Table 1

Compressional (P) and shear (S) wave velocities (km s^{-1})

Identification number	Bulk density	Mode	P = 0·2 kb	P = 0·4 kb	P = 0·6 kb	P = 0·8 kb	P = 1·0 kb	P = 2·0 kb	P = 4·0 kb	P = 6·0 kb	P = 8·0 kb	P = 10·0kb
EPR 1–1	2·943	P	6·42	6·44	6·47	6·49	6·505	6·587	6·680	6·716	6·742	6·754
EPR 1–2	2·958	P	6·31	6·35	6·39	6·42	6·450	6·564	6·686	6·742	6·776	6·791
EPR 1–3	2·957	P	6·30	6·33	6·36	6·39	6·426	6·520	6·625	6·670	6·696	6·716
Mean	2·953	P	6·34	6·37	6·41	6·43	6·460	6·557	6·664	6·709	6·738	6·754
EPR 1–1	2·943	S	3·41	3·44	3·48	3·50	3·525	3·605	3·681	3·705	3·714	3·722
EPR 1–2	2·958	S	3·40	3·42	3·45	3·47	3·485	3·568	3·662	3·695	3·708	3·714
EPR 1–3	2·957	S	3·33	3·38	3·41	3·44	3·460	3·550	3·639	3·668	3·676	3·684
Mean	2·953	S	3·38	3·41	3·45	3·47	3·490	3·574	3·661	3·689	3·699	3·707
EPR 2–1	2·937	P	6·24	6·31	6·36	6·41	6·447	6·574	6·691	6·738	6·758	6·767
EPR 2–2	2·944	P	6·25	6·31	6·36	6·41	6·445	6·574	6·682	6·727	6·752	6·763
EPR 2–3	2·953	P	6·29	6·37	6·43	6·47	6·515	6·640	6·751	6·800	6·820	6·831
Mean	2·945	P	6·26	6·33	6·38	6·43	6·469	6·596	6·708	6·755	6·777	6·787
EPR 2–1	2·937	S	3·25	3·31	3·37	3·43	3·470	3·592	3·681	3·706	3·715	3·721
EPR 2–2	2·944	S	3·25	3·33	3·38	3·44	3·481	3·602	3·693	3·710	3·720	3·729
EPR 2–3	2·953	S	3·24	3·33	3·42	3·48	3·525	3·645	3·724	3·738	3·750	3·757
Mean	2·945	S	3·25	3·32	3·39	3·45	3·492	3·613	3·699	3·718	3·728	3·736
EPR 3–1	2·868	P	6·26	6·34	6·39	6·44	6·476	6·600	6·707	6·747	6·760	6·765
EPR 3–2	2·865	P	6·15	6·21	6·25	6·29	6·325	6·455	6·595	6·665	6·695	6·702
EPR 3–3	2·881	P	6·25	6·33	6·38	6·43	6·464	6·585	6·994	6·741	6·757	6·764
Mean	2·871	P	6·22	6·29	6·34	6·39	6·422	6·547	6·765	6·718	6·737	6·744
EPR 3–1	2·868	S	3·20	3·36	3·43	3·46	3·494	3·590	3·660	3·674	3·685	3·695
EPR 3–2	2·865	S	3·10	3·22	3·33	3·40	3·401	3·580	3·667	3·682	3·698	3·706
EPR 3–3	2·881	S	3·15	3·25	3·40	3·45	3·491	3·608	3·696	3·714	3·732	3·741
Mean	2·871	S	3·15	3·28	3·39	3·44	3·462	3·593	3·674	3·690	3·705	3·714
EPR 4–1	2·872	P	5·95	6·03	6·10	6·17	6·235	6·432	6·580	6·643	6·665	6·674
EPR 4–2	2·876	P	5·85	5·98	6·10	6·18	6·250	6·465	6·626	6·692	6·722	6·734
EPR 4–3	2·883	P	6·04	6·11	6·17	6·21	6·256	6·401	6·546	6·619	6·661	6·673
Mean	2·877	P	5·95	6·04	6·12	6·34	6·247	6·433	6·584	6·651	6·683	6·694
EPR 4–1	2·872	S	3·00	3·12	3·19	3·26	3·320	3·500	3·611	3·644	3·654	3·661
EPR 4–2	2·876	S	2·89	2·98	3·14	3·26	3·320	3·516	3·649	3·682	3·695	3·705
EPR 4–3	2·883	S	3·18	3·26	3·30	3·35	3·381	3·490	3·590	3·623	3·640	3·649
Mean	2·877	S	3·02	3·12	3·21	3·29	3·340	3·502	3·617	3·650	3·663	3·672
EPR 5–1	2·829	P	5·94	5·96	5·98	6·01	6·023	6·095	6·182	6·235	6·264	6·282
EPR 5–2	2·830	P	5·85	5·88	5·91	5·93	5·948	6·023	6·118	6·174	6·205	6·225
EPR 5–3	2·810	P	5·69	5·73	5·76	5·78	5·805	5·900	6·015	6·080	6·108	6·125
Mean	2·823	P	5·83	5·86	5·88	5·91	5·925	6·006	6·095	6·163	6·192	6·211
EPR 5–1	2·829	S	3·17	3·21	3·24	3·27	3·291	3·368	3·432	3·458	3·470	3·480
EPR 5–2	2·830	S	3·14	3·12	3·20	3·22	3·240	3·315	3·388	3·414	3·423	3·430
EPR 5–3	2·810	S	3·00	3·04	3·07	3·09	3·111	3·200	3·291	3·323	3·337	3·346
Mean	2·823	S	3·10	3·12	3·17	3·19	3·214	3·294	3·370	3·398	3·410	3·419

Table 2

Elastic constants calculated from V_p, V_s, and ρ

Identification number	Pressure, kb	V_p/V_s	σ	ϕ, $(km\ s^{-1})^2$	K, Mb	β, Mb^{-1}	μ, Mb	E, Mb	λ, Mb
EPR 1	0·4	1·87	0·30	25·1	0·74	1·35	0·34	0·89	0·51
	1·0	1·85	0·29	25·5	0·75	1·34	0·36	0·93	0·52
	2·0	1·83	0·29	25·9	0·78	1·30	0·38	0·97	0·52
	6·0	1·82	0·28	26·7	0·80	1·26	0·40	1·03	0·53
	10·0	1·82	0·28	27·1	0·81	1·24	0·41	1·05	0·54
EPR 2	0·4	1·91	0·31	25·4	0·75	1·34	0·32	0·85	0·53
	1·0	1·85	0·29	25·6	0·75	1·33	0·36	0·93	0·51
	2·0	1·83	0·29	26·1	0·77	1·30	0·38	0·99	0·51
	6·0	1·82	0·28	27·1	0·80	1·25	0·41	1·05	0·53
	10·0	1·82	0·28	27·2	0·81	1·23	0·41	1·06	0·54
EPR 3	0·4	1·91	0·31	25·2	0·73	1·38	0·31	0·81	0·52
	1·0	1·85	0·30	25·2	0·73	1·38	0·34	0·89	0·50
	2·0	1·82	0·28	25·6	0·74	1·36	0·37	0·95	0·49
	6·0	1·82	0·28	26·8	0·78	1·29	0·39	1·01	0·52
	10·0	1·82	0·28	26·9	0·78	1·28	0·40	1·02	0·52
EPR 4	0·4	1·94	0·32	23·5	0·68	1·48	0·28	0·74	0·49
	1·0	1·87	0·30	24·1	0·70	1·44	0·32	0·83	0·48
	2·0	1·84	0·29	25·0	0·72	1·39	0·35	0·91	0·49
	6·0	1·82	0·28	26·3	0·76	1·31	0·38	0·99	0·51
	10·0	1·82	0·28	26·6	0·78	1·29	0·39	1·00	0·52
EPR 5	0·4	1·88	0·30	21·4	0·60	1·66	0·27	0·27	0·42
	1·0	1·84	0·29	21·3	0·60	1·66	0·29	0·75	0·41
	2·0	1·82	0·28	21·6	0·61	1·64	0·31	0·79	0·41
	6·0	1·82	0·28	22·5	0·64	1·56	0·32	0·84	0·42
	10·0	1·82	0·28	22·8	0·65	1·53	0·33	0·85	0·43

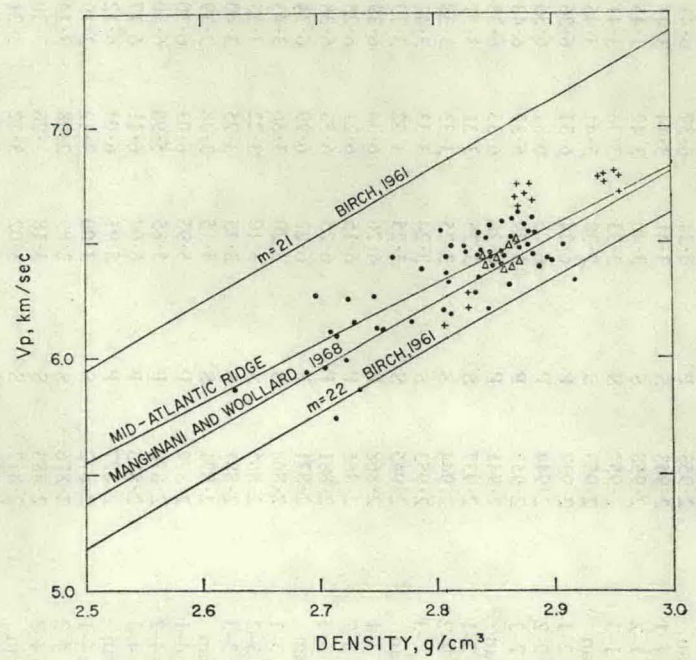

FIG. 1. Compressional wave velocities at 10kb as a function of bulk densities for basaltic rocks from the Mid-Atlantic Ridge (·), the Juan de Fuca Ridge (△), and the East Pacific Rise (+).