.45	0.34	0.04	11.8		
10965	55.8	9.21	3.87	4.07	7.30	1.48	1.80	0.42	0.33	0.04	12.3	2.08	2.18
10975	54.9	9.71	4.00	3.80	6.52	1.70	1.91	0.46	0.33	0.04	11.5		
10985	56.2	9.51	3.90	3.91	7.04	1.39	1.94	0.43	0.32	0.04	12.0		
10995	55.8	9.20	3.71	4.10	7.34	1.49	2.00	0.40	0.34	0.04	12.1		
11015	54.5	9.90	4.11	4.37	6.49	1.66	1.65	0.46	0.35	0.04	11.2	1.88	2.06
11075	56.9	10.7	4.53	3.38	5.65	1.87	2.07	0.52	0.35	0.04	9.93	1.74	1.56
11135	55.1	10.5	4.15	3.65	6.95	1.77	2.24	0.46	0.30	0.05	10.5	1.42	2.05
11195	56.1	11.1	4.62	3.23	6.28	1.89	2.53	0.49	0.27	0.06	9.98	1.29	1.72
11255	57.4	11.8	4.17	2.72	4.61	2.03	2.77	0.51	0.28	0.05	8.12	1.21	1.27
11315	57.3	11.8	4.69	2.94	4.71	1.97	2.57	0.53	0.32	0.05	9.17	1.62	1.33
11375	57.2	13.0	4.72	2.74	4.24	2.09	2.87	0.56	0.33	0.05	8.56	1.44	1.12
11435	57.7	12.4	4.71	2.65	4.47	2.09	2.74	0.58	0.35	0.05	9.16	1.74	1.18
11495	54.4	11.2	4.12	3.07	6.05	1.95	2.61	0.45	0.29	0.07	10.5	2.08	1.74
11555	57.5	14.1	4.89	2.59	3.37	1.97	3.19	0.60	0.29	0.05	8.41	1.71	0.83
11615	55.5	13.0	5.44	2.74	4.78	1.99	3.00	0.56	0.28	0.06	8.46	1.52	1.24
11675	57.8	14.0	5.04	2.39	3.48	2.18	3.12	0.61	0.30	0.04	7.98	1.45	0.77
11735	61.5	12.5	3.85	1.88	4.79	2.15	3.20	0.48	0.21	0.08	7.39	0.89	1.05
11825	58.1	13.1	4.43	2.17	5.18	2.17	2.99	0.54	0.26	0.07	8.73	1.37	1.12
11855	58.1	12.9	4.54	2.17	4.24	2.27	2.83	0.56	0.31	0.05	8.69	1.79	0.92
11915	57.5	13.1	4.99	2.41	4.25	2.20	2.86	0.57	0.32	0.06	8.76	1.91	0.97
11975	57.3	13.1	4.88	2.43	3.99	2.02	2.75	0.58	0.34	0.05	9.67	2.67	0.57
12035	59.0	12.9	4.61	2.18	3.73	2.14	2.67	0.57	0.34	0.05	9.40	2.21	0.84
12095	67.5	11.9	2.87	1.35	2.79	2.35	2.91	0.34	0.31	0.02	5.39	1.16	0.50

Table 3A. Abundances of sedimentary components (in weight %) and other derived parameters in bulk cuttings from Hondo well H-1. Values listed in columns 2 through 6 ("Detritus" through "Calcite") have been normalized to sum to 100% on an organic-matter-free basis. See text for comments on negative values and problems with the calcite-dolomite partition.

Depth	Detritus	Silica	Apatite	Dolomite	Calcite	Organic Matter	Silica/ Silica+Carb	Silica/ Sil+Detritus
5935	63	11	0.2	20.9	4.5	3.6	0.31	0.15
6175	63	17	0.3	16.9	2.7	5.0	0.47	0.21
6415	68	19	0.4	9.3	2.6	4.7	0.62	0.22
6625	74	17	-0.1	8.1	0.9	2.1	0.66	0.19
6895	72	19	-0.1	9.3	0.5	1.9	0.66	0.21
7135	64	26	0.1	7.1	2.0	3.7	0.74	0.29
7375	62	30	0.0	7.7	0.6	3.1	0.78	0.33
7615	58	37	0.0	5.0	-0.6	2.9	0.89	0.39
7855	55	36	0.0	8.0	0.6	2.6	0.81	0.40
8085	50	45	0.2	4.1	0.5	2.1	0.91	0.48
8245	54	39	0.1	6.4	0.4	2.7	0.85	0.42
8405	47	34	0.5	6.3	12.2	6.6	0.65	0.42
8445	42	44	0.7	6.0	7.3	6.0	0.77	0.51
8485	28	61	0.4	8.4	2.5	3.9	0.85	0.69
8525	25	61	0.4	10.7	2.8	4.3	0.82	0.71
8565	25	60	0.3	10.3	4.7	2.9	0.80	0.71
8605	29	59	0.3	8.7	3.2	4.1	0.83	0.67
8645	24	65	0.2	7.6	2.4	3.3	0.87	0.73
8695	16	68	0.3	13.2	2.0	3.8	0.82	0.80
8725	15	69	0.4	13.2	2.3	3.2	0.82	0.83
8765	13	75	0.3	10.1	1.7	3.7	0.86	0.86
8815	23	68	0.2	6.8	2.2	3.4	0.88	0.75
8845	21	67	0.3	8.5	3.7	3.6	0.85	0.76
8885	20	62	0.4	14.6	2.8	4.0	0.78	0.75
8925	16	68	0.4	12.6	3.3	4.1	0.81	0.81
8965	13	71	0.4	9.8	5.5	4.1	0.82	0.84

Table 3A. continued

Depth	Detritus	Silica	Apatite	Dolomite	Calcite	Organic Matter	Silica/ Silica+Carb	Silica/ Sil+Detritus
9005	12	76	0.3	7.9	3.0	3.8	0.87	0.86
9045	12	77	0.3	8.2	2.0	3.4	0.88	0.86
9095	10	71	0.4	12.2	6.4	4.1	0.79	0.87
9125	12	66	0.7	13.5	7.9	4.6	0.76	0.85
9165	15	62	0.4	13.2	10.1	5.0	0.72	0.81
9205	16	61	0.5	15.6	7.0	4.5	0.73	0.79
9245	11	59	0.8	18.6	10.5	3.8	0.67	0.84
9295	18	64	0.6	13.5	4.3	5.2	0.78	0.78
9325	16	65	0.9	14.1	3.7	6.2	0.79	0.80
9365	24	54	1.7	13.9	6.5	6.5	0.73	0.69
9405	28	43	2.8	10.9	15.1	8.6	0.62	0.61
9445	18	59	1.5	10.1	11.6	6.8	0.73	0.77
9495	17	63	1.5	10.8	7.3	6.9	0.78	0.79
9525	18	66	1.1	8.4	6.1	6.1	0.82	0.79
9565	15	71	0.8	8.9	4.4	6.4	0.84	0.83
9605	17	73	0.8	6.0	2.7	5.9	0.89	0.81
9645	13	67	0.8	14.9	3.5	6.5	0.79	0.83
9685	17	68	0.8	11.5	2.7	5.6	0.83	0.80
9725	14	71	0.6	12.1	2.4	5.1	0.83	0.84
9765	23	59	1.6	11.2	5.0	5.9	0.79	0.72
9805	26	49	2.7	9.5	13.3	7.4	0.68	0.65
9845	24	50	1.8	9.0	15.7	6.1	0.67	0.68
9885	26	41	2.6	10.1	20.8	8.2	0.57	0.61
9925	27	40	1.5	7.7	23.7	9.3	0.56	0.60
9965	24	46	1.2	5.5	23.4	8.9	0.61	0.65
10005	25	54	0.8	4.9	15.1	7.8	0.73	0.69
10045	25	52	1.3	3.9	18.1	9.5	0.70	0.68
10095	31	44	2.2	4.8	18.6	9.7	0.65	0.59

Table 3A. continued

Depth	Detritus	Silica	Apatite	Dolomite	Calcite	Organic Matter	Silica/ Silica+Carb	Silica/ Sil+Detritus
10135	32	45	1.8	7.0	13.7	8.4	0.69	0.59
10165	31	39	1.2	17.0	11.5	5.8	0.58	0.55
10185	35	40	1.5	11.7	11.9	7.7	0.63	0.53
10325	40	43	0.3	10.9	6.6	3.4	0.71	0.52

Table 3B. Abundances of sedimentary components (in weight %) and other derived parameters in bulk cuttings from Hondo well H-2. Values listed in columns 2 through 6 ("Detritus" through "Calcite") have been normalized to sum to 100% on an organic-matter-free basis. See text for comments on negative values and problems with the calcite-dolomite partition.

Depth	Detritus	Silica	Apatite	Dolomite	Calcite	Organic Matter	Silica/ Silica+Carb	Silica/ Silica+Detritus
5185	67	13	-0.1	10.2	10.1	4.5	0.38	0.16
5485	74	12	0.0	7.4	6.7	3.5	0.46	0.14
5785	58	13	0.0	21.8	7.3	3.3	0.31	0.19
6085	57	10	0.2	28.3	4.5	15.3	0.23	0.15
6385	62	11	0.2	22.9	3.3	3.9	0.30	0.16
6685	69	19	0.3	8.7	2.0	5.4	0.64	0.22
6985	67	19	0.1	12.1	1.6	3.3	0.58	0.22
7105	67	17	-0.0	14.2	1.8	2.3	0.52	0.20
7225	67	18	0.0	12.7	1.8	3.9	0.56	0.21
7345	67	17	0.1	14.7	1.7	2.8	0.50	0.20
7465	73	18	-0.0	7.5	0.8	2.7	0.69	0.20
7585	72	19	-0.0	9.1	0.3	3.1	0.66	0.20
7705	66	26	0.1	7.3	0.9	2.9	0.76	0.28
7825	64	27	0.0	8.3	0.7	3.1	0.75	0.30
7945	70	23	-0.0	6.8	0.7	2.5	0.75	0.25
8065	68	23	0.0	8.2	0.4	2.3	0.73	0.26
8185	62	29	0.1	8.0	0.1	2.2	0.78	0.32
8305	66	27	-0.1	6.6	-0.1	1.8	0.81	0.29
8425	69	25	-0.0	5.6	0.3	2.7	0.81	0.27
8545	56	37	0.1	6.6	0.8	2.6	0.83	0.40
8665	60	34	0.3	5.5	0.7	2.3	0.85	0.36
8785	60	35	0.2	4.6	0.6	2.6	0.87	0.37
8815	60	34	0.1	5.8	0.8	-	0.84	0.36
8845	61	34	0.2	4.5	0.8	-	0.86	0.36
8875	60	32	0.2	6.1	0.8	-	0.82	0.35
8905	62	32	0.2	4.8	0.5	2.7	0.86	0.34

Table 3B. continued

Depth	Detritus	Silica	Apatite	Dolomite	Calcite	Organic Matter	Silica/ Silica+Carb	Silica/ Silica+Detritus
8935	62	32	0.2	6.0	0.8	–	0.82	0.34
8965	64	29	0.3	5.1	0.6	5.4	0.84	0.31
8995	57	36	0.4	5.1	1.5	–	0.84	0.38
9015	59	33	0.5	5.2	2.1	6.0	0.82	0.36
9025	56	34	0.5	4.6	4.4	–	0.79	0.38
9035	52	34	0.6	5.9	7.6	–	0.71	0.39
9045	49	36	0.6	5.1	8.5	–	0.73	0.42
9055	49	39	0.6	4.5	7.0	7.1	0.77	0.45
9065	46	42	0.6	4.9	6.4	–	0.79	0.47
9075	44	44	0.6	5.3	6.1	–	0.79	0.50
9085	44	42	0.7	6.9	5.7	–	0.77	0.49
9095	44	43	0.8	5.7	6.1	6.7	0.79	0.49
9105	36	51	0.7	6.4	5.4	–	0.81	0.59
9115	33	56	0.7	7.0	4.1	–	0.83	0.63
9125	29	58	0.5	8.3	3.8	–	0.83	0.67
9135	30	58	0.5	8.5	3.4	4.9	0.83	0.66
9145	30	58	0.5	7.9	3.3	–	0.84	0.66
9155	27	61	0.5	8.0	3.0	–	0.85	0.69
9165	27	58	0.4	11.4	3.2	–	0.80	0.68
9175	27	57	0.5	12.2	3.0	4.5	0.79	0.67
9185	27	57	0.4	12.9	3.0	–	0.78	0.68
9195	29	53	0.6	14.4	3.5	–	0.75	0.65
9205	30	54	0.6	12.5	2.8	–	0.78	0.64
9215	29	57	0.5	10.7	2.7	4.4	0.81	0.66
9225	21	63	0.5	11.4	4.2	–	0.80	0.75
9235	21	64	0.4	10.1	3.7	–	0.82	0.75
9245	23	58	0.5	14.8	3.8	–	0.76	0.72
9255	21	67	0.4	9.1	2.9	4.2	0.85	0.76

Table 3B. continued

Depth	Detritus	Silica	Apatite	Dolomite	Calcite	Organic Matter	Silica/ Silica+Carb	Silica/ Silica+Detritus
9265	21	66	0.4	9.9	2.7	-	0.84	0.75
9275	21	65	0.4	10.7	2.8	-	0.83	0.76
9285	18	71	0.3	8.5	2.2	-	0.87	0.80
9295	29	59	0.4	9.4	2.2	4.2	0.84	0.67
9305	20	68	0.3	9.6	2.3	-	0.85	0.77
9315	22	66	0.3	9.4	2.5	-	0.85	0.75
9325	24	59	0.3	13.5	3.5	-	0.78	0.71
9335	29	56	0.3	12.0	2.3	8.0	0.80	0.66
9345	28	56	0.4	13.4	2.6	-	0.78	0.67
9355	40	50	0.3	8.2	1.7	-	0.83	0.55
9365	31	57	0.4	9.7	1.9	-	0.83	0.65
9375	28	58	0.4	9.5	4.4	4.2	0.81	0.67
9385	23	58	0.4	12.1	6.3	-	[illegible]	0.71
9395	22	60	0.4	11.6	6.2	-	0.77	0.73
9405	24	58	0.6	11.9	6.0	-	0.76	0.71
9415	23	56	0.6	13.1	6.8	5.5	0.74	0.71
9425	22	57	0.5	13.2	7.7	-	0.73	0.72
9435	22	56	0.5	13.2	8.0	-	0.73	0.72
9445	23	56	0.5	12.5	8.6	-	0.73	0.71
9455	19	59	0.4	12.0	9.2	3.8	0.74	0.75
9465	16	58	0.4	14.5	11.3	-	0.69	0.79
9475	14	59	0.4	14.9	12.3	-	0.68	0.81
9485	16	57	0.6	13.7	12.3	-	0.69	0.78
9495	16	57	0.5	15.5	10.4	4.3	0.69	0.78
9505	15	61	0.5	16.0	7.5	-	0.72	0.80
9515	19	58	0.8	16.6	5.5	-	0.72	0.75
9525	16	60	0.7	18.2	5.1	-	0.72	0.78
9535	18	58	0.9	17.2	6.4	4.7	0.71	0.77

Table 3B. continued

Depth	Detritus	Silica	Apatite	Dolomite	Calcite	Organic Matter	Silica/ Silica+Carb	Silica/ Silica+Detritus
9545	19	56	0.9	14.3	9.2	-	0.71	0.75
9555	21	54	0.7	15.2	9.0	-	0.69	0.72
9565	20	50	0.9	17.1	11.7	-	0.64	0.72
9575	20	53	0.9	14.7	10.6	5.0	0.68	0.72
9585	17	55	0.8	17.0	10.0	-	0.67	0.76
9595	20	55	0.7	15.3	8.8	-	0.69	0.73
9605	20	56	0.7	14.3	8.5	-	0.71	0.73
9615	19	59	0.6	15.2	6.0	4.5	0.73	0.75
9625	20	62	0.8	12.3	4.0	-	0.79	0.75
9635	21	60	0.7	13.4	4.5	-	0.77	0.74
9645	19	60	0.9	15.5	4.4	-	0.75	0.76
9655	21	55	0.9	18.7	4.3	4.7	0.71	0.73
9665	23	56	0.8	14.5	5.7	-	0.73	0.71
9675	24	55	1.1	11.3	8.3	-	0.74	0.70
9685	24	56	1.3	11.3	7.2	-	0.75	0.70
9695	27	51	1.4	13.1	6.9	5.7	0.72	0.65
9705	27	51	1.8	11.0	8.3	-	0.73	0.65
9715	28	50	2.0	11.8	8.0	-	0.72	0.65
9725	40	43	0.7	10.7	5.7	-	0.72	0.51
9735	37	42	1.3	9.9	10.0	5.6	0.68	0.53
9745	33	41	2.1	7.9	16.1	-	0.63	0.56
9755	34	40	2.5	7.8	15.2	7.7	0.64	0.54
9765	37	37	3.3	7.4	15.1	-	0.62	0.50
9775	37	33	3.9	7.1	18.8	8.8	0.56	0.47
9785	32	38	3.4	6.0	20.1	9.3	0.59	0.54
9795	26	45	2.4	6.7	20.1	8.1	0.63	0.63
9805	21	54	1.6	6.7	17.7	7.0	0.39	0.72
9815	21	56	1.2	7.1	14.5	5.6	0.72	0.73

Table 3B. continued

Depth	Detritus	Silica	Apatite	Dolomite	Calcite	Organic Matter	Silica/ Silica+Carb	Silica/ Silica+Detritus
9825	19	55	1.2	8.7	15.6	-	0.69	0.74
9835	19	54	1.0	8.5	17.8	-	0.67	0.74
9845	19	57	0.9	9.2	13.9	-	0.71	0.75
9855	25	55	1.0	8.4	9.9	5.4	0.75	0.69
9865	21	59	0.8	11.4	7.9	-	0.75	0.74
9875	21	61	0.8	10.2	7.5	-	0.78	0.75
9885	23	58	1.2	9.5	8.0	-	0.77	0.71
9895	30	50	1.5	9.5	9.1	5.7	0.73	0.63
9895	26	57	1.2	8.2	8.3	-	0.77	0.69
9905	21	61	0.9	8.9	8.7	-	0.78	0.75
9915	40	46	1.9	7.6	4.7	-	0.79	0.53
9925	30	57	1.0	8.8	3.7	-	0.82	0.65
9935	30	57	0.9	8.2	3.4	6.0	0.83	0.65
9945	30	57	1.2	8.5	3.2	-	0.83	0.65
9955	22	64	0.8	7.4	6.3	-	0.82	0.75
9965	22	63	0.9	7.8	6.0	-	0.82	0.74
9975	27	60	0.6	8.2	4.8	4.8	0.82	0.69
9985	27	58	0.6	10.4	4.4	-	0.80	0.68
9995	36	53	1.0	3.7	6.1	-	0.84	0.59
10005	34	56	0.9	2.9	6.3	-	0.86	0.62
10015	27	63	0.8	4.2	5.5	7.3	0.87	0.70
10025	20	66	0.7	6.4	6.7	-	0.33	0.76
10035	20	67	0.6	6.7	5.3	-	0.8[illegible]	0.77
10045	20	70	0.6	5.6	3.5	-	0.89	0.78
10055	19	72	0.5	5.7	2.7	6.6	0.89	0.79
10065	20	71	0.7	5.0	2.8	-	0.90	0.78
10075	19	71	0.7	6.7	2.8	-	0.38	0.79
10085	16	72	0.8	8.5	2.8	-	0.86	0.82

Table 3B. continued

Depth	Detritus	Silica	Apatite	Dolomite	Calcite	Organic Matter	Silica/ Silica+Carb	Silica/ Silica+Detritus
10095	18	68	0.8	9.8	2.7	5.9	0.85	0.79
10105	13	71	0.6	12.9	3.1	–	0.81	0.85
10115	14	68	0.7	13.7	3.2	–	0.80	0.83
10125	16	67	0.7	12.6	3.7	–	0.80	0.80
10135	15	68	0.7	11.0	4.8	4.7	0.81	0.82
10145	18	64	1.9	10.2	5.7	–	0.80	0.78
10155	22	58	3.9	8.8	7.5	–	0.78	0.72
10165	30	49	4.6	5.3	10.9	–	0.75	0.62
10175	30	43	4.8	6.8	14.5	8.9	0.67	0.59
10185	26	41	4.1	9.6	19.2	–	0.58	0.60
10195	29	35	5.3	5.1	26.0	–	0.53	0.55
10205	26	43	4.4	8.0	18.8	–	0.62	0.63
10215	26	42	3.0	7.5	21.5	9.0	0.59	0.62
10225	25	44	2.7	6.3	22.4	–	0.61	0.64
10235	25	43	3.0	6.4	21.9	–	0.60	0.63
10245	28	39	4.4	5.9	22.7	–	0.58	0.59
10255	27	42	3.2	6.7	21.3	8.8	0.60	0.61
10265	27	41	3.5	7.2	21.8	–	0.58	0.60
10275	32	40	1.5	16.0	10.3	–	0.61	0.56
10285	33	36	2.4	9.6	19.1	–	0.55	0.52
10295	31	32	2.3	10.1	24.6	7.8	0.48	0.50
10305	32	33	2.5	8.2	25.1	–	0.49	0.51
10315	32	32	2.5	7.9	25.9	–	0.49	0.50
10325	28	36	1.9	7.5	26.8	–	0.51	0.56
10335	25	39	1.4	11.1	23.6	6.6	0.53	0.61
10345	27	40	1.6	7.4	24.7	–	0.55	0.60
10355	25	39	3.1	6.9	26.2	–	0.54	0.61
10365	25	32	5.8	7.3	29.6	–	0.47	0.56

Table 3B. continued

Depth	Detritus	Silica	Apatite	Dolomite	Calcite	Organic Matter	Silica/ Silica+Carb	Silica/ Silica+Detritus
10375	26	33	4.2	7.2	29.6	8.6	0.48	0.57
10385	26	30	4.1	9.0	30.6	-	0.43	0.53
10395	29	27	4.1	6.2	34.2	-	0.40	0.48
10405	30	24	4.6	4.9	36.4	-	0.37	0.44
10415	29	30	4.0	6.3	30.7	9.9	0.45	0.51
10425	29	31	4.0	5.5	30.7	-	0.46	0.52
10435	29	32	4.0	4.7	29.7	-	0.49	0.53
10445	25	41	3.2	6.0	24.9	-	0.57	0.62
10455	40	34	1.4	10.9	13.6	5.7	0.58	0.46
10465	42	34	1.0	11.0	11.8	-	0.60	0.45
10475	43	34	1.6	8.4	12.7	-	0.62	0.44
10485	39	35	2.3	5.4	18.4	-	0.60	0.47
10495	32	37	3.2	5.1	22.7	8.7	0.57	0.53
10505	33	35	3.9	4.7	23.8	-	0.55	0.52
10515	33	34	3.8	5.2	23.8	-	0.54	0.51
10525	35	35	3.1	5.6	21.3	-	0.57	0.50
10535	38	35	2.8	5.2	19.7	8.9	0.58	0.48
10545	34	38	2.6	6.6	18.2	-	0.61	0.53
10555	31	41	2.0	10.4	15.4	-	0.62	0.57
10565	32	40	2.1	12.1	14.1	-	0.60	0.55
10575	37	33	1.1	18.3	10.4	4.9	0.54	0.47
10585	43	31	1.0	15.0	10.1	-	0.55	0.42
10595	41	29	0.8	19.4	9.2	-	0.51	0.42
10605	39	30	0.8	20.8	9.4	-	0.49	0.43
10615	44	26	0.8	21.0	8.5	4.4	0.47	0.37
10625	40	27	0.8	23.2	9.0	-	0.45	0.40
10635	37	24	0.7	28.8	9.4	-	0.38	0.39
10645	38	24	0.7	28.2	9.0	-	0.40	0.39

Table 3B. continued

Depth	Detritus	Silica	Apatite	Dolomite	Calcite	Organic Matter	Silica/ Silica+Carb	Silica/ Silica+Detritus
10655	33	19	0.6	37.9	9.5	2.9	0.29	0.37
10665	39	23	0.6	29.1	8.7	-	0.38	0.37
10675	32	22	0.5	36.7	9.6	-	0.32	0.41
10685	33	22	0.4	35.6	9.1	-	0.33	0.39
10695	37	22	0.3	32.3	8.3	2.5	0.35	0.37
10705	38	23	0.4	30.1	8.3	-	0.38	0.38
10715	44	22	0.4	26.5	7.6	-	0.39	0.34
10725	40	23	0.3	28.8	7.7	-	0.39	0.37
10735	44	23	0.2	25.6	6.8	1.7	0.42	0.35
10745	33	20	0.3	37.5	9.0	-	0.30	0.38
10755	42	21	0.2	29.6	7.5	-	0.36	0.33
10765	40	22	0.3	30.5	7.7	-	0.36	0.35
10775	34	21	0.3	35.9	8.5	2.0	0.32	0.38
10785	48	19	0.2	27.7	5.5	-	0.36	0.28
10795	50	18	0.3	26.8	5.0	-	0.36	0.27
10805	49	18	0.1	27.7	5.1	-	0.35	0.27
10815	59	16	0.1	21.5	2.5	2.1	0.41	0.22
10825	62	14	0.2	21.1	2.2	-	0.38	0.19
10835	49	17	0.3	28.4	5.4	-	0.33	0.26
10845	56	17	0.2	23.1	3.6	-	0.39	0.24
10855	49	16	0.2	29.6	4.6	2.6	0.32	0.25
10865	54	16	0.1	26.4	3.3	-	0.35	0.23
10875	56	17	0.1	24.2	3.2	-	0.38	0.23
10885	51	17	0.2	27.1	4.3	-	0.35	0.25
10895	60	17	0.0	21.3	2.0	2.5	0.42	0.22
10905	55	19	0.1	22.7	3.3	-	0.43	0.26
10915	55	23	0.1	19.4	3.2	-	0.50	0.29
10925	53	22	0.1	21.5	3.9	-	0.46	0.30

Table 3B. continued

Depth	Detritus	Silica	Apatite	Dolomite	Calcite	Organic Matter	Silica/ Silica+Carb	Silica/ Silica+Detritus
10935	54	24	0.1	18.3	3.9	2.5	0.52	0.31
10945	59	23	0.1	14.6	3.0	-	0.57	0.28
10955	59	23	0.1	14.5	3.8	-	0.56	0.28
10965	55	25	0.1	15.0	4.4	3.1	0.57	0.31
10975	60	23	0.0	13.7	3.8	-	0.57	0.28
10985	57	25	0.0	14.0	4.4	-	0.57	0.30
10995	55	25	0.1	15.1	4.3	-	0.57	0.31
11015	60	22	0.1	16.2	2.1	2.8	0.54	0.26
11075	65	21	0.0	10.9	3.3	2.6	0.60	0.25
11135	63	20	-0.1	12.2	5.2	2.1	0.53	0.24
11195	67	19	-0.2	9.8	5.2	1.9	0.55	0.22
11255	72	18	-0.3	7.1	3.5	1.8	0.62	0.20
11315	72	17	-0.1	8.1	3.0	2.4	0.61	0.19
11375	78	13	-0.2	6.4	2.9	2.2	0.57	0.14
11435	75	15	-0.1	6.3	3.4	2.6	0.61	0.17
11495	69	17	-0.2	9.2	5.3	3.1	0.54	0.20
11555	85	9	-0.4	5.1	1.9	2.6	0.55	0.09
11615	79	11	-0.3	6.5	4.1	2.3	0.51	0.12
11675	84	9	-0.4	4.2	2.6	2.2	0.58	0.10
11735	73	19	-0.5	2.4	6.2	1.3	0.68	0.20
11825	78	13	-0.4	3.5	6.3	2.1	0.57	0.14
11855	78	14	-0.3	3.7	4.4	2.7	0.63	0.15
11915	79	13	-0.3	4.8	3.8	2.9	0.59	0.14
11975	80	12	-0.2	4.9	3.2	4.0	0.60	0.14
12035	78	15	-0.2	3.8	3.4	3.3	0.68	0.16
12095	70	27	-0.2	0.2	3.5	1.7	0.88	0.28

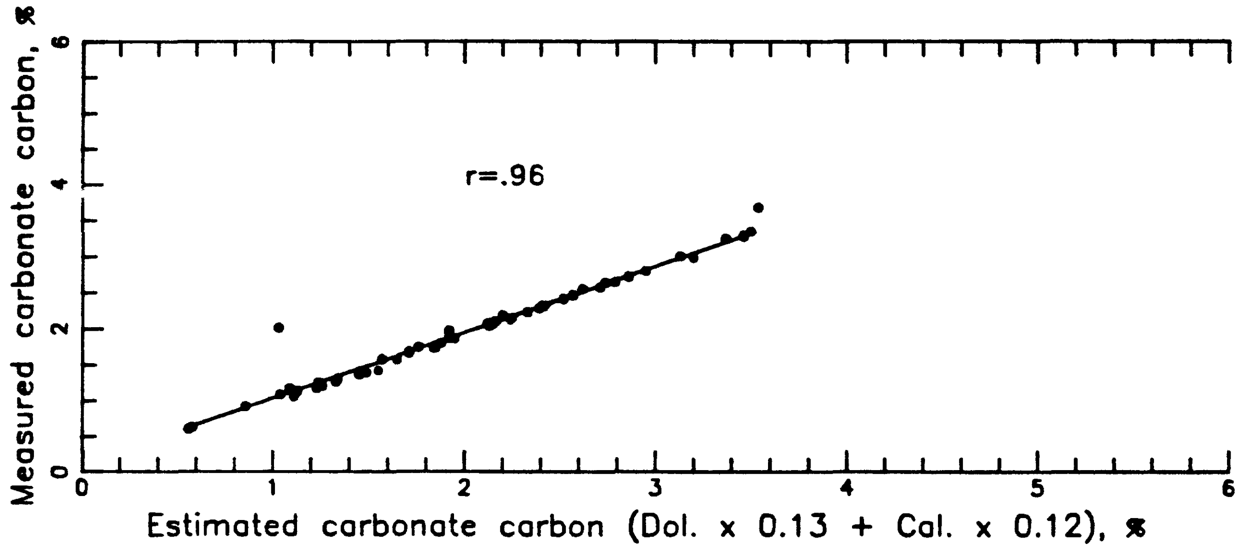

Fig. 2A. Measured values of carbonate carbon versus values estimated from oxide analyses in Hondo well H-1. The correlation was calculated by least-squares linear regression; "r" is the correlation coefficient.

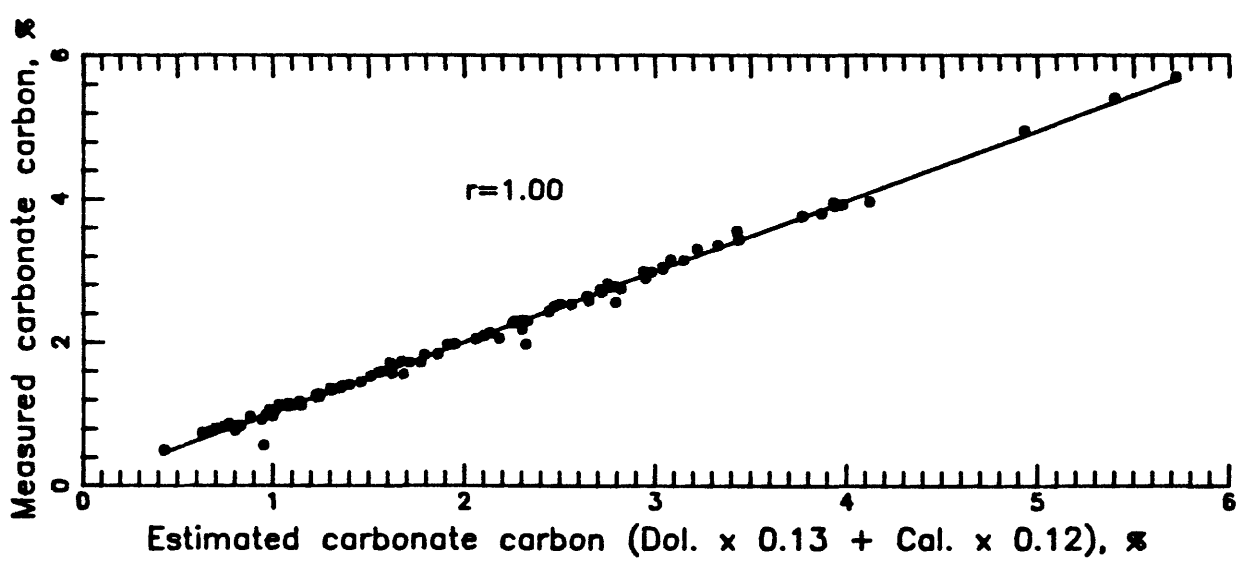

Fig. 2B. Measured values of carbonate carbon versus values estimated from oxide analyses in Hondo well H-2. The correlation was calculated by least-squares linear regression; "r" is the correlation coefficient.

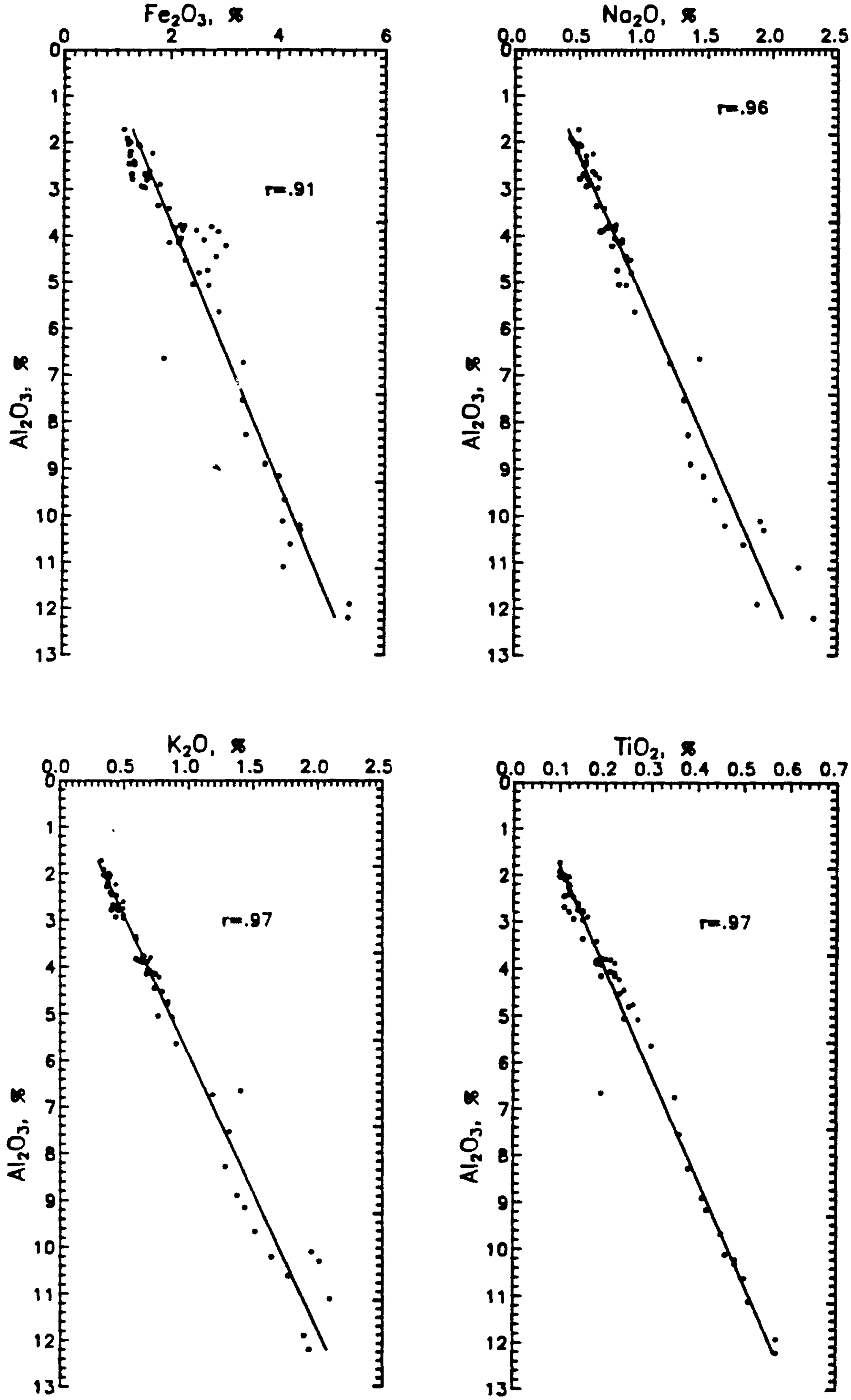

Fig. 3A. Al_2O_3 versus other major oxides in bulk cuttings from the H-1 well. Correlations were calculated by least-squares linear regression; "r" is the correlation coefficient.

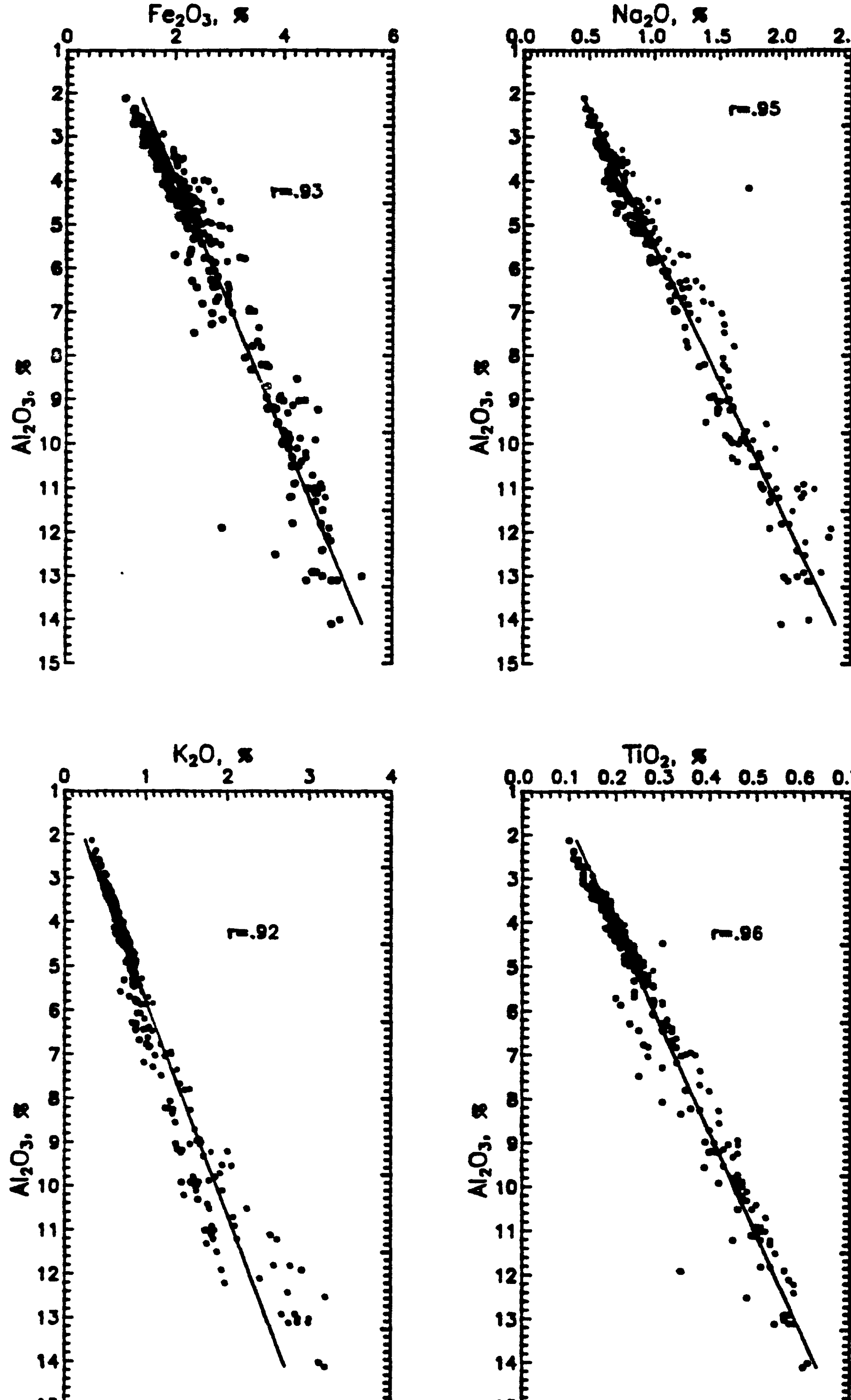

Fig. 3B. Al_2O_3 versus other major oxides in bulk cuttings from the H-2 well. Correlations were calculated by least-squares linear regression; "r" is the correlation coefficient.

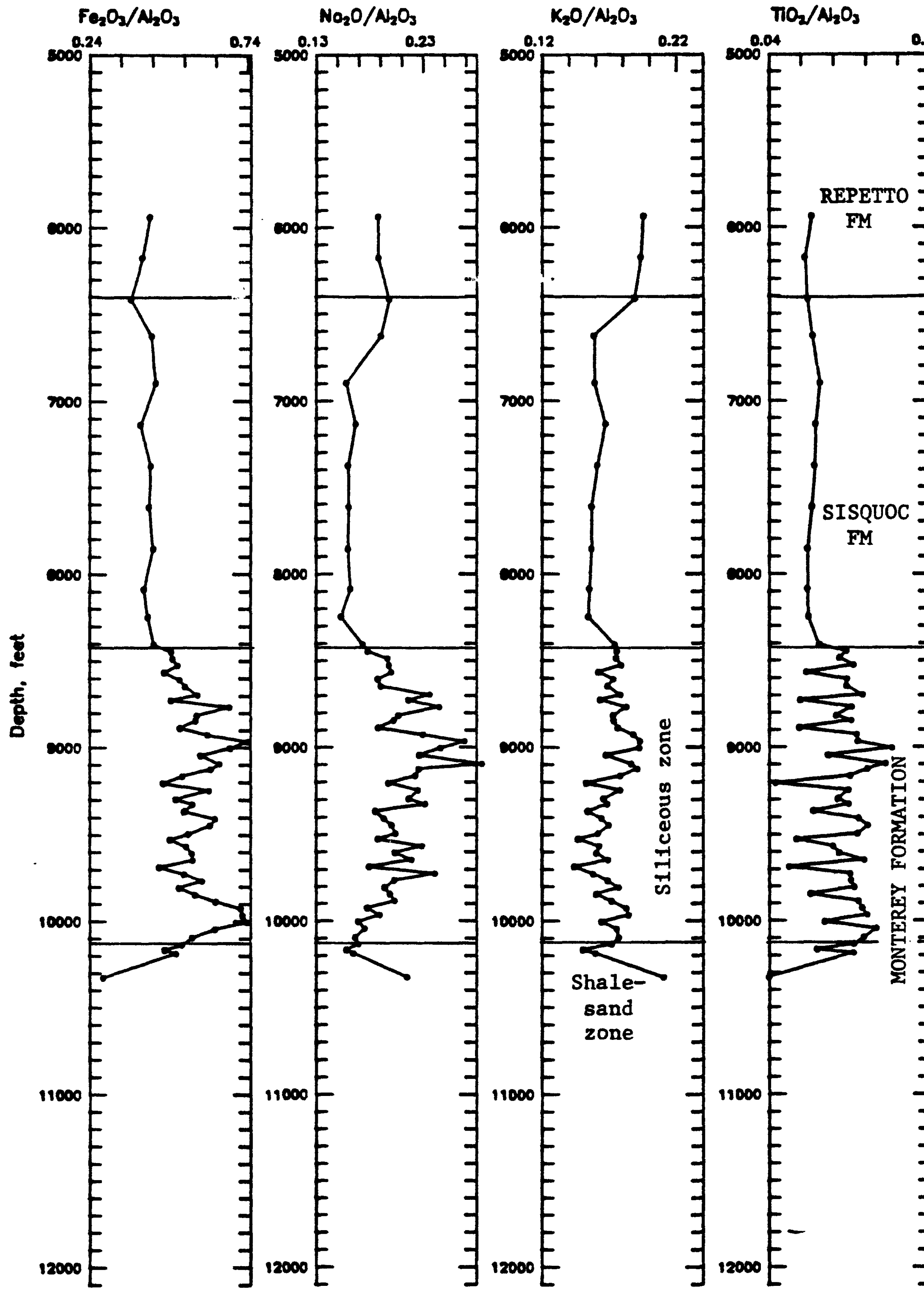

Fig. 4A. Oxide ratios versus depth in bulk cuttings from the H-1 well.

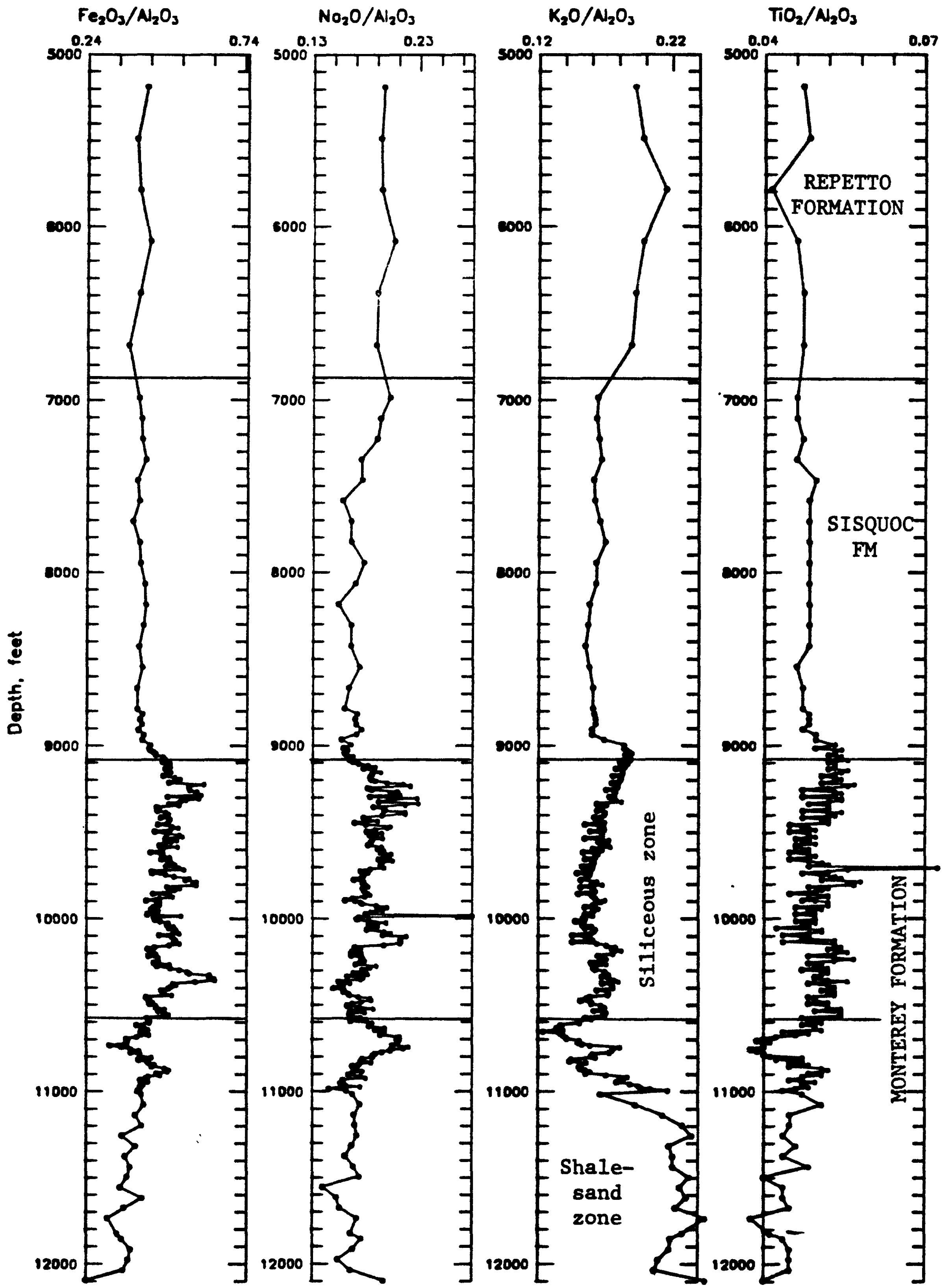

Fig. 4B. Oxide ratios versus depth in bulk cuttings from the H-2 well.

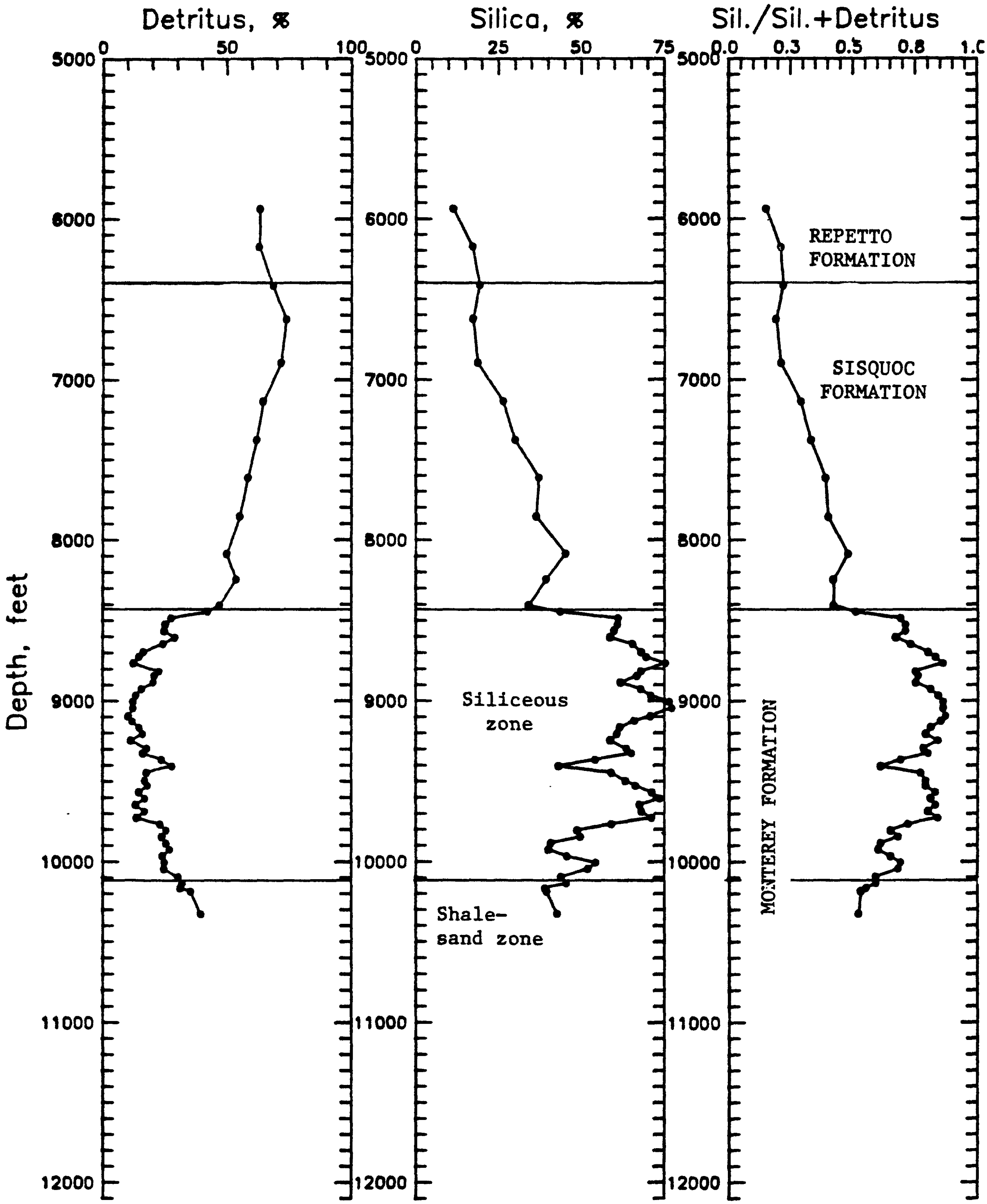

Fig. 5A. Detritus, silica, and silica/(detritus + silica) vs. depth in the H-1 well.

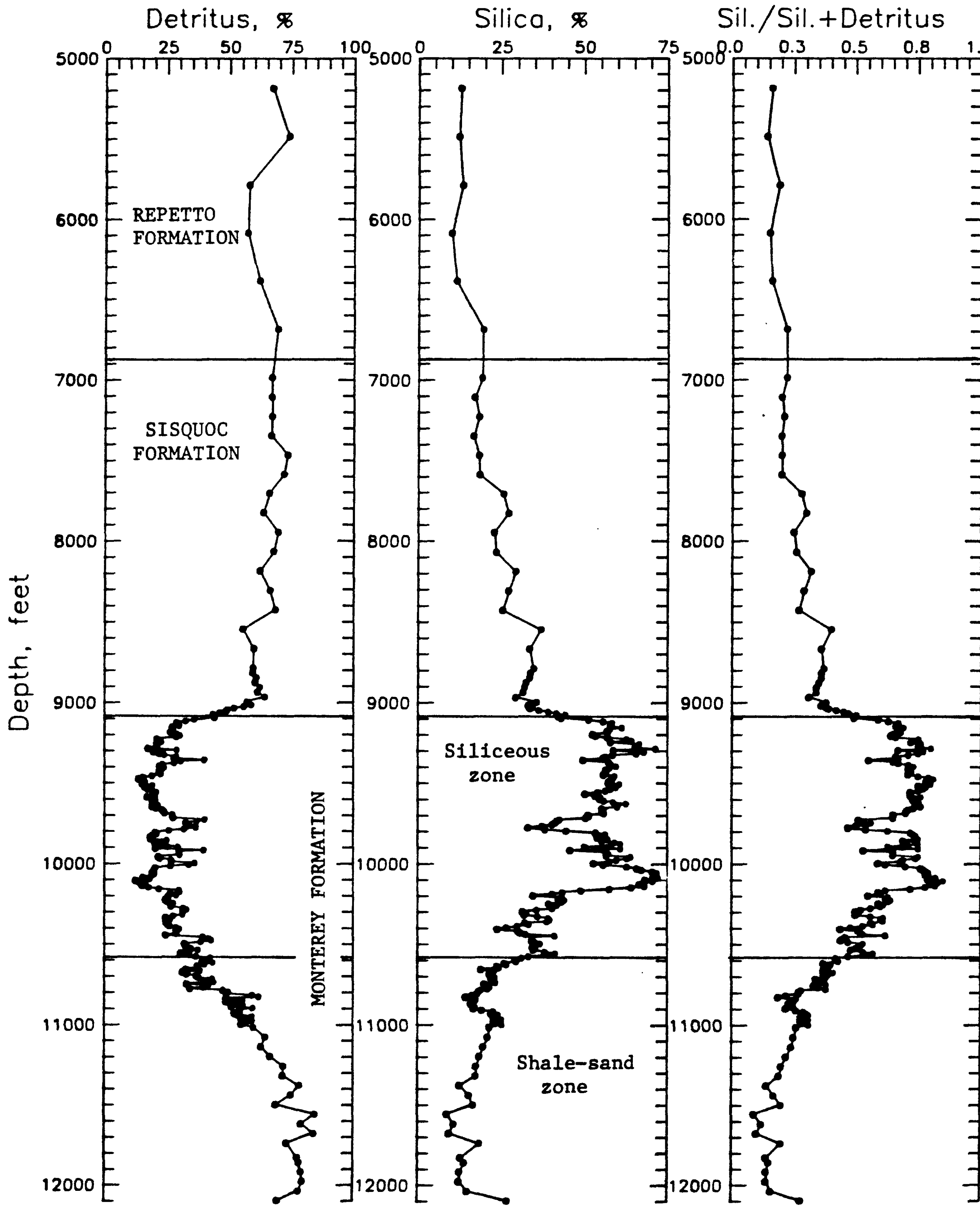

Fig. 5B. Detritus, silica, and silica/(detritus + silica) vs. depth in the H-2 well.

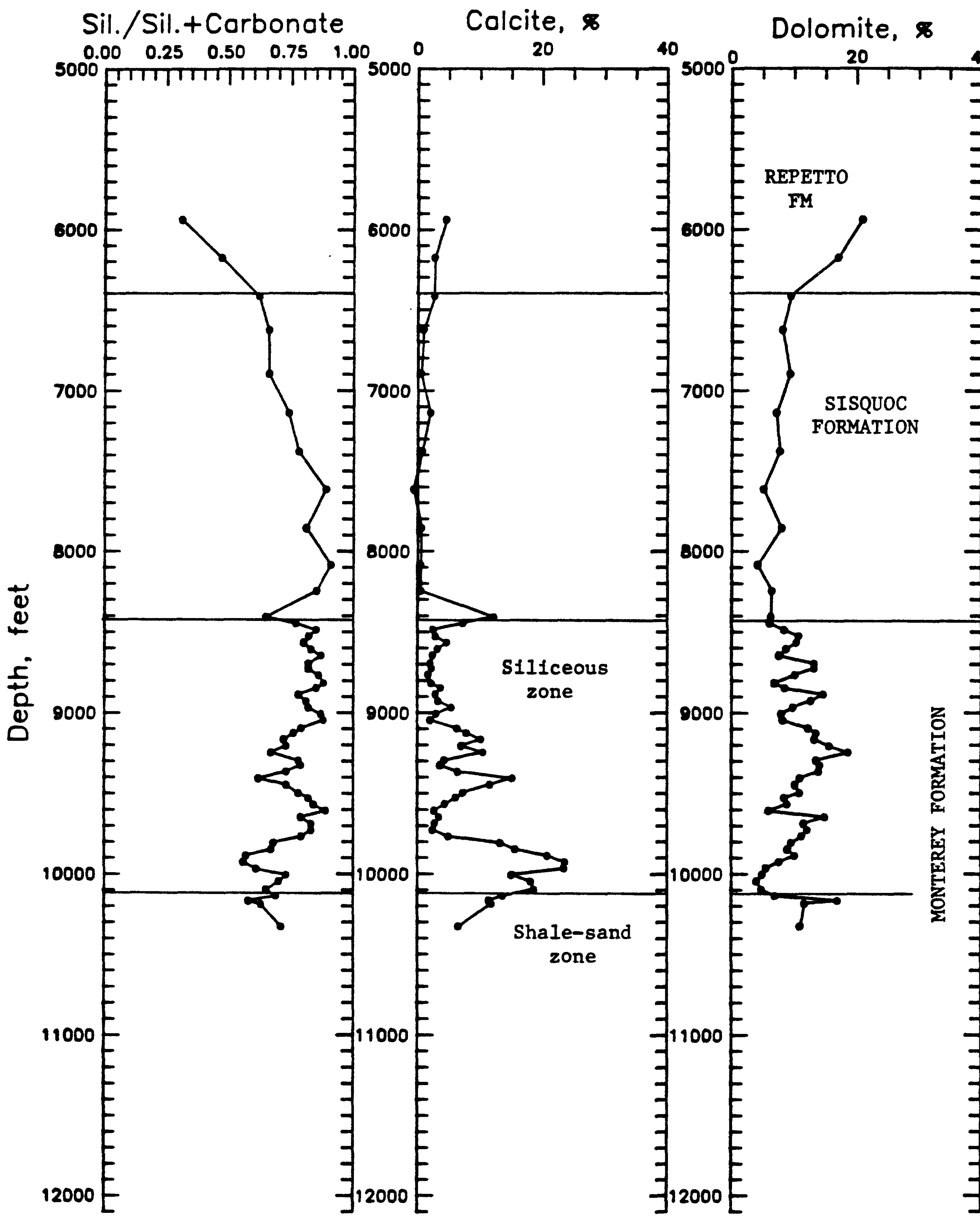

Fig. 6A. Silica/(silica + carbonates), calcite, and dolomite vs. depth in the H-1 well.

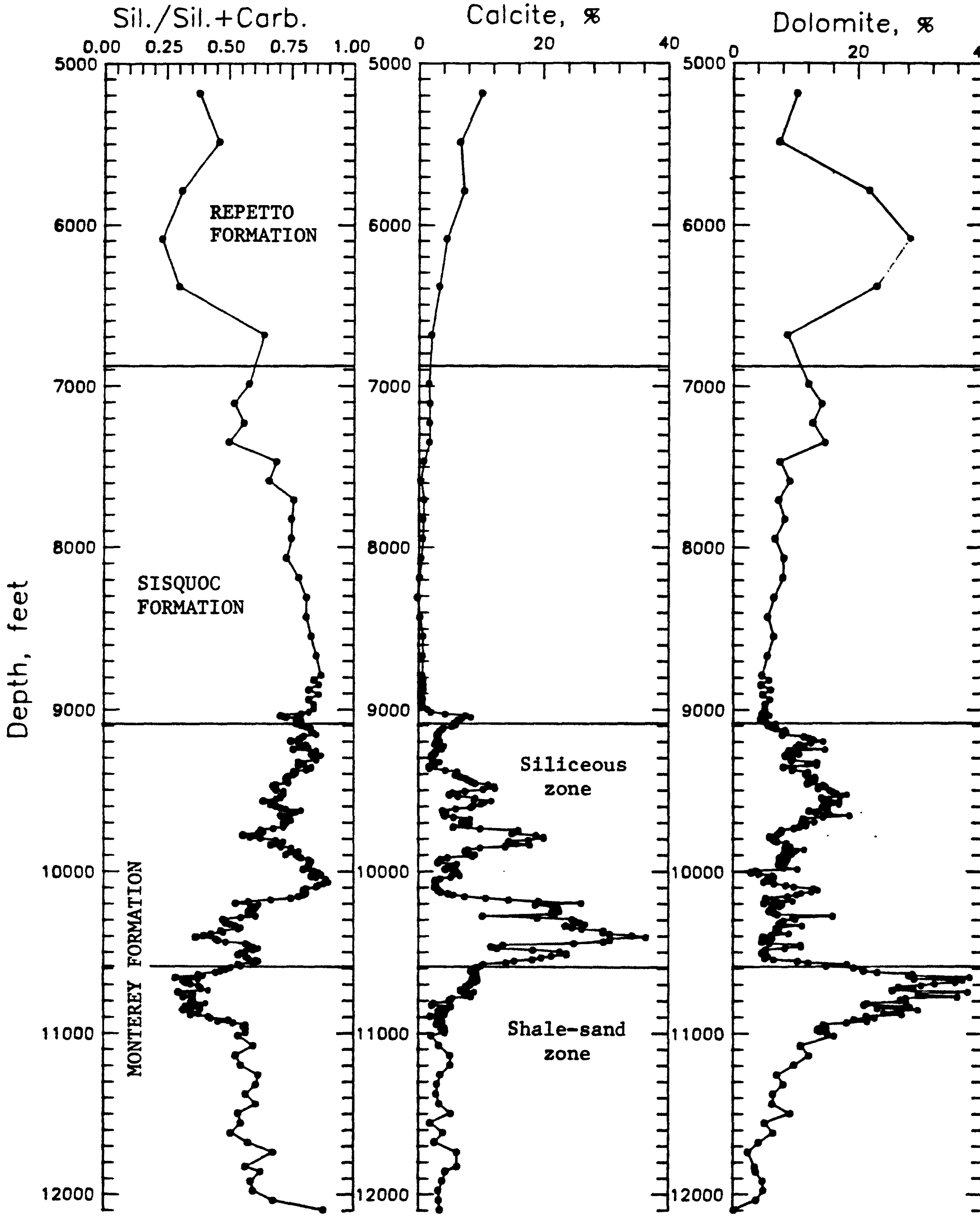

Fig. 6B. Silica/(silica + carbonates), calcite, and dolomite vs. depth in the H-2 well.

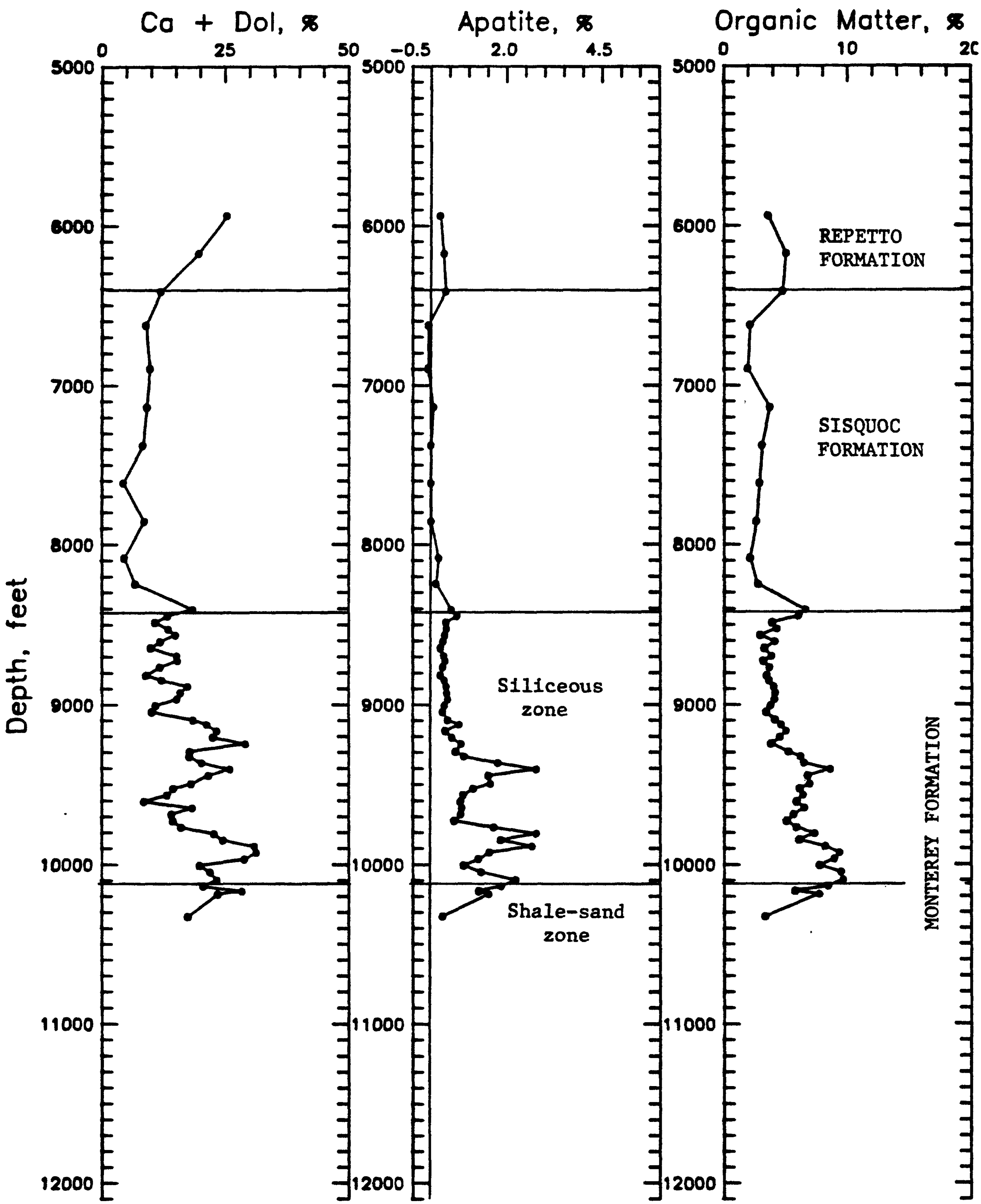

Fig. 7A. Carbonates, apatite, and organic matter vs. depth in the H-1 well.

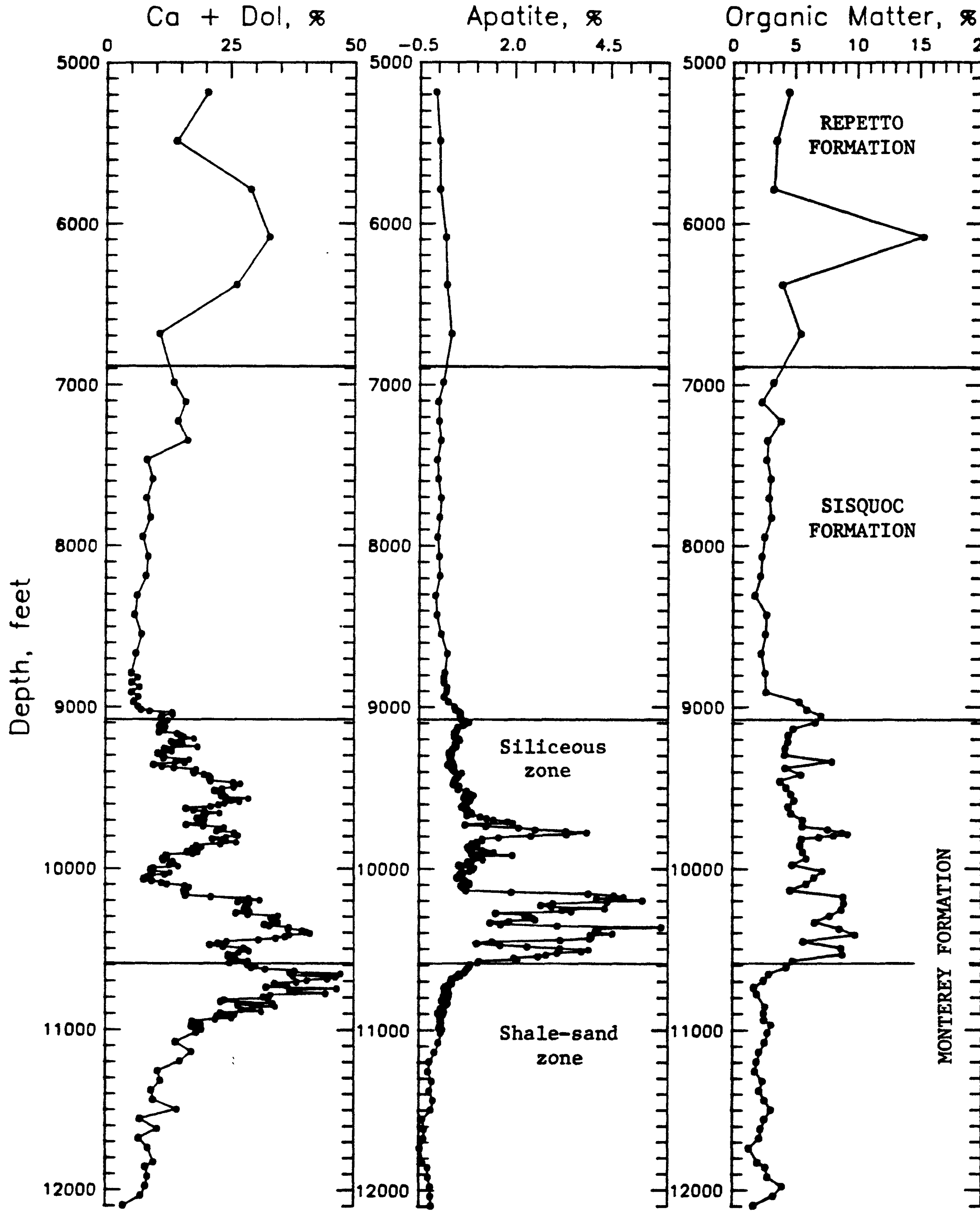

Fig. 7B. Carbonates, apatite, and organic matter vs. depth in the H-2 well.

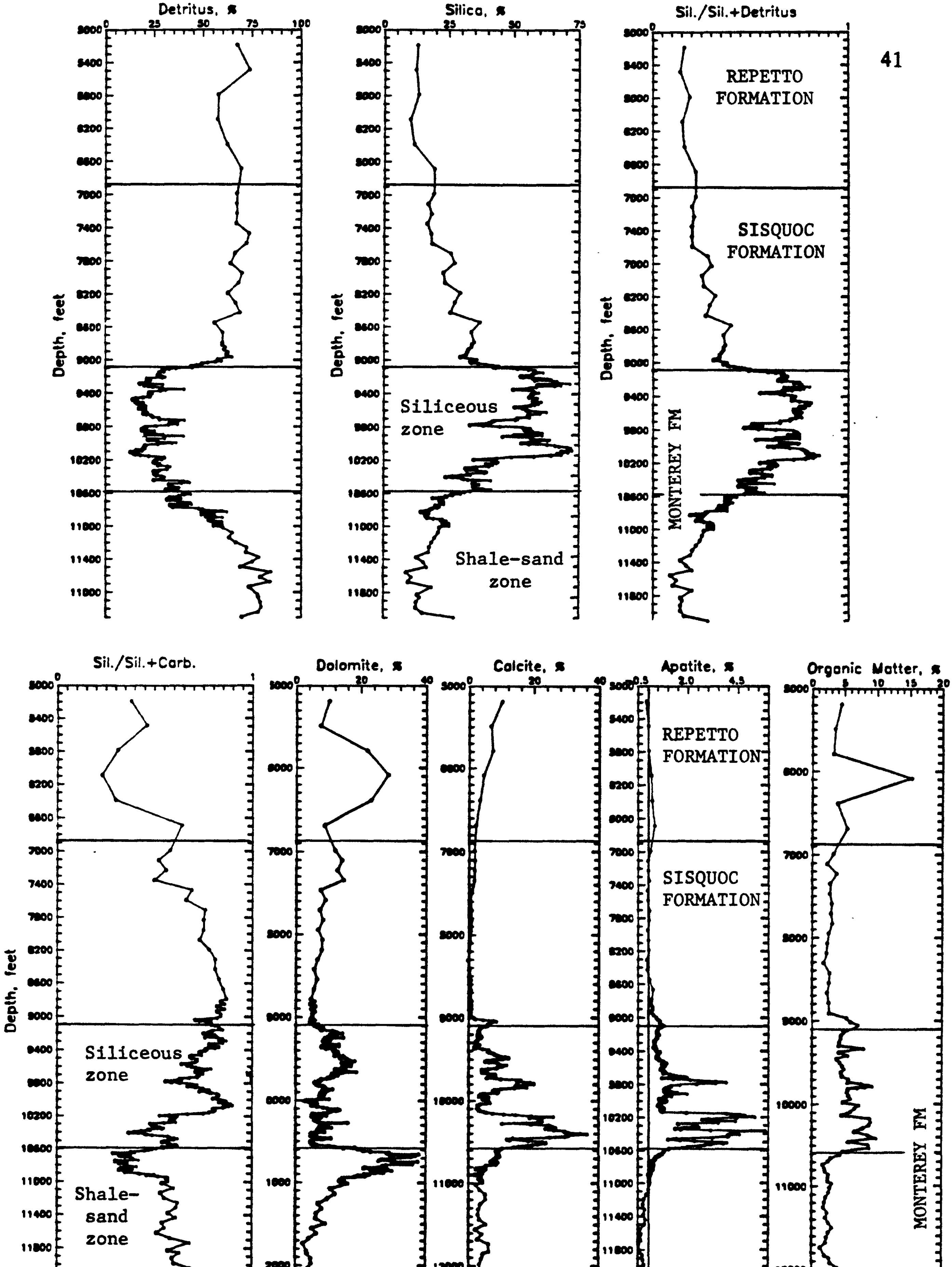

Fig. 8. Summary of sedimentary components and selected parameters versus depth in bulk cuttings from the H-2 well.

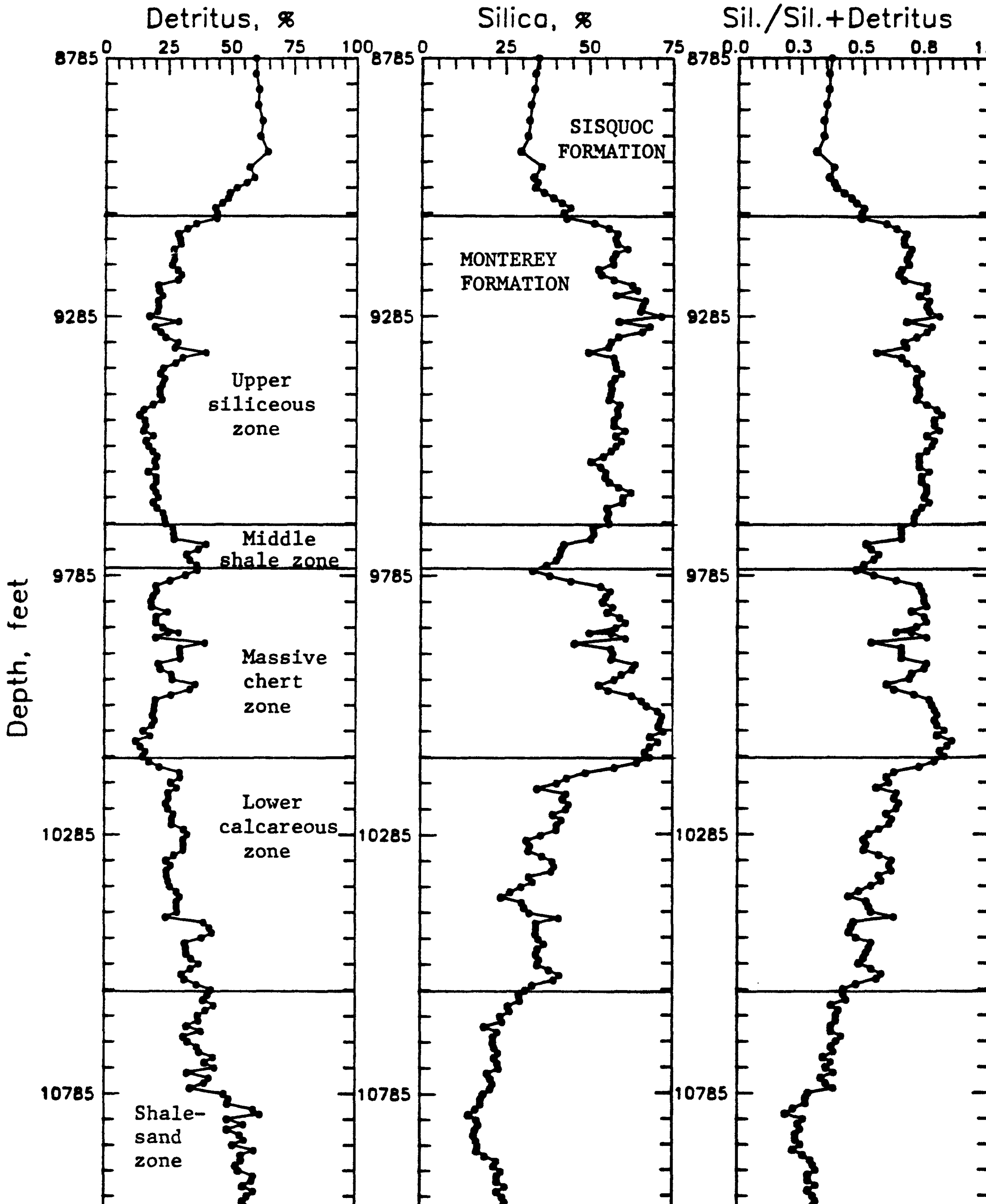

Fig. 9. Detail of detritus, silica, and silica/(detritus + silica) vs. depth within Monterey zones in the H-2 well.

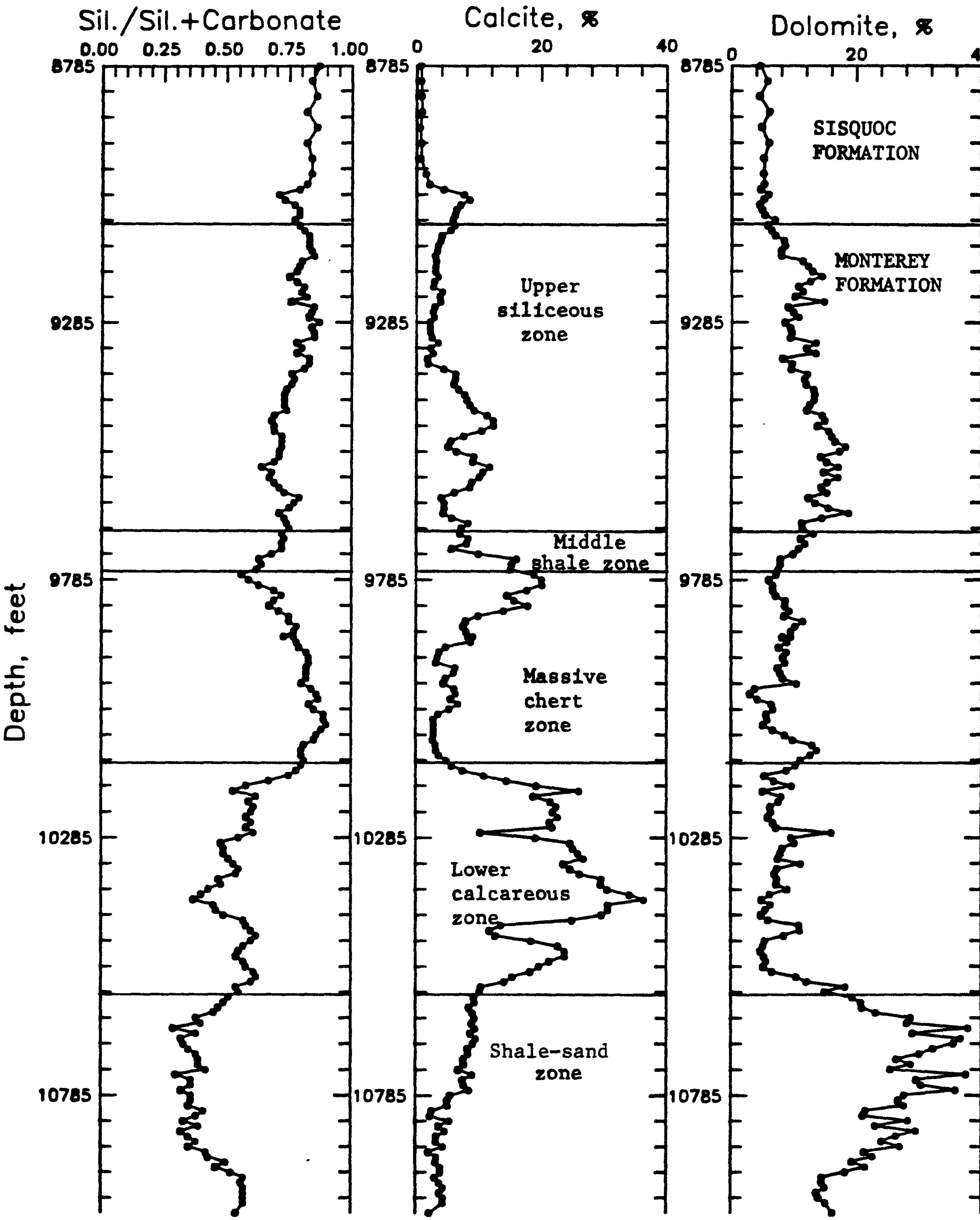

Fig. 10. Detail of silica/(silica + carbonates), calcite, and dolomite vs. depth within Monterey zones in the H-2 well.

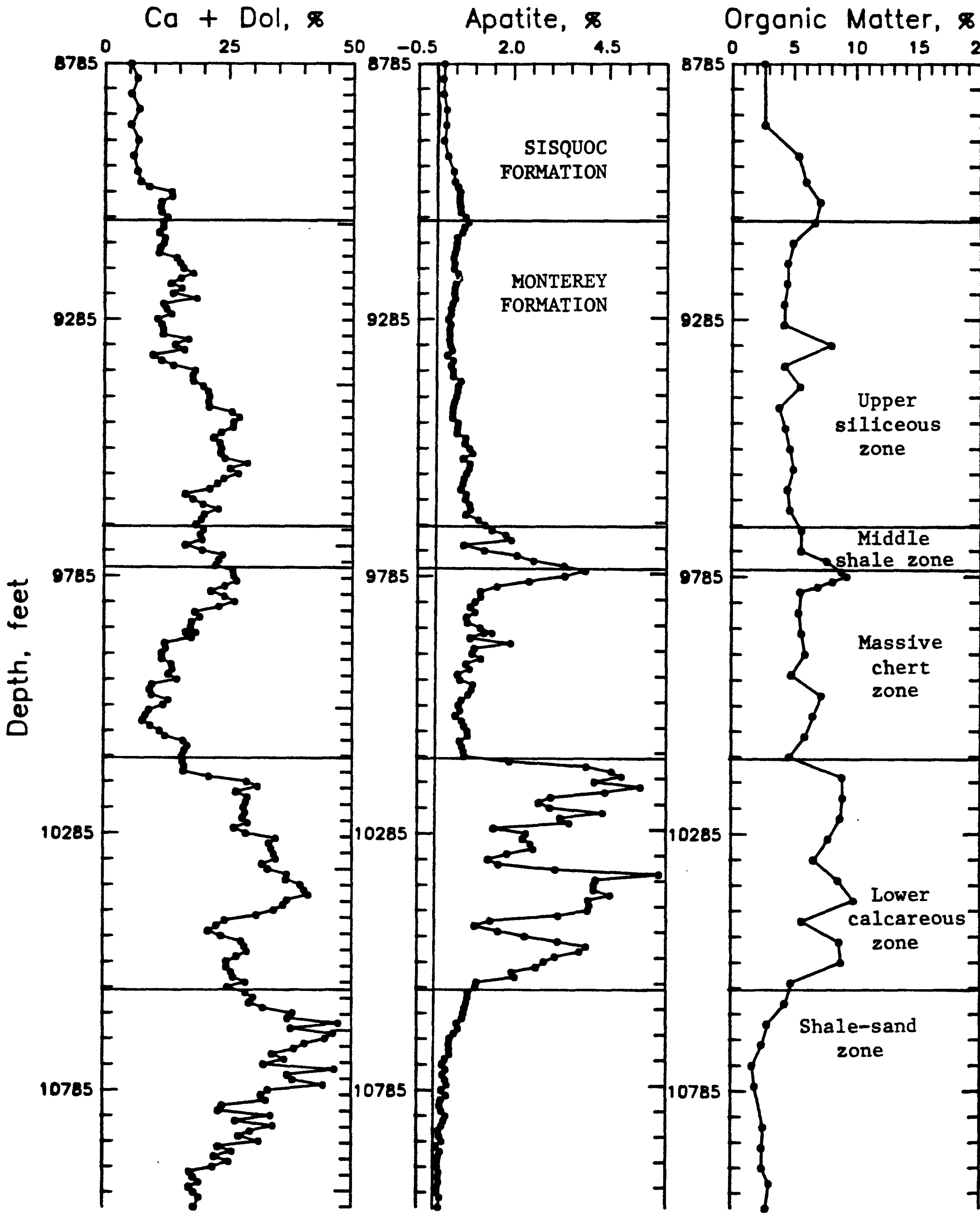

Fig. 11. Detail of carbonates, apatite, and organic matter vs. depth within Monterey zones in the H-2 well.

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