Columbia University in the City of New York
DEPARTMENT OF GEOLOGY
LAMONT GEOLOGICAL OBSERVATORY
PALISADES

Research Vessel VEMA
CRUISE N° 24
CRUISE LEG—From RIO DE JANEIRO To MIAMI

INDEX # 26
TIME ZONE +3

Station #	Day	Hour Stop	Start	Stop Depth	Start Depth	S. B.	C	CK	L NEPH.	J GRAD	W	P 1-K JET	K	KD CURRENT METER	D	°	N '	°	W '
A	DEC 2	0730				110						NOTENTERED IN INDEX					4-02	48	48
B			0853														4-05	49	00
C	2	1229				111											4-14	49	42
D			1350														4-16	49	52
E	2	1443				112											4-18	50	02
F			1600														4-20	50	11
G	2	1608				113											4-21	50	14
H			1704														4-27	50	16
I						114	DEAD	BUOY											
J	2	2239				115											5-25	50	29
K			2346														5-35	50	31
L	3	0707				116											6-51	50	45
M	3	~~0707~~	8-44														7-02	50	47
N	3	1252				117											7-48	50	52
O			1401														7-44	50	53
P 274	3	1644	1810	2381	2375		260A	189	155A	211			168				8-02	51	06
Q	4	0018				118											8-~~14~~ 12	51	~~38~~ 48
R			0151														8-~~03~~ 02	51	~~58~~ 52
S	4	0520				119											7-~~44~~ 41	52	~~25~~ 21
T			0655														7-~~33~~ 31	52	~~32~~ 33
U	4	1018				120											7-21	53	06
V			1144														7-20	53	21
W	4	1508				121											7-24	53	54
X			1634														7-34	53	05
Y	~~Dec 5~~	2340				122											12-01	54	58
Z	6		0025														1204	55	08
275	6	1500	1716				260	190	155	212		CHECK GENERAL PAGES	169				1224	57	31
276	8	~~0830~~ 0930	1500				261A		156A	213A			170A 4B				1624	58	56
277	10	~~0840~~	1240				261	191B	156~~A~~	213			170				1945	64	38
278	11	1820	2117				262	191	157	214			171				2231	68	58
279	12	~~0512~~	1748				263	192A	158	215			172				2421	71	34
280	13	0905	1200				264	192	159	216			173				2452	73	49
281	~~13~~ 13	1428	1615				265										2449	73	48

Chief Scientist

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DEPARTMENT OF GEOLOGY
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PALISADES

Research Vessel VEMA
CRUISE N° 24
CRUISE LEG—From RIO DE JANEIRO To MIAMI

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TIME ZONE _____

Station #	Day	Hour Stop	Start	Stop Depth	Start Depth	S.B	C	CK	I NEPH	I GRAD	W	P	K	KD	D	° S	′	° W	′
A	NOV 17,67	1435		35'		98								METER		23	08	43	38
B			1553		45											23	09	43	29
C	17th	2139		57		99										23	10	41	43
D			2239		48											23	11	41	33
E	18th	0236		647		100										23	14	41	00
F			0400		935											23	16	40	48
G	18th	1059		1573		101										23	21	39	52
H			1237		1600											23	23	39	41
I	18th	1304		719		102										23	22	39	27
J			1422		729											23	24	39	19
K263	19	1037	1408	2142	2150		254	—	150	204	—	JET 121	161	—	—	22	58	36	43
L266	20	1325	1915	2625	2625		255		150A	205	—		162	1	—	22	30	33	50
M267	22	1553	1853	2595	2595		256A		151	206			163			17	32	29	53
N268	24	1116	1403	2580	2480		256	188C	152	207			164			12	00	31	30
O269	26	1502	1808	2439	2435		257A	188D		208A		~~JET~~		2		5	07	32	42
P270	28	0752	1205	2400	2415		257		153	208			165	3		0	04N	35	03
Q271	29	0927	1215	1992	2260								166		30	1°	01N	38	14
R272	30	1536	1816	2265	2260		258		154	209			167			2	21	43	18
S	30	2124				103										2	29	43	24
T			2235													2	32	43	57
U	Dec 1	0619				104										2	53	45	20
V	" 1		0734													2	56	45	32
W	" 1	0851				105										3	00	45	43
X	" 1		1018													3	05	46	00
Y	" 1	1029				106										3	04	45	55
Z	" 1		1200													3	06	46	05
273	" 1	1234	1526				259	189		210				4		3	07	46	08
	" 1	2000				107										3	21	46	59
			2124													3	24	47	09
	2	0050				108										3	41	47	39
			0224													3	48	47	51
	2	0600				109										4	00	48	33
			0630													4	01	48	38

K-JET CORRENT

NOTE ENTERED ON INDEX

CHECK INGENERAL PAGES

_____
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Columbia University
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DEPARTMENT OF GEOLOGY
LAMONT GEOLOGICAL OBSERVATORY
PALISADES

Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From Capetown To Rio de Janeiro

INDEX #24

TIME ZONE Z+2

Station	Day	Hour Stop	Start	Stop Depth	Start Depth	SB	C	CK	L	T	W	P	K	KD	D	°	S′	°	W′
A	Nov. 13	1607				94										24	02	44	00
B			1744													23	58	43	54
C	Nov. 13	2026				95										23	51	43	43
D			2206													23	45	43	38
E	Nov. 14	0133				96										23	25	43	23
F			0255													23	19	43	17
G	Nov. 14	0422				97										23	12	43	10
H			0600													23	05	43	04
I																			
J																			
K																			
L																			
M																			
N																			
O																			
P																			
Q																			
R																			
S																			
T																			
U																			
V																			
W																			
X																			
Y																			
Z																			

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LAMONT GEOLOGICAL OBSERVATORY
PALISADES

Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From Capetown To Rio de Janeiro

INDEX #23

TIME ZONE Z+2

Station	Day	Hour Stop	Start	Stop Depth	Start Depth	S.B.	C	CK	L	T	W	P	K	KD	D	°	S′	°	W′
A	Nov. 10	1240				77										25	56	44	44
B			1406													25	52	44	53
C	Nov. 10	1411				78										25	52	44	54
D			1530													26	00	44	59
E	Nov. 11	0900				79										25	32	46	20
F			1030													25	40	46	26
G	Nov. 11	1327				80										25	57	46	38
H			1451													26	05	46	43
I	Nov. 11	1757				81										26	25	46	55
J			1934													26	34	47	00
K	Nov. 11	2233				82										26	51	47	11
L			0007													26	59	47	15
M	Nov. 12	0014				83										26	58	47	14
N			0154													26	51	47	08
O	Nov. 12	0300				84										26	45	47	03
P			0440													26	39	46	57
Q	Nov. 12	0452				85										26	38	46	56
R			0633													26	29	46	47
S	Nov. 12	0928				86										26	16	46	35
T			1108													26	08	46	29
U	Nov. 12	1430				87										25	48	46	12
V			1608													25	41	46	07
W	Nov. 12	1620				88										25	39	46	05
X			1755													25	33	46	00
Y	Nov. 12	2100				89										25	13	45	42
Z			2225													25	04	45	34
	Nov. 12	2236				90										25	04	45	33
			2346													25	11	45	24
	Nov. 13	0107				91										25	02	45	17
			0230													24	53	45	10
	Nov. 13	0701				92										24	30	44	27
			0820													24	25	44	22
	Nov. 13	1157				93										24	14	44	18
			1334													24	09	44	10

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Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From Capetown To Rio de Janeiro

Index #22

TIME ZONE Z+2

Station	Day	Hour Stop	Start	Stop Depth	Start Depth	SB	C	CK	L	T	W	P	K	KD	D	°	S′	°	W′
A	Nov. 2	1915				67										31	44	28	14
B			2030													31	48	28	20
C	Nov. 2	2042				68										31	49	28	21
D			2200													31	54	28	28
E	Nov. 3	0137				69										31	57	29	05
F			0314													31	48	29	03
G 253	Nov. 3	1014	1212	2102	2107		241			197			151			31	36	30	17
H	Nov. 3	1436				70										31	33	30	40
I			1550													31	32	30	50
J 254	Nov. 3	1612	1823	2190	2187		242			198			152			31	32	30	51
K	Nov. 4	1105				71										31	02	33	30
L			1239				243									30	53	33	30
M 255	Nov. 5	0927	1200	552	575		244			199A			153			31	02	35	43
N 256	Nov. 5	1526	1730	460	320		245 246						154			30	48	25	25
O 257	Nov. 5	1820	1942	337	337		247						155			30	47	35	23
P	Nov. 5	1259				72										30	58	35	38
Q			1406													30	52	35	30
R 258	Nov. 6	1822	2153	1117	1150		248			199			156			30	39	36	59
S 259	Nov. 6	2320	0206	570	420								157		3B	30	41	36	51
T	Nov. 7	1310				73										30	13	38	37
U			1443													30	09	38	49
V 260	Nov. 7	1615	1827	2237	2226		249			200			158			30	07	38	59
W 261	Nov. 7	2157	0035	2560	2545		250			201			159A			30	11	39	22
X 262	Nov. 8	0226	0449	2190	2124		251		149A	202			159			30	08	39	28
Y	Nov. 8	1629				74										29	02	40	52
Z			1758													28	54	41	02
	Nov. 8	2135				75										28	37	41	23
			2310													28	20	41	30
263	Nov. 9	0121	0302	1449	1440		252			203A			160			28	26	41	33
264A	Nov. 9	0433	0655	1922	1590										3C	28	29	41	32
264	Nov. 10	1050	1202	1115	1110		253			203						25	57	44	41
	Nov. 9	0925				76										28	19	41	44
			1037													28	13	41	50

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DEPARTMENT OF GEOLOGY
LAMONT GEOLOGICAL OBSERVATORY
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Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From Capetown To Rio de Janeiro

Index # 21

TIME ZONE Z+2 / Z+1 GMT / Z-1 / Z-2

Station	Day	Hour Stop	Start	Stop Depth	Start Depth	S.B	C	CK	L	T	W	P	K	KD	D	°	S′	°	E′
A	Oct 17	0114				63										34	21	16	18
B			0252													34	23	16	05
C 228	Oct 17	1028	1241	2420	2411		217	186A		176						34	34	14	39
D	Oct 18	2249				64										35	38	9	19
E			2355													35	40	9	10
F 229	Oct 19	1254	1920	2680	2690		218	186B	131	177			130			35	58	7	09
G 230	Oct 20	1358	1700	2756	2750		219	186C		178			131			34	51	4	09
H	Oct 20	2223				65										34	22	3	29
I			2354													34	15	3	16
J 231	Oct 21	1430	1633	1425	1438		220	186D	132	179			132			33	06	1	29
K																	S		W
L 232	Oct 22	0843	1057	1285	1250		221A	186E	133	180			133			32	11	0	21
M 233	Oct 23	0910	1154	2220	2240		221	186F	134	181			134			32	02	2	49
N 234	Oct 23	2054	2230	843	850		222A	186G		182A			135			32	59	3	02
O 235	Oct 24	0920	1139	2105	2098		222	186H	135	182			136			34	13	3	12
P 236	Oct 24	1440	1708	1795	1745		223			183			137A			34	12	3	29
Q 237	Oct 24	1940	2222	1280	1390		224	186	136	184			137			34	12	3	51
R 238	Oct 25	0848	1045	965	950		225	187A	137	185A			138			34	52	4	57
S 239	Oct 25	1225	1547	648	661		226	187B					139		3A	35	17	4	55
T 240	Oct 25	1639	1730	675	678		227									35	17	5	02
U 241	Oct 26	1228	1436	2188	2178		228		138	185			140			34	55	7	48
V 242	Oct 27	0825	1042	2245	2244		229		139	186			141			34	27	10	36
W 243	Oct 27	1913	2155	1900	1898		230		140	187			142			34	13	11	59
X 244	Oct 28	0927	1113	1782	1910		231		141A	188			143A			33	57	13	50
Y 245	Oct 28	1924	2120	1705	1660		232		141	189			143			33	46	15	07
Z 246	Oct 29	0825	1026	1750	1700		233		142	190			144			33	32	16	46
247	Oct 29	1842	2053	1755	1773		234		143	191			145			33	22	17	56
248	Oct. 30	1014	1236	1990	1955		235		144	192			146			33	15	19	33
249	Oct 31	1955	2218	2170	2192		236		145	193			147			32	42	24	05
250	Nov. 1	1436	1647	2240	2233		237	187	146	194			148			32	12	26	44
	Nov. 2	2348				66										31	59	27	56
			0109													31	57	28	06
251	Nov. 2	0800	1135	1892	1844		238 239	188A 188B	147	195			149			31	47	29	00
252	Nov. 2	1630	1900	2310	2300		240		148	196			150			31	44	28	12

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DEPARTMENT OF GEOLOGY
LAMONT GEOLOGICAL OBSERVATORY
PALISADES

Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From MAURITIUS To CAPE TOWN

INDEX #20

I.K

TIME ZONE Z-2 Z-3 Z-4

Station	Day	Hour Stop	Start	Stop Depth	Start Depth	S.B	C	CK	L	T	W	P	K	KD	D	°	S′	°	E′
A 208	Sept 19	0854	1130	910	965		197									20	06	57	26
B 209	Sept 19	1207	1406	1640	1660		198									20	02	57	19
C 210	Sept 22	1446	1708	2640	2480		199	168		161						24	28	56	37
D 211	Sept 23	0946	1143	2670	2670		200	169		162A						26	51	56	56
E 212	Sept 24	1501	1656	1560	1500		201	170		162	81					30	55	58	10
F 213	Sept 25	1409	1643	2930	2900		202	171		163	82					34	21	59	13
G 214	Sept 26	0918	1130	2670	2665		203	172		164						36	59	59	59
H 215	Sept 27	1346	2120	2475 2360	2480 2365		204 205A	173 174		165		24				36	50	55	17
216	Sept 28	1251	1527	2965	2965		205	175		166						36	51	52	17
J 217	Sept 29	1004	1318	1920	1810		206	176		167		25				36	30	49	34
K 218	Sept 30	1000	1201	1883	1870		207	177		168						36	18	46	13
L 219	Sept 30	1658	1924	1730	1725		208	178		169A						36	13	45	34
M	Sept 30	1354				60A										36	16	45	58
N			1457													36	15	45	50
O	Sept 30	1506				60										36	15	45	49
P			1610													36	14	45	40
Q	Oct 1	0952				61										36	30	42	59
R			1144													36	31	42	45
S 220	Oct 2	1020	1222	2755	2745		209	179A		169						34	45	39	44
T 221	Oct 3	1449	1650	2645	2640		210	179		170						31	52	37	13
U 222	Oct 4	1407	1703	2642	2652		211	180		171	83A					32	37	38	05
V	Oct 4	1237				62										32	34	37	54
W			1347													32	37	38	05
X 223	Oct 5	1313	1520	2714	2742		212	181		172						34	39	36	24
Y 224	Oct 9	0924	1205	2038	2012		213	182		173						36	59	25	07
Z 225	Oct 9	1310	1425	1765	1758		214	183								37	03	24	57
226	Oct 9	1559	1714	1960	1980		215	184		174						37	07	24	46
227	Oct 10	1031	1150	1980	1930		216	185		175						37	19	21	34

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LAMONT GEOLOGICAL OBSERVATORY
PALISADES

Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From DARWIN To MAURITIUS

INDEX # 19

TIME ZONE Z-7 / Z-8

Station	Day	Hour Stop	Start	Stop Depth	Start Depth	SB	C	CK	L	T	W	~~P~~ IK	K	KD	D	°	S ′	°	E ′
A S196	Aug 24	0816	1100	1441	1455		185	158	131B	149	80A		128			09	38	126	35
B S197	Aug 25	1750	1904	680	650		186	159	131C	150			129			10	53	122	02
C S198	Aug 26	0800	1203	2276	2270		187	160A	131D	151			130A			11	43	120	12
D	Aug 27	1415				57										10	59	116	21
E			1533													11	05	116	10
F S199	Aug 27	1853	2356	3580	3630		188	160		152		22				11	18	115	40
G S200	Aug 28	1519	1644	1970	1936		189	161		153						9	45	113	55
H S201	Aug 29	1008	1213	2140	2090		190	162		154						10	28	112	08
S202	Aug 30	0845	1109	2830	2837		191	163		155						13	29	110	06
J	Aug 30	1655				58A										11	04	111	38
K S203	Aug 31	0655	0947	2850	2840		192	164		156						16	02	108	08
L S204	Sept 1	1036	1602	2370	2590		193	165		157		23				14	07	106	32
M S205	Sept 2	1345	1907	2790	2790		194	166		158						11	09	104	21
N S206	Sept 3	0915	1135	2912	2905		195	167A		159						9	38	102	34
O S207	Sept 3	1615	1944	2881	2885		196	167		160						9	11	102	00
P	Sept 7	0319				58										11	09	88	40
Q			0436													11	17	88	39
R	Sept 8	0840				59										12	33	83	45
S			1020													12	36	83	47
T																			
U																			
V																			
W																			
X																			
Y																			
Z																			

Chief Scientist

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LAMONT GEOLOGICAL OBSERVATORY
PALISADES

Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From TOWNSVILLE To DARWIN

INDEX # 18

TIME ZONE Z-10

Station	Day	Hour Stop	Start	Stop Depth	Start Depth	SB	C	CK	L	T	W	P	K	KD	D	°	S′	°	E′
A 193	Aug. 14	1546	1745	1178	1182		183	156	130	147	78		← 127B			15	20	146	15
B 194	Aug. 15	1352	11.00	1605	1600		184	157	131A	148	79		← 127			12	52	146	12
C	Aug. 16	0812				56										10	50	145	03
D			0930													10	39	145	04
E 195	1610	1700	12	15											2	10	37	141	17
F																			
G																			
H																			
I																			
J																			
K																			
L																			
M																			
N																			
O																			
P																			
Q																			
R																			
S																			
T																			
U																			
V																			
W																			
X																			
Y																			
Z																			

Chief Scientist

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DEPARTMENT OF GEOLOGY
LAMONT GEOLOGICAL OBSERVATORY
PALISADES

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Research Vessel VEMA
CRUISE N° 24
CRUISE LEG—From TOWNSVILLE To TOWNSVILLE

TK SRP

TIME ZONE Z-10

Station	Day	Hour Stop	Start	Stop Depth	Start Depth	SB	C	CK	L	T	W	P	K	KD	D	°	S '	°	E '
A	Aug 2	1947				55										12	12	150	47
B			2047													12	17	150	45
C	Aug 3	0616	0946											48		12	36	149	57
D																13	10	149	44
E187	Aug 3	1014	1506	2414	2412		177	151		143				48R		13	12	149	40
F188	Aug 4	1015	1550				178	152		144				49R		14	06	148	50
G	Aug 4	0613												49		13	38	149	07
H			0934													14	07	148	52
I189	Aug 5	0800	1002				179	153		145						15	49	148	47
J190	Aug 6	0701	1350				180	154		146A				51R		17	39	149	39
K	Aug 5	1028												50		15	49	148	45
L			1459													16	30	148	47
M	Aug 5	1610	2153											50R		16	38	148	46
N	Aug 6	1531												51		17	35	149	33
O			2057													17	54	148	39
P191	Aug 7	0548	1134				181	155						52R		18	30	149	00
Q	Aug 6	2336	0120									21				17	59	148	38
R	Aug 7	1233												52		18	27	149	00
S			1706													18	13	148	08
T192	Aug 7	2219	0324				182	156		146				53R		17	31	147	30
U	Aug 8	0548												53		17	12	147	14
V			0946													16	44	146	47
W																			
X																			
Y																			
Z																			

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Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From TOWNSVILLE To TOWNSVILLE

INDEX #16

I. K SRP

TIME ZONE Z-10

Station	Day	Hour Stop	Start	Stop Depth	Start Depth	S.B.	C	CK	L	T	W	~~T~~	K	~~KD~~	D	°	S′	°	E′
A	July 25	1100				47										15	00	148	53
B			1230													14	56	148	44
C	July 26	2210				48										16	13	146	51
D			2330													15	59	146	51
E	July 27	1000				49										15	08	147	35
F			1115													15	09	147	42
G	July 28	1850				50										13	56	146	10
H			2000													14	04	146	10
S181	July 29	1100	1728	1450	1454		171	145		138A				43R		14	18	145	51
J	July 29	2033	2210									19				13	46	145	33
K	July 29	1820				51										14	03	145	40
L			1857													13	58	145	38
M	July 29	1910				52										13	56	145	37
N			1943													13	53	145	36
O	July 29	0548												43		15	14	146	02
P			1041													14	22	145	52
Q S182	July 30	0930	1642	898	907		172	146		138				44R		14	41	146	49
R	July 30	0511												44		14	13	146	24
S			0859													14	38	146	49
T S183	July 31	0925	1130	1806	1797		173	147		139						11	46	148	06
U	July 31	1405				53										11	22	148	13
V			1527													11	13	148	14
W	July 31	1757				54										11	03	148	28
X			1935													11	02	148	41
Y S184	Aug. 1	0835	1320	565	507		174	148		140				45R		11	07	150	52
Z	Aug. 1	0516												45		10	59	150	15
			0825													11	08	150	49
	Aug. 1	1644												46		11	27	150	36
			1811													11	27	150	22
S185	Aug. 1	1833	0122	1420	1385		175	149		141				46R44R		11	25	150	18
	Aug. 2	0141												47		11	26	150	17
			0545													12	01	149	57
S186	Aug. 2	1325	1844	2355	2347		176	150		142		20				12	14	150	49

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Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From TOWNSVILLE To TOWNSVILLE

INDEX #15
IK
SRP

TIME ZONE Z−10

Station	Day	Hour Stop	Start	Stop Depth	Start Depth	S.B.	C	CK	L	T	W	~~P~~	K	~~KD~~	D	°	S′	°	E′
A S170	July 18	1453	1838	1506	1530		160	136		130						18	07	147	36
B S171	July 20	0005	0700	897	894		161	137		131A				35R		18	12	151	27
C S172	July 20	1602	1702	710	708		162	138		131						17	22	152	33
D	July 19	1501	2335											34035		18	28	150	20
E																18	32	150	50
F																18	17	151	28
G S173	July 21	1240	1838	2476	2475		163	139		132				36R		15	27	153	34
H	July 21	0457												36		16	30	153	40
			1221													15	30	153	36
S174	July 22	1334	2220	2405	2407		164	140		133				37R		13	52	153	58
K	July 22	0613												37		14	37	154	54
L			1256													13	55	154	02
M S175	July 23	1449	2126	2122	2126		165	141		134A				38R		15	21	152	21
N	July 23	2218				44										15	12	152	18
O			2350													15	02	152	16
P	July 24	0009				45										15	00	152	17
Q			0135													14	59	152	23
RS176	July 24	1525	2155	416	415		166	142A		134		17		39R		16	31	150	47
S	July 23	0735												38		15	02	153	00
T			1240													15	30	152	13
U	July 24	1118												39		16	07	151	23
V			1455													16	29	150	51
WS177	July 25	1757	0448	610	611		167	142B		135				40R+40B		15	17	148	03
X	July 25	1305												40		14	52	148	40
Y			1725													15	17	148	08
Z	July 26	0505												41		15	14	147	58
			0906													15	39	147	31
	July 26	0948												42		15	46	147	26
			1501													16	19	146	53
S178	July 26	1521	2131	955	955		168	142		136				42R		16	20	146	52
S179	July 27	1945	2212				169	143								14	13	148	01
S180	July 28	0905	1042	1195	1200		170	144		137		18				13	31	146	53
	July 24	1315				46										16	19	157	15
			1410													16	24	150	57

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CRUISE LEG—From SUBIC BAY To TOWNSVILLE

IK

INDEX #14

TIME ZONE Z-10

Station	Day	Hour Stop	Start	Stop Depth	Start Depth		C	CK	L	T	W	~~P~~	K	KD	D	°	S′	°	E′
A	167	July 11	2218	2325	645	650	157	133		127						14	57	149	54
B	168	July 12	0800	1035	933	937	158	134		128		16				15	53	146	54
C	169	July 12	1526	1633	745	752	159	135		129						16	32	146	24.
D																			
E																			
F																			
G																			
H																			
I																			
J																			
K																			
L																			
M																			
N																			
O																			
P																			
Q																			
R																			
S																			
T																			
U																			
V																			
W																			
X																			
Y																			
Z																			

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Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From SUBIC BAY To TOWNSVILLE

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SRP

Z-10
Z-11
E-10
TIME ZONE Z-9

Station	Day	Hour Stop	Start	Stop Depth	Start Depth	S.B.	C	CK	L	T	W	P	K	~~KD~~	D	°	N'	°	E'
A 153	JUNE 29	2205	0401	2290	2282		145	122		115				27R		1	49	142	36
B	JUNE 29	1428												26R		1	53	142	26
C			1801													1	53	143	00
D	JUNE 29	1804												27		1	53	143	00
E			2145													1	51	143	36
B 156	JUNE 30	1227	1658	2405	2410		146	123		116						1	50	144	53
G	JUNE 30	1720												28		1	48	144	56
H			2152													1	46	145	39
I	JUNE 30	2155												29		1	46	145	39
J			0241													1	43	146	14
K 157	July 2	1104	1336	2615	2617		147	124		117						1	40	151	25
L																S		E	
M 158	July 4	0933	1039	1023	1023		148	125		118						0	50	157	22
N 159	July 4	2242	0428	889	890		149	126		119				30R		1	41	156	49
O 160	July 5	1124	1223	993	992		150	127		120						2	12	155	42
P 161	July 5	1700	2317	1384	1390		151	128		121				31R		2	25	154	57
Q	July 4	1109				39										0	53	157	26
R	July 4	1258				40										1	04	157	27
S	July 4	1442				41										1	R4	157	29
T	July 4	1618				42										1	24	157	28
U	July 4	1845												30		1	28	157	25
V			2216													1	40	156	58
W	July 5	1240												31		2	10	155	42
X			1637													2	25	155	02
Y 162	July 6	0855	1350	1327	1293		152	129		122				32R		3	18	153	32
Z 163	July 6	2215	0343	2194	2189		153	129		123				33		4	30	153	28
	July 6	0455												32		2	56	154	08
			0752													3	13	153	41
	July 7	0413												33R		4	34	153	27
			0911													5	17	153	46
S 164	July 10	1119	1345	2258	2260		154	130		124						1 2	03	157	14
S 165	July 10	2249	2356	2423	2422		155	131		125						12	52	150	12
S 166	July 11	0855	1232	2405	2403		156	132		126						13	49	149	04
	July 10	1453				43										12	08	157	07

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Research Vessel VEMA
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CRUISE LEG—From SUBIC BAY To TOWNSVILLE

SRP

TIME ZONE Z-9 / Z-8

Station	Day	Hour Stop	Start	Stop Depth	Start Depth		C	CK	L	T	W	P	K	~~KB~~	D	°	N′	°	E′
A	JUNE 19	1407												15		9	31	119	09
B			1817													8	53	119	14
C S143	JUNE 19	1840	0001	1070	1070		134	113	122	105A	72		118	15R		8	50	119	14
D	JUNE 20	0835												16		7	45	120	07
E			1336													7	28	120	24
ES144	JUNE 20	1440	1935	2240	2240		135	114A	123	105	73A		119	16R		7	21	120	31
GS145	JUNE 21	0545	1100	20	24		136A	114B						17R		6	17	121	39
HS146	JUNE 21	2012	0014	2368	2359		136	114	124	106	73B		120	18R		5	17	122	18
	JUNE 21	0152												17		6	42	121	16
J			0418													6	24	121	33
K	JUNE 21	1444												18		5	48	122	05
L			1905													5	10	122	23
MS147	JUNE 22	1213	1730	2652	2652		137	115	125A	107	73C		121	19R		3	47	122	59
NS148	JUNE 23	0347	0830	2575	2566		138	116	125	108	73		122	20R		2	42	123	47
O	JUNE 22	0701												19		4	24	122	41
P			1150													3	47	122	59
Q	JUNE 23	2352												20		3	10	123	29
R			0318													2	44	123	43
SS149	JUNE 25	1351	1606	1795	1790		139	117	126	109	74		123			3	31	132	26
TS150	JUNE 26	1048	1409	2382	2372		140	118	127	110	75A		124			3	04	135	33
US151	JUNE 27	0816	1314	2337	2338		141	119A	128	111	75		125	21R		2	52	138	28
VS152	JUNE 27	2239	0342	2250	2237		142	119	129	112	76A		126	22		2	30	139	58
WS153	JUNE 28	1211	2140	1710	1712		143	120	130A	113	76		127A	23R+24		2	04	141	18
X	JUNE 27	0341												21		2	56	137	44
Y			0755													2	54	138	25
Z	JUNE 28	0430												22R		2	28	140	02
			0800													2	19	140	37
	JUNE 28	0802												23		2	19	140	37
			1145													2	08	141	16
S154	JUNE 29	0435	1411	1698	1690		144	121		114	77			25R+26		1	53	142	23
	JUNE 28	2203												24R		1	59	141	20
			0053													1	56	141	49
	JUNE 29	0036												25		1	56	141	49
			0414													1	54	142	23

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PALISADES

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SRP

Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From SUBIC BAY To MANILA

TIME ZONE Z-8

Station	Day	Hour Stop	Start	Stop Depth	Start Depth		C	CK	L	T	W	P	K	~~KB~~	D	°	N′	°	E′
A	JUNE 6	0809												14		19	01	119	03
B			1141													18	34	118	53
C																			
D																			
E																			
F																			
G																			
H																			
I																			
J																			
K																			
L																			
M																			
N																			
O																			
P																			
Q																			
R																			
S																			
T																			
U																			
V																			
W																			
X																			
Y																			
Z																			

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Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From SUBIC BAY To MANILA

SRP

TIME ZONE Z - 8

Station	Day	Hour Stop	Start	Stop Depth	Start Depth		C	CK	L	T	W	P	K	~~KD~~	D	°	N′	°	E′
A S131	JUNE 2	1256	1813											1		14	42	118	00
B	JUNE 2	2100												1R		14	35	118	01
C			0030													14	12	117	58
D S132	JUNE 3	0900	1516	2165	2193		124	103	116	99	66		112	2		14	00	118	58
E	JUNE 3	1619												2R		14	07	119	02
F			2006													14	40	119	12
G S133	JUNE 4	0736	1110	1241	1270		125	104	117	100	67		113	3		15	30	119	30
H	JUNE 4	1135												3R		15	27	119	30
I			1401													15	11	119	34
J	JUNE 4	1404												4		15	11	119	34
K			1728													14	46	119	32
L S134	JUNE 5	0617	1130	1353	1350		126	105	118A		68A		114	5		14	14	119	50
M	JUNE 5	1200												5R		14	16	119	51
N			1434													14	44	119	47
O	JUNE 5	1437												6		14	44	119	47
P			1703													15	11	119	43
Q S135	JUNE 5	1738	0043	1100	1098		127	106	118		68		115	6R+7		15	15	119	49
R S136	JUNE 6	1843	2245											8		18	00	120	25
S S137	JUNE 7	0549	1045	1731	1700		128	107	119A		69		116A	9		18	11	120	04
T	JUNE 7	1110												9R		18	17	120	08
U			1400													18	41	120	22
V	JUNE 7	1402												10		18	41	120	22
W			1813													19	14	120	42
X S138	JUNE 7	1856	0048	1774	1778		129	108	119B	101A	70		116B	10R		19	12	120	49
Y	JUNE 8	0744												11		18	45	120	03
Z			1235													18	15	119	48
S139	JUNE 8	1258	2128	1345	1322		130	109	119	101	71A		116C	11R		18	18	119	48
S140	JUNE 9	0606	1203	2205	2228		131	110		102				12		17	32	118	59
S141	JUNE 9	2028	0108	2230	2230		132	111	120	103	71B		116	13R		18	47	119	30
S142	JUNE 10	1203	1715	2110	2118		133	112	121	104	71		117	14R		18	33	118	55
	JUNE 9	1236												12R		17	39	119	02
			1602													18	08	119	17
	JUNE 9	1605												13		18	08	119	17
			2004													18	43	119	27

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Research Vessel VEMA
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CRUISE LEG—From MIDWAY To MANILA

INDEX # 9 TIME ZONE Z-8 Z-9

Station	Day	Hour Stop	Start	Stop Depth	Start Depth	↑	C	CK	L	T	W	P	K	IK ~~KD~~	D	°	N′	°	E′
A S126	MAY19	0707	0956	2983	2984		119	99	111	95			108			18	39	135	00
B	MAY19	2014	2126											10		18	39	133	25
C S127	MAY20	0725	1045	3119	3158		120	100	112	96			109			18	31	131	39
D S128	MAY21	0700	1150	2730	2878		121	101	113	97			110	11		18	30	128	23
E S129	MAY22	0830	1105	2576	2620		122	102	114	98A			111			18	32	125	28
F	MAY23	1015	1125											12		18	43	121	30
G S130	MAY24	0750	0932	1506	1576		123	103	115	98			112			17	32	119	31
H	MAY24	2008	2143											13		16	04	118	42
I	MAY25	0634	0952											14+15		15	03	119	39
J																			
K																			
L																			
M																			
N																			
O																			
P																			
Q																			
R																			
S																			
T																			
U																			
V																			
W																			
X																			
Y																			
Z																			

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Research Vessel VEMA
CRUISE N° U-24
CRUISE LEG—From MIDWAY To MANILA

INDEX #8

IK

Z-9
Z-10
Z-11
Z-12
TIME ZONE Z+12

Station	Day	Hour Stop	Start	Stop Depth	Start Depth	SB	C	CK	L	T	W	₱	K	KD	D	°	N′	°	W′
A S103	APRIL 26	0719	1030	2883	2860		97	81A	94	75	66		88			24	48	178	04
B S104	APRIL 27	0745	1057	2885	2887		98	81B	95	96			89			21	47	178	47
C S105	APRIL 28	0730	0830	807	851		99	81	96				90			18	32	179	30
D																	N		E
E S106	APRIL 30	0819	1107	2828	2827		100	82	97	77			91			16	08	179	44
F S107	MAY 1	0750	1740	1818	1784		101	83	98A	78		5	92A			13	10	178	53
G S108	MAY 3	0734	1021	2652	2707		102		98	79			92			08	19	176	25
H S109	MAY 4	0726	1000	2650	2652		103	84	99	80			93			06	34	173	30
I	MAY 4	2110	2244	40	40							6				05	39	172	03
J S110	MAY 5	0719	0941	2395	2398		104	85	100A	81			94			04	57	170	55
K	MAY 4	1456				36										06	10	172	52
L			1703													06	00	172	36
M	MAY 5	1503				37										04	22	170	15
N			1600													04	18	170	08
O S111	MAY 6	0713	0951	2350	2343		105	86	100	82			95			02	49	168	11
P S112	MAY 6	1426	1624	2400	2400		106	87	101				96			02	43	167	46
Q S113	MAY 7	0850	1104	2220	2220		107	88	102	83			97			02	04	165	19
R S114	MAY 8	0724	0918	2195	2195		108	89	103	84			98			01	13	162	12
S S115	MAY 9	0719	0916	1269	1260		109	90	104	85			99			00	26	158	48
T S116	MAY 10	0721	0908	1384	1401		110	91	105	86			100A			02	20	156	42
U	MAY 9	1522				38										00	15	157	51
V			1700													00	13	157	40
W S117	MAY 11	0714	0901						106A				100			05	28	155	08
X S118	MAY 11	1058	1251	2157	2155		111	92		87						05	38	155	00
Y S119	MAY 12	0720	1000	2638	2638		112	93	106	88			101			07	56	153	32
Z	MAY 12	2138	2234									7				09	45	152	48
S120	MAY 13	0712	1016	3100	3100		113	94A	107	89			102			11	19	152	08
S121	MAY 14	0725	1030	3163	3170		114	94	108	90			103			14	42	150	33
S122	MAY 15	0713	1026	2940	2940		115	95	109A	91			104			17	55	149	09
	MAY 15	1534	1713									8				18	00	148	22
S123	MAY 16	0726	0922	1441	1438		116	96	109B	92			105			17	55	146	01
S124	MAY 17	0732	1044	1980	1969		117	97	109	93			106			18	36	142	22
	MAY 17	2017	2124									9				18	47	140	45
S125	MAY 18	0730	1018	2695	2720		118	98	110	94			107			18	42	138	44

Chief Scientist

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in the City of New York

DEPARTMENT OF GEOLOGY
LAMONT GEOLOGICAL OBSERVATORY
PALISADES

Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From HONOLULU To MIDWAY

Index #7

TIME ZONE Z+11 / Z-12

Station	Day	Hour Stop	Start	Stop Depth	Start Depth	SB	C	CK	L	T	W	P	K	KD	D	°	N′	°	E′
A S98	APRIL 18	0930	1306	3126	3126		92	78	89	70	61		84			24	57	174	00
B S99	APRIL 19	0328	1234	3060	3078		93	79	90	71	62		85			25	48	176	13
C	APRIL 19	1305	1321			35A										25	51	196	11
D	APRIL 19	1332				35										25	52	176	13
E			1542													25	56	196	25
F S100	APRIL 20	0948	1931	3018	3020		94	80	91	72	63		86		2A	26	34	179	46
G																	N		W
H S101	APRIL 20	0928	1529	2808	2808		95	81	92	73	64		87			27	36	179	42
I S102	APRIL 21	0403	2300	1760	1770		96	82	93	94	65		88			27	46	177	59
J																			
K																			
L																			
M																			
N																			
O																			
P																			
Q																			
R																			
S																			
T																			
U																			
V																			
W																			
X																			
Y																			
Z																			

Chief Scientist

Columbia University
in the City of New York

DEPARTMENT OF GEOLOGY
LAMONT GEOLOGICAL OBSERVATORY
PALISADES

Research Vessel VEMA
CRUISE N° V24
CRUISE LEG—From HONOLULU To MIDWAY

Index #6
I K

TIME ZONE Z−12 / Z+12 / Z+11 / Z+10

Station	Day	Hour Stop	Start	Stop Depth	Start Depth	S.B.	C	CK	L	T	W	P	K	~~KD~~	D	°	N '	°	E '
A S577	MAR 28	0932	1400	2706	2680		71	62	69	56	45		64A			19	18	161	19
B	MAR 29	0825	0955											1		17	51	163	59
C S578	MAR 29	1438	1744	2903	2898		72	63A	70	57	46		64			17	31	164	41
D S579	MAR 30	0900	1151	2813	2774		73	63	71	58	47		65			16	29	166	47
E S580	MAR 31	1042	1416	2996	3000		74		72	59A	48		66			14	53	169	51
F	MAR 31	0905	1042											2		14	51	169	49
G S581	APRIL 1	0033	0249	2291	2400		75	64	73				67			14	20	170	55
H S582	APRIL 1	1635	1938	3012	3010		76	65	74	59	49		68			13	18	172	55
I	APRIL 2	1037	1300											3		12	11	175	19
J S583	APRIL 2	1505	1837	2798	2800		77	66	75	60	50A		69			12	01	175	37
K S584	APRIL 3	0936	1246	2850	2818		78	67	76	61	50		70			10	28	177	46
L																	N		E
M S585	APRIL 4	0923	2107	3060	3042		79	68	77A	62	51		71		1	09	17	178	57
N	APRIL 4	1803	2008											4		09	13	178	54
O S586	APRIL 7	0949	1302	2840	2820		80	69	77	63	52		72			10	53	173	03
P	APRIL 7	0236				32A										10	27	174	11
Q			0345													10	31	174	00
R	APRIL 7	2128				32										11	21	171	43
S			2300													11	21	171	30
T S587	APRIL 8	0942	1256	2728	2728		81	=	78	64	53		73			11	51	169	41
U S588	APRIL 9	1251	1713	2962	2961		82	70B	79	65	54		74			14	08	166	48
V S589	APRIL 10	0940	1240	2760	2760		83	70	80	66A	55		75			15	23	164	16
W S590	APRIL 11	0855	1222	2970	2990		84	71	81	66B	56		76			16	48	161	04
X	APRIL 11	1327				33										16	50	160	54
Y			1506													16	53	160	41
Z S591	APRIL 12	0959	1307	2931	2940		85	72	82	66C	57		77			17	51	158	52
	APRIL 12	1447				34										17	54	159	01
			1610													17	58	159	10
S92	APRIL 13	1019	1443	2170	2260		86	73A	83	66D	58		78			19	03	161	19
S93	APRIL 13	1602	1858	2660	2460		87	73	84				79			19	04	161	23
S94	APRIL 14	1410	1703	2560	2573		88	74	85	66	59		80			19	52	162	58
S95	APRIL 15	0938	1300	2940	2940		89	75	86	67	60		81			20	52	165	07
S96	APRIL 16	1022	1354	2960	3000		90	76	87	68	61A		82			22	12	168	02
S97	APRIL 17	0938	1309	3140	3140		91	77	88	69	62B		83			23	39	170	52

Chief Scientist

Columbia University in the City of New York

DEPARTMENT OF GEOLOGY
LAMONT GEOLOGICAL OBSERVATORY
PALISADES

Index #5

Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG 3 From PANAMA To HONOLULU

TIME ZONE Z+10

Station	Day	Hour Stop	Start	Stop Depth	Start Depth	S.B	C	CK	L	T	W	P	K	KD	D	°	N′	°	W′
A	MAR 12	1127				25										02	17	141	45
B			1307													02	18	142	00
C S63	MAR 13	0843	1054	2483	2480		59	50	55	44	36		52			02	34	145	32
D S64	MAR 14	0842	1050	2583	2583		60	51	56	45	37		53			02	48	149	00
E S65	MAR 14	1812	2022	2395	2366		61	52	57	46A	38A		54			02	51	150	10
F S66	MAR 15	0902	1137	2686	2695		62A	53	58	46	38B		55			02	54	152	08
G	MAR 13	1523				26										02	38	146	15
H			1700													02	40	146	25
	MAR 15	0621				27										02	53	151	43
J			0753													02	53	151	55
K S67	MAR 15	1924	2140	2570	2570		62	54A	59	47	38		56			03	04	153	35
L S68	MAR 16	0842	1056	2484	2511		63A	54	60	48A	39A		57A			03	27	155	32
M S69	MAR 16	2043	2306	2396	2390		63	55	61	48	39		57			03	45	157	07
N	MAR 16	1527				28										03	40	156	19
O			1707													03	41	156	33
P	MAR 17	0823				29										03	59	158	49
Q			1035													04	01	158	54
R S70	MAR 17	1304	1511	2102	2100		64	56	62	49	40A		58			04	10	159	04
S S71	MAR 18	0840	1102	2570	2570		65	57A	63	50	40		59			06	40	157	32
T S72	MAR 19	0823	1103	2788	2788		66	57	64	51	41A		60			09	18	155	37
U S73	MAR 19	1916	2148	2818	2800		67	58	65	52	41		61			10	13	155	01
V	MAR 19	1225				30										09	28	155	31
W			1430													09	39	155	23
X S74	MAR 20	0848	1121	2772	2770		68	59	66	53	42		62			11	46	154	02
Y S75	MAR 20	1939	2215	2883	2892		69	60	67	54	43		63A			13	08	154	32
Z S76	MAR 21	0912	1158				70	61	68	55	44		63			14	57	155	18
	MAR 21	1522				31										15	33	155	35
			1655													15	42	155	39

Chief Scientist

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LAMONT GEOLOGICAL OBSERVATORY
PALISADES

Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG 3 From PANAMA To HONOLOLU

Index #4

TIME ZONE Z+5
Z+9
Z+8
Z+7
Z+6

Station	Day	Hour Stop	Start	Stop Depth	Start Depth	S.B.	C	CK	L	T	W	P	K	KD	D	°	N ′	°	W ′
A S35	Feb 22	1020	1217	1480	1560		35	22	27	22A	16		31			07	06	79	58
B S36	Feb 23	2310	0038	1010	1009		36	23	28	22	17		32			06	30	85	13
C S37	Feb 24	1414	1556	1695	1690		37	24	29	23	18		33			06	56	87	21
D S38	Feb 25	1546	1745	1945	1951		38	25	30	24	19		34			06	19	90	37
E S39	Feb 26	1445	1639	1831	1828		39	26	31	25	20		35			04	53	93	34
F S40	Feb 27	1611	1750	1620	1715		40	27	32	26	21		36			03	04	97	08
G S41	Feb 28	1530	1735	1865	1854		41	28	33	27A	22		37			01	25	100	18
H S42	Feb 28	2354	0056	2065	2120		42	29	34	27B	23		38			01	27	101	21
I S43	MAR 1	0541	0727	1670	1667		43	30	35	27C	24		39A			01	28	102	04
J S44	MAR 1	1328	1500	1760	1737		44	31	36	27	25		39			01	33	103	02
K S45	MAR. 1	2051	2232	1842	1842		45	32	37	28	26		40			01	38	103	56
L S46	MAR 2	0611	0755	1922	1908		46	33	38	29	27		41			01	40	105	09
M S47	MAR2	1835	2017	1946	1934		47	34	39	30	28		42			01	43	106	54
N S48	MAR3	1108	1259	1987	1987		48	35	40	31	29		43			01	43	109	20
O S49	MAR4	0907	1102	2074	2072		49	36	41	32A	30		44A			01	49	112	44
P	MAL 3	1900				22										01	45	110	25
Q			2030													01	46	110	39
R S50	MAR4	2118	0006	2060	2059		50	37	42	32	31		44B			01	48	114	32
S S51	MAR5	1359	1731	2161	2162		51A	38	43	33	32A		44			01	46	117	12
T S52	MAR6	0833	1054	2361	2310		51	39	44	34	32B		45A			01	40	120	20
U S53	MAR6	2111	0021	2475	2472		52A	40	45	35A	32C		45B			01	47	122	22
V S54	MAR7	1302	1530	2493	2500		52B	41	46	35	32D		45			01	54	124	49
W S55	MAR 7	1835	2114	2438	2442		52C	42	47	36	32E		46			01	54	125	25
X S56	MAR8	0848	1048	2405	2380		52	43	48	37			47A			01	49	127	00
Y S57	MAR 8	2015	2224	2386	2356		53	44	49	38	32		47			01	51	129	01
Z S58	MAR9	1347	1532	2400	2383		54	45	50	39	33A		48			01	51	131	42
59	MAR10	0837	1035	2338	2290		55	46	51	40	33B		49			02	03	134	38
	MAR10	1543				23										02	09	135	30
			1717													02	11	135	41
60	MAR10	2116	0025	2318	2314		56	47	52	41	33		50			02	14	136	15
	MAR11	0959				24										02	17	137	52
			1140													02	17	138	08
61	MAR11	1436	1657	2270	2278		57	48	53	42	34		51			02	16	138	36
62	MAR12	0843	1103	2395	2391		58	49	54	43	35		52A			02	16	141	40

Chief Scientist

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DEPARTMENT OF GEOLOGY
LAMONT GEOLOGICAL OBSERVATORY
PALISADES

Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From MIAMI To PANAMA

INDEX #3

TIME ZONE Z+5

Station	Day	Hour Stop	Start	Stop Depth	Start Depth	SB	C	CK	L	T	W	P	K	KD	D	°	N′	°	W′
A	FEB 9	2203				17										21	45	93	02
B			0007													21	53	93	08
C S22	FEB 10	1413	1617	1986	1989		22	10	16	11	10A		19			23	35	92	08
D	FEB 10	1937				18										23	35	92	07
E			2118													23	31	91	53
F	FEB 11	1417				19										22	45	89	00
G			1624													22	41	88	43
H S23	FEB 12	1110	1305	1102	1115		23	11	17	12	10		20			21	27	85	42
I S24	FEB 13	0823	1102	2357	2358		24	12	18	13	11A		21			20	45	82	30
J	FEB 13	0242				20										20	52	83	25
K			0432													20	50	83	11
L S25	FEB 13	2017	2149	1518	1526		25	13	19	14A	11		22	see sect 8		19	57	81	07
M S26	FEB 14	0440	0814	3640	3641		26	14		14/5	12					19	02	80	32
N S27	FEB 14	1542	1750	2450	2450		27	15	20A	15A	13A		23			18	05	79	53
O S28	FEB 15	1839	2004	1215	1216		28	16	20	16	13		24			15	19	77	57
P S29	FEB 16	0621	0820	2142	2143		29	17A	21	17	14A		25			13	50	77	18
Q S30	FEB 16	1805	1950	1990	1990		30	17	22	18	14B		26			12	26	76	43
R S31	FEB 16	2120	2255	1928	1929		31	18	23		14		27			12	15	76	38
S S32	FEB 17	0658	0845	1440	1448		32	19	24	19	15A		28			11	12	76	06
T	FEB 16	1251				21										13	07	76	58
U			1440													12	54	76	52
V S33	FEB 17	2102	2308	1671	1670		33	20	25	20	15		29			10	00	77	04
W S34	FEB 18	1644	1818	1885	1885		34	21	26	21	16A		30			10	40	79	06
X																			
Y																			
Z																			

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DEPARTMENT OF GEOLOGY
LAMONT GEOLOGICAL OBSERVATORY
PALISADES

Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From MIAMI To PANAMA

INDEX #2

TIME ZONE Z+5

Station	Day	Hour Stop	Start	Stop Depth	Start Depth	SB	C	CK	L	T	W	P	K	KD	D	°	N′	°	W′
A	S17 FEB 2	1356	1641	1733	1735		17	6	11		7A		15A			25	24.4	85	52.3
B	S18 FEB 2	1737	2052	1732	1736		18	7	12				15			25	25	85	53
C	S19 FEB 3	1415	1554	1615	1608		19	8A	13	8	7		16			27	28	86	49
D	S20 FEB 4	1337	1518	1420	1422		20	8B	14	9	8		17			27	17	87	57.5
E	S21 FEB 5	1517	1657	1942	1942		21	8	15	10	9		18			24	23	90	06
F	FEB 1	2157				4										24	01	85	36
G	FEB 2	2111				5										25	22	85	53
H			2243													25	22	86	00
I	FEB 3	0916				6A										26	48	86	36
J			1010													26	54	86	39
K	FEB 3	1027				6										26	55	86	39
L			1152													27	06	86	43
M	FEB 3	1814				7										27	53	86	53
N			2033													28	01	87	02
O	FEB 4	0108				8										28	51	86	54
P			0229													29	00	86	58
Q	FEB 4	0841				9										27	59	87	34
R			1022													27	47	87	40
S	FEB 4	1901				10										26	42	88	16
T			2057													26	30	88	22
U	FEB 5	0305				11										25	44	88	48
V			0455													25	31	88	59
W	FEB 5	1121				12										24	42	89	39
X			1330													24	32	89	52
Y	FEB 5	2129				13										23	56	90	42
Z			0140													23	33	91	12
	FEB 6	0536				14										23	09	91	46
			0744													23	00	91	58
	FEB 6	1323				15										22	29	92	48
			1501													22	24	93	00
	FEB 8	0900				16										20	22	94	42
			1100													20	14	94	30

Chief Scientist

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DEPARTMENT OF GEOLOGY
LAMONT GEOLOGICAL OBSERVATORY
PALISADES

Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From NEW YORK To MIAMI

INDEX # 1

TIME ZONE Z+5

Station	Day	Hour Stop	Start	Stop Depth	Start Depth	SB	C	CK	L	T	W	P	K	KD	D	°	N′	°	W′
A S1	JAN. 17	1414	1608	1610	1610		1	1A	1A				1			36	30	73	30
B S2	JAN. 18	1129	1402	2410			2	1B	1B	1	1A		2			34	26	71	42
C S3	JAN. 19	1925	2214	2545			3	1C	1C	2A	1B		3			31	33	74	18
D	JAN 20	1600				1										29	30	73	54
E			1730													29	24	73	58
F S4	JAN 21	1030	1302	2493	2495		4	1D	1	2	1C		4			27	46	74	39
G S5	JAN. 22	1440	1722	2860	2858		5	1E	2	3A	1D		5			28	35	71	05
H S6	JAN. 23	1520	1817	2916	2916		6	1F	3	3B	1		6A			24	58	71	06
I S7	JAN. 24	1230	1527	2585	2562		7	1G	4		2		6			22	39	72	46
J S8	JAN. 24	2110	2346	2585	2581		8	1H	5		3A		7			22	36	72	36
K S9	JAN. 25	0928	1152	2535	2539		9	1	6		3B		8			22	46	72	58
L S10	JAN 25	1412	1647	2525	2521		10	2	7	3	3C		9			22	42	72	40
M S11	JAN. 25	2054	2325	2520	2510		11	3	8A	4	3		10A			22	47	72	57
N S12	JAN 26	2138	0110	2811	2812		12	4	8	5	4A		10			24	39	73	50
O S13	JAN. 27	0951	1326	2795	2838		13	5	9A	6	4B		11			24	44	73	41
P S14	JAN. 27	1805	2135	2818	2818		14	6A	9B	7	4		12			24	44	73	42
Q S15	JAN. 28	0740	1003	2795	2802		15	6B	9		5		13			24	44	73	45
R S16	JAN 28	1310	1523	2785	2785		16	6C	10		6		14			24	42	73	44
S																			
T																			
U																			
V																			
W																			
X																			
Y																			
Z																			

Chief Scientist

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Columbia University
in the City of New York
DEPARTMENT OF GEOLOGY
LAMONT GEOLOGICAL OBSERVATORY
PALISADES

Research Vessel VEMA
CRUISE N° 24
CRUISE LEG—From Rio To Miami

TIME ZONE +5

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. W	LOG	REMARKS
13	JN 160	2100	2130	35m		~~2501~~	7435	—	Welds on jet-net fins gave way during
Dec									recovery. No heli-arc equipment on board
67									for repair.

Chief Scientist

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DEPARTMENT OF GEOLOGY
LAMONT GEOLOGICAL OBSERVATORY
PALISADES

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Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From RIO DE JANEIRO To MIAMI

TIME ZONE +5

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. W	LOG	REMARKS
13 DEC 67	CORE CAMERA 192	0921	1107	2815	2820	2452	7349	280	4 FRAMES TAKEN, NONE ON BOTTOM
13 DEC 67	CAMERA 173	0907	1150	2815	2820	2452	7349	280	8 FRAMES SHOWING TRACKS AND TRAILS, RIPPLES
13 DEC 67	NEPH-ELOMETER 159	0907	1150	2815	2820	2452	7349	280	500 FM NEPHELOID LAYER SEEN
13 DEC 67	CORE 265	1434 Hit	1611 1523	2520 Hit	2821 2821	2449	7348	281	Pen 304 cm CL 331 cm TC 331 Lt. Brown foraminiferal marl oozes seperated by a foram sand from 38-305 cm.
13 Dec 67	Bio 866 - 868	1506	1539	200m		2449	7348	281	Sargasso present. Scattering down to 80 Fm.
13 Dec 67	MP 183	1630	—	Surface		2449	7348	281	
13 Dec 67	JN 159	1630	1700	35m		2449	7348	281	

R. Gerard
Chief Scientist

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LAMONT GEOLOGICAL OBSERVATORY
PALISADES

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Research Vessel VEMA
CRUISE N° 24
CRUISE LEG 13 From RIO To MIAMI

TIME ZONE +5

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
12 DEC 67	CAMERA 172	1524	1728	2915	2915	2421	7134	279	TOOK 12 FRAMES SHOWING SOFT MUD BOTTOM
12 DEC 67	NEPH-ELOMETR 158	1524	1728	2915	2915	2421	7134	279	NEPHELOID LAYER BOTTOM 200 FMS
12 Dec 67	Bio 863 865	1523	1731			2421	7134	279	
12 Dec 67	MP 182	1500	—	Surface		2421	7134	279	
12 Dec 67	JN 158	1900	1930	35m		2425	7139	—	
13 DEC 67	CORE 264	0921 Hit	1107 1004	2825 Hit	2821 2825	2452	7849	280	CL. 471cm TC. 471 cm Lt. tan foraminiferal marl changing to a foram and pteropod sand from 70-254cm. The core then changes to a grey marl with foram sand layers between 324-325 and 332-337 cm.
13 Dec 67	T-GRND 216	0921	1107	2822	2820	2452	7349	280	GOOD RECORD - 3 PROBES H.F. = 1.94 μcal/cm²/sec

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Research Vessel VEMA
CRUISE N° 24
CRUISE LEG 13 From RIO To MIAMI

TIME ZONE +4

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. W	LOG	REMARKS
11 DEC 67	CORE CAMERA 191	1852	2105	2912	2915	2231	6858	278	3 FRAMES ONLY - NO BOTTOM PIX. DUE TO CORE RIG GOING IN FULLY.
11 DEC 67	CAMERA 171	1810	2105	2912	2915	2231	6858	278	30 FRAMES EACH PARTLY OVER-LAPPING + DOUBLE EXPOSING ADJACENT FRAMES DUE TO FAULTY TRANSPORT BOTTOM SOFT MUD WITHOUT FEATURES.
11 DEC 67	NEPH-ELOMETR 157	1810	2105	2912	2915	2231	6858	278	NEPHELOID ZONE IN BOTTOM 200 FMS SEEN.
12 DEC 67	CORE CAMERA 263	1545 Hit	1728 1631	2915 Hit	2916 2915	2421	7134	279	Pen. 880 cm CL. 940 TC. 428 cm Lt. tan and gray marls containing many moderately compacted layers and sand layers. There is a foraminiperal sand layer present between 334-337 cm.
12 DEC 67	T-GRAD 215	1545	1729	2915	2915	2421	7134	279	GOOD RECORD - 3 PROBES H.F. = 1.48 μcal/cm²/sec
12 DEC 67	CORE CAMERA 192A	1545	1728	2915	2915	2421	7134	279	LIGHT FAILED TO WORK

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Research Vessel VEMA
CRUISE N° 24
CRUISE LEG—From Rio To Miami

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TIME ZONE +4

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
10 Dec 67	JN 155	2200	2230	35m.		2035	~~66~~ 6600	—	
11 DEC 67	CORE 262	1852 Hit	2105 2000	2912 Hit	2915 2912	2231	6858	278	Pen. 1300 cm CL. 891 cm TC 840 cm Grey and tan clays with a large foraminiferal sand layer present between 604-622 cm.
11 DEC 67	FGRAD 214	1852	2105	2911	2915	2231	6858	278	GOOD RECORD - 4 PROBES H.F. = 1.52 μcal/cm²/sec
11 Dec 67	Bio 860 -862	2006	2059	200m		2231	6858	278	?
11 Dec 67	MP 181	1800	—	Surface		2231	6858	278	
11 Dec 67	JN 156	1700	1730	35m		2228	6855	278	
11 Dec 67	JN 157	2130	2200	35m		2233	6900	278	

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Research Vessel VEMA
CRUISE N° 24
CRUISE LEG 13 From RIO To MIAMI

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TIME ZONE _____

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. W	LOG	REMARKS
10 DEC 67	CORE 261	0846 Hit	1248 1036	3890 Hit	3872 3885	1945	6438	277	Pen. 550 cm CL. 714 TC. 714 Lt. tan and gray marls that contain many shallower water terbidites.
10 DEC 67	FGRAD 213	0846	1240	3890	3875	1945	6438	277	GOOD RECORD – 2 PROBES H.F. = 2.5 μcal/cm²/sec
10 DEC 67	CORE CAMERA 191A	0846	1240	3890	3972	1945	6438	277	MALFUNCTION – FILM RAN THRU PREMATURELY
10 DEC 67	CAMERA 190	0640	0956	3985	3960	1945	6438	277	8 FRAMES POORLY LIGHTED – DISCOVERED FAULTY CAPACITOR
10 DEC 67	NEPH-ELOMETER 156	0640	0956	3985	3960	1945	6438	277	NEPHELOID LAYER FAINTLY SEEN IN BOTTOM 300 FATHOMS
10 Dec 67	Bio 857 -859	1045	1126	200m.		1945	6438	277	Three SLs: 0-90Fm, 150-190Fm, 210-270Fm. Sargasso weed present.
10 Dec 67	JN 154	1600	1702	35m		1945	64-38	—	

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Research Vessel VEMA
CRUISE N° 24
CRUISE LEG—From Rio To Miami

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TIME ZONE +4

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. W	LOG	REMARKS
8	MP 180	1600		Surface		16 24	58 59	276	
Dec									
67									
8	JN 150	1601	1631	35m		16 24	58 59	276	
Dec									
67									
8	JN 151	2202	2232	35m		16 50	59 50	—	
Dec									
67									
8	MP air 5	1630				16 26	59 04	276	
Dec		8 Dec							
67			1600			18 31	62 22	—	
			9 Dec						
9	JN 152	1500	1530	35m.		18 26	62 13	—	
Dec									
67									
9	MP air 6	1630				18 34	62 26	—	
Dec		9 Dec							
67									
9	JN 153	2230	2300	35m.		19 05	63 25	—	
Dec									
67									

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Research Vessel VEMA
CRUISE N° 24
CRUISE LEG—From Rio To Miami

TIME ZONE +4

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. W	LOG	REMARKS
6	JN 148	1930	2000	35m		1237	5756	—	
Dec									
67									
8		#1		#1				276	RETURNED RIG TO THE SURFACE
DEC	CORE	1230	1320	2955	2925	1624	5856		AFTER LOWERING TO 1500 FMS. TO
67	261A								CHECK CONDITION. LOWERED TO 700
		#2							FMS. AND HAD TROUBLE WITH WATER
		1323	1519	2925	2903				BRAKE - CROSSED WITH HYDROWIRE - QUIT.
		#1		#1				276	No RECORD - SEE ABOVE
8	FGRAD	1230	1320	2955	2925	1624	5856		
DEC	#213A								
67		#2		#2					
		1323	1519	2925	2403				
8	CURRENT	0930	1500	2950		1624	5856	276	TOOK 3-8 MINUTE MEASUREMTS.
DEC	METER								ON BOTTOM — WIRE PARTED
67	4B								DUE TO KINKS AT LOWER END WHILE
									RAISING — LOST 25 FMS WIRE
									CURRENT METER + COREHEAD CAMERA
8	NEPH	0930	1500			1624	5856	276	ABORTED DUE TO WIRES BEING
	156A								CROSSED
8	CAMERA	0930	1500			1624	5856	276	ABORTED SEE ABOVE
	170A								
8	Bio 854	1126	1258	200m		1624	5856	276	Continue to observe suspended particles
Dec	-856								in sunlit surface waters. Very light
67									plankton concentrations this area.

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Research Vessel VEMA
CRUISE N° 24
CRUISE LEG 1,3 From RIO To MIAMI

TIME ZONE +4

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. W	LOG	REMARKS
6 DEC 67	CORE CAMERA 190	1519	1655	2247	2256	12.24	57.31	275	ABOUT 20 FRAMES SHOWING COMPASS POOR QUALITY AS THOUGH UNDER-EXPOSED
6 DEC 67	CAMERA 169	1506	1635	2244	2250	12.24	57.31	275	9 FRAMES LOOK UNDER-EXPOSED DIFFICULT TO SEE DETAILS OF SOFT BOTTOM
6 DEC 67	NEPH. ELOMETER 155	1506	1635	2244	2250	12.24	57.31	275	NO NEPHELOID LAYER SEEN. GOING DOWN PORTION AT 50 FM/MIN COMING UP FAST.
6 Dec 67	Bio 852 853	1557	1706	0	200	1224	5731	275	
6 Dec 67	MP 179	1430	—	Surface		1224	5731	275	Suspended debris, visible in surface waters shows up on MP filter even after straining sample through 202 μ mesh. Particles are of terrestrial origin — mostly plant fibers, wind-born seeds, pollin, dust, etc.
6 Dec 67	JN 147	1434	1455	35 m -		1224	5731	275	Non-standard tow, shorter than usual 30 min because of premature station.
6 Dec 67	MP Air 4	1730 6 Dec	0800 7 Dec			1224 1305	5733 5937	—	

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Research Vessel VEMA
CRUISE N° 24
CRUISE LEG—From Rio To Miami

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TIME ZONE +3

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. W	LOG	REMARKS
5 Dec 67	JN 145	1700	1730	35		1150	53-54	—	Increasingly heavy samples.
5 Dec 67	JN 146	2100	2130	35		1155	5433	—	
5 Dec 67	MP (air) #3	1800 DEC 6→	1500			1150 1225	5405 5728	—	
Dec 5	SONOBUOY 122	2340				1201	5458		LOG 9307.90 TO 9318.53 (10.63 MI) CHANNEL 1 DEPTH SETTING NOT KNOWN (SSQ 28 MODEL), SURF TEMP 27.4° C. RECORDED ON A2 + B2 (4 SEC DECAY ON A)
		DEC 6→ 0025				1204	5508		
6 Dec 67	CORE 260	1519 Hit	1655 1618	2247 Hit	2256 2253	1224	5731	275	Pen. ≈ 765 cm CL. 663 cm TC. 663 cm Lt. tan foraminiferal marl changing to grey and tan marls. Mineral sand layers present between 41-53, 343-356, 501-510, 580-585, 636-645, 652-660 cm. Ash layer present at 240 cm. Water in base of core when surfaced.
6 Dec 67	T-GRAD 212	1519	1655	2245	2256	1224	5731	275	GOOD RECORD - 2 PROBES H.F. = 2.2 μcal/cm²/sec
7 Dec 67	JN 149	2100	0130	35m		1430	5924	—	

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Research Vessel VEMA
CRUISE N° 24
CRUISE LEG 3 From RIO To MIAMI

TIME ZONE +3

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. W	LOG	REMARKS
3	NEPH-	1619	1840	2381	2375	8°02'	51°06'	274	BATTERY SHORTED - NO RECORD
DEC	ELOMETR								VOLTAGE DECREASED IN BATTERIES DUE TO
67	155A								THE COOLING OF THE INSTRUMENT. NOT
									ENOUGH VOLTAGE TO DRIVE MOTOR
4	SONO-	0018	0151	2430	2310	8-12	51-40		LOG 8849.48 TO 8859.51 (9.93 mi)
DEC	BUOY		0151			8-02	51-52		CH. 11, 60 FT, 3 HRS., SURF. T. 27.0°C.
67	118								RECORDED ON A2-B2 FAST
									TRANS. AND PDR. #2.
4	SONO-	0520	0655	1293	783	7-47	52-25		LOG 8897.93 TO 8908.48 (10.55)
DEC	BUOY		0655			7-32	52 33		CH. 15, 60 FT 3 HRS, SURF T. 27.1°C.
67	119								RECORDED ON FAST TRANS. A2-
									B2 AND PDR. #2.
4	SONO-	1018	1144	280	205	7-21	5306		LOG 8946.00 TO 8954.64 (8.64 mi)
DEC	BUOY					7-20	5321		CH. 9, 60 FT. 3 HRS, SURF. T. 27.1°C
67	120								RECORDED ON A2 AND MAG
									TAPE PLAYED BACK ON B2 —
									ALSO PDR #2
4	SONO-	1508	1634	100	162	7-24	53-54		LOG 8986.34 TO 8994.00 (7.66 mi)
DEC	BUOY					7-34	53-56		CH. 14, 60 FT, 3 HRS., SURF. T. 24.2°C
67	121								RECORDED A2 + B2 FAST TRAV.
									ALSO PDR #2
4	JN 144	2330	0000	35m		7-44	53-59	—	
Dec									
67									
5	MP 178	1700	—	Surface		8-02	51-08	—	
Dec									
07									

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Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From Rio de Janeiro To Miami

TIME ZONE +3

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. W	Str. LOG	REMARKS
3 Dec 67	Bio 851			Surface		8°02'	51°06'	274	
3 Dec 67	JN 142	1530	1600	35m		8°02'	51°06'	274	
3 Dec 67	JN 143	2130	2202	35m		8-13	51-19	—	Heavy sample with one myctophid.
3 DEC 67	CORE 260A	1647 Hit	1810 1726	2380 Hit	2373 2377	8°02'	51°06'	274	DID NOT TRIP - TRIED 3 PIPES + TRIGGER LINE GOT HUNG UP ON CORE PIPE GOT TRIGGER CORE BENT PIPE AT 35' FROM CUTTING EDGE
3 DEC 67	T'GRAD 211	1647	1810	2380	2376	8°02'	51°06'	274	CORE PIPE PENETRATED NEARLY 40 FT. 3 PROBES IN MUD H.F. = 1.10 μcal/cm²/sec
3 DEC 67	CORE CAMERA 189	1644	1810	2381	2375	8°02'	51°06'	274	25 FRAMES OBTAINED - NO BOTTOM FEATURES SEEN
3 DEC 67	CAMERA 168	1619	1840	2381	2375	8°02'	51°06'	274	11 FRAMES OBTAINED SHOWING SOFT MUD.

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Research Vessel VEMA
CRUISE N° 24
CRUISE LEG—From Rio To Miami

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TIME ZONE +3

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start ~~A~~	SOUNDING End ~~W~~	POSITION Lat. N	POSITION Long. W	STN ~~LOG~~	REMARKS
2 Dec 67	MP air filtration 2	1830 2 Dec	1930 3 Dec.	~~4-39~~	~~50-20~~ →	4-39 8-02	50-20 51-08	—	
2 Dec 67	JN 141	1900	1932	~~4-44~~	~~5020~~	4-44	5020	—	Heavy sample containing 3 adult teleosts.
2 DEC 67	SONO - BUOY 113.	1608	1704 1704	55	50	4-21 427	5014 5016		LOG 8585.81 to 8590.97 (5.16 miles) CHAN. 6, 60 FT, 3 HRS, SURF. TEMP 26.8. RECORDED ON A2 AND MAG. TAPE. REPLAYED FROM TAPE ONTO B2 — ALSO ON 3.5KC P.D.R.
2 DEC 67	SONOBUOY 114								NO DATA UNIT FADED OUT
2 DEC 67	SONO - BUOY 115	2239	2346 2346	9053	1280	5-25 5-35	50-29 50-31		LOG 8642.93 TO 8649.25 (7.32 mi) CHAN. # 6, 60 FT, 3 HRS. SURF TEMP. 26.6C RECORDED ON A2, B2, PDR #2
3 DEC 67	SONO - BUOY 116	0707	0844 0844	2030	2270	6-51 7-02	50-45 50 47		LOG 8719.92 TO 8729.93 (9.01 mi) CHAN. 8, 60 FT, 3 HRS, SURF. T. 27.0°C RECORDED ON A2 - B2 + PDR #2
3 DEC 67	SONO - BUOY 117	1852	1401 1401	2328	2337	7-48 7-44	5052 50-53		LOG 8770.60 TO 8776.24 (6.24 mi) CHAN 5, 60 FT, 3 HRS, SURF. T. 27.6°C. RECORDED ON A2, B2, PDR #2

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Research Vessel VEMA
CRUISE N° 24
CRUISE LEG 13 From RIO To MIAMI

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TIME ZONE +3

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. W	LOG	REMARKS
1 DEC 67	SONO-BUOY 107	2000	2124	1260	1132	3 21 3 24	46 59 47 09		LOG 8415.00 TO 8424.64 CHAN # 9 60 FT, 3 HRS, SURF. TEMP 27.5°C RECORDED ON A2 - B2 - PDR #2
2 DEC 67	SONO-BUOY 108	0050	0224	900	940	3 41 3 48	47 39 47 51		LOG 8457.72 TO 8467.42 CHAN # 10 60 FT, 3 HRS., SURF. TEMP 27.3°C RECORDED ON A2 - B2 + PDR #2
2 DEC 67	SONO-BUOY 109	0600	0630	400	390	4-00 4 01	48 33 48 38		LOG 8505.83 TO 8508.93 CHAN # 16 60 FT, 3 HRS, SURF. TEMP. 27.3°C RECORDED ON A2 - B2 - PDR #2 CUT SHORT DUE TO RECORDER TROUBLE
2 DEC 67	SONO-110	0730	0853	405	475	4 02 4-05	48 48 49 00		LOG 8515.25 TO 8523.99 CHAN # 6 60 FT, 3 HRS, SURF. TEMP 27.1°C RECORDED ON A2, TAPE RECORDER + REPLAYED ON B2 - ALSO PDR #2
2 DEC 67	SONO-116	1229	1350	235	60	4-14 4-16	49 47 49 52		LOG 8563.21 TO 8571.50, CHAN # 10 60 FT, 3 HRS, SURF. TEMP. 27.1°C, RECORDED ON A2 - B2 - PDR #2
2 DEC 67	SONO 112	1443	1600	58	55	~~4-16~~ ~~47~~ 4-18 4-20	~~47~~ 50 02 50 11		LOG 8577.04 TO 8585.04 CHAN # 9 60 FT 3 HRS SURF TEMP 26.8°C RECORDED ON A2 AND TAPE RECORDER WHICH REPLAYED INTO B-2 ALSO PDR #2,
2 Dec 67	JN ~~13~~ 140	1785	1805	48m		4-30	50 18	—	Amazon Delta sampling: large volume of tiny copepods + great variety of larval crustacea + teleosts, with usual pteropods, jellies, forams, heteropods, etc.

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Research Vessel VEMA
CRUISE N° 24
CRUISE LEG 13 From RIO To MIAMI

TIME ZONE +3hr

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. W	LOG	REMARKS
1	T'GRAD	1301	1410	1820	1818	3-07	4608	273	GOOD RECORD - 3 PROBES
DEC	210								H.F. = 1.30 μcal/cm²/sec
67									
1	CORE			1825		307	4608	273	
DEC	CAMERA				1818				
67	188								
1	CURRENT	123.4		1822				273	GEODYNE METER J-191 USED
DEC	METER		1526		1818	307	4608		IN TRIPOD. PLACED ON BOTTOM
67	4A								FOR TWO 5 MINUTE RECORDINGS
									WIRE ANGLE < 70°. TRIED CAMERA
									BUT CASE FLOODED. METER ALSO FLOODED; N.G.
1	Bio 849,	1259	1530	200m				273	
Dec	850								
67									
1	MP177	1545	—	Surface				273	
Dec									
67									
1	JN 138	1633	1703	35m		3-08	46-29	273	
Dec									
67									
1	JN 139	2001	2105	48m.		3-21	4657	—	Duration 1 hr. @ 6Kt.
Dec									
67									

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Research Vessel VEMA
CRUISE N° 24
CRUISE LEG 13 From RIO To MIAMI
TIME ZONE +3

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. W	STA LOG #	REMARKS
30 NOV 67	M.P 176	1530		SURFACE		2-20	43-14	272	
30 NOV 67	J.N. 137	1830	1900	35M		2-23	43-25	272	
30 NOV 67	SONO-BUOY 103	2124	2235	2235	2230	2°29 / 2°32	43°48 / 43°57		LOG 8232.61 TO 8240.37 — 7.76 Mi CHANNEL 15 — PHONE DEPTH 60 FT, 3 HRS, SURF TEMP 27.5°C RECORDED ON A-2, B-2 + PDR #2.
1 DEC 67	SONO-BUOY 104	0619	0734			2°53 / 2°56	45°20 / 45°32		LOG 8325.56 TO 8332.72 — 7.36 Mi CHANNEL 7, PHONE DEPTH 60 FT, 3 HRS, SURF. TEMP. 27.3°C RECORDED ON PROFILERS A-2, B2 AND PDR #2
1 DEC 67	SONO-BUOY 105	0857	1018			3-00 / 3-05	45°43 / 46.00		LOG 8347.15 TO 8356.98 — 9.83 Mi. CHANNEL 16, PHONE DEPTH 60 FT 3 HRS., SURF. TEMP 27.3°C, RECORDED ON PROFILERS A2 + B2 AND PDR #2
1 DEC 67	SONO-BUOY 106	1029	1200			3-04 / 3 06	45°55 / 46 05		LOG 8357.81 TO 8367.33 — 9.52 Mi CHANNEL 6, PHONE DEPTH 60 FT. 3 HRS. SURF. TEMP 27.3°C, RECORDED ON PROFILERS A2 + B2 + PDR #2
1 DEC 67	CORE 259	1300 Hit	1404 13 40	1820 Hit	1813 1918	3-07	46 08	273	Pen. 1050 cm C.L. 885 cm T.C. 728 cm Lt. tan Foraminiferal MARL CHANGING TO Gray MARL. MINERAL SAND LAYER BETWEEN 725-728 cm. FORMS BASE OF TRUE CORE

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Research Vessel VEMA
CRUISE N° 24
CRUISE LEG—From Rio To Miami

TIME ZONE +3

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. W	Str ~~LOG~~	REMARKS
~~28~~ Nov 67	JN 135	2133	2203	35m		00-28	36-25	—	Cod-end burst, ruining sample
30 Nov 67	JN 136	1300	1330	35m		2-15	42 52		Finished repairs on jet-net
30 Nov 67	CORE 258	1602 Hit	1709 1634	2265 Hit	2263 2265	2-21	43-18	272	Pen. 894 cm. CL. 803 cm. TC. 760 cm. Foraminiferal marl changing to marl. There are numerous mineral sand layers present. A Mn crust (≃0.5 cm thick) is present at 54 cm.
30 Nov 67	T-GRAD 209	1602	1709	2266	2265	2-21	43-18	272	CORE HEAD THERMOMETERS USED GOOD RECORD - 3 PROBES H.F. = 1.78 μcal/cm²/sec
30 Nov 67	CAMERA 167	1542	1808	2265	2260	2-21	43 18	272	TOOK 8 FRAMES - LARGE WIRE ANGLE THIS STA.
30 Nov 67	NEPHELOMETER 154	1542	1808	2265	2260	2-21	43-18	272	NO NEPH. LAYER SEEN
30 Nov 67	Bio 846 - 848	1550	1753	200m				272	Well defined DSL appearing at ~ 80 Fm.

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PALISADES

Research Vessel VEMA
CRUISE N° 24
CRUISE LEG—From Rio To Miami'

TIME ZONE +2

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. W	Stn. ~~LOC~~	REMARKS
28 Nov 67	MP Filtration of air #1	1330	1345 (29 Nov.)			00°08	35'4 / 00°06'	—	Millipore air sampler was mounted foreward (over starboard running light) to minimize stack gas + winch exhaust contamination. Filtering began just after ship station 270, + ended after stn 271.
28 Nov 67	CAMERA 165	1946	1210	2400	2415	00°04	35°03	270	16 PICTURES SHOWING SOFT BOTTOM FEW TRACKS
28 Nov 67	NEPHELOMETER 153	1946	1210	2400	2415	00 04	35 03	270	NO APPARENT NEPH LAYER
28 Nov 67	CURRENT METER 3	0820	0930	2400	2400	00 04	35°03	270	LOWERED GEODYNE CURRENT METER TO 90 FMS ALONG WITH TEMP. PROBE FROM DRIFTINGSHIP — SHIP'S DRIFT FIGURED AT 27 CM/SEC TOWARDS 060°
29 Nov 67	DREDGE 3-D	0927 Bottom Time 1007–1041	1115	1992 Bottom Depth	1988	1°01	38°14	271	USED CROWN DREDGE ON TOP OF SMALL MOUNT SUMMIT. OBTAINED SMALL QUANTITY OF GLOB OOZE FROM SURFACES OF DREDGE. PRESERVED IN VIAL.
29 Nov 67	CAMERA 166	1050	1215	1988	2260	1°01	38°14	~~271~~	OBTAINED IR PICTURES DOWN N. SLOPE OF SMALL SEAMOUNT. NEARLY FEATURELESS GLOB OOZE BOTTOM OBSERVED
29 Nov 67	Bio 843-845	1104	1221	200m		1°01'	38°14'	271	

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Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From Rio de Janeiro To Miami

TIME ZONE +2

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. S	POSITION Long. W	LOG	REMARKS
27 Nov 67	JN 132	1730	1802	35 m		1°55'	33°58	—	
27 Nov 67	JN 133	2030	2100	35m		1°30	34°18	—	
28 Nov 67	CORE 257	1006 Hit	1126 1045	2415 Hit	2415 2415	00°04N	35°03	270	CL 936 cm Pen ≃ 1210 cm TC. ≃ 920 cm Multi-colored Tan & Gray marls. There are Foraminiferal sand layers between 38-490 cm and 880 ≃ 920 cm. Bowed laminae are present throughout the core
		1006	1126	2427	2415			270	4 PROBES IN SEDIMENT. CORE HEAD
28 Nov 67	T-4 RAD 208					00°04N	35°03		REV. THERMS. 0.995°C GOOD RECORD - 4 PROBES H.F. 1.26 μcal/cm²/sec
28 Nov 67	Bio 840-842	0945	1146	200m		00°04N	35°03	270	Ecological data corresponding to marine organisms sampled: (1) Vectors of equitorial undercurrent measured at 11 Fm intervals (see Sam Gerard) (2) Associated thermal gradients in upper 100 Fm (surf. temp. recorder)
28 Nov 67	MP 175	1215	-	Surface		00°04N	35°03	270	
28 Nov 67	JN 134	1233	1303	35m		00°04N	35°03	270	Low phyto plankton content — high percentage of Krill.

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Research Vessel VEMA
CRUISE N° 24
CRUISE LEG 3 From RIO To MIAMI

TIME ZONE +2 HR

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. S	POSITION Long. W	LOG	REMARKS
26 Nov 67	CORE 257A	1559 Hit	1710 1631	2437 Hit	2435 2436	5-07	32°42	269	NO CORE - TRIGGER LINE BECAME WRAPPED AROUND CORER, THIS DUE TO ATTEMP TO USE DOUBLE TRIG. CORE RIG.
26 Nov 67	T-GRAD 208A					5-07	32-42	269	NO RECORD - CORE DIDN'T PENETRATE AGAIN!!
26 Nov 67	837-839 (Bio)	1518	1716			5-07	32-42	269	Blue copepods existing in large numbers in upper 10m.
26 Nov 67	MP 174	1500	—	Surface		5-07	3242	269	Possible shipboard contamination.
26 Nov 67	JN 131	1900	1930	35m		5-00	32 44	—	Marked increase in sample volume.
26 Nov 67	CAMERA 165A	1507	1744			507	3242	269	CAMERA RIGGED ON CURRENT METER TRIPOD — FAILED DUE TO CASE LEAK
26 Nov 67	CURRENT METER 2.	1501	1744	2439	2435	5-07	32-42	269	GEODYNE CURRENT METER IN TRIPOD USED FOR BOTTOM CURRENT MEASUREMENT. LOST TRIGGER WT. OFF METER.

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Research Vessel VEMA
CRUISE N° 24
CRUISE LEG—From Rio To Miami

TIME ZONE +2

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. S°	POSITION Long. W°	Stn ~~LOG~~	REMARKS
24 Nov 67	Bio 835-836	1139	1403			1200	1330	268	No DSL observation because 12 kc PDR inoperable. Sharks, whales, + jelly fish sighted this area.
24 Nov 67	MP 173	1180		Surface		1200	1330	268	
24 Nov 67	JN 127	1432	1503	35m		1200	1330	268	
24 Nov 67	JN 128	2000	2030	35m		11 11	3142	—	
25 Nov 67	JN 129	1600	1630	35m		~~11 11~~ 8° 12	~~3142~~ 3208	—	
25 Nov 67	JN 130	2032	2100	35m		~~8° 12~~ 7 48	32 14	—	

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Research Vessel VEMA
CRUISE N° 24
CRUISE LEG 13 From RIO To MIAMI

TIME ZONE

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. S	POSITION Long. W	LOG	REMARKS
22 Nov 67	CAMERA 163	1600	1845	2590	2595	1732	≈953	267	TOOK 33 GOOD FRAMES SHOWING SOFT BOTTOM - ANIMAL TRACKS, RIPPLE MARKS. 33 HITS.
22 Nov 67	NEPHELOMETER 152	1600	1845	2590	2595	1732	2953	267	GOOD FILM BUT NO APPARENT NEPHCOID LAYER.
23 Nov 67	JN 126	1930	2000	35m.		1408	3048	—	Numerous large euphausiids
24 Nov 67	CORE 256	1208 Hit	1335 1245	2630 Hit.	2600 2565	1200	3130	268	PRESSURE SAFETY PIN FAILED TO WORK AGAIN — NO TRIP ON BOTTOM CONTACT — SAMPLE OBTAINED FROM CUTTING EDGE
24 Nov 67	TGRAD 207	1208	1335	2578	2540	1200	3130	268	DUE TO VERY SHALLOW PENETRATION ONLY BOTTOM PROBE IN MUD. PROBABLY CORER FELL OVER AFTER REACHING BOTTOM SO VALUE OF THIS MEAS. IS SMALL. H.F. = 3.44 μcal/cm²/sec
24 Nov 67	CAMERA 164	1118	1353	2580	2480	1200	1330	268	NINE PICTURES SHOWING MN NODULES
24 Nov 67	NEPHELOMETER 152	1118	1353	2580	2480	1200	1330		NO NEPH. LAYER SEEN IN FILM.

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Research Vessel VEMA
CRUISE N° 24
CRUISE LEG—From Rio To Miami

TIME ZONE +2

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. S	POSITION Long. W	LOG	REMARKS
21 Nov 67	JN 123	2032	2102	35m.		1946	3125	—	Light sample containing large, luminescent euphausiids.
22 Nov 67	CORE 256A	1618 Hit	1747 1703	2597 Hit	2596 2597	1732	2953	267	A Pressure triggering device was tested but failed to trigger the gun and the core didn't trip.
22 Nov 67	T-GRAD 206	1618	1747	2596	2596	1732	2953	267	4 PROBES IN MUD - APPARENTLY CORER PENETRATED FULLY IN SPITE OF NO TRIP MUST USE CAUTION IN FIGURING THERMAL GRADIENT DUE TO THE VERTICAL QUESTION → H.F. = 1.45 μ cal/cm²/sec
22 Nov 67	Bio 832 - 834	1634	1812			1732	2953	267	
22 Nov 67	MP 172	1810	—	Surface		1732	2953	267	
22 Nov 67	JN 124	1902	1933	35m		1732	2953	267	Light sample, mostly crustaceans.
23 Nov 67	JN 125	0832	0903	35m		1539	3020	—	

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Research Vessel VEMA
CRUISE N° 24
CRUISE LEG 13 From RIO To MIAMI

TIME ZONE + 2 HR

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
20	CAMERA	1632	1845	2625		22 30	33 50	266	11 GOOD FRAMES SHOWING RIPPLES
NOV	162				2625				QUALITY OF LIGHT FADED AT
1967									END OF FILM
									20 HITS
20	NEPH.	1632	1845	2625		2230	3350	266	NO USABLE FILM IMAGES OF INSTRUMENT
NOV	159 A				2625				SHOW IN A REPEATED MANNER —
1967									POSSIBLY DUE TO IRREGULAR FILM
									TRANSPORT
20	CURRENT			2625		2230	3350		TRIPOD MOUNTED GEODYNE CURRENT
NOV	METER				2625			266	METER USED ON BOTTOM FOR 5-10
1967	1								MINUTE PERIODS, 3 PERIODS OF
									THIS DURATION MEASURED ON
									FLAT CHANNEL BOTTOM
20	Bio 829	1348	1547	200m		2230	3350	266	Bridle of surface net fouled, as in previous
Nov	-831								stn., causing frame to tow on an incline.
67									Adjusted bio winch wire mark from 175m.
									(96Fm) to exactly 200m (109Fm). Light
									sample.
20	MP 170	1330	—	Surface		2230	3350	266	
Nov									
67	BT 113	1410	1415	600 ft.				266	Subsequent to this measurement, additional
									wire was transfered from outboard bio
									winch to BT winch.
20	BT 114	1815	—			2230	3350	266	Lost instrument # 8151-B with 500 ft of wire
Nov									out. Used wire parted during haul-in.
67									(Splice held).
21	MP 171	1330	—	Surface		2032	3203	—	
Nov									
67	JN 122	1330	1400	35m		2032	3203	—	

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Research Vessel VEMA
CRUISE N° 24
CRUISE LEG 5 From RIO To MIAMI

TIME ZONE +2HR

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG STA #	REMARKS
NOV 19 1967	CAMERA 161	1106	1331	2145		2258	3643	265	13 FRAMES SHOWING RIPPLES AND GENTLE BUMPS 13 - HITS
NOV 19 1967	NEPHLTR. 150	1106	1331	2145		2258	3643	265	NO NEPHLOID LAYER OBSERVED FILM OF POOR QUALITY DUE TO IMAGE REPEATED MANY TIMES ALONG FILM. CAUSE: JUMPY TRANSPORT OR CAMERA LIGHT INTERFERENCE
NOV 19 1967	PLANKTON 826-828	1051	1316			2258	3643	265	Surface net returned with fouled bridle so frame may have sampled on an incline. PDR shows two SLs of moderate intensity: 0-60 Fm, 160-180 Fm.
NOV 19 1967	MP 169	1500	—			2258	3643	265	Samples taken with metal bucket instead of plastic. (Contamination?)
1967	BT 112	1130	1135					265	BT's being taken with instrument # 8151-B, recording to a depth of only 600 ft. because of short wire.
NOV 19 1967	JN 121	1730	1800	35m		2258	3643	265	Winch trouble made it necessary to tow JN at surface for 5 min. before paying out to usual 35 m. towing depth. Difficult to remove sample quantitatively due to damaged aod end.
20 NOV 67	CORE 255	1655 Hit	1849 1746	2621 Hit	2623 2623	2230	3350	266	Pen. 376 cm. C.L. T.C. The core was not extruded aboard ship
20 NOV 67	T-GRAD 205	1655	1849	2621	2623	2230	3350	266	GOOD RECORD - 1 PROBE H.F. = 1.42 μcal/cm²/sec

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Research Vessel VEMA
CRUISE N° 24
CRUISE LEG 13 From RIO To MIAMI

TIME ZONE +2 HR.

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat S	POSITION Long W	LOG	REMARKS
17	SONOBUOY	1435		35FM		2308	4338	5536.78	CHANNEL 2, DEPTH OF PHONE 60 FT, 3 HRS.
NOV.	98		1553		45FM	2309	4329	5543.66	SURF TEMP. 19.8°C, RECORD SONOBUOY ON
67									A-2 AND B-2, NO TAPE RECORD, NO B.T. TAKEN
									BOTH PROFILERS FAST TRAVERSE AND
									INTERNAL FILTER, RECORDED ON 3.5 P.D.R.
17	SONOBUOY	2139		57		2310	4143	5597.43	CHANNEL 6, 60 FT PHONE DEPTH, 3 HRS.
NOV	99		2239		48	2311	4133	5606.88	SURF TEMP 22.0°C RECORDED ON
67									A-2 + B-2 PROFILERS, NO TAPE, NO B.T.,
									FAST TRAVERSE, RECORDED ON
									P.D.R. #2
18	SONOBUOY	0236		647		2314	4100	5644.11	CHANNEL 8, PHONE DEPTH 60 FT, 3 HRS
NOV	100		0400		935	2316	4048	5650.47	SURF. TEMP, 24.7°C, RECORDED ON
67									A-2 + B-2 PROFILERS, FAST TRAVERSE
									NO TAPE RECORD, NO B.T., RECORDED
									ON P.D.R. #2.
18	SONOBUOY	1059		1573		2321	3952	5703.10	CHANNEL 12, PHONE DEPTH 60 FT,
NOV	101		1237		1600	2323	3941	5715.77	SURF TEMP. 23.8°C NO BT, USED
67									A-2 + B2 PROFILERS PLUS 3.5 KC. P.D.R.
									#2. NO TAPE RECORD, FAST TRAVERSE
									ON PROFILERS — TOTAL 7.58 MI.
18	SONOBUOY	1304		1612		2327	3947	5719.38	CHANNEL 12, 60 FT PHONE DEPTH
NOV	102		1422		1631	2334	3919	5729.89	SURF TEMP 23.9°C, RECORDED
67									ON A-2 + B2 PROFILERS AT
									FAST TRAVERSE — NO TAPE
									RECORD, NO B.T., TOTAL 10.5 HRS
19		1119	1236	2145	2148			5265	Pen. CL. 907 cm. T.C. 500
NOV	CORE	Hit	1157	Hit	2147	2258	3643		Foraminiferal marl changing to marl. There are
67	254								numerous sand layers present which consist
									of about equal parts of foram and mineral
									Sand.
19		1119	1235	2145	2148	2258	3643	265	GOOD RECORD - 2 PROBES
NOV	T-GRAD								
67	204								H.F. = 1.72 μcal/cm²/sec

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Research Vessel VEMA
CRUISE N° 24
CRUISE LEG—From CAPETOWN To RIO DE JANEIRO

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TIME ZONE Z+2

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. S	POSITION Long. W	~~LOG~~	REMARKS
13 Nov 67	SONOBUOY 92	0701	0820	78		24°30' 24°35'	44°37' 44°32'	—	CHANNEL 9 NO SETTINGS FOR DEPTH OR TIME (OLD STYLE) SURFACE TEMP. 22.4°C, PITLOG 5336.67 START - 5343.40 END SONOBUOY ON A2, B2 FROM TAPE AND 3.5KC PDR, ALSO TAPED BOTH PROFILERS ON FAST TRAVERSE AND INTERNAL FILTER REFRACTIONS
13 Nov 67	SONOBUOY 93	1157	1334	80	75	24°14' 24°09'	44°18' 44°10'	—	CHANNEL 15, TIME SET 3 HOURS, DEPTH SET 60 FEET SURFACE TEMP 21.3°C, PITLOG 5362.20 START - 5370.60 END SONOBUOY ON A2, B2 FROM TAPE AND 3.5KC PDR, ALSO TAPED BOTH PROFILERS ON FAST TRAVERSE AND INTERNAL FILTER REFRACTIONS
13 Nov 67	SONOBUOY 94	1607	1744	72	73	24°02' 23°58'	44°01' 43°54'	—	CHANNEL 15, TIME SET 3 HOURS, DEPTH SET 60 FEET SURFACE TEMP 21.5 to 23.5, PITLOG 5384.43 START - 5393.20 END SONOBUOY ON A2, B2 FROM TAPE AND 3.5KC PDR, ALSO TAPED BOTH PROFILERS ON FAST TRAVERSE AND INTERNAL FILTER REFRACTIONS
13 Nov 67	SONOBUOY 95	2026	2206	64	65	23°51' 23°45'	43°43' 43°38'	—	CHANNEL 14, TIME SET 3 HOURS, DEPTH SET 60 FEET SURFACE TEMP 23.9°C, PITLOG 5407.76 START - 5416.81 END SONOBUOY ON A2, B2 FROM TAPE AND 3.5KC PDR, ALSO TAPED BOTH PROFILERS ON FAST TRAVERSE AND INTERNAL FILTER REFRACTIONS
14 Nov 67	SONOBUOY 96	0133	0255	55	30	23°25' 23°19'	43°23' 43°17'	—	CHANNEL 1, TIME SET 3 HOURS, DEPTH SET 60 FEET SURFACE TEMP 18.5°C, PITLOG 5445.03 START - 5453.19 END SONOBUOY ON A2, B2 FROM TAPE AND 3.5KC PDR, ALSO TAPED BOTH PROFILERS ON FAST TRAVERSE AND INTERNAL FILTER REFRACTIONS
14 Nov 67	SONOBUOY 97	0422	0600	39	27	23°12' 23°05'	43°10' 43°04'	—	CHANNEL 11, TIME SET 3 HOURS, DEPTH SET 60 FEET SURFACE TEMP 18.0°-19.0°C, PITLOG 5465.39 START - 5475.26 END SONOBUOY ON A2, B2 FROM TAPE AND 3.5KC PDR, ALSO TAPED BOTH PROFILERS ON FAST TRAVERSE AND INTERNAL FILTER REFRACTIONS

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Research Vessel VEMA
CRUISE N° 24
CRUISE LEG—From CAPE TOWN To RIO DE JANEIRO

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TIME ZONE Z+2

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. S	POSITION Long. W	LOG	REMARKS
12	SONOBUOY	0452		79		26°38'	46°56'	—	CHANNEL 1, TIME SET 3 HOURS, DEPTH SET 60 FEET
NOV	85		0633			26°29'	46°47'		SURFACE TEMP. 22.7°C, PIT LOG 5126.87 START - 5136.20 END
67									SONOBUOY ON A2, B2 FROM TAPE AND 3.5 KC PDR, ALSO TAPED
									BOTH PROFILERS ON FAST TRAVERSE AND INTERNAL FILTER
									REFRACTIONS
12	SONOBUOY	0928		90		26°16'	46°35'	—	CHANNEL 9, TIME SET 3 HOURS, DEPTH SET 60 FEET
NOV	86		1108		88	26°08'	46°29'		SURFACE TEMP. 22.6°C, PIT LOG 5159.82 START - 5168.71 END
67									SONOBUOY ON A2, B2 FROM TAPE AND 3.5 KC PDR, ALSO TAPED
									BOTH PROFILERS ON FAST TRAVERSE AND INTERNAL FILTER
									REFRACTIONS
12	SONOBUOY	1430		81		25°48'	46°12'	—	CHANNEL 7, TIME SET 3 HOURS, DEPTH SET 60 FEET
NOV	87		1608		79	25°41'	46°07'		SURFACE TEMP. 22.4°C, PIT LOG 5198.79 START - 5208.38 END
67									SONOBUOY ON A2, B2 FROM TAPE AND 3.5 KC PDR, ALSO TAPED
									BOTH PROFILERS IN FAST TRAVERSE AND INTERNAL FILTER
									REFRACTIONS
12	SONOBUOY	1620		80		25°39'	46°05'	—	CHANNEL , TIME SET 3 HOURS, DEPTH SET 60 FEET
NOV	88		1755		78	25°33	46°00'		SURFACE TEMP. 22.6°C, PIT LOG 5209.39 START - 5218.33 END
67									SONOBUOY ON A2, B2 FROM TAPE AND 3.5 KC PDR, ALSO TAPED
									BOTH PROFILERS ON FAST TRAVERSE AND INTERNAL FILTER
									REFRACTIONS
12	SONOBUOY	2100				25°13'	45°42'	—	CHANNEL 14, TIME SET 3 HOURS, DEPTH SET 60 FEET
NOV	89		2225			25°04'	45°34'		SURFACE TEMP. 23.0°C, PIT LOG 5245.32 START - 5257.28 END
67									SONOBUOY ON A2, B2 FROM TAPE AND 3.5 KC PDR, ALSO TAPED
									BOTH PROFILERS ON FAST TRAVERSE AND INTERNAL FILTER
									REFRACTIONS
12	SONOBUOY	2236				25°04'	45°33'	—	CHANNEL 7, TIME SET 3 HOURS, DEPTH SET 60 FEET
NOV	90		2346			25°11'	45°24'		SURFACE TEMP. 23.5°C, PIT LOG 5258.87 START - 5269.34 END
67									SONOBUOY ON A2, B2 FROM TAPE AND 3.5 KC PDR, ALSO TAPED
									BOTH PROFILERS ON FAST TRAVERSE AND INTERNAL FILTER
									REFRACTIONS
13	SONOBUOY	0107				25°02'	45°17'		CHANNEL 3, TIME SET 3 HOURS, DEPTH SET 60 FEET
NOV	91		0230			24°52'	45°10'		SURFACE TEMP. 22.6, PIT LOG 5281.32 START - 5294.17 END
67									SONOBUOY ON A2, B2 FROM TAPE, 3.5 KC PDR, ALSO TAPED
									BOTH PROFILERS ON FAST TRAVERSE AND INTERNAL FILTER
									REFRACTIONS

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Research Vessel VEMA
CRUISE N° 24
CRUISE LEG—From CAPETOWN To RIO DE JANEIRO

TIME ZONE Z+2

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. S	POSITION Long. W	~~STD~~ LOG	REMARKS
10	SONOBUOY	1411		950		25°32'	44°54'	—	CHANNEL 5, TIME SET 3 HOURS, DEPTH SET 60 FEET
NOV	78		1530			26°00'	44°59'		SURFACE TEMP. 23.9°C, PITLOG 4869.51 START - 4877.85 END
67									SONOBUOY ON A2, B2 FROM TAPE AND 3.5KC PDR, ALSO TAPED
									BOTH PROFILERS ON FAST TRAVERSE AND INTERNAL FILTER
									REFRACTIONS
11	SONOBUOY	0900		65		25°32'	46°20'	—	CHANNEL 6, TIME SET 3 HOURS, DEPTH SET 60 FEET
NOV	79		1030			25°40'	46°26'		SURFACE TEMP. 21.8°C, PITLOG 4997.94 START - 5006.81 END
67									SONOBUOY ON A2, B2 FROM TAPE AND 3.5KC PDR, ALSO TAPED
									BOTH PROFILERS ON FAST TRAVERSE AND INTERNAL FILTER
									REFRACTIONS
11	SONOBUOY	1327		68		25°57'	46°38'	—	CHANNEL , TIME SET 3 HOURS, DEPTH SET ~30 FEET
NOV	80		1451			26°05'	46°43'		SURFACE TEMP. 22.3°C, PITLOG 5825.20 START - 5034.51 END
67									SONOBUOY ON A2, B2 FROM TAPE AND 3.5KC PDR, ALSO TAPED
									BOTH PROFILERS ON FAST TRAVERSE AND INTERNAL FILTER
									REFRACTIONS
11	SONOBUOY	1757		77		26°25'	46°55'	—	CHANNEL 13, TIME SET 3 HOURS, DEPTH SET 300 FEET
NOV	81		1934		77	26°34'	47°00'		SURFACE TEMP , PITLOG 5053.40 START - 5063.81 END
67									SONOBUOY ON A2, B2 FROM TAPE AND 3.5KC PDR, ALSO TAPED
									BOTH PROFILERS ON FAST TRAVERSE AND INTERNAL FILTER
									REFRACTIONS
11	SONOBUOY	2233		76		26°51'	47°11'	—	CHANNEL 16, TIME SET 3 HOURS, DEPTH SET 60 FEET
NOV	82		0007		77	26°59'	47°15'		SURFACE TEMP. 23.0°C, PITLOG 5082.49 START - 5091.85 END
67									SONOBUOY ON A2, B2 FROM TAPE AND 3.5KC PDR, ALSO TAPED
									BOTH PROFILERS ON FAST TRAVERSE AND INTERNAL FILTER
									REFRACTIONS
12	SONOBUOY	0014		76		26°58'	47°14'	—	CHANNEL 2, TIME SET 3 HOURS, DEPTH SET 60 FEET
NOV	83		0154		75	26°57'	47°08'		SURFACE TEMP 22.8°C, PITLOG 5092.51 START - 5103.07 END
67									SONOBUOY ON A2, B2 FROM TAPE AND 3.5KC PDR, ALSO TAPED
									BOTH PROFILERS ON FAST TRAVERSE AND INTERNAL FILTER
									REFRACTIONS
12	SONOBUOY	0300		76		26°45'	47°03'	—	CHANNEL 10, TIME SET 3 HOURS, DEPTH SET 60 FEET.
NOV	84		0440			26°39'	46°57'		SURFACE TEMP 22.9°C, PITLOG 5110.11 START - 5123.49 END
67									SONOBUOY ON A2, B2 FROM TAPE AND 3.5KC PDR, ALSO TAPED
									BOTH PROFILERS FAST TRAVERSE AND INTERNAL FILTERS
									REFRACTIONS

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PALISADES

Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From Capetown To Rio de Janeiro

#279

TIME ZONE Z+2

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat S	POSITION Long. W	STN ~~LOG~~	REMARKS
9		0448	0602	Bottom Depth		28°19'	41°22'	264A	Surfaced Empty. Slight sand film on Dredge.
NOV	DREDGE	Bottom Time		1932-1590					
67	3C	0534-0602							
		1100	1147	1115	1110			~~265~~	Pen. 1069 cm Cl. 1213 cm T.C. 560 cm
10	CORE	Hit	1124	Hit	1110	25°57'	44°41'	264	Foraminiferal marl changing to marl. There is
NOV	253								a mineral sand layer present between 55-60 cm.
67									
		1100	1149	1113	1110			~~266~~	GOOD RECORD - 4 PROBES
10	T-GRAD					25°57'	44°41'	264	
NOV	203								H.F. < 1.0 μ cal/cm²/sec
67									
10	SURFACE	1105	1135			25°57'	44°41'	264	
NOV	PLANKTON								
67	8245F								
	BT #111					25°57'	44°41'	264	
10	VERTICAL	1119	1128			25°57'	44°41'	264	
NOV	PLANKTON								
67	825V								
9	SONOBUOY	0925		1687		28°19'	41°44'	—	CHANNEL 3, TIME SET 3 HOURS, DEPTH SET 60 FEET
NOV	76		1037			28°13'	41°50'		SURFACE TEMP 21.6°C, PIP LOG 46 24.67 START - 4631.45 END
67									SONOBUOY ON A2, B2, F3.5 KC PDR, BOTH PROFILERS FAST TRAVERSE AND
									INTERNAL FILTER
									2, MMDB 3, REFRACTIONS, BUT TOPOGRAPHY WILL INFLUENCE VEL.
10	SONOBUOY	1240		1070		25°56'	44°44'	—	CHANNEL 2, TIME SET 3 HOURS, DEPTH SET 60 FEET
NOV	77		1406			25°52'	44°53'		SURFACE TEMP 23.8°C PIP LOG 4860.70 START - 4869.03 END
67									SONOBUOY ON A2, B2 [redacted], AND 3.5 KC PDR, [redacted] Mc.
									BOTH PROFILERS FAST TRAVERSE AND INTERNAL FILTERS REFRACTIONS

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PALISADES

Research Vessel VEMA
CRUISE N° 24
CRUISE LEG—From CAPE TOWN To RIO DE JANEIRO

#278

TIME ZONE Z+2

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. S	POSITION Long. W	STN ~~LOG~~	REMARKS
8 Nov 67	SONOBUOY 74	1629	1758	2040	2040	29°02'	40°52'	—	CHANNEL 7, TIME SET 3 HOURS, DEPTH SET 60 FEET
						28°54'	41°02'		SURFACE TEMP. 20.8°C, PIT LOG 4533.05 START - 4544.14 END
									SONOBUOY ON A2, B2 + 3.5 KC P.D.R., BOTH PROFILERS FAST TRAVERSE
									AND INTERNAL FILTER
									2 REFRACTIONS
8 Nov 67	SONOBUOY 75	2135	2310	2100		28°37'	41°23'	—	CHANNEL 13, TIME SET 3 HOURS, DEPTH SET 60 FEET
						28°30'	41°30'		SURFACE TEMP. 21.5°C, PIT LOG 4574.04 START 4583.31 END
									SONOBUOY ON A2, B2 + 3.5 KC P.D.R., BOTH PROFILERS FAST TRAVERSE
									AND INTERNAL FILTER
									2 REFRACTIONS
		0142	0244	1459	1440	28°26'	41°33'	263	Pen. — CL, Jar
9 Nov 67	CORE 252	Hit	0211	Hit	1451				Foram sand and semi consolidated calcite rhombs.
		0142	0245	1457	1440	28°26'	41°33'	263	NO RECORD - NO PENETRATION
9 Nov 67	T-GRAD 203A								
9 Nov 67	CAMERA 160-11	0125	0253	1460	1485	28°26'	41°33'	263	11 NEGATIVES 30 HITS
									TRIGGER WEIGHT LOST AFTER 11th PICK UP.
									TRACK AND TRAILS
									FAUNA AND FLORA
									SEDIMENT
9 Nov 67	SURFACE PLANKTON 8225F	0215	0250			28°26'	41°33'	263	
	BT #110					28°26'	41°33'	263	
9 Nov 67	VERTICAL PLANKTON 8237	0231	0240			28°26'	41°33'	263	

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PALISADES

#277

Research Vessel VEMA
CRUISE N° 24
CRUISE LEG—From CAPETOWN To RIO DE JANEIRO

TIME ZONE Z+2

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat S	POSITION Long. W	STN ~~LOG~~	REMARKS
7 Nov 67	CAMERA 159A					30°11'	39°22'	261	32 - HITS 6 VOLT PULSE ~~FROM~~ STROBE LIGHT UNIT FAILED DUE TO A ~~BAT~~ SODEN CONDITION BATTAIC.
7 Nov 67	SURFACE PLANKTON 820SF	2200	2230			30°11'	39°22'	261	
	BT #109					30°11'	39°22'	261	
7 Nov 67	VERTICAL PLANKTON 821V	2209	2218			30°11'	39°22'	261	
		0248	0420	2190	2124	30°08	39°28'	262	Pen. 396 cm CL. 451 cm TC. 360 cm
8 Nov 67	CORE 251	Hit	0335	Hit	2190				Foraminiferal marl ooze changing to marl at about 90 cm. Two compacted layers between 210-225 cm and 345-360 cm. Bottom layer is volcanic tuff
8 Nov 67	F-GRAD 202	0248	0420	2180	2129	30°08'	39°28'	262	GOOD RECORD = 3 PROBES H.F. = 3.64 μ cal/cm²/sec
8 Nov 67	CAMERA 159-11	0227	0544	2200	2210	30°08	39°28'	262	11 - PICTURES 17 HITS MANGANESE NODULES FAUNA AND FLORA SEDIMENT
8 Nov 67	NEPHEL. METER F49-A	0227	0544	2200	2210	30°08'	39°28'	262	FORGOT TO PUT IN LIGHT LOOK AT NEPHEL SHEET FOR THIS STATION.

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PALISADES

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Research Vessel VEMA
CRUISE N° 24
CRUISE LEG—From CAPETOWN To RIO DE JANEIRO

TIME ZONE Z+2

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat S	POSITION Long W	Stn ~~Loc~~	REMARKS
7		1635	1804	2237	2226	30°07'	38°59'	260	Pen: 1230 cm CL. TO 67 TC. 1067
Nov		Hit	1720	Hit	2230				Alternating sections of brown & blue marls.
67	CORE								Scattered dark stainings due to mn micro
	249								nodules found throughout
7		1635	1804	2235	2230	30°07'	38°59'	260	GOOD RECORD - 4 PROBES
Nov	T-GRAD								
67	200								H.F. = 1.38 μcal/cm²/sec
7	SURFACE	1625	1710			30°07'	38°59'	260	Millipore 1.6T
Nov	PLANKTON								
67	8185F								
	BT# 108					30°07'	38°59'	260	
7	VERTICAL					30°07'	38°59'	260	
Nov	PLANKTON								
67	819V								
								260	
		2217	0002	2560	2545	30°11'	39°22'	261	Pen. 335 cm CL. 376 cm T.C. 376
7-8	CORE	Hit	2310	Hit	2555				Yellowish Gray marl that is compacted.
Nov	250								Water pockets present between sections of
67									the core when extruded.
7		~~1635~~	~~1804~~	2562	2545	30°11'	39°22'	261	GOOD RECORD - 2 PROBES
Nov	T-GRAD	2217	0003						
67	201								H.F. = 1.36 μcal/cm²/sec

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PALISADES

#275

Research Vessel VEMA
CRUISE N° 24
CRUISE LEG—From CAPETOWN To RIO DE JANEIRO

TIME ZONE Z+2

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. S	POSITION Long. W	STAN ~~LOG~~	REMARKS
6 Nov 67	CAMERA 156-7	1924		1143		30°39'	36°59'	258	7 PICTURES — 10 HITS ROCKY BOTTOM PEBBLE AND GRAVEL BOTTOM SEDIMENT.
6 Nov 67	SURFACE PLANKTON ~~STD~~ SF 816	1910	1940			30°39'	36°59'	258	Millipore 166
	BT#107							258	
6 Nov 67	VERTICAL PLANKTON 817 V	1959	2006			30°39'	36°59'	258	
6-7 Nov 67	DREDGE 3B	2327 0108 Bottom time 2342-0045		Bottom 570	Depth 420	30°41'	36°57'	259	Surfaced Empty. Dough ful in dredge bit Bottom
7 Nov 67	CAMERA 157-3	0119	0202	549	685	30°41'	36°57'	259	9 PICTURES — 11 HITS SOME FLORA SOLID ROCK CLIFFS AND LEDGES
7 Nov 67	SONOBUOY 73	1310	1443	2168		30°13' 30°09'	38°37' 38°49'	—	CHANNEL 6, TIME SET 3 HOURS, DEPTH SET 60 FEET SURFACE TEMP 20.0°C START 20.4°C END, PITLOG 4360.39 START-4369.79 END, SONOBUOY ON A2 FACT TRAVERSE AND 3.5KC PDR A2 ON INTERNAL FILTER; SONOBUOY ALSO TAPED REFRACTION
7 Nov 67	CAMERA 158-28	1616	1811	2235	2225	30°07'	38°59'	260	28 PICTURES, 32 HITS. LARGE RIPPLE MARKS SEDIMENT.

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PALISADES

#274

Research Vessel VEMA
CRUISE N° 24
CRUISE LEG—From CAPE TOWN To RIO DE JANEIRO

TIME ZONE Z+2

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. S	POSITION Long. W	LOG	REMARKS
5 Nov 67	CORE 246	1635 Hit	1650 1644	322 Hit	320 320	30°48'	35°25'	256	Pen —. CL. Tan, No Trigger core. The core consists of pieces of weathered basalt. taken from cutting edge & core catcher. No age determined
5 Nov 67	CORE 247	1832 Hit	1847 1841	337 Hit	337 336	30°47'	35°23'	257	Pen — CL. Lose, No Trigger Core Sediment was caught in a bucket as it ran out of the core pipe. It is foram sand containing also echinoid spines, obsidian, & calcite.
5 Nov 67	CAMERA 154-17	X	X	X	X	30°48'	35°25'	256	17 NEGATIVES — 20 HITS COMPASS PICTURE WORKING FAIR. 20th HIT AT 444 FMS.) (FAUNA AND FLORA) CARBS ROCKS — RIPPLE MARKS
5 Nov 67	CAMERA 155-9	185300	X	X	X	30°47'	35°23'	257	9 NEGATIVES — 12 HITS 12th HIT AT 358 FMS SOME FLORA — SEDIMENT
5 Nov 67	VERTICAL PLANKTON 815V	1925	1932			30°47'	35°23'	257	
	BT#106								
6 Nov 67	CORE 248	1829 Hit	1912 1851	1117 Hit	1150 1144	30°39'	36°59'	258	Pen — CL ≃ 840 cm T.C. ≃ 840 cm. The core had to be banged out of the pipe. Consists of Foram sand pinkish Grey in color
6 Nov 67	T-GRAD #199	1829	1911	1117	1150	30°39'	36°59'	258	GOOD RECORD - 1 PROBE H.F. = 1.2 μ cal/cm²/sec

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PALISADES

#273

Research Vessel VEMA
CRUISE N° 24
CRUISE LEG—From CAPETOWN To RIO DE JANEIRO

TIME ZONE Z+2

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. S	POSITION Long. W	LOG	REMARKS
5		0935	1008	552	542	31°02'	35°43'	253	Pen. — CL. Jar, No Trigger Core
Nov	CORE	Hit	0950	Hit	548				White limestone scraped from core catcher
67	243								& cutting Edge. containing recrystalized forams.
									Core Dated as Paleocene by Dr Saito.
5		0935	1008	551	542	31°02'	35°43'	255	~~C~~ No RECORD — NO PENETRATION
Nov	FGRAD								
67	199A								
5	CAMERA	100300	111300	548	X	31°02	35°43'	255	13 — NAGATWOS 15 HITS
Nov	153-13								ABUNDANT FAUNA
67									ROCK BOTTOM
									CHANGED BATTERIES.
5	VERTICAL	1005	1012			31°02'	35°43'	255	Millipore 165
Nov	PLANKTON								
67	796=814T								
	BT# 105								
5	CORE	1125	1145	562	575	31°02'	35°43'	255	Pen. — CL. Jar, No Trigger Core
Nov	244	Hit	1136	Hit	570				Pink limestone scraped from cutting edge & Core
67									catcher containg gastropods and benthonic forams.
									No planktonic forams vissible. No age determined
5	SUNFLOWER	1259				30°58'	35°38'	—	CHANNEL 9, TIME SET 3 HOURS, DEPTH SET 300 FEET
Nov	72		1406			30°52'	35°30'		SURFACE TEMP , PIT LOG 4003.33 START — 4012.51 END
67									A ON FAST TRAVERSE, B ON SLOW TRAVERSE, BOTH ON INTERNAL FILTERS
									ALSO ON 3.5KC PDR
									2 REFRACTIONS ON A PROFILER
5	CORE	1542	1559	460	395	30°48'	35°25'	256	Pen. — CL. Jar, No Trigger Core
Nov	245	Hit	1551	Hit	410				Piecer of Aggregate of hydrozoans, pteropods, & forams
67									cemented together by white mud. Dated as Pleistocene.

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PALISADES

#272

Research Vessel VEMA
CRUISE N° 24
CRUISE LEG—From CAPETOWN To RIO DE JANEIRO

TIME ZONE Z+2

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. S	POSITION Long. W	STN ~~LOG~~	REMARKS
3	SURFACE	1020	1050			31°36'	30°17'	253	Millipore 164
Nov	PLANKTON								
67	794=810SF								
	BT#103					31°36'	30°17'	253	LOST BT#CC16145, USED BT#8151B
3	VERTICAL	1104	1111			31°36'	30°17'	253	
Nov	PLANKTON								
67	795V=813V								
3	CORE	1637	1745	2170	2187	31°32'	30°51'	254	Pen. 1250 cm CL. 1515 cm T.C. 880 cm
Nov		Hit	1712	Hit	2180				Tan foraminiferal marl ~~ooze~~ changing to foraminiferal
67	242								marl. Several forem sand layers are present at 17-21cm,
									340 cm, 798-800 cm, & 832 cm. The core was dated
									as Pleistocene.
3		1637	1745	2160	2187	31°32'	30°51'	254	GOOD RECORD - 3 PROBES
Nov	TGRAD								
67	198								H.F. = 1.22 μcal/cm²/sec
3	CAMERA	1617	1813	2160	2179	31°32'	30°51'	254	19 NEGATIVES 20 HITS
Nov	152-19								COMPASS PICTURES WORKING VERY GOOD.
67									SEDIMENT REFLECTIONS ONLY!
	BT#104					31°32'	30°51'	254	
3	SONOBUOY	1436				31°33'	30°40'	—	CHANNEL 12, TIME SET 3 HOURS, DEPTH SET 60 FEET
Nov	70		1550			31°32'	30°50'		SURFACE TEMP. 18.9°C, PIT LOG 3649.79 START - 3657.71 END
67									BOTH PROJECTORS ON FAST TRAVERSE, BUOY ON A2+B2, BOTH ON INTERNAL FILTER
									ALSO 3.5 KC P.D.R., B2 ON 1.5 SEC DELAY ON COMING FROM TAPE RECORDER
									REFRACTION
4	SONOBUOY	1105				31°02'	33°30'		CHANNEL 5, TIME SET 3 HOURS, DEPTH SET 300 FEET
Nov	71		1239			30°53'	33°30'		SURFACE TEMP 18.0°C, PIT LOG 3809.82 START - 3817.86 END
67									BOTH PROJECTORS FAST TRAVERSE, BOTH A2+B2 ON INTERNAL FILTER
									ALSO 3.5 KC P.D.R. ONE REFRACTION

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PALISADES

#271

Research Vessel VEMA
CRUISE N° 24
CRUISE LEG—From CAPETOWN To RIO DE JANEIRO

TIME ZONE Z+2

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. S	POSITION Long. W	STN LOG	REMARKS
2	CORE	1700	1821	2310	2300	31°44'	28°12'	252	Pen 1088 cm CL. 1092 cm TC 1020 cm
Nov	240	Hit	1738	Hit	2304				Lt Tan foraminiferal marl changing to dark brown
67									marl. Heavy burrowing in the upper sections of the
									core. Dated as Upper Pliocene by Dr Saito.
2	SONOBUOY	1915				31°44'	28°14'	—	CHANNEL 5, TIME SET 3 HOURS, DEPTH SET 60 FEET
Nov	67		2030			31°48'	28°20'		SURFACE TEMP 18.3°C, PIT LOG 3501.47 START - 3509.16 END
67									PROFILER A FAST TRAVERSE, B SLOW TRAVERSE, BOUY ON A2 + B2
									A2 EXTERNAL FILTER - MISTAKE, B2 INTERNAL, ALSO ON 3.5KC
									P.D.R.
2	SONOBUOY	2042				31°49'	28°21'	—	CHANNEL 13, TIME SET 3 HOURS, DEPTH SET 60 FEET
Nov	68		2200			31°54'	28°28'		SURFACE TEMP 18.4°C, PIT LOG 3510.43 START - 3518.40 END
67									PROFILER A FAST TRAVERSE, B SLOW TRAVERSE, BUOY ON A2 + B2
									A2 EXTERNAL (MISTAKE) & INTERNAL FILTER, B2 INTERNAL, ALSO
									ON 3.5KC PDR. REFRACTION
3	SONOBUOY	0137				31°57'	29°05'	—	CHANNEL 15, TIME SET 3 HOURS, DEPTH SET 60 FEET
Nov	69		0314			31°48'	29°03'		SURFACE TEMP 18.3°C, PIT LOG 3551.88 START - 3561.92 END
67									PROFILER A FAST TRAVERSE, B SLOW TRAVERSE, BUOY ON A2 + B2
									A2 + B2 BOTH INTERNAL FILTER, ALSO ON 3.5 KC P.D.R.
									3 REFRACTIONS
3	CORE	1037	1147	2102	2107	31°36'	30°17'	253	Pen. ≃ 700 cm CL: 1100 cm TC 690 cm
Nov	241	Hit	1113	2104	Hit				Various tan foraminiferal marl oozes and
67									marls. A foram sand layer is present between
									645 - 660 cm. The core was dated as Pleistocene
									By Dr. Saito.
3	T-Grad	1037	1147	2098	2105	31°36'	30°17'	253	GOOD RECORD - 4 PROBES
Nov									
67	197								H.F. = 1.18 μcal/cm²/sec
3	CAMERA	1015	1154	2100	2106	31°36'	30°17'	253	30 NEGATIVES 30 AXIS
Nov	151 30								(NO NEPHEL - OUT OF BATTERIES / NO FOND CAMERA - FILM SHORTAGE.) (TRACES AND TRAILS SEDIMENT.)
67									

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PALISADES

#270

Research Vessel VEMA
CRUISE N° 24
CRUISE LEG—From CAPETOWN To RIO DE JANEIRO

TIME ZONE Z+2

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat S	POSITION Long E	57m ~~LOG~~	REMARKS
2 Nov 67	NEPHOLO-METER 147-000	0810.00	100730	1900	1910	31°47	29°00'	251	NO LAYER CAMERA FELL WHILE PULLING OVER SIDE.
2 Nov 67	SURFACE PLANKTON 791SF	0810	0840			31°47S	29°00'W	251	Very Poor fauna Millipore 163
	BTH#101							251	
2 Nov 67	VERTICAL PLANKTON 792V	0914	0921			31°47S	29°00'W	251	Very Poor fauna
2 Nov 67	CAMERA 150 18	165655	183630	2310	2310	31°44'	28°12'	252	18 PICTURES 22 HITS SEDIMENT REFLECTION
2 Nov 67	NEPHOLO METER 148-000	165655	183630	2310	2310	31°44'	28°12'	252	NO LAYER NEPHEL NOT RUNNING, JAZZLERS DISCHARGED COMPLETELY.
2 Nov 67	VERTICAL PLANKTON 793V	1830	1837			31°44'	28°12'	252	
	BTH102					31°44'	28°12'	252	
2 Nov 67	TGRAD 196	1700	1821	2312	2304	31°44	28°12'	252	- GOOD RECORD - 4 PROBES H.F. = 1.66 μ cal/cm²/sec

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PALISADES

#269

Research Vessel VEMA
CRUISE N° 24
CRUISE LEG—From CAPETOWN To RIO DE JANEIRO

TIME ZONE Z+2

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. S	POSITION Long. W	STN ~~LOG~~	REMARKS
1/12	SONOBUOY	2348				31°59'	27°56'	—	CHANNEL 14, TIME SET 3 HOURS, DEPTH SET 60 FEET. BOTH PROJECTORS ON
Nov	66		0109			31°57'	28°06'		FAIRTRAVERSE AND BUOY ON A2 AND B2, ALSO ON 3.5 KC PDR
67									PDR LOG 3381.72 START - 3390.12 END, 8.4 MILES AT 6 KTS
									SURFACE WATER TEMP 18.0° to 18.2°C
									3 DEFINATE REFRACTIONS
2		0831	0936	1892	1920	31°47'	29°00'W	251	Pen. 726 cm CL. 1116 cm Tc. 540 cm
Nov	CORE	Hit	0906	Hit	1915				Lt. Tan foraminiferal marl ooze that is
67	238								moderately burrowed. Core dated as Lower
									Pliocene by Dr Saito.
		~~Hit~~	~~Hit~~	1895	1920	31°47'	29°00'	251	GOOD RECORD = 3 PROBES
2	T-GRAD	0831	0939						H.F. = 1.8 μcal/cm²/sec
Nov	195								
67									
2		1027	1127	1910	1884	31°47'	29°00'	251	Pen 460 cm CL. 512 cm Tc. 440 cm
NOV	CORE	Hit	1055	Hit	1891				Foraminiferal Marl ooze Lt tan in color
67	239								with slight burrowing. Dated as Pleistocene
									by Dr. Saito.
2	CORE	0831	0936	1892	1920	31°47'	29°00'	251	LEADS PARTED
Nov	CAMERA								FILM ADVANCED NO FLASH.
67	188-A								
2	CORE	1027	1127	1910	1884	31°47'	29°00'	251	LEADS PARTED.
Nov	CAMERA								FILM ADVANCED NO FLASH
67	188 B								
2	CAMERA	081000	100730	1900	1910	31°47'	29°00'	251	9 PICTURES 29 HITS
Nov	149/9								SOME FAUNA — SEDIMENT
67									TELLYON LIGHT LOST AGAIN.

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DEPARTMENT OF GEOLOGY
LAMONT GEOLOGICAL OBSERVATORY
PALISADES

#268

Research Vessel VEMA
CRUISE N° 24
CRUISE LEG—From CAPETOWN To RIO DE JANEIRO

TIME ZONE Z+2

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. S	POSITION Long. W	Str Loc	REMARKS
1		1509	1625	2240	2233			250	Pen. 823cm CL 1195cm TC 740cm
Nov	CORE	Hit	1545	Hit	2235	32°12'	26°44'		Lt Tan changing to Dunker Brown Foraminifer
67	237								marl. Bas of core is formed by a
									thin layer 7cm Thick. Dated as Eocene
									by Dr. Saito.
1	T-GRAD	1509	1624	2240	2233	32°12	26°44	250	
Nov	194								GOOD RECORD - 2 PROBES
67									
									H.F. = 2.05 μcal/cm²/sec
1	CORE	1509	1625	2240	2233	32°12	26°44	250	20 PICTURES NO ORIENTATION
Nov	CAMERA								BLACK OUT AT MAXIMUM PENETRATION.
67	187								
1	CAMERA	1443	1449	2240	2233	32°12	26°44	250	2 PICTURES 30 MIN
Nov	148-2								TRIGGER WEIGHT LOST AT SECOND PICTURE
67									2 LIGHT STRICKEN NEGATIVES SHOWING
									MANGANESE NODULES.
1	NEPHOLO-METER	1443	1449	2240	2233	32°12	26°44'	250	NO LAYER.
Nov	146								
67									
1	SURFACE	1445	1515			32°12	26°44	250	Millipore 162 Surface Water temp. 18.8°C
Nov	PLANKTON								
67	7895F								
	BT#100								
1	VERTICAL	1531	1538			32°12	26°44'	250	
Nov	PLANKTON								
67	7900								

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#267

Research Vessel VEMA
CRUISE N° 24
CRUISE LEG—From CAPETOWN To RIO DE JANEIRO

TIME ZONE Z+1

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. S	POSITION Long. W	S.V. 1500	REMARKS
30 Oct 67	VERTICAL PLANKTON T86V	10:39	1047			33°15'	19°33'	248	
	BT#98					33°15'	19°33'	248	
		2021	2142	2172	2192	32°42'	24°05'	249	GOOD RECORD - 2 PROBES
31 Oct 67	T-GRAD 193								
31 Oct 67	CORE 236	2021 Hit	2142 2101	2170 Hit	2192 2185	32°42'	24°05'	249	Pen. 622 cm. CL. 990 TC 698cm Lt. Tan Foraminiferal marl heavily burrowed. The core was dated as Pliocene by Dr. Saito.
31 Oct 67	CAMERA 147-18	1957.55	2204.00	2170	x	32°42'	24°05'	249	18 Min - 18 Pictures ABUNDANT FLORA AND FAUNA TRACKS AND TRAILS SEDIMENT
31 Oct 67	NEPHELO METER 145-00	1957.55	2204.00	2170	x	32°42'	24°05'	249	NO LAYER
31 Oct 67	SURFACE PLANKTON 787SF	2005	2045			32°42'	24°05'	249	Millipore 161
	BT#99					32°42'	24°05'	249	
31 Oct 67	VERTICAL PLANKTON 788V					32°42'	24°05'	249	

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#266

Research Vessel VEMA
CRUISE N° 24
CRUISE LEG—From CAPETOWN To RIO DE JANEIRO

TIME ZONE Z+1

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat S	POSITION Long. W	STN ~~LOG~~	REMARKS
29 Oct 67	NEPHOLO-METER 143	1846.00	2048.10	1745	X	33°22'	17°56'	247	NO LAYER!
29 Oct 67	SURFACE PLANKTON 784SF	1845	1905			33°22'	17°56'	247	
	BT#					33°22'	17°56'	247	
29 Oct 67	VERTICAL PLANKTON 785T	1917	1925			33°22'	17°56'	247	
30 Oct 67	CORE 235	1045 Hit	1148 1116	1990 Hit	1955 1992	33°15'	19°33'	248	Pen. ≈ 650 cm CL 620 cm TC ≈ 340 cm Lt. tan foraminiferal marl with slight burrowings present.
30 Oct 67	T-GRAD 192	1045	1148	2000	1955	33°15'	19°33'	248	GOOD RECORD - 2 PROBES H.F. = 2.6 μcal/cm²/sec
30 Oct 67	CAMERA 146	1022.27	1226.15	2000	X	33°15'	19°33'	248	18 PICTURES — 19 MISS. SMALL FAUNA SEDIMENT SOME TRACKS AND TRAILS
30 Oct 67	NEPHOLO-METER 144	1022.27	1226.15	2000	X	33°15'	19°33'	248	NO LAYER!

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PALISADES

#265

Research Vessel VEMA
CRUISE N° 24
CRUISE LEG—From Capetown To Rio De Janeiro

TIME ZONE Z+1

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. S	POSITION Long. W	STN ~~LOG~~	REMARKS
29 Oct 67	CAMERA 144	0835.50	1016.55	1735	^	33°32'	16°46'	246	25 HITS - 25 PICTURES. TRACK & TRAILS, ABUNDANT FAUNA & SEDIMENT.
29 Oct 67	NEPHOLO-METER 142	0835.50	1016.55	1735	X	33°32'	16°46'	246	NO LAYER!
29 Oct 67	SURFACE PLANKTON 782SF	0845	0915			33°32'	16°46'	246	Millipore 159 Surface Water Temp 16.6°C
	BT# 96					33°32'	16°46'	246	
29 Oct 67	VERTICAL PLANKTON 783V	0945	0952			33°32'	16°46'	246	
		1908	2010	1755	1773	33°32'	17°56'	247	Pen 2250 cm CL. 588 cm TC. 240 cm
29 Oct 67	CORE 234	Hit	1939	Hit	1748				Lt. Tan Foram sand changing to foram ooze/ marl ooze at about 21 cm. Slight burrowing present. core dated as Pleistocene by Dr Saito.
29 Oct 67	T-GRAD 191	1908	2010	1750	1773	33°32'	17°56'	247	GOOD RECORD - 2 PROBES H.F. = 3.0 μcal/cm²/sec
29 Oct 67	CAMERA 145	1846.00	2048.10	1745	X	33°32'	17°56'	247	17 HITS — 17 NEGATIVES Some TRACKS AND TRAILS Some FAUNA SEDIMENT.

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#264

Research Vessel VEMA
CRUISE N° V24
CRUISE LEG—From Capetown To Rio de Janeiro

TIME ZONE Z+1

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. S	POSITION Long. W	STN ~~106~~	REMARKS
28		1954	2101	1708	1678			245	GOOD RECORD - 2 PROBES
Oct	F-GRAD					33°46'	15°07'		
67	189								H.F. = 3.0 μcal/cm²/sec
						33°46'	15°07'	245	
28	CAMERA	1935.5	2111.0	1710	1710	33°46'	15°07'	245	12 HITS - 12 PICTURES
Oct	143-2								TRACKS & TRAILS (SOME ANIMAL LIFE),
67									SEDIMENT.
28	NEPHELO-	1935.5	2111.0	1710	1710	33°46'	15°07'	245	NO LAYER!
Oct	METER								
67	141-60								
28	SURFACE	1935	2020			33°46'	15°07'	245	Unusual amount of Copepods were caught in
Oct	PLANKTON								this surface tow
67	780SF								
	BT# 95					33°46'	15°07'	245	
28	VERTICAL	20:02	20:10			33°46'	15°07'	245	
Oct	PLANKTON								
67	781V								
29		0857	0958	1750	1700	33°32'	16°46'	246	Pen ≈ 300 cm. CL. 317 cm
Oct	CORE	HIT	0928	HIT	1727				Lt. Tan Foraminiferal marl ooze with
67	233								slight burrowing. Dated as Pleistocene
									by Dr. Saito.
29		0857	0958	1750	1700	33°32'	16°46'	246	GOOD RECORD - 2 PROBES
Oct	T-GRAD								
67	190								H.F. = 3.30 μcal/cm²/sec

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#263

Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From Capetown To Rio de Janeiro

TIME ZONE Z+1

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. S	POSITION Long. W	STN ~~LOG~~	REMARKS
		0945	1057	1782	1910			244	Pen. 340 cm CL 330 cm TC. 330 cm
28 Oct 67	CORE 231	Hit	1070	Hit	1842	33°57'	13°58'		Lt. Tan Foraminiferal marl. Slight burrowing present. Dated as Pleistocene by Dr Saito.
		0945	1051	1760	1840	33°57'	13°58'	244	GOOD RECORD - 2 PROBES
28 Oct 67	T-GRAD 188								H.F. = 4.0 μcal/cm²/sec
28 Oct 67	CAMERA 143A	0933	111215	1770	1910	33°57'	13°50'	244	17 Hits - 0 Pictures Not enough film (to short of length.)
28 Oct 67	NEPHOLO-METER 141A	0933	111215	1770	1910	33°57'	13°50'	244	No Track On Film, Light was Out When Unit Surfaced — Not Changed Film enough.
28 Oct 67	SURFACE PLANKTON 778SF	0930	1010			33°57'	13°50'	244	Millipore 158
	BT# 94					33°57'	13°50'	244	
28 Oct 67	VERTICAL PLANKTON 779V	3/10:00	10:8			32°57'	13°50'	244	
28 Oct 67	CORE 232	1953	2101	1705	1660	33°46'	15°07'	245	Pen. 335 cm CL 259 cm TC 245 cm Lt. Tan Foraminiferal marl ooze. Slight burrowing present throughout

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Research Vessel VEMA
CRUISE N° 24
CRUISE LEG—From CAPETOWN To RIO DE JANEIRO

262

TIME ZONE Z+1

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. S	POSITION Long. W	STN LOG	REMARKS
27 Oct 67	VERTICAL PLANKTON 795V	0941	0948			34°27'	10°36'	242	
	BT#92					34°27'	10°36'	242	
27 Oct 67	Core #230	1938 Hit	2051 2012	1900 Hit	1898 1898	34°13'	11°59'	243	Pen 380 cm CL 876 cm TC ≈ 375 cm Lt. Tan foraminiferal marl. Slight burrowing near upper part of the core. Dated as Pleistocene by Dr. Saito.
27 Oct 67	T.G rod 187	1938	2051	1900	1898	34°13'	11°59'	243	GOOD RECORD - 3 PROBES H.F. = 1.0 μcal/cm²/sec
27 Oct 67	CAMERA 142	191945	2149.00	1890	1870	34°13'	11°59'	243	19 HITS - 18 PICTURES TRACKS & TRAILS — SOME FAUNA, SEDIMENT.
27 Oct 67	NEPHOLO-METER 140	191945	2149.00	1890	1870	34°13'	11°59'	243	NO LAYER!
27 Oct 67	SURFACE PLANKTON 776SF	1920	1950			34°13'	11°59'	243	Very abundant fauna Surface Water Temp 15.8°C
	BT# 93					34°13'	11°59'	243	
27 Oct 67	VERTICAL PLANKTON 777V	1941	1949			34°13'	11°59'	243	

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Research Vessel VEMA
CRUISE N° 24
CRUISE LEG—From CAPETOWN To RIO DE JANEIRO

TIME ZONE Z+1

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat S	POSITION Long W	STN ~~LOC~~	REMARKS
26 Oct 67	SURFACE PLANKTON 7725F	~~1155~~ 12:45	13:15			34°55'	7°48'	241	Millipore 156 Surface Water Temp 15.1°C
	BTH 91								
26 Oct 67	VERTICAL PLANKTON 7737	13:49	13:57			34°55'	7°48'	241	
		0855	1007	2245	2244	34°27'	10°36'	242	Pen. 550 cm CL. 407 cm Tc. 280 cm
27 Oct 67	CORE 229	Hit	0928	Hit	2245				Lt. Tan foraminiferal marl with slight burrowing. Core dated as Pleistocene by Dr Saito
27 Oct 67	T-GRAD 186	0853	1007	2247	2244	34°27'	10°36'	242	GOOD RECORD - 2 PROBES H.F. = 1.28 μcal/cm²/sec
27 Oct 67	CAMERA 141	08284	103500	2250	2250	34°27'	10°36'	242	20 HITS - 4 PICTURES FLASH (STROBE LIGHT BATTERIES LOW VOLTAGE) DID NOT WORK. TRACK & TRAILS SOME SEA WIRE.
27 Oct 67	NEPHOLO-METER 139	08284	103500	2250	2250	34°27'	10°36'	242	DID NOT SEE HIT, LAID SOME WIRE ON BOTTOM. NO LAYER
27 Oct 67	SURFACE PLANKTON 7745F	0845	0915			34°27'	10°36'	242	Millipore 157

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#260

Research Vessel VEMA
CRUISE N° 24
CRUISE LEG—From Capetown To Rio De Janeiro
TIME ZONE GMT

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. S	POSITION Long. W	STN LOC	REMARKS
25 Oct 67	CAMERA 139	132625	X	650	X	35°17′	4°55′	239	19 PICTURES — 22 HITS STONE FIELDS, ABUNDANT SOFT LIFE FOUR CLUSTERS.
25 Oct 67	DREDGE 3A	1421 Bottom Time 1455–1517	1533	Bottom Depth 681–668 Fms		35°17′	4°55′	239	No Sample. It is believed dredge didn't Hit bottom. Wire Angle 56°
25 Oct 67	CORE 227	1657 Hit	1720 1712	675 Hit	678 676	35°17′	5°02′	240	Pen — CL. Jar Sample of Basalt & Manganese Fragements. Pipe bent & cutting edge damaged.
26 Oct 67	CORE 228	1251 Hit	1411 1328	2185 Hit	2182 2183	34°55′	7°48′	241	Pen. 594 cm CL. 860 cm T.C. ≃ 500 Lt. Brown foraminiferal marl with slight to moderate burrowing. Between 220–260 cm there is a zone containing ice rafted pumice. The core was dated as Pleistocene by D. Saito.
26 Oct 67	T-GRAD 185	1251	1410	2186	2182	34°55′	7°48′	241	GOOD RECORD - 3 PROBES H.F. = 2.36 μcal/cm²/sec
26 Oct 67	CAMERA 140	123336	143000	2188	2178	34°55′	7°48′	241	16 HITS — 15 PICTURES
26 Oct 67	NEPHELO-METER 138	123336	143000	2188	2178	34°55′	7°48′	241	NO NEPHELOID LAYER

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#259

Research Vessel VEMA
CRUISE N° 24
CRUISE LEG—From Capetown To Rio De Janeiro

TIME ZONE GMT

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. S	POSITION Long. W	~~GCT~~ ~~LOG~~	REMARKS
25 Oct 67	CORE CAMERA 187A					34°52'	4°57'	238	
25 Oct 67	CAMERA 138-47	0854.03	1022.17	980	x	34°52'	4°57'	238	47 – PICTURES – 50 MISS. VERY CLEAR NEGATIVES SHOWING LARGE ROCK OUTCROPS, ABUNDANT FAUNA SOME RIPPLE MARKS.
25 Oct 67	NEPHOLO METER 137-00	0854.03	1022.17	580	x	34°52'	4°57'	238	NO NEPHELOID LAYER.
25 Oct 67	VERTICAL PLANKTON 771V	10:08	10:16			34°52'	4°57'	238	
	BT# 90					34°52'	4°57'	238	
25 Oct 67	SURFACE PLANKTON 770SF	0900	0930			34°52'	4°57'	238	Millipore 155 Surface water temp. 13.7° C.
25 Oct 67	CORE 226	1343 HIT	1409 1356	648 HIT	661 660	35°17'	4°55'	239	Pen – CL. Jar Sample The One pipe was very bent and cutting edge damaged. Basalt progements Found in core catcher
25 Oct 67	CORE CAMERA 187B					35°17'	4°55'	239	

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#258

Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From Capetown To Rio De Janeiro

TIME ZONE GMT

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. S	POSITION Long. W	STN LOG	REMARKS
24		1953	2057	1280	1390			237	GOOD RECORD - 1 PROBE
OCT	T-GRAD					34°12'	3°51'		
67	184								
24	CORE					34°12'	3°51'	237	11 — PICTURES — NO ORIENTATION.
OCT	CAMERA								
67	186								
24	CAMERA	220000	221710	1400	X	34°12'	3°51'	237	13 PICTURES — 13 MTRS SEDIMENT, SOME ANIMAL LIFE, ROCKS.
OCT	137								
67									
24	NEDHOLD	21000	221710	1400	X	34°12'	3°51'	237	NO NEPHELOID LAYER.
OCT	METER								
67	136								
24	VERTICAL	2003	2010			34°12'	3°51'	237	Surface water temperature 15.1°C
OCT	PLANKTON								
67	769T								
	BT# 89								
25		0912	0951	965	950	34°52'	4°57'	238	Pen. — CL 251 cm
OCT	CORE	HIT	0934	HIT	962				It. Tan foram sand which is partially disturbed. This
67	225								lays on top of a shallow water mid-Eocene
									beach sand present from 240-251 cm. Dated by
									Dr Saito. core pipes bent, cutting edge damaged.
25		0913	0951	968	950	34°52'	4°57'	238	NO RECORD - CORE DID NOT
OCT	T-GRAD								PENETRATE
67	185A								

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Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From Capetown To Rio De Janeiro

TIME ZONE GMT

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. S	POSITION Long. W	LOG	REMARKS
24		1455	1700	1795	1745			236	Pen 909cm CL. 1080cm T.C. ≐ 730cm
Oct	CORE	Hit	1525	Hit	1767	34°12'	3°29'		Lt Tan Foreminiferal marl ooze. Moderate
67	223								burrowing throughout. Core Dated as
									Pliocene by Dr Saito. Camera wire caught
									on core Head during surfacing
		1455	1700	1795	1745	34°12	3°29'	236	
24	T GRAD								GOOD RECORD - 03 PROBES
Oct	183								
67									H.F. = 0.97 μcal/cm²/sec
	CORE					~~34°12'~~	~~3°29'~~	~~236~~	
	CAMERA							235	
	186-H								
24	CAMERA	1443:00	1703:00	1800	1770	34°12'	3°29'	236	CAMERA RETRIEVED UPSIDE DOWN.
Oct	137-A								THIS HAPPENED AT CA FIRST HIT!
67									NO NEPHEL. BAD MOTOR!
	VERTICAL PLANKTON	1515	1521			34°12'	3°29'	236	Surface Water Temp 15.2°C
	768 T								
	BT# 88					34°12	3°29'	236	
24	CORE	1953	2057	1280	1390	34°12'	2°51'	237	Pen. — CL. 70 cm.
Oct	224	Hit	2032	Hit	1322				Lt gray foram sand changing to manganese
67									fragements at about 49 cm. Both Pipes bent
									cutting edge Damaged.

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Research Vessel VEMA
CRUISE N° 24
CRUISE LEG—From Capetown To Rio De Janeiro

TIME ZONE GMT

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. S	POSITION Long. W	STN ~~LOG~~	REMARKS
23 Oct 67	CAMERA 135-30	~~0900.0~~	~~2220.30~~	~~2850~~	X	32°59'	3°02'	234	30 PICTURES — 26 HITS. RIPPLE MARKS — SMALL PEBBLE CLUSTERS SOME ANIMAL LIFE. — INSTALL NEW BATTERIES IN NEPHEL.
23 Oct 67	VERTICAL PLANKTON 765 V	21:30	21:37			32°59	3°02'	234	
	BT#86					32°59	3°02'	234	
		0945	1057	2105	2098			235	Pen. 632 cm CL. 647 cm TC. 640 cm.
24 Oct 67	CORE 222	Hit	1019	Hit	2104	34°3'	3°12'		Foremen mixed mud of light brown color changing to Lt. Gray. There is a poram Sand layer between 412-415cm & a shallow water Eocene sand layer between 455-440 cm. Core Dated as Pliestocene by Dr. Saito.
24 Oct 67	T-GRAD 182	0944	1057	2108	2104	34°13'	3°12'	235	GOOD RECORD - 3 PROBES H.F. = 0.41 μcal/cm²/sec
	~~Surface~~ VERTICAL PLANKTON #765F	09:30	10:00			34°13'	3°12'	235	Millipore 154 Surface Water Temperature 15.1°C
	Vertical Plankton #787T	11:21	11:29						
	BT #87					34°13'	3°12'	235	11 — PICTURES 12 - HITS
	CAMERA 136-4	~~0917.45~~	112315	2118	X	34°13'	3°12'	235	SEDIMENT
	NEPHOLOM METER 135	~~0917.45~~	112315	2118	X	34°13'	3°12'	235	NO NEPHELOID LAYER.

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PALISADES

#255

Research Vessel VEMA
CRUISE N° 24
CRUISE LEG—From CAPE TOWN To RIO DE JANEIRO

TIME ZONE GMT.

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. S	POSITION Long. W	STN ~~LOG~~	REMARKS
23	CAMERA	09 24.2	11 45 40	2210	2250			233	14 PICTURES
OCT	134-14					32°02'	2°49'		MOSTLY ALL SEDIMENT
67									SOME SLIGHT TRACKS & TRAILS
									COMPASS PICTURE OUT OF ADJUSTMENT.
23	NEPHEL	09 29	11 45 40	2210	2250	32°02'	2°49'	233	NO NEPHELOID LAYER.
OCT	134-								
67									
23	CORE					32°02'	2°49'	233	
OCT	CAMERA								
67	186-F								
23	SURFACE	0950	10:20			32°02'	2°49'	233	Millipore 153 Surface water temp 16.8°c
Oct	PLANKTON								
67	763SF								
	BT#85					32°02'	2°49'	233	
23	VERTICAL	11:30	11:37			32°02'	2°49'	233	
Oct	PLANKTON								
67	764V								
	CORE	1709	1750	843	850	32°59'	2°02'	234	Pen ? Jar Sample Salvaged From Core pipe.
23	222A	Hit	1737	Hit	853				Trigger Core pipe was cut in help by
Oct									Core pipe. Medium grain foraminiferal sand
67									stone.
23	F-GRAD	2110	2151	846	845	32°59'	2°02'	234	NO RECORD - CORE DID NOT PENETRATE
Oct	182A								WATER PROBE RECORD WAS
67									USEABLE

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PALISADES

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Research Vessel VEMA
CRUISE N° 24
CRUISE LEG—From Capetown To Rio De Janeiro

TIME ZONE GMT

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat S	POSITION Long W	STN ~~LOG~~	REMARKS
22 Oct 67	CAMERA 133-21	0859.55	1051.50	1280	1260	32°11'	0°21'	232	21 — PICTURES — 26 HITS. RIPPLE MARKS, ROCKS AND SMALL ESCARPS. PICTURES ARE VERY SHARP & CLEAR.
22 Oct 67	NEPHELOMETER 133-00	0859.55	1051.50	1280	1260	32°11'	0°21'	232	NO NEPHELOID LAYER.
22 Oct 67	SURFACE PLANKTON 761SF	0855	0925			32°11'	0°21'	232	Millipore 152 Surface Water Temp 16.4° C
	BT# 84					32°11'	0°21'	232	
22 Oct 67	VERTICAL PLANKTON 762V	10:39	10:47			32°11'	0°21'	232	
23 Oct 67	CORE 221	0950 Hit	1110 1036	2220 Hit	2240	32°02'	2°49'	233	Pen. ≃ 1260 cm CL. 1147 cm TC. 709 cm Lt. Tan Foraminiferal marl ooze. Slight to moderate burrowing throughout.
23 Oct 67	FLARE 181	0949	1110	2220		32°02'	2°49'	233	GOOD RECORD - 4 PROBES H.F. = 0.72 μcal/cm²/sec
23 Oct 67	CORE CAMERA 186G							234	NO FLASH — NO RAINBOW.

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Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From Capetown To Rio De Janeiro

TIME ZONE GMT

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. S	POSITION Long. E	LOG	REMARKS
21		1437.50	1628.25	1445	1442	33°06'	1°29'	231	17 – Pictures – 21 hits
Oct	CAMERA								Some Animal Life, Sediment
67	132-17								
						33°06'	1°29'	231	No Nephloid Layer at all
21	NEPHO	1437.50	1628.25	1445	1442				
Oct	132-00								
67									
		0909	1004	1285	1250	32°11'	0°21'N	232	Pen: 180 cm Cl. 0 cm
22	CORE	Hit	0935	Hit	1295				One pipe which was very bent. No
Oct	221A								Trigger core either.
67									
		0910	1005	1283	1250	32°11'	0°21'W	232	Good Record – 2 Probes
	T-GRAD								
22	180								
Oct									
67									
21	Surface	14:30	15:00	33°06	1°29'	33°06'	1°29'	231	Very Rich Surface Plankton
Oct	Plankton								
67	7595F								
	Bt# 83					33°06'	1°29'	231	
21	Vertical	16:17	16:27	33°06'	1°29'	33°06'	1°29'	231	Millipore 151
Oct	Plankton								
67	760 V								
22	Core					32°11'	0°21'W	232	No Pictures
Oct	Camera								Did not advance — Workers on Deck
67	186-E								Not in water.

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#252

Research Vessel VEMA
CRUISE N° 24
CRUISE LEG—From Capetown To Rio De Janeiro
TIME ZONE GMT

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat S	POSITION Long E	STN ~~LOC~~	REMARKS
20	CAMERA	~~14~~ 10	X	2745	2760			230	11- PICTURES
OCT	131					34°51'	4°09'		GOOD COMPASS PICTURES
67									SEDIMENT ONLY. — DID NOT SOND NOPHOZ
									DOWN DUE TO BURNED OUT MOTOR!
20	SURFACE	14:10	14:40			34°51	4°09'	230	Millipore Sample No150
OCT	PLANKTON								Surface water Temp 15.5°C.
67	7575F								
	VERTICAL					34°51	4°09'	230	Very little catch
20	PLANKTON	16:45	17:00						
OCT	758V								
67									
	BT#82					34°51'	4°09'	230	
								—	CHANNEL 1b SSQ41, TIME SET 3 HOURS, NO DEPTH SETTING
20	SONOBUOY	2223				34°22'	3°29'		PIT LOG 1323.73 START - 1332.55 END, 5KTS, 8.9 MILES
OCT	65		2354			34°15'	3°16'		WATER TEMP 15.5°C, PUT BOTH PROFILERS ON FAST TRAVERSE, AND
67									USED CHANNEL 2 ON BOTH PROFILERS, NEW 5-20CPS FILTER ON B
									3.5KC SONOBUOY ON 12KC POR. ONE DEFINATE REFRACTION
						33°06'	1°29'	231	Lt. beige Foraminiferal mal OOZE with
~~CAP~~	CORE	1449	1543	1425	1438				slight to moderate burrowing. No visible
21	220	HIT	1513	HIT	1415				remanac.
OCT 67									Pen. 366 cm CL. 611 cm TC ≃ 464 cm
		1453	1545	1443	1438	33°06	1°29'	231	GOOD RECORD - 2 PROBES
OCT	T-GRAD								
21	#179								HF = 0.88 μcal/cm²/sec
67									
OCT	CORE	1449	1543			33°06'	1°29'	231	NO RETURES
21	CAMERA								DID NOT ADVANCE
67	186-D								

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#257

Research Vessel VEMA
CRUISE N° 124
CRUISE LEG—From Capetown To Rio De Janeiro

TIME ZONE GMT

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. S	POSITION Long. E	STN ~~LOG~~	REMARKS
19	Plankton							229	Surface water temp 14.8°c at 1m depth
Oct	Surface								Millipore filter No 149 at 13:00
67	756-SF	13:20	13:50			35°58'	7°09'		
19	BOTTOM					35°58'	7°09'	229	NO PICTURES
OCT	CAMERA								
67	186-B								
19	Bottom	1508.00	1910.45	2690	2680	35°58'	7°09'	229	12 GOOD PICTURES WITH INTERNAL COMPASS.
OCT	CAMERA								MN NOODLES, SEDIMENT, TRACE & TRAILS
67	130-12								PICTURES ARE VERY VERY SHARP!
									COMPASS PICTURES SOMEWHAT WORSE THAN
									PREVIOUS CAMERA.
19	NEPHEL	1508.00	1910.45	2690	2680	35°58'	7°09'	229	WORK NEPHEL. LAYER — BOTTOM 300 FATHOMS
OCT	CAMERA								WIRE ANGLE 30° PER BOTTOM 120°
67	131								
20		1417	1549	2756	2750	34°51'	4°09'	230	Pen. 1280 cm. CL 1008 cm T.C. 1008 cm.
OCT	CORE	HIT	1500	HIT	2747				Multi colored layers of marl. These
67	219								colors range from Lt. Browns to Lt. Greens. Many
									dark stainings due to manganese micro nodules
									are present throughout the core.
20		1420	1549	2756	2750	34°51'	4°09'	230	GOOD RECORD - 4 PROBES
OCT	F-GRAV								
67	178								H.F. = 1.34 μcal/cm²/sec
20	CORE	1417	1549	2756	2750	34°51'	4°09'	230	
Oct	CAMERA								
67	186C								

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#250

Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From Capetown To Rio De Janeiro

TIME ZONE Z-2

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. S	POSITION Long. E	STN ~~LOG~~	REMARKS
17	CORE	1045	1206	2420	2414			228	Pen 833 cm. CL 1016 cm. TC. 585 cm
Oct	217	Hit	1128	Hit	2415	34°34'	14°39'		Lt, Brown Foraminiferal Marl changing to
67									marl at about 20 cm. No visible laminae
									but dark staining present throughout
									the core.
17		1047	1207	2409	2412	34°34'	14°39'	228	GOOD RECORD - 2 PROBES
Oct	T-GRAD								
67	176								H.F. = 0.79 μcal/cm²/sec
17						34°34'	14°39'	228	NO PICTURES.
Oct	CORE								BAD CONE THROWINGS AND SOME BALLWATER
67	CAMERA								SHOTS.
	186-A								
17		0114				34°21'	16°18'	—	CHANNEL 13 TIME SET 3 HOURS, DEPTH 300 FEET
Oct	SONOBUOY		0252			34°23'	16°05'		PITLOG 0618.27 START - 0629.08 END, WATER TEMP 16.5°C
67	63								USED CHANNEL 2 ON A PROFILER, FAST TRAVERSE, PUT 3.5 KC
									SONOBUOY RECORD ON 12 KC PDR; SPEED 6 KTS
									NO REFRACTIONS
18	SONOBUOY	2249				35°38'	9°19'		CHANNEL 16 TIME SET 3 HOURS, DEPTH 300 FEET
Oct	64		2355			35°40'	9°10'		PITLOG 0974.03 START - 0982.54 END, WATER TEMP 14.6°C
67									USED CHANNEL 2 ON A PROFILER, FAST TRAVERSE, ATTEMPTED ON
									BOTH 3.5 & 12 KC PDRs; SPEED 7 KTS
									NO REFRACTIONS
19		1303	1430	2680	2690	35°38'	7°09'	229	Pen. 389 CL. 923 cm T.C. 40 cm
Oct	CORE	Hit	1342	Hit	2682				Brown marl with manganese nodules ranging
67	218								in size from 5x4x2 cm to micro nodules, Layer
									of Bentonite present between 32-40 cm. This
									layer is broken. Core may not have tripped
		1304	1420	2678	2690	35°38'	7°09'	229	GOOD RECORD - 1 PROBE
19	T-GRAD								
Oct	177								H.F. = 2.08 μcal/cm²/sec
67									

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#249

Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From MAURITIUS To CAPETOWN

TIME ZONE Z-2

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. S	POSITION Long. E	STN LOG	REMARKS
10 Oct 67						37°19'	21°34'	227	6 - PICTURES
	CORE								ORIENTATION NOT POSSIBLE
	CAMERA 185								
10 Oct 67	Bio 772-774	1047	1116			37°19'	21°34'	227	Intensive sound scattering near surface Correspondingly rich samples.
10 Oct 67	MP-149	1000		Surface		37°19'	21°34'	227	
67	BT-81	1055		150fm		37°19'	21°34'	227	
10 Oct 67	JN 119	1200	1230			37°19'	21°34'	227	Rich sample with great variety.
10 Oct 67	JN 120	2003	2032			36°52'	19°58'	—	Very rich, highly luminescent sample including a beautifully preserved bathylaconoidian of the order salmoniformes. Rich sample possibly due to proximity to continental shelf

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#248

Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From MAURITIUS To CAPE TOWN

TIME ZONE Z-2

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. S	POSITION Long. E	LOG	REMARKS
9		1606	1706	1960	1980			226	Pen 405 cm. CL. 403 cm Tc 403 cm
Oct	CORE	Hit	1635	Hit	1970	37°07'	24°46'		It brown Foram nanofloral marl changing to
67	215								lt gray marl. Many layerings are present. The
									sediment is very compacted near the base of
									the core. Cutting edge was damaged.
9		1607	1707			37°07'	24°46'	226	GOOD RECORD - 3 PROBES
Oct	T-GRAD								
67	174								HF = 2.5 μcal/cm²/sec
9						37°07'	24°46'	226	7 - PICTURES
Oct	CORE								ORIENTATION NOT POSSIBLE
67	CAMERA								
	184								
9	171-V	1641	1649	190m	0m	37°07'	24°46'	226	Turbid water with a definite green hue.
Oct									
67									
9	JN 118	1737	1804	35m		37°07'	24°46'	226	Extremly rich sample. Surface temp.
Oct									recorder dropped more than 2.0°C during
67									this tow, so rich sample may be due to
									interface between two masses of water
10		1035	1136	1980	1930	37°09'	24°46'	227	Pen 295 cm CL. 300 cm TC. 300
Oct	CORE	Hit	1106	Hit	1940				Moderately compacted yellowish marl that has
67	216								a highly peppered appearance due to terrigen-
									ous detritus. Rock fragments occure throughout
									especially between 45-55, 155-162, 172-185 & 205-230 cm
10		1037	1137			37°09'	24°46'	227	GOOD RECORD - 2 PROBES
Oct	FLRAD								
67	175								HF = 1.6 μcal/cm²/sec

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#247

Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From MAURITIUS To CAPE TOWN

TIME ZONE Z-2

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. S	POSITION Long. E	LOG	REMARKS
9		0932	1034	2038	2012			224	Pen. CL. 811cm TC. 122cm
Oct	CORE	Hit	1004	Hit	2015	36°59'	25°07'		Foraminiferal marl ooze underlain by a
67	213								bed of manganese nodules. No laminations
									or burrowings visible.
									1ST + 2ND Pipe Bent. Cutting Edge Slightly Damaged
						36°59	25°07'	224	
9	CORE								
Oct	CAMERA								
67	182								
9		1316	1408	1765	1758	37°03	24°57'	225	Pen. 320cm CL 309cm TC 309cm
Oct	CORE	Hit	1343	Hit	1760				Foraminiferal marl changing to Lt. gray marl.
67	214								Heavy burrowing is present throughout the
									core.
						37°03'	24°57'	225	6 — PICTURES
9	CORE								ORIENTATION [redacted] POSSIBLE
Oct	CAMERA								
67	183								
9	Bio 768-	1325	1425			37°03'	24°57'	225	No core MPS because storm destroyed
Oct	770								nets — no spares left. Stations 225 + 226
67									are in close proximity, so samples should
									be similar.
9	MP 148	1300		Surface		37°03'	24°57'	225	
Oct									
67	BT 80	1345		150 Fm		37°03'	24°57'	225	
~~JN~~	JN-117	1227	1257	35m		37°03'	24°57'	225	Sample 770-V was accidently combined with
9									JN 117 in formalin-preserved bag. Consequently
Oct									these two samplings were repeated on stn
67									226 taken nearly same location

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PALISADES

#246

Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From MAURITIUS To CAPE TOWN

TIME ZONE Z-3

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat S	POSITION Long E	LOG	REMARKS
5 Oct 67	CORE 212	1327 Hit	1500 1418	2714 Hit	2742 2725	34°39'	36°24'	223	Pen. 520 cm. Cl. 643 cm TC 290 cm. Typical "Red" clay homogeneous in color throughout. A pepering effect due to Mn micro nodules is present. Both Pipes Bent near coupling.
5 Oct 67	CORE CAMERA 181					34°39'	36°24'	223	12- PICTURES ORIENTATION NOT POSSIBLE
5 Oct 67	T-GRAD 172	1329	1500			34°39'	36°24'	223	GOOD RECORD - 2 PROBES H.F. = 2.1 μ cal/cm²/sec
5 Oct 67	Bio 765 -767	1333	1411			34°39'	36°24'	223	Two dark SLs. Deeper SL very narrow & compact & highly photophobic. Its vertical movements during this station correlate perfectly with amount of solar radiation. No CMPS because of efforts to locate cause of core trip failure.
5 Oct 67	BT-79	1345		150Fm		34°39'	36°24'	223	
8 Oct 67	MP 147	1400		Surface		35°50'	31°01'	—	Other samplings precluded by foul weather
9 Oct 67	T-GRAD 173	0933	1036			36°59'	25°07'	224	GOOD RECORD - 1 PROBE H.F. = 2.5 μ cal/cm²/sec

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PALISADES

#245

Research Vessel VEMA
CRUISE N° 24
CRUISE LEG—From MAURITIUS To CAPETOWN

TIME ZONE Z-3

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. S	POSITION Long. E	STN LOG	REMARKS
4 Oct 67	CORE 211	1443 Hit	1556 1517	2642 Hit	2652 2648	32°37'	38°05'	222	Pen. 450cm C.L. 205cm Tc. 205cm Mud changing from light brown to various shades of grayish greens. The core is highly layered and moderate burrowing is present in the upper parts. 2nd & 3rd Pipe Bent.
4 Oct 67	CORE CAMERA 180					32°37'	38°05'	222	22 - PICTURES ORIENTATION NOT POSSIBLE PICTURES STILL OUT OF FOCUS. (ADJ. LENS)
4 Oct 1967	SONO-BUOY 62	1237	1347			32°34' 32°37'	37°54' 38°05'	—	CHANNEL 15. SET AT 3 HOURS AND 60 FEET WATER TEMP 18.2°C PROFILER A CHANNEL 2 FAST TRAVERSE @ 3.5 KC PDR DIED AFTER 70 MINUTES; 7.37 MILES; BT#78 IN AREA (S222) 1 REFRACTION FROM BASEMENT
4 Oct 67	WATER BARREL 83 A					32°37'	38°05'	222	ON CORE 211 TALETELL SLIDE INDICATES BARREL TRIPPED BEFORE REACHING BOTTOM. SAMPLE DISCARDED
4 Oct 67	Bio 762 764	1413	1457			32°37'	38°05'	222	Surface waters rich in red copepods. No core MPS because of repairs.
4 Oct 67	MP 146	1300		Surface		32°37'	38°05'	222	
	BT 78	1425		150 Fm		32°37'	38°05'	222	
4 Oct 67	JN 116	1714	1745	35m		32°37'	38°05'	222	

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PALISADES

#244

Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From MAURITIUS To CAPE TOWN

TIME ZONE Z-3

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. S	POSITION Long. E	LOG	REMARKS
3		1521	1636	2645	2640	31°52	37°13'	221	pen. 492 cm Cl. 29 cm T.C. 29 cm
OCT	CORE	Hit	1558	Hit	2630				Corer Failed to trip. Lt. Brown mud with moder-
67	210								ate burrowings. Mn. prupements (nodules) present
									at top and at 14 cm.
3	T-GRAD	1522	1638			31°52'	37°13'	221	GOOD RECORD - 1 PROBE
OCT	170								
67									H.F. = 0.8 μ cal/cm²/sec
3						31°52'	37°13'	221	
OCT	CORE								21 PICTURES
67	CAMERA								ORIENTATION NOT POSSIBLE
	179								
3	BIO 759	1545	1640			31°52'	37°13'	221	No core MPS because of damage
Oct	761								sustained on previous station
67									
3	MP 145	1700		Surface		31°52'	37°13'	221	Possible ship contamination
Oct									
67	BT 77	1608		150 Fm		31°52'	37°13'	221	
3	JN 115	1721	1761	35 m		31°52'	37°13'	221	
Oct									
67									
4		1446	1602			32°37	38°05'	222	GOOD RECORD - 3 PROBES
Oct	T-GRAD								
67	171								H.F. = 1.4 μ cal/cm²/sec

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PALISADES

#243

Research Vessel VEMA
CRUISE N° 24
CRUISE LEG—From Mauritius To Capetown

TIME ZONE E-3

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. S	POSITION Long. E	Stn Log	REMARKS
1 Oct 67	JN 113	1705	1733	35m		36°41'	41°45'	—	Surface temp took a radical "dip" during this tow. If this is an area of upwelling, the sample may reflect the ecological change cf JN 114. Numerous albatross.
2 Oct 67	CORE 209	1035 Hit	1212 1116	2755 Hit	2745 2750	34°45'	39°44'	220	Pen. 828 cm CL. 1271 cm TC 611 cm Lt. brown marl. Moderate burrowing near the top of the core. A few layerings are present.
2 Oct 67	PGRAV 169	1033	1212			34°45'	39°44'	220	GOOD RECORD - 2 PROBES H.F. = 1.62 μcal/cm²/sec
2 Oct 67	CORE CAMERA 179A					34°45'	39°44'	220	NO PICTURES ; STROBE LIGHT DID NOT FLASH — REPLACED COIL, FLASH BULB AND CAPACITOR.
2 Oct 67	Bio 756-758					34°45'	39°44'	220	Deep flowmeter failed to trip. Shallow net of CMPS split up both sides - irreparable. Vertical net was torn by high winds during the night — no replacements.
2 Oct 67	MP 144	1230		Surface		34°45'	39°44'	220	
	BT - 76	1100		150 Fm		34°45'	39°44'	220	
2 Oct 67	JN 114	1238	1309	35m		34°45'	39°44'	220	Large pink krill actively swimming in sample.

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PALISADES

#242

Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From MAURITIUS To CAPE TOWN
TIME ZONE Z-3

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. S	POSITION Long. E	Sta	REMARKS
30 Sept 67	Bio 750-755	1045	1118			36°18'	46°13'	218	Normal. Deep flowmeter failed to trip.
30 SEPT 67	CORE 208	1721 Hit	1815 1746	1730 Hit	1725 1730	36°13'	45°34'	219	Pen. ? Cl. 1095cm TC. 70 cm Gray foraminiferal marl of mostly juvinile forms. 15-70 cm mostly broken foram tests. It is believed that the core didn't trip till after the hit.
30 SEPT 67	FRAME 164	1723	1816			36°13'	45°34'	219	NO RECORD - NO READABLE EQUILIBRIUM POINT
30 SEPT 67	CORE CAMERA 178					36°13'	45°34'	219	27 [illegible] - PICTURES ORIENTATION NOT POSSIBLE FILM OUT OF FOCUS DUE TO DIRT ON LENSE.
1 Oct 67	SONO-BUOY 61	0952	1144			36°36' 36°31'	42°59' 42°45'	-	CHANNEL 5, SET AT 3 HOURS AND 60 FEET FAST TRAVEL WATER TEMP. 16.7°C PROFILED A CHANNEL 2 11.43 MILES
30 Sept 67	MP 143	1000		Surface		36°18'	46°13'	218	
67	BT 75	1050		150 Fm		36°18'	46°13'	218	Smoke flaked off of slide
30 Sept 67	JN 112	1230	1307	35m		36°18'	46°13'	218	Difficult handling jet-net in foul weather. Received considerable battering during recovery. High winds + heavy seas precluded removal of sample until ship slowed for sonobuoy.

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#-241

Research Vessel VEMA
CRUISE N° 24
CRUISE LEG—From Mauritius To Capetown

TIME ZONE 2-3

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat S	POSITION Long. E	5th LOG	REMARKS
29 Sept 67	MP 142	1015		Surface		36°30'	49°34'	217	
	BT 74	1230		150 fm		36°30'	49°34'	217	
29 Sept 67	~~[illegible]~~ JN 111 ~~[illegible]~~	1336	1358	35 m		36°30'	49°34'	217	
30 Sept 67	CORE 207	1008 Hit	1138 1043	1883 Hit	1870 1845	36°18	46°13'	218	Pen. 300 cm. CL. 556 cm. TC. 300 cm. Gray foraminiferal marl. Bright burrowing invisible.
30 Sept 67	T-GRAD 168	1009	1140			36°18	46°13'	218	GOOD RECORD - 1 PROBE H.F. = 0.74 μcal/cm²sec
30 Sept 67	CORE CAMERA ~~[illegible]~~ 177					36°18	46°13'	218	38 — PICTURES ORIENTATION NOT POSSIBLE
30 Sept 67	SONO-BUOY GOA	1354	1451			36°16' 36°15	45°58' 45°50'	—	CHANNEL 1, SET AT 3 HOURS AND 60 FEET WATER TEMP 16.3°C POWDER A CHANNEL 2 43.5 KC POR DIED AFTER 1 HOUR, NOT LONG ENOUGH FOR USEFUL DATA 4.43 MILES
30 Sept 67	SONO-BUOY 60	1506	1610			36°15' 36°14'	45°49' 45°40'	—	CHANNEL 4, SET AT 3 HOURS AND 60 FEET WATER TEMP 16.4°C POWDER A CHANNEL 2 7.12 MILES

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PALISADES

#240

Research Vessel VEMA
CRUISE N° 24
CRUISE LEG—From Mauritius To Capetown

TIME ZONE Z-4

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. S	POSITION Long. E	Stn. ~~LOG~~	REMARKS
28 Sept 67	MP 141	1300		Surface		36°51'	52°17'	216	
	BT 73	1350		150 Fm		36°51'	52°17'	216	
28 Sept 67	JN-110	1539	1609	35m		36°51'	52°17'	216	Bulk of sample consists of large pink copepods and phyto plankton. Abundant albatross + terns this area.
29 Sept 67		1145	1305	1920	1810	36°30'	49°24'	217	Pens cm CL1170 cm. TC 550 cm
	CORE 206	Hit	1217	Hit	1800				Lt. brown foraminiferal marl changing to lt gray foraminiferal marl. Moderate burrowing and some bowed laminae are also present.
29 Sept 67	T-GRAB 167	1146	1310			36°30	49°34'	217	Good RECORD - 3 PROBES
									H.F. = 0.4 μcal/cm²/sec
29 Sept 67	CORE CAMERA 176					36°30'	49°34'	217	25 – PICTURES ORIENTATION NOT POSSIBLE
29 Sept 67	IK 25	1028	1119	150m		36°30'	49°34'	217	Rough seas. Replaced old towing block system with a simpler, faster, safer arrangement, utilizing an expendable rope loop which may be cut to release wire.
29 Sept 67	Bio 744-749	1206	1350			36°30	49°34'	217	Usual

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#239

Research Vessel VEMA
CRUISE N° 24
CRUISE LEG—From Mauritius To Capetown

TIME ZONE 3-4

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. S	POSITION Long. E	LOG	REMARKS
	Bio 732-					36°50'	55°17'		information derived from IK-24 and JN-109
	737 contin								taken same location.
27 Sept 67	JN-109	2134	2207	35m		36°50'	55°17'	215	
27 Sept 67	BT-72	2020	-	150Fm.		36°50'	55°17'	215	Same location as BT 71, but at night.
28 Sept 67	Core 205	1304 Hit	1503 1400	2965 Hit	2965 2935	36°51'	52°17'	216	Pen. 234cm. CL. 720 cm Piece of Core lost in separating pipes + 3 pieces mixed when they Fell on deck. Lt Grey Marl changing to Green mineral Sand. There are 2 maby 3 Turbidites. This Core Should be Checked.
28 Sept 67	T-grad 166	1307	1504			36°51'	52°17'	216	Good RECORD - 1 PROBE
28 Sept 67	Core Camera 175					36°51'	52°17'	216	34 - PICTURES ORIENTATION NOT POSSIBLE
28 Sept 67	Bio 738- 743	1330	1424			36°51'	52°17'	216	Normal

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#238

Research Vessel VEMA
CRUISE N° 24
CRUISE LEG—From Mauritius To Capetown

TIME ZONE 3-4

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. S	POSITION Long. E	Sln ~~LOG~~	REMARKS
27								215	30 - PICTURES
Sept	Core					36°50'	55°17'		ORIENTATION NOT POSSIBLE
67	camera								
	173								
27	Core	1906	2100	2360	2365	36°50'	55°17'	215	No core or trigger core obtained. First pipe
Sept	205-A	Hit	1959	Hit	2372				broke off about 1' from coupling. Cutting edge
67									was also damaged.
27	Core					36°50'	55°17'	215	35 - PICTURES
Sept	Camera								ORIENTATION NOT POSSIBLE.
67	174								DOUBLE FLASH AFTON — 20 PICTURES
27	Bio 726-	1405	1510			36°50'	55°17'	215	Very well-defined scattering in surface layers.
Sept	731								Abundant red copepod from previous sth has been
67									abruptly replaced by a pink variety. Numerous
									albatross this area. Cf. 732-737 (night, same location)
									for vertical changes in migrant species concentration
27	MP 140	1530	—	Surface		36°50'	55°17'	215	
Sept									
67	BT-71	1425		150Fm		36°50'	55°17'	215	Smoke flaked off of slide.
27	IK-24	1649	1818	340m		36°50'	55°17'	215	IK 24 sampled a daytime SL at about 180Fm.
Sept									Numerous hatchet fish + krull. Dusk migrations
67									began just after completion of tow.
27	Bio 732-	1938	2054			36°50'	55°17'	215	Two attempts were made to core this location — one
Sept	737								before + one after sunset — giving us two complete (and
67									comparable) sets of biological samplings. These data were
									supplemented by additional biomass and DSL →

Day

Night

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PALISADES

#237

Research Vessel VEMA
CRUISE N° 24
CRUISE LEG—From Mauritius To Capetown

TIME ZONE E-4

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. S	POSITION Long. E	LOG	REMARKS
26								214	33 — PICTURES
SEPT	CORE					36°39'	59°59'		ORIENTATION NOT POSSIBLE
67	CAMERA								
	172								
25	WATER					24°21'	59°13'	213	On Core
SEPT	BARREL								TELLTALE INDICATES BOTTOM TRIP
67	82								SAMPLE DISCARDED WHEN CENTRIFUGE NOT
									WORKING DURING PROCESSING
26-	Bio 721-	0959	1121			36°39	59°59	214	Damage sustained on previous stn. made it
Sept	725								necessary to install new net on shallow frame
67									of core MPS. Deep flowmeter read "0" but
									net contained normal sample (flowmeter release
									failed). Shallow net failed to open.
26	MP 139	0930		Surface		36°39	59°39	214	
Sept									
67	BT 70	1000		150 Fm		36°39	59°39	214	Slide ok — no flaking off
26	JN 108	1200	1230	35m		36°39	59°39	214	Sample predominately pink copepods. Blue copepod
Sept									from warm waters of Indian + S. Pacific Oceans
67									has disappeared. Luminescence in sample bright
									enough to be seen in bright sunlight! Fresh
									water causes discharge of light.
27		1353	1540	2475	2480	36°50	55°17'	215	Penn. Core Head Buried CL. 1880cm T.C. ≈ 10cm
SEPT	CORE	Hit	1435	Hit	2470				Light gray marl. It is believed the piston
67	204								didn't work properly causing the three pipes
									to be full of flour in.
27		1355	1540			36°50'	55°17'	215	GOOD RECORD - 3 PROBES
SEPT	T-GRAD								
67	165								

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#236

Research Vessel VEMA
CRUISE N° 24
CRUISE LEG—From Mauritius To Capetown

TIME ZONE Z-4

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. S	POSITION Long. E	LOG	REMARKS
25 Sept 67	CORE CAMERA 177					34°21'	59°13'	213	38 - PICTURES ORIENTATION NOT POSSIBLE
25 Sept 67	BIO 715-720.	1422	1549			34°21'	59°13'	213	Shallow net of core MPS surfaced with hole in net.
25 Sept 67	MP 138	1245		Surface		34°21'	59°13'	213	
25 Sept 67	BT. 69	1430	-	150Fm		34°21'	59°13'	213	
25 Sept 67	JN 106	1700	1730	35m		34°21'	59°38'	213	Repaired internal net
25 Sept 67	JN 107	1934	2003	35m		34°49'	59°22'	—	Rich sample, highly luminescent. Numerous copepods + other crustacea.
26 Sept 67	CORE 203	0927 Hit	1118 1014	2670 Hit	2665 2657	36°59'	59°59'	214	Pen. 1200 cm CL. 1215 cm TC 1200 cm Lt. brown marl changing to gray marl. Numerous fine green laminae are present throughout the lower sections of the core. Slight burrowing throughout.
26 Sept 67	T-GRAD 164	0929	1121			36°59'	59°59'	214	GOOD RECORD - 4 PROBES HF = 2.02 μcal/cm²/sec

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PALISADES

#235

Research Vessel VEMA
CRUISE N° 24
CRUISE LEG—From Mauritius To Capetown

TIME ZONE Z-4

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. S	POSITION Long. E	STN ~~LOG~~	REMARKS
24								212	21 PICTURES - CHANGED DVSR TO
SEPT	CORE					30°55'	58°10'		SLOW ROWING CAMERA
67	CAMERA								ORIENTATION NOT POSSIBLE
	MD								
24	WATER	1517	1623	1520	1500	30°55'	58°10'	212	WITH CORE 201 TEMTALE INDICATES GOOD TRIP
SEPT	BARREL								CENTREPUSED FROM 2120 TO 2310
67	BI								SAMPLE MUST BE CONTAMINATED, AS IT IS THE LARGEST
									RESIDUE EVER COLLECTED
24	Bio 709 -	1539	1640			30°55'	58°10'	212	Installed new nets on deep + middle frames
Sept	714								of core MPS.
67									
24	MP 137	1500	—	Surface		30°55'	58°10'	212	
Sept									
67	BT 68	1550		150 Fm		30°55'	58°10'	212	Smoked slides reach surface in poor condition — smoke flakes off.
24	JN 105	1719	1749	35m		30°55'	58°10'	212	Sample non-quantitative because of small
Sept									leak in seam of internal net. Sample
67									contains much gelatinous material —
									phaetocystis ?
25		1424	1637	2930	2900	34°21'	59°13'	213	Pen. Core Head H.T. CL. 1288 cm TC. 1237 cm
SEPT	CORE	H.T	1516	H.T	2930				Lt. brown marl changing to gray marl around
67	202								512 cm. Many fine laminae throughout.
									Angular bedding is present between 640-
									720 cm.
25	F-GRAD	1426	1624			34°21'	59°13'	213	GOOD RECORD - 3 PROBES
SEPT	163								
67									H.F. = 1.76 μ cal/cm²/sec

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PALISADES

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Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From MAURITIUS To CAPE TOWN

TIME ZONE Z-4

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. S	POSITION Long. E	LOG	REMARKS
23 SEPT 67	CORE 200	0958 Hit	1120 1020	2670 Hit	2670 2675	26°51'	56°56'	211	Pen 781 cm CL 1205 TC 800 Typical "red" clay consisting of manganese micro nodules and unidentified orange mineral probably a zeolite.
23 SEPT 67	T-GRAD 162A					26°37'	56°56'	211	NO RECORD BATTERIES TOO WEAK
23 SEPT 67	CORE CAMERA 169					26°37'	56°56'	211	
23 Sept 67	Bio 706-708	1024	1127			26°37'	56°56'	211	Installed new net on vertical frame (170μ)
23 Sept 67	Milli 136	0945	—	Surface		26°37'	56°56'	211	2nd PICTURES - TAPE ROUND CAMERA ORIENTATION NOT POSSIBLE
67	BT 67	1015		150 Fm		26°37'	56°56'	211	COMPASS NOT MOUNTED ON CORE PIPE
24 SEPT 67	CORE 201	1517 Hit	1623 1548	1560 Hit	1500 —	30°55'	58°10'	212	Pen. CL 830 cm TC 540 cm Lt. tan foraminiferal ooze uniform in texture and color throughout. Slight burrowing visible.
24 SEPT 67	T-GRAD 162	1517	1623			30°55'	58°10'	212	GOOD RECORD - 2 PROBES ΔT = 1.82 μ/cm. °/sec

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#233

Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From MAURITIUS To CAPETOWN

TIME ZONE Z-4

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. S	POSITION Long. E	LOG	REMARKS
19	CORE	1037	1115	910	965	20°06'	57°26'	205	Rec 142 cm CL. ≥150cm.
Sept	197	Hit	1055	Hit	973				Sand and about .7mm thickness of gravel
67									near the bottom of the core. It consist of basalt
									and coral shell fragment.
19	CORE	1305	1356	1640	1660	20°02'	57°19'	209	Rec 157 CL ≥ 230 cm
Sept	198	Hit	1327	Hit	1650				Sand as about .7mm consisting of
67									basalt, coral and shell fragment
22	CORE	1505	1637	2640	2450	24°28'	56°37'	210	CL. 38 cm
Sept	199	Hit	1537	Hit	2490				Core consist of mm to cm size nodules ranging in size
									from 5x4x3 to micro nodules in the
									sand fraction which also contained
									Phillipsite and other mang minerals
22		1507	1637			24°28'	56°37'	210	
SEPT	T-GRAD								GOOD RECORD - 1 PROBE
67	161								
									HF = 2.0 μcal/cm²sec
22						24°28'	56°37'	210	125 PICTURES — USED FAST ROWING CAMERA
SEPT	CORE								ORIENTATION NOT POSSIBLE
67	CAMERA								
	168								
22	Bio 704-	1457	1555			24°28'	56°37'	210	Too rough for core MPS. First vertical net
Sept	705								surfaced with gaping tear. No time to
67									repair during station. Two SLs: 0-70 Fm, 250-
									260 Fm. Surface sample contaminated with
									cigarette butt.
22	BT 66	1615		150 Fm		24°28'	56°37'	210	
Sept									
67	MP 135	1630	—	Surface				210	

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PALISADES

#232

Research Vessel VEMA
CRUISE N° 24
CRUISE LEG—From Darwin To Mauritius

TIME ZONE Z-5

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. S	POSITION Long. E	LOG	REMARKS
12 Sept 67	JN 101	1306	1333	35m		17°57'	65°48'	—	
12 Sept 67	MP 134	1315	—	Surface		17°57'	65°48'	—	
12 Sept 67	JN 102	2305	2333	35m		18°30'	63°45'	—	Significant decrease in sample volume as well as water temp, phyto plankton show the greatest decrease in numbers
13 Sept 67	JN 103	1636	1703	35m		~~19°00'~~ 19°15'	60°17'	—	Gelatinous material makes up large proportion of sample.
13 Sept 67	JN 104	1935	2004	35m		19°23'	59°40'	—	

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PALISADES

#231

Research Vessel VEMA
CRUISE N° 24
CRUISE LEG—From Darwin To Mauritius

TIME ZONE Z-5

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. S	POSITION Long. E	LOG	REMARKS
9 Sept 67	JN-95	1234	1306	35m		14°06'	78°45'	—	New JN rig working beautifully. Samples are large + well-preserved, and new net design permits efficient + quantitative removal of plankters
9 Sept 67	JN-96	2205	2235	35m		14°34'	77°00'	—	
10 Sept 67	JN-97	1305	1331	35m		15°23'	74°16'	—	
10 Sept 67	MP 133	1315	—	Surface		15°23'	74°16'	—	
10 Sept 67	JN-98	2004	2034	35m		15°48'	73°00'	—	
11 Sept 67	JN-99	1505	1533	35m		16°31'	69°55'	—	
11 Sept 67	JN-100	2035	2103	35m		17°08'	68°34'	—	

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PALISADES

#230

Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From DARWIN To MAURITIUS

TIME ZONE Z-7

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. S	POSITION Long. E	LOG	REMARKS
3		~~1351~~	~~1548~~	~~2368~~	~~24~~			207	GOOD RECORD - 2 PROBES
SEPT	T-GRAD	1630	1838	2881	2881	9°11'	102°00'		
67	160								H.F. = 1.70 μcal/cm²/sec
3								207	
SEPT	CORE					9°11'	102°00'		
67	CAMERA								
	167								
7	SONOBUOY	0919				11°09'	88°40'	—	ANSS 41 CHANNEL 10 ON TOP OF 90 EAST RIDGE
SEPT	58		0436			11°19'	88°29'		NO REFRACTION 7.9 MILES
67									
8	SONOBUOY	0840				12°33'	83°45'	—	ANSS 41 CHANNEL 10
SEPT	59		1020			12°36'	83°47'		NO REFRACTION 6.14 MILES
67									
2	JN-93	2136	2204	35m		12°10'	85°38'	—	Beginning with this tow, the jet-net will be sampling with an internal net to end of improved design. New net has mesh aperture of 202 μ while samples JN-1 → JN-92 used 452 μ mesh.
Sept									
67									
8	JN-94	1435	1507	35m		12°54'	83°04'	—	
Sept									
67									
8	MP 132	1630	—	Surface		12°58'	82°45'	—	
Sept									
67									

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#229

Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From DARWIN To MAURITIUS

TIME ZONE Z-7

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat S	POSITION Long. E	LOG	REMARKS
3 SEPT 67	CORE 195	0927 Hit	1128 1012	2912 Hit	2905 2902	9°38'	102°34'	206	Penn. 1200 CL. 1264 cm TC. 965 cm Lt Brown Diatomaceous ooze changing to gray & green marl. Ash layers are present at 70-77, 205-210, and 958-963. Mineral layer of Phillipsite at 322-324 cm. Many bowed gray & green laminae from 370-960 cm.
3 SEPT 67	T-GRAD 159					9°38'	102°34'	206	GOOD RECORD — 4 PROBES H.F. = 1.62 μcal/cm²/sec
						9°38'	102°34'	206	NO PICTURES DUE TO MAGNETIC LOST ON THE WAY DOWN.
3 SEPT 67	CORE CAMERA 167A								
3 Sept 67	Bio 698-703	0937	1033			9°38'	102°34'	206	Deep net of CMPS had sample but no flow-meter reading. Middle net surfaced with small hole — possible sample loss.
3 Sept 67	BT-65	0900	0905	150Fm		9°38'	102°34'	206	
	MP 131	0910	—	Surface		9°38'	102°34'	206	
3 Sept 67	JN-92	1200	1233			9°38'	102°24'	206	
3 SEPT 67	CORE 196	1630 Hit	1838 1725	2881 Hit	2885 2881	9°11'	102°00'	207	Pen. CL. 1862. TC. 820 cm Diatom marl ooze changing to Radiolarian marl to marl. 2 ash layers 50-60 cm & 795-815 cm. Compacted green layerings at 492-497, 542-546, & 562-564 cm.

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Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From DARWIN To MAURITIUS

TIME ZONE 2-7

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. S	POSITION Long. E	LOG	REMARKS
2		1358	1836	2790	2790	11°09'	104°21'	205	Foram + Diatom marl oozes changing to mineral
SEPT	CORE	Hit	1438	Hit	2785				marls. Between 40-160 cm there is a ash layer which is
67	194								about 90% glass. Small Mn nodules are scattered
									throughout the core after 160 cm.
									Penn 370 cm CL 979 cm. T.C. 979?
2						11°09'	104°21'	205	GOOD RECORD - 2 PROBES
SEPT	T-GRAD								
67	158								H.F. = 2.0 μcal/cm²/sec
2						11°09'	104°21'	205	22 — PICTURES
SEPT	CORE								
67	CAMERA								ORIENTATION NOT POSSIBLE
	166								
2	BIO 692	1400	1509			11°09'	104°21'	205	
Sept	-697								
67									
2	BT 64	1437	1442	150 fm		11°09'	104°21'	205	
Sept									
67	Milli 130	1345	—	Surface		11°09'	104°21'	205	
							+		
2	JN-91	2005	2034	35 m		11°02'	104°11'	~~205~~	
Sept									
67									

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PALISADES

#227

Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From DARWIN To MAURITIUS

TIME ZONE Z-7

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. S	POSITION Long. E	LOG	REMARKS
1		1350	1547	2370	2590	14°07'	106°32'	204	Penn. 365 cm C.L. 887 cm T.C. 460 cm
SEPT	CORE	H/t	1437	H/t	2400				Lt. brown foraminiferal marl changing to darker brown
67	193	/							marl at about 160 cm. Between 92-160 cm there is a section
									of unconsolidated Mn coated basalt ranging in size from
									1 cm to 4x7x6 cm. Rock fragments & Mn nodules found throughout
1						14°07'	106°32'	204	
SEPT	T-GRAD	/							GOOD RECORD - 1 PROBE
67	157								
									H.F. = 0.90 μcal/cm²/sec
1		/				14°07'	106°32'	204	42 - PICTURES
SEPT	CORE								ORIENTATION NOT POSSIBLE
67	CAMERA								
	165								
1	Bio 686	1404	1504			14°07'	106°32'	204	
Sept	691								
67									
1	BT-63	1425	1430	150Fm.		14°07'	106°32'	204	
Sept									
67	MP 129	1345		Surface		14°07'	106°32'	204	
1	IK-23	1142	1218	460m.		14°07'	106°32'	204	
Sept		=							
67									
1	JN-90	1626	1702	35m		14°07'	106°32'	204	
Sept									
67									

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PALISADES

#226

Research Vessel VEMA
CRUISE N° 24
CRUISE LEG—From Darwin To Mauritius

TIME ZONE Z-7

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. S	POSITION Long. E	LOG	REMARKS
30 Aug 67	Bio 675-679	0848	1052			13°29'	110°06'	202	Pressure cylinder on CMPS failed to release net arms properly.
	JN 87 (A)	1134	1216			13°29'	110°06'	202	
30 Aug 67	BT-61	0935	0940	150Fm		13°29'	110°06'	202	
	MP 127	0845	–	Surface		13°29'	110°06'	202	
30 Aug 67	JN-87 (B)	2305	2345	35m		15°08'	108°52'	~~202~~	
31 Aug 67	Bio 680-685	0739	0906			16°02'	108°08'	203	
31 Aug 67	BT 62	0800		150Fm		16°02'	108°08'	203	
	MP 128	1000		Surface		16°02'	108°08'	203	
31 Aug 67	JN-88	1018	1102	35m		16°02'	108°08'	203	
31 Aug 67	JN-89	2235	2304	35m		16°06'	107°04'	—	

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#225

Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From DARWIN To MAURITIUS
TIME ZONE Z-7

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. S	POSITION Long. E	LOG	REMARKS
30		0850	1101	2830	2837			202	Pen. CL. 1276 cm T.C. 664 cms
Aug	CORE	Hit	0946	Hit	2828	13°29'	110°06'		Lt brown Radiolarian marl changing to
67	191								alternating sections of darker brown marls.
									Moderate burrowings is present throughout
									the core.
30		0853	1101	2825	2837	13°29'	110°26'	202	
Aug	T-GRAD								GOOD RECORD - 3 PROBES
67	155								
									H.F. = 1.40 μcal/cm²/sec
30	CORE					13°29	110°26'	202	45 - PICTURES
Aug	CAMERA								ORIENTATION NOT POSSIBLE
67	163								
29	SONOBUOY					11°04'	111°38'	—	ANSSQ 41 CHANNEL 9
Aug	58A	1655							SEAS SLIGHTLY TOO ROUGH, TRAVERSE NOT SET ON FAST,
67									AFTER ABOUT 1 HOUR, BUOY PRINTED OUT SO MUCH NOISE
									THAT ALL SIGNALS WERE BLOCKED OUT
31		0703	0909	2850	2840	16°02'	108°08'	203	Penn 1109 cm CL. 1703 cm T.C. 914 cm.
Aug	CORE	Hit	0800	Hit	2862				Typical "red clay" sediment of alternating
67	192								sections of light and dark brown marls.
									Slight burrowing throughout
31		0703	0910	2852	2850	16°02'	108° 09'	203	GOOD RECORD - 1 PROBE
Aug	T-GRAD								
67	156								H.F. = 1.28 μcal/cm²/sec
31	CORE					16°02'	108°08'	203	
Aug	CAMERA								
67	164								

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#224

Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From DARWIN To MAURITIUS
TIME ZONE Z-8

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. S	POSITION Long. E	LOG	REMARKS
29 Aug 67	CORE 190	1015 Hit	1200 1100	2140 Hit	2090 2164	10°28'	112°08'	201	Pen. 1021cm CL. 1213cm TC 822cm Radiolarian mud changing to Diatomatious mud and again to Radiolarian mud. Colors include light green and brown with many thin color bands scattered randomly throughout the core.
29 Aug 67	T-GRAD 154	1016	1159			10°28'	112°08'	201	GOOD RECORD - 4 PROBES H.F. = 0.95 μcal/cm²/sec
29 Aug 67	CORE CAMERA 162					10°28'	112°08'	201	35 - PICTURES ORIENTATION POSSIBLE
28 Aug 67	Bio 669-674	1019	1212			10°28'	112°08'	200	Sudden disappearance of masses of phyto-plankton observed on three previous stations.
28 Aug 67	BT-60	1020	1025	150Fm		10°28'	112°08'	201	
	MP 126	1011		Surface		10°28'	112°08'	201	
28 Aug 67	JN-85	1305	1334	35m		10°28'	112°08'	201	
29 Aug 67	JN-86	2205	2233	35m		11°46'	111°10'	—	

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Research Vessel VEMA
CRUISE N° 24
CRUISE LEG—From Darwin To Mauritius

TIME ZONE Z-8

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. S	POSITION Long. E	LOG	REMARKS
28 Aug 67	Bio 660-665	2138	2231			11°18'	115°40'	199	
28 Aug 67	CORE 189	1521 HIT(1557')	1634	1970 Hit	1936 1938	9°45'	113°55'	200	Pen 1320 cm CL. 1196 cm TC 1000 cm Radiolarian marl, light brown and olive gray. Mineral sand layers at 396, 455, 485, 598-600, 730, 764-773 (turbidite) & 847 cm. Between 910-1000 cm many fine lamenae (5-10 mm thick). Strong H_2S odor from the core
28 Aug 67	T-GRAD 153	1521	1634	1970	1936	9°45'	113°55'	200	GOOD RECORD - 2 PROBES H.F. = 0.71 μcal/cm²/sec
28 Aug 67	CORE CAMERA 161					9°45'	113°55'	200	20 PICTURES ORIENTATION NOT POSSIBLE
28 Aug 67	Bio 666-668	1526	1639			9°45'	113°55'	200	Probable area of upwelling, as suggested by surface temp. "dip" + plankton bloom (esp. phyto plankton). Abundant algae, dinoflagellates, diatomes, etc. Water exhibits blue-green hue. No CMPS because of undercurrent + wire angle.
28 Aug 67	BT-56	~~2110~~ 1607	~~2105~~ 1615	150 Fm.		9°45'	113°55'	200	
28 Aug 67	MP 125	1503				9°45'	113°55'	200	
28 Aug 67	JN-84	1708	1739	35m.		9°45'	113°55'	200	

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#222

Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From DARWIN To MAURITIUS

TIME ZONE Z-8

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. S	POSITION Long. E	LOG	REMARKS
27 Aug 67	SONOBUOY 57	1415	1475.52			10°59'	116°21'	—	ANSSQ41 CHANNEL 7, DEPTH SET AT 60 FEET, TIME SET AT 3 HOURS ± 5.8 MILES
67		1483.33	1533			11°05'	116°10'		ONE REFRACTION
27 Aug 67	JN-83	1039	1155			10°42'	116°55'	—	
						10°48'	116°43'		
27 Aug 67	IK-22	1909	2055			11°18'	115°40'		
						11°18'	115°40'	199	Penn 833 cm CL. 1122 cm T.C. 760 cm
27 Aug 67	CORE 188	2026 Hit	2344 2209	3580 Hit	3630 3660				Light brown marl changing to olive green marl at about 17 cm. No structures visible. Light and dark striping appear randomly throughout the core
27 Aug 67	T-GRAD 152					11°18'	115°40'	198	GOOD RECORD - 3 PROBES
									H.F. = 0.86 μcal/cm²/sec
27 Aug 67	CORE CAMERA 160-					11°18'	115°40'	199	53 PICTURES ORIENTATION POSSIBLE
27 Aug 67	BT-57	2140	2145			11°18'	115°40'	199	

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#221

Research Vessel VEMA
CRUISE N° VEMA 24
CRUISE LEG—From Darwin To Mauritius

TIME ZONE Z-8

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. S	POSITION Long. E	STN LOG	REMARKS
26 Aug 67	BIO 654	0905	1104					198	
	659					11°43'	120°12'		
26 Aug 67	Milli 124	0830		Surface 15OM		11°43'	120°12'	198	
	BT-57	1000				11°43'	120°12'	198	
26 Aug 67	~~SN 80~~								
	JN 81	1604	1637			11°19'	119°32'	—	
26 Aug 67	JN 82	~~0830~~ 2134	2203			10°46'	118°43'	—	
26 Aug 67	CAMERA 130A	0749.00	X	2460 fms	X	11°43'	120°12'	198	UNIT LOST ALONG WITH 2400 FATHOMS OF WIRE, BAD CURRENTS, STEAMED ON WIRE WIRE WAS ACROSS THE MPS BIOLOGY NET ON THE CORE WIRE
26 Aug 67	NEPH OLOMETER 131D	0749.00	X			11°43'	120°12'	198	UNIT LOST
26 Aug 67	CORE CAMERA 160A					11°43'	120°12'	198	ON CORE 187 FILM ADVANCED, BUT NO PICTURES ON FILM

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Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From Darwin To Mauritius

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TIME ZONE Z-8

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. S	POSITION Long. E	STN LOG	REMARKS
25 Aug 67	JN 80	1922	1954			10°53'	122°02'	197	
25 Aug 67	CAMERA 129-10	(1733.3)	(1903?)	(680 fms)	(658 fms)	10°53'	122°02'	197	10 - HITS 10 PICTURES ABUNDANT SOFT LIFE FLAT MUDDY SEDIMENT BOTTOM
25 Aug 67	NEPHELOMETER 131-C	(1733.3)	(1903?)	(680 fms)	(658 fms)	10°53'	122°02'	197	NO NEPHELOMETER DUE TO SLIPPING CLUTCH ON TAKE UP REEL. CHANGES: PUT TAPE AROUND CLUTCH ABS. FOR BETTER TRACTION.
25 Aug 67	CORE CAMERA 159-8	1804	1900			10°53	122°02'	197	ON CORE 186 8 PICTURES ORIENTATION POSSIBLE.
26 Aug 67	CORE 187	0824 Hit	1144 0909	2276 Hit	~~650~~ 2270	11°43'	120°12'	198	Penn. 580 cm CL. 628 cm TC 628 cm Multi colored layers of foraminiferal marl, including white, light green, light brown, and light blue. Foram sand layers are present at 30, 32, 85, and 179 cm.
26 Aug 67	T-GRAD 151					11°43'	120°12'	198	GOOD RECORD - 2 PROBES H.F. = 1.36 μcal/cm²/sec
26 Aug 67	WATER BARREL 80	1804	10			11°43	120°12'	198	ON CORE 187 TELETALE INDICATES GOOD TRIP

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Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From DARWIN To MAURITIUS
TIME ZONE Z-8

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. S	POSITION Long. E	LOG	REMARKS
24 Aug 67	Milli 122	0900	—	Surface		9°38'	126°35'	196	
	BT-55	0935		150 Fm		9°38'	126°35'	196	
24 Aug 67	JN-78	1132	1206	35m		9°38'	126°35'	196	
24 Aug 67	JN-79	2131	2202	35m		10°30'	125°06'	—	
25 Aug 67	CORE 186	1804 Hit	1837 1821	680 Hit	650 672	10°53'	122°02'	197	Pen 287 cm CL. 320 cm T.C. 320 cm Light brown changing to light green foraminiferal marl. Between 163-170 cm there is a layer of greenish gray foraminiferal marl very high in volcanic glass
25 Aug 67	T-GRAD 150					10°53'	122°02'	197	GOOD RECORD - 1 PROBE H.F. = 2.04 μcal/cm²/sec
25 Aug 67	Bio 652-653	1802	1843			10°53'	122°02'	197	
25 Aug 67	MP 123	1800		Surface		10°53'	122°02'	197	
	BT-56	1830		150 Fm		9°38'	126°35'	196	

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#218

Research Vessel VEMA
CRUISE N° 24
CRUISE LEG—From DARWIN To MAURITIUS

TIME ZONE Z-8

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. S	POSITION Long. E	LOG	REMARKS
24		0847	1013	1441	1455	9°38'	126°35'	196	Pen. 1186 cm. C.L. 1091 cm G.C. 1045 cm.
Aug	CORE								Olive gray foraminiferal marl homogeneous in color
67	185	Hit	0916	Hit	1450				and texture. Mineral sand layers 415-417 cm & 575 cm.
									Foraminiferal sand layer between 640-641 cm
24						9°38'	126°35'	196	
Aug	T-GRAD								GOOD RECORD - 4 PROBES
67	149								
									H.F. = 1.74 μcal/cm²/sec
24						9°38'	126°35'	196	GOOD TRIP, SAMPLE CONTAMINATED AT SURFACE
Aug	WATER	0847	1013	1441	1455				WHEN WATER PUMP BROKE
67	BARREL								
	80A								
24	CORE	0847	1013	1441	1455	9°38'	126°35'	196	24 PICTURES, 2 BROKEN BOTTEN, ORIENTATION POSSIBLE
Aug	CAMERA								ON CORE 185
67	128								
24	CAMERA	0826	10.27	1440		9°38'	126°35'	196	19 HITS - 7 PICTURES
Aug	128-7								FLAT MUDDY SEDIMENT —
67									
24	NEPHELOMETER	0826	1037	1440		9°38'	126°35'	196	NEPHELOMETER CAMERA NOT STARTED
Aug	131-B								
67									
24	Bio 646	0830	1023			9°38'	126°35'	196	Very productive waters — esp phytoplankton.
Aug	-651								
67									

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#217

Research Vessel VEMA
CRUISE N° 24
CRUISE LEG—From T'ville To Darwin

TIME ZONE -10

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. S	POSITION Long. E	LOG	REMARKS
17 Aug 67	Milli 121	1700		Surface		10°37'	141°17'	195	
16 Aug 67	JN-77	1545	1616			9°33'	145°07'	—	

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Research Vessel VEMA
CRUISE N° 24
CRUISE LEG—From T'ville To Darwin

TIME ZONE Z-10

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. S	POSITION Long. E	LOG	REMARKS
15 Aug 67	Bio 639-644	1456	1516			12°52'	146°12'	194	
15 Aug 67	BT-54	1510	1520	150Fm		12°52'	146°12'	194	
15 Aug 67	Milli 120	1400		Surface		12°52'	146°12'	194	
15 Aug 67	JN-75	1633	1705	35m		12°52'	146°12'	194	
15 Aug 67	JN-76	2202	2234	35m		12°12'	145°24'	—	
16 Aug 1967	Sonobuoy 56	0812	0930			10°30' 10°29'	145°03' 145°04'	—	PitLog 4878.02 Start - 4885.24 End 2 Refractions Ships Speed 6.5 Kts
17 Aug 1967	Dredge #2	1643 Hit	1650 1644	12Fm	15 Fms	10°37'	141°17'	195	Dredge successful containing shells and shell fragments.
17 Aug 67	Bio 645	1616	1641	0-10m		10°37'	141°17'	195	

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#215

Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From TOWNSVILLE To DARWIN

TIME ZONE Z-10

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. S	POSITION Long. E	STD Loc	REMARKS
14 Aug 67	BT-53	1910		150Fm		15°20'	146°15'	193	
15 AUG 67	CORE 184	1405 HIT	1528 1439	1605Fm	1600Fm	12°52'	146°12'	194	alternating color sections of light brown and light gray foraminiferal marl. a light olive gray layer similar in composition to the rest of the core is present between 305-307cm.
15 AUG 67	T-GRAD 148	1405	1528	1605	1600	12°52'	146°12'	194	GOOD RECORD - 4 PROBES H.F. = 1.55 μcal/cm²/sec
15 AUG 67	CORE CAMERA 157					12°52'	146°12'	194	12 EXPOS. CORE HEAD SUNK INTO SEDIMENT — CAUSE: NO FOAMS TOWARDS END.
15 AUG 67	WATER BARREL 79					12°52'	146°12'	194	
15 AUG 67	CAMERA ~~1275~~ 1276	1350:30	1653:55			12°52'	146°12'	194	6 EXPOS. 20 HITS INCORRECT COMP. DUE WEST (210-270°) ADDED A LARGER TRIGGER WEIGHT.
15 AUG 67	NEPHO 131A	1359:30	1658:00			12°52'	146°12'	194	CAMERA DID NOT START. CAUSE UNKNOWN.

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Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From TOWNSVILLE To DARWIN

TIME ZONE Z-10

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. S	POSITION Long. E	LOG	REMARKS
14								193	
AUG	CORE	1615	1725	1178 Fm	1182 Fm.	15°20'	146°15'		Foraminiferal marl varying slightly in
67	183	Hit	1639						composition and containing a compacted
									layer between 162-164 cm.
14		1615	1725	1178	1182	15°20'	146°15'	193	GOOD RECORD - 3 PROBES
AUG	T-GRAD								
67	147								H.F. = 2.20 μcal/cm²/sec
14						15°20'	146°15'	193	
AUG	CORE								
67	CAMERA								
	156								
14						15°20'	146°15'	193	
AUG	WATER								
67	BARREL								
	78								
14						15°20'	146°15'	193	
AUG	CAMERA	1549.45	1728.50						
67	127B								
	127B								
14		1546.33	1735.92			15°20'	146°15'	193	
AUG	NEPHO								
67	130								
14	BIO 633	1620	1920			15°20'	146°15'	193	
AUG	-638								
67									

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Research Vessel VEMA
CRUISE N° 24
CRUISE LEG—From T'ville To T'ville

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TIME ZONE U-24

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. S	POSITION Long. E	LOG	REMARKS
8	Milli 119	1630		Surface				—	
Aug						16°51'	146°05'		
67									

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#212

Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From TOWNSVILLE To TOWNSVILLE

TIME ZONE Z-10

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. S	POSITION Long. E	LOG	REMARKS
7 AUG 67	SRP52 VEMA SHOOT	1233	1706			18°27'	149°00'		
						18°13'	148°08'		
7 AUG 67	CORE 182					17°31'	147°30'	192	
7 AUG 67	T-GRAD 146	2257	2331	731	731	17°31'	147°30'	192	GOOD RELOAD - 3 PROBES H.F. = 2.10 μcal/cm²/sec
7 AUG 67	CORE CAMERA 156					17°31'	147°30'	192	
7 AUG 67	SRP53R VEMA REC'V.	2247	0245			17°31'	147°30'		
8 AUG 67	SRP 53 VEMA SHOOT	0548	0926			17°12'	147°14'		
						16°44'	146°47'		
7 AUG 67	BIO 630-632	2320	0031			17°21'	147°30'	192	

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#211

Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From TOWNSVILLE To TOWNSVILLE

TIME ZONE Z−10

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. S	POSITION Long. E	LOG	REMARKS
AUG	SRP 51R	0732	1236						
6	VEMA					17°39'	149°39'		
67	REC'V								
6	SRP 51	1531	2057			17°35'	149°33'		
AUG	VEMA					17°54'	148°39'		
67	SHOOT								
6	II-21	2336	0120			17°39'	148°38'	—	
Aug									
67									
						18°20'	149°00'	191	
7	CORE								
Aug	181								
67									
						18°20'	149°00'	191	
7	CORE								
Aug	CAMERA								
67	155								
7	BT-51	1145				18°20'	149°00'	191	
Aug									
67									
7	SRP 52R	0615	1045			18°20'	149°00'		
AUG	VEMA								
67	REC'V.								

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PALISADES

#210

Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From TOWNSVILLE To TOWNSVILLE

TIME ZONE Z-10

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. S	POSITION Long. E	LOG	REMARKS
6								190	
Aug	CORE					17°39'	149°39'		
67	CAMERA								
	154								
6	SRP 50	1028	1459			15°49'	148°45'		
Aug	VEMA					16°30'	148°47'		
67	SHOOT								
6	SRP 50R	1632	2124			16°38'	148°46'		
Aug	VEMA								
67	REC'V.								
5	Bio 624-	1619	2004			16°38'	148°46'	—	
Aug	626								
67									
5	BT-49	1930		150Fm		16°38'	148°46'	—	
Aug									
67									
6	Bio 627-	1007	1303			17°39'	149°39'	190	
Aug	629								
67									
6	BT-50	1055		150Fm		17°39'	149°39'	190	
Aug									
67	Milli 118	1915						—	

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Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From TOWNSVILLE To TOWNSVILLE

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TIME ZONE Z-10

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. S	POSITION Long. E	LOG	REMARKS
July 25	SRP40 VEMA SHOOT	1305	1725			14°52'	148°40'		
						15°17'	148°08'		
July 25	SRP40R VEMA RECEIVE	1838	2159			15°17	148°03'		
July 25	SRP41R VEMA RECEIVE	2354	0325			15°17'	148°03'		
July 26	SRP41 VEMA SHOOT	0505	0906			15°14'	147°58'		
						15°39'	147°31'		
July 26	SRP42 Vema shoot	0948	1501			15°46'	147°26'		
						16°19'	146°53'		
July 26	SRP42R Vema Receive	1550	2040			16°20'	146°52'		
July 24	Londbreeg 46	1315	1410			16°19'	157°15'		
						16°29'	150°57'		

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PALISADES

#198

Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From TOWNSVILLE To TOWNSVILLE

TIME ZONE Z-10

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. S	POSITION Long. E	LOG	REMARKS
27	Bio 575-	2100	2144					179	
July	580					14°13'	148°01'		
67									
27	BT 39	2100	2110	150Fm		14°13'	148°01'	179	
July									
67	Mill-113	2030		Surface		14°13'	148°01'	179	
27	JN-72	1601	1634			14°45'	148°04'	—	
July									
67									
28	IR-18	0916	1011			13°31'	146°53'	180	
July	1								
67	Bio 581-	1103	1156			13°31'	146°53'	180	
	586								
	BT- 40	1115	1125			13°31'	146°53'	180	
28						13°31'	146°53'	180	
July	CORE	1052	1202	1195	1200				
	178	HIT	1116	1200					
28						13°31	146°53	180	GOOD RECORD - 4 PROBES
July	T-GRAD								
67	137								H.F. = 1.76 μcal/cm²/sec
28	CORE					13°31'	146°53'	180	
July	CAMERA								
67	144								

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#197

Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From TOWNSVILLE To TOWNSVILLE

TIME ZONE 2—10

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. S	POSITION Long. E	LOG	REMARKS
26		1544	1621	955	955			178	
JULY	T-GRAD					16°20'	146°52'		GOOD RECORD - 3 PROBES
67	136								
									H.F. = 1.64 μcal/cm²/sec
26	BT-37	0325		150 Fm		15°17'	148°03'	177	
July									
67									
26	Bio 572-	1537	1625			16°20'	146°52'	178	
July	574								
67									
26	BT-38	1550				16°20'	146°52'	178	
July									
67	Milli 112	1530		Surface		16°20'	146°52'	178	
27						14°13'	148°01'	179	
July	CORE	2102	2145						
67	169	HIT-21	18						
~~27~~								179	
July	~~T-GRAD~~								
67	~~139~~								
27						14°13'	148°01'	179	
July	CORE								
67	CAMERA								
	143								

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#196

Research Vessel VEMA
CRUISE N° 11-24
CRUISE LEG—From TOWNSVILLE To TOWNSVILLE

TIME ZONE Z-10

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. S	POSITION Long. E	LOG	REMARKS
24	SRP-39	1118	1455						
July	VEMA					16°07'	151°23'		
	SHOOT					16°29'	150°51'		
~~24~~	SRP-39R	1546	1958			16°31'	150°47'		
July	~~VEMA~~								
	~~RECEIVE~~								
25						15°57'	148°03'	177	
July	CORE	1818	1849	610	611				
67	167	HIT	1834	610					
						15°17'	148°03'	177	
25	T-GRAD								GOOD RECORD - 4 PROBES
July	135								
67									H.F. = 1.43 μcal/cm²/sec
						15°17'	148°03'	177	
25									
July	CORE								
67	CAMERA								
	142B								
						16°20'	146°52'	178	
26									
July	CORE								
67	CAMERA								
	142								
26						16°20'	146°52'	178	
July	CORE	1544	1621	955	955				
67	168	HIT	1600	956					

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Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From TOWNSVILLE To TOWNSVILLE

TIME ZONE Z – 10

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. E	LOG	REMARKS
24								176	
July	CORE	1543	1607	416	415	16°31'	150°47'		
67	166	HIT	1554	415					
24						16°31'	150°47'	176	
July	T-ERAD								GOOD RECORD - 4 PROBES
67	134								
									H.F. = 1.44 μcal/cm²/sec
24	Bio 569-	1508	1604			16°31'	150°47'	176	
July	571								
67									
24	BT-36	1550	1600	150 Fm		16°31'	150°47'	176	
July									
67	Milli-111	1530		Surface		16°31'	150°47'	176	
24	IK-17	2040	2132	48 m.		16°31'	150°47'	176	
July									
67									
23	SRP-38	0735	1240			15°02'	153°00'		
July	VEMA					15°30'	152°13'		
	SHOOT								
July	VEMA	1527	2031			15°21'	152°21'		
23	RECEIVE								
	SRP-39R								

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Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From TOWNSVILLE To TOWNSVILLE

TIME ZONE Z—10

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. S	POSITION Long. E	LOG	REMARKS
July	SONOBUOY								
23	44	2218	2350			15°92'	152°18'		
						15°02'	152°16		
July 24	SONOBUOY 45	0009	0135			15°00'	152°17'		
						14°59'	152°23'		
23 July 67	Bio 566 568	1548	1634			15°21'	152°21'	175	
23 July 67	Milli 110	1445		Surface		15°21'	152°21'	175	
	BT 35	1630				15°21'	152°21'	175	
23 July 67	JN-70	1336	1407	35m		15°27'	152°19'	—	
23 July 67	JN-71	2336	0007	35m		15°00'	152°16'	—	
24 July 67	CORE CAMERA 142A					16°31'	150°47'	176	

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Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From TOWNSVILLE To TOWNSVILLE

TIME ZONE Z-10

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat S	POSITION Long E	LOG	REMARKS
22	SRP 37	0613	1256			14°37'	154°34'		
JULY	VEMA					13°55'	~~154°58'~~		
	SHOOT						154°02'		
	SRP-37R	1413	2135			13°52'	153°58'		
	VEMA								
	RECEIVE								
23						15°21'	152°21'	175	
JULY	CORE	1505	1616	2122	2162				
67	165-	HIT 1	642	2165					
						15°21'	152°21'	175	
23	T-GRAD								NO RECORD
JULY	134A								
67									
						15°21'	152°21'	175	
23									
JULY	CORE								
67	CAMERA								
	141								
22	BIO 563-	1556	1627			13°52'	153°58'	174	
July	565								
67									
22	BT- 34					13°52'	153°58'	174	
July									
67	Milli 109					13°51'	153°58'	174	

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Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From TOWNSVILLE To TOWNSVILLE

TIME ZONE Z-10

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. S	POSITION Long. E	LOG	REMARKS
21 July 67	SRP 36	0457	1221			16°30'	153°40'		
	VEMA					15°30'	153°36'		
	SHOOT								
	SRP36R	1312	1800						
	VEMA					15°27'	153°34'		
	RECEIVE								
21 July 67	Bio 560 -562	1415	1500			15°27'	153°34'	173	
21 July 67	BT-33	1400		150Fm		15°27'	153°34'	173	
	Milli 108	1245				15°27'	153°34'	173	
22						13°52'	153°58'	174	
July 67	CORE 164	1612 HIT	1542 1453	2405 2407	—				
22 July 67	T-GRAD 133					13°52'	153°58'	174	GOOD RECORD — 4 PROBES H.F. = 1.78 μcal/cm²/sec
22 July 67	CORE CAMERA 140					13°52'	153°58'	174	

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Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From TOWNSVILLE To TOWNSVILLE

TIME ZONE Z-10

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. S	POSITION Long. E	LOG	REMARKS
20								172	
JULY	CORE					17°22'	152°33'		
67	CAMERA								
	138								
	SRP 34-35	1501	2335			18°38'	150°20'		(Shooting course 090°)
	VEMA					18°32'	150°50'		alteration point
	SHOOT					18°17'	151°28'		(shooting course 075°)
	SRP 35R								
	VEMA								
	RECEIVE					18°12'	151°29'		
20	Bio 559	1617	1647	Surface		17°22'	152°33'	172	
July									
67									
21						15°27'	153°34'	173	
JULY	CORE	1310	1649	2474	2475				
67	163	HIT	1358	2474					
21						15°27'	153°34'	173	GOOD RECORD - 3 PROBES
JULY	T-GRAD								
67	132								H.F. = 1.77 μcal/cm²/sec
21						15°27'	153°34'	173	
JULY	CORE								
67	CAMERA								
	139								

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Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From TOWNSVILLE To TOWNSVILLE

TIME ZONE Z-10

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat S	POSITION Long E	LOG	REMARKS
19								171	
July	CORE	0046	0123	897	894	18°12'	151°27'		Poorly bedded foraminiferal ooze
67	161	HIT	0104	895					with one thin (3 cm) layer of calcareous
									sand
19						18°12'	151°27'	171	NO RECORD
July	T-GRAD								
67	131A								
20	BIO 556-	0035	0226			18°12'	151°27'	171	
July	558								
67									
20	BT-32	0040	0050	≡	150Fm	18°12'	151°27'	171	
July									
67									
20	milli 107	1615	—	Surface		~~18°12'~~	~~151°27'~~	172	
July						17°22'	152°33'		
67									
20						17°22'	152°33'	172	
July	CORE	1613	1645	710	708				
67	162	HIT	1629	709					
20		1614	1645	710	708	17°22'	152°33'	172	GOOD RECORD – 3 PROBES
July	T-GRAD								H.F. = 1.33 μcal/cm²/sec
67	131								

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Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From TOWNSVILLE To TOWNSVILLE

TIME ZONE Z-10

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. S	POSITION Long. E	LOG	REMARKS
18						18°07'	147°36'	160	
July	CORE	1506	1531	535	536				Bedded foraminiferal ooze with one section
67	160	HIT	1516						of interbedded tuffite
18						18°07'	147°36'	160	GOOD RECORD - 2 PROBES
July	T-GRAD								
67	130								
18						18°07'	147°36'	160	
July	CORE								
67	CAMERA								
	136								
18	Bio 553	1500	1530			18°07'	149°26'	170	
July	-555								
67									
18	Milli 106	1500	-	Surface		18°07'	147°36'	170	
July									
67									
18	BT-31	1510		150Fm		18°07'	147°36'	170	
July									
67									
19						18°21'	151°27'	171	
July	CORE								
67	CAMERA								
	137								

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PALISADES

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Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From SUBIC BAY To TOWNSVILLE

TIME ZONE Z-10

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. S	POSITION Long E	LOG	REMARKS
12 July 67	CORE 159	1538 Lit 1553	1610	745 750	752	16°32'	146°24'	169	Bedded brown and olive muds, interbedded with calcarious mash layers. Penetration 981cm, Core length 1224 good core length 429cm. Bottom topography sloping & flat with sloping stratified subbottom?
12 July 67	TGRAD 129	1538	1610	745	752	16°32'	146°24'	169	Good Record - 4 Probes Heat flow = 1.92 μcal/cm²/sec.
12 July 67	CORE CAMERA 135					16°32'	146°24'	169	2 wks. - ORIENTATION POSSIBLE.
12 July 67	Bio 552	1547	1617			16°32'	146°24'	169	
12 July 67	Milli 105	1528		Surface		16°32'	146°24'	169	

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Research Vessel VEMA
CRUISE N° 24
CRUISE LEG—From Subic To Townsville

TIME ZONE Z-10

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. S	POSITION Long E	LOG	REMARKS
11 July 67	Bio 548-549	2226	2321			14°37'	147°54'	167	
11 July 67	Milli 104	2215		Surface		14°37'	147°54'	167	
12 July 67	IR-16	0810	0911			15°53'	146°54'	168	Little sound scattering; scant sample
12 July 67	Core 158	0940 w.t. 0957	1018	933 940	937	15°53'	146°54'	168	Dotted foram ooze. Penetration 1318cm core length 1109cm good core 700. Bottom topography hilly, sloping with stratified sloping subbottom
12 July 67	T-Grad 128	0940	1018	933	937	15°53'	146°54'	168	Good Record 3 Probes Heat Flow = 2.10 μcal/cm²/sec 5 Incl. NO ORIENTATION.
12 July 67	Core Camera 134					15°53'	146°54'	168	
12 July 67	Bio 550-551	1008	1032			15°53'	146°54'	168	
	BT-30	1025				15°53'	146°54'	168	

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Research Vessel VEMA
CRUISE N° 24
CRUISE LEG—From Sutoie To Townsville

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TIME ZONE Z-10

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat S	POSITION Long. E	LOG	REMARKS
11 July 67	BT 29	1000	1010	150Fm		13°49'	149°46'	166	
11 July 67	JN 68	1749	1826	19Fm		14°28'	148°25'	—	
11 July 67	JN-69	1932	2003	19Fm		14°40'	148°42'	—	
10 June 67	Sono Buoy 43	1453	—			12°08'	15°07'		
11 July 67	CORE 157	2213 Lid 2247	2309	645 648	650	14°57'	147°54'	167	Bottom topography flat, sloping with flat sloping stratified subbottom.
11 July 67	T-GRAD 127	2231	2301	645	650	14°57'	147°57'	167	GOOD RECORD - 3 PROBES H.F. = 1.72 μcal/cm²/sec
11 July 67	CORE CAMERA 133	2231	2301			14°57'	147°54'	167	8 DEG. NO ORIENTATION.

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Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From SUBIC BAY To TOWNSVILLE

TIME ZONE Z-10

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. S	POSITION Long. E	LOG	REMARKS
10								165	Extensively interbedded sediment composed of
July	CORE	2301	2345±	2423	2422	12°52'	150°12'		six distinct lithologies Penetration 1320,
67	155	hit	2356	2424					core length 1266, good core 1064cm. Bottom
									topography flat, with highly stratified undulating
									subbottom. + Time zone change Z-11 to Z-10
10		2301	2345	2423	2422	12°52'	150°12'	165	GOOD RECORD - 3 PROBES
July	T-GRAD								
67	125								H.F. = 2.0 μcal/cm²/sec
11						12°49	149°04	166	Extensively interbedded lutite calcareous sand
July	CORE	0919	1128	2405	2403				and detrital sand. Penetration 1433cm
67	156	hit?		2403					core length 1166 good core length 1166.
									Bottom topography flat. Depth recorder on winch
									broke down, hit not observed, excess wire paid out.
11		0919	1128	2405	2403	12°49	149°04	166	
July	T-GRAD								GOOD RECORD - 3 PROBES
67	126								
									H.F. = 1.50 μcal/cm²/sec
11		0919	1128			12°49	149°04'	166	38 NO ORIENTATION
July	CAMERA								
67	132								
10	Bio 541-	2320	0032			12°52	150°12'	165	
July	542								
67									
11	Bio 543	0937	1204			12°49'	149°04'	166	
July	547								
67									

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Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From SUBIC BAY To TOWNSVILLE

#184
TIME ZONE Z-11

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. S	POSITION Long. E	LOG	REMARKS
10								164	Light brown lutite overlying a bedded olive lutite
July	CORE	1128	1334	2258	2260	12°03'	151°14'		containing shell hash layers. Penetration 13'5
67	154	hit 12'5		2255					core length 1190cm, good core length 908cm
									Bottom topography sloping, slightly hilly
									with stratified subbottom. Partially buried core head
10		1128	1334	2258	2260	12°03'	151°14'	164	
July	T-GRAD								GOOD RECORD - 2 PROBES
67	124								
10						12°03'	151°14'	164	24 wire NO ORIENT.
July	CORE	1128	1334						
67	CAMERA								
	129								
10	BID 536-	1131	1247			12°03'	151°14'	164	
July	540								
67									
10	BT 28	1200	1210	150 Fm.		12°03'	151°14'	164	
July									
	Milli 103	1115		Surface		12°03'	151°14'	164	
10	JN-67	1633	1703			12°16'	150°57'	—	
July									
67									
10						12°52'	150°12'	165	330 deg. ORIENTATION POSSIBLE
July	CORE	2103	2345						
67	CAMERA								
	130								

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Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From SUBIC BAY To TOWNSVILLE

TIME ZONE Z-11

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. S	POSITION Long E	LOG	REMARKS
6 July 67	BT 26	1145			~~3478'~~	3°98'	153°32'	162	
	BT 27	2330			~~4420'~~	4°30'	153°28'	163	
7 July 67	BIO 531-535	2312	0039			4°30'	153°28'	163	
6 July 67	SRP 32 VEMA Shoot	0455	0752			2°56' 3°13'	154°08' 153° 41'		
6 July 67	SRP 32R VEMA REC	1035	1324			3°18'	153°32'		
6 July 67	SRP 33 VEMA REC	2251	0240			4°30'	153°28'		
	SRP 33R VEMA Shoot	0413				4°34' 5°17'	153°27' 153°46'		

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Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From SUBIC BAY To TOWNSVILLE

TIME ZONE Z-11

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. S	POSITION Long. E	LOG	REMARKS
6		0918	1019	1327	1293			162	Indurated and bedded light gray and
July	CORE	hit	0945	1293		3°18'	153°22'		pale orange lutites. Penetration 326 cm,
67	152								core length & good core length 345'. Bottom
									topography hilly with hilly subbottom.
									Bottom pipe bent in middle app 25°
6		0918	1019	1327	1293	3°18'	153°32'	162	GOOD RECORD - 1 PROBE
July	T-GRAD								
67	122								H.F. = 2.24 μcal/cm²/sec
6						4°30'	153°28'	163	Olive lutites interbedded with black sand layers.
July	CORE	2310	0956	2194	2189				Penetration 351cm core length 457 cm, good
67	153	hit	2355	2190					core length 238cm. Bottom topography hilly,
									sloping with stratified sloping subbottom.
									Bottom pipe bent in middle app 30°
6						4°30'	153°28'	163	
July	T-GRAD	2310	0055	2194	2189				Good Record - 2 probes
67	123								
									Heat flow = 2.02 μcal/cm²/sec
6						4°30'	153°28'	163	34 NEG. ORIENTATION LOSS.
July	CORE	2310	0055						
67	CAMERA								
	129								
6	BIO 529-	1055	1214			3°18'	153°32'	162	
July	530								
67									
6	MILL 102	1400				3°18'	153°22'	162	
July									
67									

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PALISADES

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Research Vessel VEMA
CRUISE N° 1-24
CRUISE LEG—From SUBIC BAY To TOWNSVILLE

TIME ZONE Z-11

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. S	POSITION Long. E	LOG	REMARKS
4 JULY	SONABOUY 41	1442	—			10°14'	157°27'		
4 JULY	SONABOUY 42	1618	—			1°24'	157°28'		
4 JULY	SRP 30	1845	2216			1°28'	157°25'		1903 close aboard
	VEMA					1°40'	156°53'		
	SHOOT								
4-5 JULY	SRP 30R	2355	0345 5 JULY			1°41'	156°49'		
	VEMA								
	REC.								
5 JULY	SRP 31	1240	1637			2°10'	155°42'		
	VEMA					2°25'	155°02'		
	SHOOT								
5 JULY	SRP 31R	1750	2245			2°25'	154°57'		
	VEMA								
	REC								
6 JULY								162	CAMERA DIDNT START.
6	CORE					3°18'	153°32'		
	CAMERA								
	1294								

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PALISADES

#180

Research Vessel VEMA
CRUISE N° 24
CRUISE LEG—From Subic To Townsville

TIME ZONE Z-11

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. S	POSITION Long. E	LOG	REMARKS
5 July 67	CORE 151	1746	1859	1384	1390			161	Bedded globogerina ooze. Penetration 852 core length 1153cm Recovered core length 856. Bottom topography gently sloping, slightly hilly with lightly stratified undulating sub bottom.
		HIT	1816		1390	2°25'	154°57'		
5 July 67	T-GRAD 121	1746	1859	1384	1390	2°25'	154°57'	161	GOOD - RECORD - 3 PROBES H.F. = 1.10 μcal/cm²/sec
5 July 67	CORE CAMERA 128	1746	1859			2°25'	154°57'	161	1 INCH. BAD RESULTS. CAMERA STARTED THEN STOPED. CLEANED BRUSHES. NO ORIENTATION.
5 July 67	Bio 524 528	1734	1853	~~1853~~		2°25'	154°57'	161	
5 July 67	BT-25	1815		150 Fm		2°25'	154°57'	161	
4 July 67	SONOBUOY 39	1109	-			0°53'	157°26'		
4 JULY	SONOBUOY 40	1258	-			1°04'	157°26'		

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#179

Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From SABIC BAY To TOWNSVILLE

TIME ZONE Z-11

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. S	POSITION Long. E	LOG	REMARKS
4		2328	0010					159	14 hyd. ORIENTATION. POSS.
July	CORE					1°41'	156°49'		
67	CAMERA								
	126								
5								160	Redded globogerina ooze. Penetration 1221
July	CORE	1138	1215	993	992	2°12'	153°42'		core length 833cm, good core 650cm
67	150	hit	1155	993					Bottom topography flat with highly
									stratified undulating subbottom.
5								160	
July	T-GRAD	1138	1215	993	992	2°12'	153°42		Good Record - 4 probes
67	120								
									Heat flow = 0.45 4 cal/cm²/sec
						2°12'	153°42	160	HWEG. ORIENTATION. OK.
5	CORE	1138	1215						
July	CAMERA								
67	126								
4	Bio 521	2316	0035			1°41'	156°49'	159	
July	522								
67									
	BT-23	2330				1°41'	156°49'	159	
5	Bio 523	1154	1225					160	
July						2°12'	155°42'		
67									
	BT-24	1200				2°12'	155°42'	160	
5	Milli 101	1245		Surface				160	
July						2°12'	155°42'		
67									

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PALISADES

#178

Research Vessel VEMA
CRUISE N° 24
CRUISE LEG—From Subic To Townsville

TIME ZONE Z-10

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. S	POSITION Long. E	LOG	REMARKS
3 July 67	JN-65	2030	2103			0°00'	155°42'	—	
4 July 67	CORE 148	0947	1020	1023	1023	0°50'	157°22'	158	Bedded globogerina ooze Penetration 1260cm. core length 1023cm. Good core length 823. Bottom topography flat with highly stratified undulating subbottom.
		hit 1002		1023					
4 July 67	T-GRAD 118	0947	1020	1023	1023	0°50'	157°22'	158	Good Record - 4 Probes Heat flow = 0.78 μcal/cm²/sec.
4 July 67	CORE CAMERA 125	0947	1020			0°50'	157°22'	158	6 wet. No Orientation.
4 July 67	JN-66	1300	1330			1°05'	157°27'	—	
4 July 67	CORE 149	2328	0010	889	890	1°41'	156°49'	159	Bedded g/globogerina ooze. Penetration 1265 core length 982 good core 770cm. Bottom topography flat with highly stratified undulating subbottom.
		hit 2352		890					
4 July 67	T-GRAD 119	2328	0010	889	890	1°41'	156°49'	159	Good Record 4 probes Heat flow = 0.72 μcal/cm²/sec.

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#177

Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From SUBIC BAY To TOWNSVILLE

TIME ZONE Z - 10

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. E	LOG	REMARKS
2								157	Stratified brown lutite containing two small white layers. Penetration 1257 cm, core of good core length 1246 cm. Bottom topography moderately hilly with a highly stratified underlying subbottom
July 67	CORE 147	1113	1321	2615	2617	1°40'	151°25'		
		hit	1207	2614					
2 July 67	F GRAD 117	1113	1321	2615	2617	1°40'	151°25'	157	Good Record 4 probes Heat Flow = 1.52 μ cal/cm²/sec
2 July 67	CORE CAMERA 124	1113	1321			1°40'	151°25'	157	41 nec. ORIENTATION. Poss.
2 July 67	Bio 519 520	1135	1245			1°40'	151°25'	157	
2 July 67	Mill 100	1330				1°46'	151°25'	157	
	BT 22	1145	1155			1°40'	157°25'	157	
2 July 67	JN 64	1630	1700			1°25'	151°30'	—	
1 July 67	JN-63	1331	1403			1°40'	148°03'	—	

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#176

Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From SUBIC BAY To TOWNSVILLE

TIME ZONE Z-10

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. E	LOG	REMARKS
30								156	Extensively bedded and burrowed brown lutites.
June	CORE	1235	1421	2405	2410	1°50'	144°53'		Penetration 1220cm core & good core length 1091.
67	146	L.t	R320	2410					Bottom topography hilly, sloping with highly
									stratified undulating subbottom.
30								156	
June	T-GRAD	1235	1421	2405	2410	1°50'	144°53'		Good Record 4 probes
67	116								
									Heat Flow = 0.24 μ cal/cm²/sec
30								156	33 wet. NO ORIENTATION.
June	CORE	1235	1421			1°50'	144°53'		
67	CAMERA								
	123								
30	Bio 514-	1305	1420					156	
June	518					1°50'	144°53'		
67									
30	Milli 99	1230		Surface		1°50'	144°53'	156	
June									
67	BT 21	1300	1310	150 Fm		1°50'	144°53'	156	
30	SRP 28	1720	2152			1°48'	144°56'		END-TO-END UNREVERSED
J	VEMA					1°46'	145°39'		PROFILES
U	Shoot								
N									— TOSHI MARU RECEIVING —
E									
30-	~~2155~~	2155	0241			1°46'	145°39'		
J	SRP 29					1°48'	146°14'		
U	VEMA								
L	Shoot								
Y									

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#175

Research Vessel VEMA
CRUISE N° 24
CRUISE LEG—From Subic To Townsville

TIME ZONE Z-10

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. E	LOG	REMARKS
29	Bio 509	2319	0132			10 49'	143 36'	155	
+30	-513								
June									
67									
29	BT 20	2315	2325			10 49'	143 36'	155	
June									
67									
29	SRP25R	0600	0903			1°53'	142°23'		
J	VEMA								
U	REC								
N									
E									
29	SRP26	0906	1322			1°53'	142°23'		
J	VEMA								
U	REC								
N									
E									
29	SRP 26R	1428	1801			1°53'	142°26'		
J	VEMA					1°53'	143°00'		
U	SHOOT								
N									
E									
29	SRP 27	1804	2145			1°53'	143°00'		
J	VEMA					1°51'	143°36'		
U	Shoot								
N									
E									
29	SRP27R	2250	0334			1°49'	143°36'		
30	VEMA								
J	REC								
U									
N									
E									

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Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From SUBIC BAY To TOWNSVILLE

#174
TIME ZONE Z-9

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. E	LOG	REMARKS
29								154	Brown lutites overlying a stratified olive lutite. Penetration 849 core length 1184
June 67	CORE 144	0848	1017	1698	1690	1°53'	142°23'		good core length 694cm. Bottom topography hilly sloping with sloping highly stratified undulating sub bottom.
		Lit	0926	1695					
29								154	
June 67	T-GRAD 114	0848	1017	1698	1690	1°53'	142°23'		Good Record 3 probes
									Heat flow = 2.64 μ cal/cm²/sec
29 June 67	Bio 504-508	0943	1120			1°53'	142°23'	154	
29 June 67	Milli 98	1430		Surface		1°53'	142°23'	154	
	BT 19	0915	0925	150Fm		1°53'	142°23'	154	
29						1°49'	143°36'	155	Bedded and interbedded brown and olive lutites
June 67	CORE 145	2242	0134	2290	2282				Containing mostly broken foram tests. Penetration 1240cm
		Lit	2333	2287					Core length & good core length 1022. Bottom topography Flat and hilly with highly stratified undulating subbottom. Time zone change Z-9 to Z-10
29						1°49'	143°36'	155	
June 67	T-GRAD 115	2242	0134	2290	2282				Good Record 3 probes
									Heat flow = 2.86 μ cal/cm²/sec
									Time zone change Z-9 to Z-10
29	~~WATER~~					1°49'	143°36'	155	
June 67	BA' CORE CAMERA 122	2242	0134						25 NO ORIENTATION.

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#173

Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From SUBIC BAY To TOWNSVILLE

TIME ZONE Z-9

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. E	LOG	REMARKS
28	SRP 23	0802	1145						
JUNE	VEMA					2°19'	140°32'		
67	SHOOT					2°08'	141°16'		
28	SRP 23R	1305	1752			2° 04'	141°18'		
JUNE	VEMA								
67	REC								
28	SRP 24	1755	2042			2°04'	141°18'		
JUNE	VEMA								
67	REC								
28	SRP 24R	2203	0053			1°59'	141°20'		
JUNE	VEMA					1°56'	141°49'		
67	SHOOT								
29									
29	SRP 25	0056	0414			1°56'	141°49'		
JUNE	VEMA	—				1°54'	142°23'		
67	SHOOT								
29								154	
JUNE	WATER	0848	1017.			1°52'	142°23'		DISCARDED.
67	BARREL 77								
29	CORE	0848	1017			1°52'	142°23'	154	27 NEG. ORIENTATION POSS.
JUNE	CAMERA								
67	121								

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#172

Research Vessel VEMA
CRUISE N° 1-24
CRUISE LEG—From SUBIC BAY To TOWNSVILLE

TIME ZONE Z-9

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. E	LOG	REMARKS
28								153	
JUNE 67	CAMERA 127A					2°04'	141°18'		LOST CAMERA. WIRE PARTED AT DRUM. SUSPECT FAULTY WIRE. IT WAS TESTED BEFORE BEING
28 JUNE 67	NEPHO 130A					2°04'	141°18'	153	PUT ON AT 3600 lb. AFTER LOSS OF CAMERA. RETESTED. 1400 lb. ATTENUATOR SHOWED 900 - 1000 lb. WHEN SHE BROKE.
27 JUNE	SRP 21 VEMA SHOOT	0341	0755			2°36' 2°54'	137°44' 138°25'		
27 JUNE	SRP21R VEMA REC	0905	1240			2°52'	138°28'		
27 JUNE 28	SRP22 VEMA ~~SHOOT~~ REC	2353	0306			2°28'	139°58'		
28 JUNE	SRP22R VEMA ~~SHOOT~~? SHOOT	0430	0800			2°28' 2°19'	140° 02' 140°37'		
28 June 67	Bio 502-503	1304	1354			2°04'	141°18'	153	
	BT 18	1310							

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Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From SUBIC BAY To TOWNSVILLE

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TIME ZONE Z-9

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. E	LOG	REMARKS
28 June 67	Bio 499-501	0003	0127			2°30'	139°38'	152	
28 June 67	Mill 97	0345		Surface		2°30'	139°38'	152	
27 June 67	BT 17	2345	2355	Surface		2°30'	139°38'	152	
								153	Bedded brown and olive lutites containing a diatomaceous ooze layer. Penetration 967cm core length 1028° good core 740cm. Bottom topography moderately hilly, sloping with highly stratified sloping subbottom.
28 June 67	CORE 143	1315	1424	1710	1712	2°04'	141°18'		
		lit 1345		1708					
						2°04'	141°18'	153	
28 June 67	T-GRAD 113	1315	1424	1710	1712				Good Record 4 probes
									Heat flow = 2.04 μcal/cm²/sec
28 June 67	WATER BARREL 76	1315	1424			2°04'	141°18'	153	OK SAMPLE CENTRIFUGED.
28 June 67	CORE CAMERA 120	1315	1424			2°04'	141°18'	153	15 ORIENTATION. POSS.

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PALISADES

#170

Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From SUBIC BAY To TOWNSVILLE

TIME ZONE Z-9

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. E	LOG	REMARKS
27 June 67	JN 62	1733	1802			2°42'	139°12'	—	
27 June 67	CORE 142	2330 hit	0125 0019	2250	2237 2251	2°30'	139°38'	152	Stratified and interbedded olive and brown lutites containing diatom-rich ooze layers. Penetration 1306 cm, core length 1138 cm, good core 1120 cm. Bottom topography moderately hilly with highly stratified undulating sub bottom.
27 June 67	T-GRAD 112	2330	0125	2250	2237	2°30'	139°38'	152	Good Record 3 probes Heat flow = 2.44 μ cal/cm²/sec
27 June 67	CORE CAMERA 119	2330	0125			2°30'	139°38'	152	40 exp. No ORIENTATION.
27 June 67	WATER BARREL 76A	2330	0125			2°30'	139°38'	152	Water sample centrifuged
27 June 67	CAMERA 126	0025	0311			2°30'	139°38'	152	~~40 exp.~~ NO ORIENTATION. 19 exp. Numerous + distinct trails. Very clear + interesting.
27 June 67	NEPHO 129	0022	0315			2°30'	139°38'	152	0 no layer.

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PALISADES

#169

Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From SUBIC BAY To TOWNSVILLE

TIME ZONE Z-9

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. E	LOG	REMARKS
27								151	Interbedded light brown and olive lutites overlying a moderately stratified light brown lutite.
JUNE 67	CORE 141	0850 lift	0937	2337	2336	2°52'	138°28'		Penetration 13/2cm. core length 1245 good core 1100 cm. Bottom topography slightly hilly, rolling with highly stratified undulating subbottom.
27								151	
JUNE 67	T-GRAD 111	0850	1037	2337	2338	2°52'	138°28'		Good Record - 4 probes
									Heat flow = 2.54 4 cal/cm²/sec
27						2°52'	138°28'	151	
JUNE 67	WATER BARREL 75	0850	1037						Sample ~~centrifuged~~ discarded
27						2°52'	138°28'	151	119A - pin not pulled.
JUNE 67	CORE CAMERA 119A	0850	1037						
27						2°52'	138°28'	151	14 NGG. 15 hits
JUNE 67	CAMERA 125	0836	1058						Sediment. Numerous trails + impressions of bottom life. Sediment cloud from previous hits.
27						2°52'	138°28'	151	
JUNE 67	NEPHO 128	0831	1101.						O no rays.
27	Bio 496-	0940	1121			2°52'	138°28'	151	
June 67	428								

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Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From SUBIC BAY To TOWNSVILLE

TIME ZONE Z-9

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. E	LOG	REMARKS
26 June 67	CAMERA 124	1053	1314			3°04'	135°33'	150	Dweet. 20 Hits. Sediment - Bottom life trails. (camera leakage - film light struck in 2 places.)
26 June 67	NEPHO 127	1042	1324			3°04'	135°33'	150	1 Layer. Light opens to surface.
25 June 67	Bio 489-490	1414	1540	Surface		3°31'	132°36'	149	
25 June 67	JN-60	1301	1333	19Fm	19Fm	3°31'	132°21'	—	
26 June 67	Milli 96	1430		Surface		3°04'	135°33'	150	
67	BT 15	1100	1110	150Fm		3°04'	135°33'	150	
26 June 67	Bio 491 495	1135	1255			3°04'	135°33'	150	
26 June 67	JN 61	1432	1504			3°04'	135°33'	150	

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Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From SUBIC BAY To TOWNSVILLE

TIME ZONE Z-9

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. E	LOG	REMARKS
25								149	
JUNE 67	CORE CAMERA 117	1408	1510			03°31'	132°26'		18 mg. Excellent Orintation.
25 JUNE 67	CAMERA 123	1355	1539			03°31'	132°26'	149	19 Feb. 20 Hits. Sediment. Small rocks or bottom life. Plant Utes bottom life present.
25 JUNE 67	NEPHO 126	1339	1543.			03°36'	132°26'	149	Reading to surface.
26 JUNE 67	CORE 140	1107 hit	1317 1191	2382	2372. 2378	03°04'	135°33'	150	Dark gray cuttings overlying a green olivine both firm dry and compact having a low coarse fraction. Penetration 1048' good core 43cm. Bottom topography sloping moderately hilly, undulating bottom. Mass sample failed to activate trigger due to frayed wire.
26 JUNE 67	T-GRAD 110	1107	1317	2382	2372	03°04'	135°33'	150	GOOD RECORD - 4 PROBES H.F. = 1.90 μcal/cm²/sec
26 JUNE 67	CORE CAMERA 118	1107	1317.			03°04'	135°33'	150	50 mg. Orientation Poss.
26 JUNE 67	WATER BARREL 75A					03°04'	135°23'	150	No sample.

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Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From SUBIC BAY To TOWNSVILLE

#166
TIME ZONE Z-9

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. E	LOG	REMARKS
24 June 67	JN 58	1330	1400			03°41'	128°40'	—	
24 June 67	JN 59	1833	1904			12°59'	129°20'	—	
23 JUNE	SRP 20	2353	0318			03°01	123°29'		
	VEMA SHOOT					02°44	123°42'		
23 JUNE	SRP 20R	0420	0746			02°42	123°47'		
	VEMA REC								
25 JUNE 67	CORE 139	1408 Lat	1510 1435	1795 1792	1790	03°31'	132°26'	149	Light brown lutite overlying an olive lutite both having a high foram content. Penetration 970? core length 1116 good core 11/6. Bottom topography very emerald volcanic peaks with stratified sediment covering most of bottom
25 JUNE 67	T-GRAD 109	1408	1510	1795 B	1790	03°31	132°26'	149	GOOD RECORD - 3 PROBES H.F = 0.35 μcal/cm²/sec
25 JUNE 67	WATER BARREL 74	1408	1510			03°31'	132°26'	149	Sample Centrifuged

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#165

Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From SUBIC BAY To TOWNSVILLE

TIME ZONE Z-8

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. E	LOG	REMARKS
23								148	
June 67	NEPAC 125	0422	0721			02°42'	123°47'		Layer to surface.
22	Bio 480-	1255	1434					147	
June	484					03°47'	122°59'		
67									
	BT 13	1300						147	
						03°47'	122°59'		
23	Bio 485-	0457	0625					148	
June	488					02°42'	123°47'		
67									
23	BT 14	0400						148	
June						02°42'	123°47'		
67									
23	Milli 95	1300						—	
June						02°40'	124°33'		
67									
23	JN 57	1402	1433			02°40'	124°44'	—	
June						12°39'	124°50'		
67									

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Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From SUBIC BAY To TOWNSVILLE

164

TIME ZONE Z-8

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. E	LOG	REMARKS
22	SRP 19	0701	1150						
JUNE	VEMA					04°24'	122°41'		
67	SHOOT					03°47'	122°59'		
	SRP 19R	1250	1657						
	VEMA					03°47'	122°59'		
	REC.								
23								148	Brown lutite overlying an olive lutite turbe-
JUNE	CORE	0448	0654	2575	2566	02°42'	123°47'		bedded with volcanic ash layers. Penetration
67	138	Lift	0535	2570					979cm, Core length 1020cm, good core 724cm.
									Bottom topography slightly hilly with lightly
									stratified undulating subbottom.
23								148	GOOD RECORD - 2 PROBES
JUNE	T-GRAD	0448	0654	2575	2566	02°42'	123°47'		
67	108								H.F. = 1.79 μcal/cm²/sec
23								148	
JUNE	WATER	0448	0654			02°42'	123°47'		Sample centrifuged
67	BARREL								
	73								
23								148	1.3mg. No orientation
JUNE	CORE	0448	0654			02°42'	123°47'		
67	CAMERA								
	116								
23								148	19 rev. 20 hits Excessive amount of bottom
JUNE	CAMERA	0427	2040			02°42'	123°47'		life.
67	122								

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Research Vessel VEMA
CRUISE N° VE24
CRUISE LEG—From SUBIC BAY To TOWNSVILLE

#163 TIME ZONE Z-8

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. E	LOG	REMARKS
21 June 67	Milli 94 BT 12	0900 2100		Surface		05°17'	122°18'	146	
22 June 67	CORE 137	1312 Lit	1517 1356	2652	2652 2652	03°47'	122°59'	147	Bedded brown and olive lutites interbedded with volcanic ash layers Penetration 1172cm core length 1020cm, good core length 1020cm. Bottom topography flat with highly stratified undulating subbottom. Partial self retention for bottom pipe.
22 June 67	T-GRAD 107	1312 Lit	1517	2652	2652	03°47'	122°59'	147	GOOD RECORD - 2 PROBES H.F. = 1.93 μcal/cm²/sec
22 June 67	WATER BARREL 73C	1312	1517			03°47'	122°59'	147	Sample discarded
22 June 67	CORE CAMERA 115	1312	1517.			03°47'	122°59'	147	36mg. Sediment - worm like bottom life.
22 June 67	CAMERA 121					03°47'	122°59'	147	Over. 11 hits. Sediment worm like bottom life.
22 June 67	NEPHO 125A					03°47'	122°59'	147	

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#162

Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From SUBIC BAY To MANILA

TIME ZONE Z-8

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. E	LOG	REMARKS
21								146	19 wet 20 kits.
JUNE 67	CAMERA 120	2058	2316			05°17'	122°18'		Sediment small worm type. Ecotor life.
21						05°17'	122°18'	146	Apears to surface.
JUNE 67	NEPHO 124	—	2323.						
21	SRP 17	0152.	0418			06°42'	120°61'		Thanks to H.C.K for fine
JUNE	VEMA SHOOT					06°24'	121°32'		piece of navigation on this one!!
21	SRP17R	0740	0950			06°47'	121°39'		
JUNE	VEMA REC								
21	SRP18	1444	1905			05°48'	122°05'		Reversed course about 40 min
JUNE	VEMA SHOOT					05°10'	122°23'		after last shot (1905) before stopping
21	SRP18R	2045	2338			05°17'	122°18'		
JUNE	VEMA REC								
21 June 67	Bio 475-479	2111	2221			05°17'	122°18'	146	

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#161

Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From SUBIC BAY To TOWNSVILLE

TIME ZONE Z-8

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. E	LOG	REMARKS
21								145	Core contained a piece of a bryozoan, a broken
J						06°17'	121°29'		pelecypod shell and a broken gastropod shell.
u	Core 136	1051	1054	20	24				No trigger weight core penetration indeterminable,
n		10.52 (L.T.)		23					Bottom topography - jagged & irregular. Bottom
e									pipe bent at 15° three feet from cutting edge
20	Bio. 469-	1528	1900			07°21'	120°31'	144	
June	474								
67									
20	Milli 93	1930	—	Surface		07°21'	120°21'	144	
June									
67	BT 11	1600	1610						
21								146	Brown lutite overlying a bedded and in places lightly
JUNE	CORE	2112	2302	2368	2359	05°17'	122°18'		stratified olive lutite containing volcanic ash layers
67	136	Lit 2159		2360					Penetration 1257cm. Core length 1160cm. good core
									length 962cm. Bottom topography slightly hilly
									containing small peak
21								146	
JUNE	T-GRAD	2112	2302	2368	2359	05°17'	122°18'		GOOD RECORD - 4 PROBES
67	106								
									H.F. = 1.74 μcal/cm²/sec
21						05°17'	122°18'	146	
JUNE	WATER	2112	2302						Sample discarded
67	BARREL								
	73B								
21						05°17'	122°18'	146	.35 mg. Orenti Poss.
JUNE	CORE	2112	2302						
67	CAMERA								
	114								

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#160

Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From SUBIC BAY To TOWNSVILLE

TIME ZONE Z-8

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. E	LOG	REMARKS
20								144	Grayish orange ooze overlying a pale olive
JUNE	CORE	1539	1720	2240	2240	07°21'	120°31'		ooze both containing predominantly
67	135	to	1619	2240					globogerina forams. Penetration 1189cm
									core length 1104cm good core 1000cm. Bottom topography
									slightly hilly with highly stratified undulating sub bottom
20								144	GOOD RECORD - 3 PROBES
JUNE	T-GRAD	1539	1720	2240	2240	07°21	120°31'		
67	105								H.F. = 2.38 μcal/cm²/sec
20						07°21	120°31'	144	
JUNE	WATER	1539	1720						Sample discarded
67	BARREL								
	73A								
20						07°21	120°31'	144	
JUNE	CORE	1539	1720						Pin not pulled.
67	CAMERA								
	114A								
20	SPR 16	0835	1336			07°45	120°07'		
J	VEMA					07°28	120°24'		
U	SHOOT								
N									
E									
20	SRP 16R	1507	1823			07°21'	120°31'		
J	VEMA								
U	REC.								
N									
E									
21									
J	Core	1051	—			06°17	121°29'	145	Pin not Pulled.
u	Camera								
n	114B								
e									

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#159

Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From SUBIC BAY To TOWNSVILLE

TIME ZONE Z-8

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. E	LOG	REMARKS
19 JUNE	SRP 15	1407	1817			09°31'	119°09'		
						08°53'	119°14'		
19 JUNE	SRP 15R	1955	2328			08°56'	119°14'		
19 June 67	JN 56	0904	0934	20 Fm		09°52' 08°50'	119°49' 119°46'	—	
19 June 67	Bio 466 468	2100	0000			08°50'	119°14'	143	
	BT 10	2100	2110	150 Fm		08°50'	119°14'	143	
~~20~~ June 67	Mill 92 ~~BT 10~~	0015	0015	Surface		08°50'	119°14'	143	
20 June 67	CAMERA 119	1513	1740			07°21'	120°31'	144	19 neb. 20 hits. Coral present. - sediment.
20 June 67	NEPHO 123	1508	1743			07°21'	120°31'	144	Apears to surface.

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#158

Research Vessel VEMA
CRUISE N° 24
CRUISE LEG—From Subic Bay To Townsville

TIME ZONE Z-8

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. E	LOG	REMARKS
18 June 67	JN-55	1916	1946	U/W	20Fm	11°44'	120°38'	—	
						11°39'	120°38'		
19 JUNE 67	CORE 134	1951 (bit)2015	2035	1070	1070	08°50'	119°14'	143	Small brown lutite layer overlying a faintly stratified olive lutite. Penetration 1357+ core length 1166 good core 1010cm. Bottom topography flat with highly stratified slightly dipping subbottom. +Buried half of core head
				1070					
19 JUNE 67	T-GRAD 105A	1954	2035	1070	1070	08°50'	119°14'	143	
19 JUNE 67	WATER BARREL 72	1954	2035			08°50'	119°14'	143	Sample centrifuged
19 JUNE 67	CORE CAMERA 113	1954	2035			08°50'	119°14'	143	9 neg. Possible Orientalo
19 JUNE 67	CAMERA 118	1932	2105			08°50'	119°14'	143	19 neg 20 hits. slight mounding of sediment. Bottom life present. Possible Rock. No. 4.
19 JUNE 67	NEPHO C22	1924	2107			08°50'	119°14'	143	Copies to surface.

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#158

Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From SUBIC BAY To MANILA

TIME ZONE Z-8

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. E	LOG	REMARKS
10	SAP 14	0807	1141			19°01'	119°03'		
J	VEMA					18°34'	118°53'		
O	SHOOT								
W									
E									
10	SRP 14R	1246	1600			18°33'	118°55'		
J	VEMA								
W	REC								
E									
10	BIO 461-	1313	1435					142	
June	465								
67									
10	BT 9	1330	1340	150Fm				142	
June									
67	Milli 91	1600							
10	JN 54	1731	1803					142	
June									
67									
67	JN 53	1819		20Fm				138	These entries made earlier in log, but were improperly deleted
June									
67	BT-6	2040		150Fm					
7+8	BIO 446-	2023	0018					138	
June	450								
67									
	Milli 88	0045		Surface					

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Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From SUBIC BAY To MANILA

#157 TIME ZONE Z-8

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. E	LOG	REMARKS
10								142	30 WEB- NO ORIENTATION.
JUNE	CORE					18°33'	118°55'		
67	CAMERA								
	112								
						18°33'	118°55'	142	19 WEB 20 HITS, - SEDIMENT - TRAILS
10	CAMERA	1249	1521						SCARCE - LARGE MOUNDINGS (3) SMALL
JUNE	117								MOUNDING & BOTTOM LIKE NOW
67									
						18°33'	118°55'	142	LAYER TO SURFACE.
10									
JUNE	NEPHO	1239	1527						
67	121								
						17°32'	118°59'		
9	SRP 12	0733	1054						
J	VEMA								
U	REC								
E									
9	SRP 12R	1236	~~1602~~ 2004			17°39	119°02'		
J	VEMA					18°08'	119°17'		
U	SHOOT								
N									
E									
	SRP 13	1605	2004			18°08'	119°17'		
	VEMA					18°43'	119°27'		
	SHOOT								
	SRP 13R	2130	0038			18°47'	119°30'		
	VEMA								
	REC								
	-								

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Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From SUBIC BAY To MANILA

#156 TIME ZONE Z-8

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. E	LOG	REMARKS
9 June 67	CAMERA 116					18°47'	119°30'	141	20 PROB. - 20 HITS. SEDIMENT. - MOST HARD TRAILS BUT CONSIDERABLE MOUNDING OF SEDIMENT BY BOTTOM LIFE. FEW EXAMPLES OF LIFE.
9 June 67	NEPHO 120					18°47'	119°30'	141	Layes to surface
9+10 June 67	Bio 456 4/60	2254	0034			18°47'	119°30'	141	
10 June 67	Mill. 90	0130	-	Surface		18°47'	119°30'	141	
10 June 67	CORE 133	1314 Lift 1365	1453	2110 2114	2118	18°33'	118°55'	142	Interbedded and homogeneous olive gray pelite and sand. Penetration 1237cm, core length 1133cm. good core length 910cm. Bottom topography flat with highly stratified horizontal sediments. Bottom pipe slightly bent.
10 June 67	T-GRAD 104	1314	1453	2110	2118	18°33'	118°55'	142	GOOD RECORD - 2 PROBES H.F. = 1.72 μcal/cm²/sec
10 June 67	WATER BARREL 78					18°33'	118°55'	142	CENTRIFUGED WEEDS MOTOR REPLACED - WAITING ON CENTRIFUGING.

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#155

Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From SUBIC BAY To MANILA

TIME ZONE Z-8

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. E	LOG	REMARKS
9.		0850	1027	2225	2228	17°22'	118°59'	140	Grayish olive Ooze containing pumiceous detritus and in places, radiolaria. Penetration 924cm
JUNE	CORE	Lit 0925		2228					Core length 115 cm good core length - 800 cm.
67	131								Bottom topography flat to at base of continental
									slope. Trigger weight head gauged by core pipe at lit.
9		0850	1027	2225	2228	17°22'	118°59'	140	6800 RECORD - 2 PROBES
JUNE	T-GRAD								
67	102								H.F. = 1.30 μcal/cm²/sec
9						17°22'	118°59'	140	24 1066. - DEFECT. POSSIBLE.
JUNE	CORE	0850	1027						
67	CAMERA								
	110								
9						18°47'	119°30'	141	Interbedded and homogeneous olive gray
JUNE	CORE	2204	0002	2230	2230				detrite and sand. Penetration 228? core length
67	132	Lit 2254		2230					900cm good core length 800 cm? Bottom topography
									flat with lightly stratified undulating
									subdued type
9						18°47'	119°30'	141	GOOD RECORD - 2 PROBES
JUNE	T-GRAD	2204	0002	2230	2230				
67	103								H.F. = 1.6 μcal/cm²/sec
9						18°47'	119°30'	141	38 DEG - NO ORIENTATION.
JUNE	CORE								
67	CAMERA								
	111								
9						18°44'	119°30'	141	DIDNOT TRIP.
JUNE	WATER								
67	BARREL								
	71A								

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#154

Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From SUBIC BAY To MANILA

TIME ZONE Z-8

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. E	LOG	REMARKS
8		1526	1643	1345	1322			139	Yellowish brown Silty Clay overlying a green silty clay which contains two sand layers. Penetration 1057 cm length 905cm good core length 680cm. Bottom topography hilly with thin layer of stratified sediment.
JUNE	CORE 130	Lil	1559		1322	18°18'	119°48'		
8		1526	1643	1345	1322	18°18'	119°48'	139	GOOD RECORD - 2 PROBES
JUNE	T-GRAD 101								H.F. = 1.04 μcal/cm²/sec
8	SRP 11	0744	1235			18°45'	120°03'		
JUNE	VEMA Shoot					18°15'	119°48'		
8	SRP 11R	1515	1903			18°18'	119°48'		
JUNE	VEMA REC.								
8	CAM 116C	1929	2110			18°18'	119°48'	139	FILM ADVANCED - 100 PICTURES. SUSPECT SPLICE LEAKAGE.
JUNE									
8	NGP 119-1	1920	2113			18°18'	119°48'	139	LAYER APPEARS TO SURFACE.
JUNE									
8	Bio 451-455	1546	1653			18°18'	119°48'	139	
Jun 69	BT 7	1315	1325						
	Milli 89	1700							

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#153

Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From SUBIC BAY To MANILA

TIME ZONE Z-8

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. E	LOG	REMARKS
7	~~CAM 109~~	~~1712~~	~~1911~~	~~2075~~				138	BAD CURRENTS - NEVER HIT. BOTTOM.
JUNE 67	~~CAM~~	~~1910~~				19°12'	120°49'		
	NEPHO 1196	1910	—						(GOOD STATION - DISREGARD SCRATCHES)
7 JUNE	SRP 9	0712	0938			18°11'	120°04'		
	VEMA								
	REC								
7	SRP 9R	1110	1400			18°7'	120°08'		
	VEMA					18°41'	120°22'		
	Shoot								
7 JUNE 67	SRP 10	1402	1813			18°41'	120°22'		
	VEMA					19°14'	120°42'		
	Shoot								
7 JUNE 67	SRP 10R	1955	2237			19°12'	120°49'		counter currents - unable to control wires and Refraction cables together
	VEMA								
	REC								
8 JUNE 67	CORE CAMERA 109	1526	1643			18°18'	119°48'	139	24 HRS - ORIENTATION POSSIBLE.
8 JUNE 67	WATER BARREL 70A	1526	1643			18°18'	119°48'	139	SAMPLE DISCARDED - TRIPPED ON SOUNDER.

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#152

Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From SUBIC BAY To MANILA

TIME ZONE 2-8

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. E	LOG	REMARKS
						18°11'	120°04'	137	CURRENTS BAD— COULD NOT HIT BOTTOM.
7 June 67	CAMERA 116A	0756	0949						
						18°11'	120°04'	137	CURRENTS BAD. COULD NOT HIT BOTTOM.
7 June 67	NEPHO 119A	0749	0949						
8 7-8 June 67	CORE 129	2300 Lit 2345	0035	1774	1788	19°12'	120°49'	138	Interbedded and homogeneous olive gray lutite and sand. Penetration 952cm. core length 1163cm. good core, 740cm. Bottom topography: alongside peak; stratified sediment. Bottom pipe bent.
7 June 67	FGRAD 101A	2300	0035	1774	1788	19°12'	120°49'	138	NO RECORD - LIGHT SOURCE KNOCKED OUT OF POSITION
7 June 67	CORE CAMERA 108	2300	0035			19°12'	120°49'	138	
8-7 June 67	~~Bio 446-450~~ ~~WATER BARREL~~ 70	~~2023~~ 2300	~~0018~~ 0035			19°12'	120°49'	138	SAMPLE CONTAMINATED - SAMPLE HEAVY. (GOOD ST. DISREGARD SCRATCHES.)
~~8~~ 7 June 67	~~Milli 88~~ ~~CAMERA~~ ~~HOB~~	~~0045~~ 1944	—	Surface		19°12	120°49'	138	CURRENTS BAD - COULD NOT HIT BOTTOM. (GOOD ST. DISREGARD SCRATCHES)

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Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From SUBIC BAY To MANILA

#151
TIME ZONE -8

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. E	LOG	REMARKS
5 JUNE	SRP 7 VEMA REC	2258	2343			15°15'	119°49'		Hauled - Toshi Maru unable to continue - dangerous shooting conditions because of heavy seas. VEMA difficulty with cable strumming.
6 JUNE	BID 444	2014	2130			18°00'	120°25'	136	
	445								
6 JUNE	MILLI 87	1900				18°00'	120°25'	136	
	BT 5	1945							BT rested on bottom — shallow station.
6 JUNE	SPR 8 VEMA REC.	1933	2215			18°00'	120°25'		unreversed - Toshi Maru not willing to reverse - apparently having hydrophone problems in heavy sea.
						18°11'	120°04'	137	Extensively interbedded and homogeneous olive gray lutite and sand. Penetration 672 (barrel + core head) core length 605 good core 603. Bottom topography flat with moderately stratified. Bubble... No trigger weight sample
7 JUNE 67	CORE 128	0628 Lit 0655	0727	1731 1707	1100				
7 JUNE 67	~~TGT~~ WATER BARREL 69					18°11'	120°04'	137	SAMPLE CENTRIFUGED - (SAMPLE HEAVY!)
7 JUNE 67	CORE CAMERA 107					18°11'	120°04'	137	14 NOV ORIENTATION POSSIBLE.

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PALISADES

#150

Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From SUBIC BAY To MANILA

TIME ZONE -8

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long E	LOG	REMARKS
5						15°15'	119°49'	135	12 NEB. - NO ORIENTATION.
JUNE	CORE	1800	1838						
67	CAMERA								
	106								
5		1746	1937			15°15'	119°49'	135	19 NEB 20 HITS. SEDIMENT SMOOTH - BOTTOM
JUNE									LIFE PRESENT + NUMEROUS - BURROWING
67	CAMERA								+ TRAILS ON, SEDIMENT.
	115								
		1731	1941			15°15'	119°49'	135	LAYER APPEARS QUITE HEAVY +
5									TO SURFACE.
JUNE	NEPHO								
67	118								
	SRP 5	0650	1050			14°34'	119°50'		
5	VEMA								
	REC.								
5	SRP 5R	1200	1434			14°16'	119°51'		
	VEMA					14°44'	119°47'		
	Shoot								
5	SRP 6	1437	1703			14°44'	119°47'		
	VEMA					15°11'	119°43'		
	Shoot								
5	SRP 6R	1930	2255			15°15'	119°49'		
	VEMA								
	REC								

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PALISADES

#149

Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From SUBIC BAY To MANILA

TIME ZONE Z-8

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. E	LOG	REMARKS
						14°14'	119°00'	134	Interbedded olive brite and sand layers
5	CORE	0651	0743	1353	1350				containing volcanic ash and terrigenous detritus.
JUNE	126	hit	0717		1350				Penetration app. 575 core length 186cm good
67									core 186cm. Cable fouled on fins of corehead.
									Piston jamed 1/3 of way up pipe. Stratified bottom
						14°14'	119°30'	134	TRIPED OD SURFACE.
5	WATER	0651	0743						SAMPLE DISCARDED.
JUNE	BARREL								
67	68A								
						14°14'	119°30'	134	13 DEG. ORIENTATION POSSIBLE.
5	CORE	0651	0743						
JUNE	CAMERA								
67	105								
						14°14'	119°30'	134	19 DEG 20 HITS, SEDIMENT - BOTTOM LIFE
5		0631	0824						EXTENSIVE - MOUNDING + TRAILS ON, SEDIMENT
JUNE	CAMERA								
67	114								
						14°14'	119°30'	134	DID NOT PUT FILM IN CAMERA.
5	NEPHO	0625	0830						
JUNE	4.8A								
67									
5						15°15'	119°49'	135	Interbedded olive green sand and brite layers
JUNE	CORE	1800	1838	1100	1098				containing terrigenous detritus. Penetration app.
67	127	1819		1100					555cm good core length 517cm. Hammer inbalance
									method of retrieval for bottom 85cm of core.
									Hilly bottom with no observable stratification.
5	WATER	1800	1838			15°15'	119°49'	135	SAMPLE
JUNE	BARREL								
67	68								

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Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From SUBIC BAY To MANILA

TIME ZONE Z-8

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. E	LOG	REMARKS
								132	8 web. 20 HITS. - CAMERA MALFUNCTION - ?
4 JUNE 67	CAMERA 113	0735	0924			15°30'	119°30'		SEDIMENT - BOTTOM LIFE EXTENSIVE - MOUNDING OF AND TRAILS ON SEDIMENT SOME LIFE PRESENT.
4 JUNE 67	NEPHO 117	0728	0922			15°30'	119°30'	132	LAYER TO SURFACE. - READING ONLY TO BOTTOM HITS. LIGHT SOURCE WENT OUT.
4 JUN E	SRP 3 VEMA REC	0813	1018			15°30'	119°30'		
4 JUNE	SRP 3R VEMA Shoot	1135	1401			15°27' 15°11'	119°30' 119°34'		
4 JUNE	SRP 4 VEMA Shoot	1404	1728			15°11' 14°46'	119°34' 119°32'		
								?	
4 Jun 67	Bio 440-443	0839	0855			15°30'	119°30'	133	Surface sample contaminated by garbage dumped during station, again !
								?	
4 Jun 67	Milli 86	1115		Surface		15°30'	119°30'	133	
	BT 2	1100		150 Fm		15°30'	119°30'	133	

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#147

Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From SUBIC BAY To MANILA

TIME ZONE Z-8

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long E	LOG	REMARKS
	Bio 436-9	1005	1048			14°00'	118°52'	131	READING VERY POOR. CAMERA OK -
3									LIGHT SOURCE SHORTED FROM RAIN
JUNE	NEPHO	0843	?			14°00'	118°52'		LEAKING IN ON TO CHARGING RACKS.
67	116								
3	SRP 2	1103	1339			14°00'	118°52'		
J	VEMA								
U N E	REC								
	BT-1	1415	1425			14°00'	118°52'		
3	SRP 2R	1619	2006			14°07'	119°02'		
J	VEMA					14°10'	119°12'		
U N E	shooting								
						15°30'	119°30'	132	Interbedded silts and sand layers containing
4	CORE	0755	0904	1241	1270				terrigenous clastics and foams. Penetration
JUNE	125	hit	0824	1250					910cm, core length 900cm good core
67									length 400cm. Bottom topography - sloping,
									gently rolling with stratified subbottom.
		0929	1119	2165	2170	15°30'	119°30'	132	GODS RECORD - 2 PROBES
4									
JUNE	T-GRAD								H.F. = 1.70 m cal/cm²/sec
67	100								
		0755	0904			15°30'	119°30'	132	22 DEG. ORIENTATION POSSIBLE
4									
JUNE	CORE								
67	CAMERA								
	104								
4		0755	0904			15°20'	119°30'	132	SAMPLE CENTRIFUGED - SAMPLE APPEARS HEAVY.
JUNE	WATER								
67	BARREL								
	67								

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#146

Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From SUBIC BAY to MANILA

TIME ZONE Z-8

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. E	LOG	REMARKS
2	SRP 1	1256	1813			14°42'	118°00'		
JUNE	VEMA								
67	REC								
2	SRP 1R	2100	0030			14°25'	118°01'		
3	VEMA					14°12'	117°58'		
JUNE	Sheeting								
67									
						14°00'	118°52'	131	Bedded volcanic mud and sand layers Penetration 347cm Core length 1180cm good core length 190cm Bottom topography sloping bottom alongside peak, highly stratified sediments. Pipe bend
3	CORE	0929	1119	2165	2193				
JUNE	124	lid	1010		2170				
67									GOOD RECORD - 1 PROBE
		0929	1119	2165	2198	14°00'	118°52'	131	
3	T-GRAD								
JUNE	99								H.F. = 1.26 μcal/cm²/sec
67									
						14°00'	118°52'	131	SAMPLE CONTAMINATED. AFTER CENTRIFUGING SAMPLED APPEARED AS MUD AND A TREMENDOUS AMOUNT OF IT, ALSO RUST PARTICLES. — SAMPLE DISCARDED.
3	WATER	0929	1119						
JUNE	BARREL								
67	66								
3						14°01'	118°52'	131	34 NEG. — ORIENTATION POSSIBLE.
JUNE	CORE	0929	1119						
67	CAMERA								
	103								
3		0847	1114			14°01'	118°52'	131	19 NEG 20 HITS. SEDIMENT - LIVELY WITH BOTTOM LIFE, TRAILS + MOUNDING + SOME SPECIE.
JUNE	CAMERA								
67	112								

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Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From MIDWAY To MANILA

#145 TIME ZONE Z-8

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. E	LOG	REMARKS
24								130	150 Fm. Layer Heavy.
May 67	NEPHO 115	0743	0924			17°32'	119°31'		
24 May 67	Bio 430-435	0815	0902			17°32'	119°31'	130	
24 May 67	Mili 85	1000		Surface		17°32'	119°31'	130	
	IK-13	2015	2131			16°04'	118°42'	—	
25 May 67	IK-14	0650	0800			15°03'	119°39'	—	
25 May 67	IK-15	0832	0944			15°03'	119°39'	—	

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#144

Research Vessel VEMA
CRUISE N° 24
CRUISE LEG—From Midway To Manila

TIME ZONE Z-8

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. E	LOG	REMARKS
23 May 67	IK 12	1010	1118			18°43'	121°30'	—	This is the first IK to sample the deep SL (240 Fm). The catch was not only larger in volume than previous IKs, but the individuals in the catch were generally of a larger scale.
23 May 67	JN 51	1759	1831			18°43'	120°45'	—	
23 May 67	JN 52	2000	2030			18°36'	120°34'	—	
24 MAY 67	CORE 123	0804 Lift 0831	0917	1580 1578	1576	17°32'	119°31'	130	Interbedded olive gray lutite and detrital sand. Penetration 948cm, core length 999 good core length 539. Bottom topography small peak rising through flat bottom with highly stratified sediments. Trigger weight sample lost.
24 MAY 67	T-GRAD 98	0804	0917	1580	1576	17°32'	119°31'	130	GOOD RECORD - 4 PROBES H.F. = 0.89 μcal/cm²/sec
24 MAY 67	CORE CAMERA 102	0804	0917			17°32'	119°31'	130	17 mid 1 print.
24 MAY 67	CAMERA 112A	~~0827~~ 0751	~~1033~~ 0914			17°32'	119°31'	130	HAVEN'T FOUND TROUBLE. FILM ADVANCED 100 PICTURES

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#143

Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From MIDWAY To MANILA

TIME ZONE Z-9

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. E	LOG	REMARKS
22						18°32'	125°28'	129	9 mg 10 hits
MAY	CAMERA	0827	1033						of Sediment - signs of bottom
67	111								life.
22						18°32'	125°28'	129	Interbedded lutite and volcanic ash layers
MAY	CORE	0844	1048	2576	2620				containing a siliceous ooze layer. Pen. 692 cm
67	122	Lit	0935	2589					Core length 778 cm good core 536 cm
									Bottom topography alongside peak surrounded
									by slightly stratified undulating sediments
22						18°32'	125°28'	129	
MAY	T-GRAD	0844	1048	2576	2620				NO RECORD - 20K RESISTOR LEAD BROKEN
67	98A								OFF
22						18°32	125°28	129	54 meg. No orientation
MAY	CORE	0844	1048						
67	CAMERA								
	102								
	(101)								
22	Bio 426-	0945	1015			18°32	125°28	129	
May	429								
67									
22	Milli 84	1100		Surface		18°32	125°28	129	
May									
67									
22	JN-50	1328	1403			18°32	125°04	—	
May									
67									

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Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From MIDWAY To MANILA

142 TIME ZONE Z-9

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. E	LOG	REMARKS
21								128	~~General~~ Essentially structureless red clay.
MAY 67	CORE 121	0850	1135	2730	2878	18°30'	128°23'		Penetration 809 cm core length 727 cm
		hit	0950	2880					good core length 600 cm small peaks & valleys
									with thin sediment overlying basement.
									gaseous core, partial self extrusion
21								128	
MAY 67	T-GRAD 97	0850	1135	2730	2878	18°30'	128°23'		GOOD RECORD - 3 PROBES
									H.F. = 1.72 μcal/cm²/sec
21						18°30'	128°23'	128	Along Orient pass.
MAY 67	CORE CAMERA 100	0850	1135						
21 May 67	BIO 421-425	0815	1043			18°30'	128°23'	128	
	IK-11	0706	0826			18°30'	128°28'		
21 May 67	Mili 83	1130		Surface		18°30'	128°23'	128	
21 May 67	JN 49	2231	2303			18°31'	126°55'	—	
22 MAY 67	NEPHO 114	0819	1036			18°32'	125°28'	129	0 two layer (layer appears to surface)

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Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From MIDWAY To MANILA

141

TIME ZONE Z-9

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. E	LOG	REMARKS
20						18°31'	131°29'	127	9 mg 10 lits
MAY	CAMERA	0721	1054						sediment - little signs
67	109								of bottom life
20						18°31'	131°29'	127	Ono layer.
MAY	NEPHO	0712	1057						
67	112								
20	Bio 415 -	0815	0955			18°31'	131°29'	127	Was able to correct trigger malfunction
May	420								which plagued previous 4 tows.
67									
20	Mill. 82	1115	-	Surface		18°31'	131°39'	127	
May									
67									
20	JN 48	1452	1522			18°30'	130°54'	—	
May									
67									
21						18°30'	128°23'	128	Ono layer.
MAY	NEPHO	0826	1112						
67	113								
21		0833	1108			18°30'	128°22'	128	9 mg 10 lits
MAY	CAMERA								Sediment + signs of bottom
67	110								life.

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PALISADES

#140

Research Vessel VEMA
CRUISE N° 24
CRUISE LEG—From Midway To Manila
TIME ZONE Z-9

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat N	POSITION Long. E	LOG	REMARKS
19								126	Arr Nep Layup.
May 67	Nepho 111	0200	0933			18°29'	135°00'		
19 May 67	Bio 411 414	0750	0900			18°29'	135°00'	126	
19 May 67	Milli 81	1015	—	Surface		18°29'	135°00'	126	
19 May 67	IK-10	2024	2110	25Fm		18°29'	133°25'	—	
20 MAY 67	CORE 120	0736	1032 wit 0838	3119	3150 3450	18°21'	121°39'	127	Structureless red clay. Penetration 1172 core length 1062 cm. Good core length 1062 cm. Bottom topography hilly, with thin stratified layer of sediment.
20 MAY 67	T-GRAD 96	0736	1032	3119	3150	18°21'	121°39'	127	GOOD RECORD - 4 PROBES H.F. = 1.30 μcal/cm²/sec
20 MAY 67	99 CORE CAMERA ~~100~~	0736	1032			18°21'	121°39'	127	52 no Orink

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#139

Research Vessel VEMA
CRUISE N° 24
CRUISE LEG—From Midway To Manila

TIME ZONE Z-9

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. E	LOG	REMARKS
18								125	
May 67	Nepho 110	0758	—			18°42'	138°44		0 no layers.
18 May 67	Bio 407-410	0830	0934			18°42'	138°44'	125	
18 May 67	Milli 80	1130		Surface		18°42	138°44	125	
19 May 67	Core 119	0725 hit 0823	0945	2983 2984	2984	18°39	135°00'	126	Firm, compact and essentially structureless red clay Penetration 480 Core length 545 good core 420 Bottom topography: at base of volcanic peak with thin sloping sediments
19 May 67	Farad 95	0725	0945	2983	2984	18°39	135°00	126	GOOD RECORD - 2 PROBES
19 May 67	Core Camera 98	0725	0945			18°39	135°00	126	3 mg. Orient Pass.
19 May 67	Camera 108	0707	0929			18°39	135°00'	126	9 mg 10 hits magenese nodules-sediment

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PALISADES

#138

Research Vessel VEMA
CRUISE N° 24
CRUISE LEG—From Midway To Manila

TIME ZONE -10

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. E	LOG	REMARKS
17 May 67	Bio 403-406	0830	1020			18°36'	142°22'	124	
17 May 67	Milli 79	1525	—	Surface		15°48	141 32	—	
17 May 67	IK-9	2026	2120			18°47'	140°45'	—	
18 MAY 67	CORE 118	0751 Lift 0842	1003	2695	2720 2720	18°42'	138°44'	125	Extensively bedded diatomaceous ooze overlying a brown lutite. Penetration 1307cm core length 1242cm good core length 1242cm. Bottom topography peaks & troughs with stratified sediments alongside peak
18 MAY 67	T-GRAD 94	0751	1003	2695	2720	18°42'	138°44'	125	T-GRAD GOOD RECORD - 4 PROBES H.F. = 1.79 μcal/cm²/sec
18 MAY 67	CORE CAMERA 97 (97)					18°42	138°44'	125	
18 MAY 67	CAMERA 107	0733	—			18°42'	138°44'	125	9 mg 10 hits - sediment Foram Ooze

9 1/2

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#136

Research Vessel VEMA
CRUISE N° 24
CRUISE LEG—From Midway To Manila

TIME ZONE −10

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. W	LOG	REMARKS
16 May 67	Mill 78	0945	—			17°55'	146°01'	123	
16 May 67	JN 47	1758	1833			18°02'	144°29'	—	
17 MAY 67	CORE 117	0854 Lt 0927	1016	1980 1980	1969	18°36'	142°22'	124	Extensively bemowed and interbedded volcanic muds. Penetration 1752 cm Core length 1253 good core length 1077 cm. Bottom topography: moderately hilly with highly stratified subbottom.
17 MAY 67	T-GRAD 93	0854	1016	1980	1969	18°36'	142°22'	124	GOOD RECORD - 4 PROBES H.F. = 1.06 μcal/cm²/sec
17 MAY 67	CORE CAMERA 97A	0854	1016			18°36'	142°22'	124	FICO ADVANCED 100 PICTURES.
17 MAY 67	CAMERA 106	081	0908			18°36'	142°22'	124	9 mg 10 hits. Sediment — signs of bottom life.
17 MAY 67	NEPHO 109	0725	0912			18°36'	142°22'	124	Light out 6 hits — reading only surface.

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Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From MIDWAY To MANILA

#136 TIME ZONE Z-10

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat N	POSITION Long. E	LOG	REMARKS
								122	
15 MAY 67	NEPHO 109A					17°55'	149°09'		Magnet jarred when hoisted over side
16 MAY 67	NEPHO 109B					17°55'	146°01'	123	Magnet jarred when hoisted over side.
16 MAY 67	CORE 116	0744 hit 0813	0900	1441 1440	1438	17°55'	146°01'	123	Black volcanic sand overlying a brown volcanic mud Penetration 301cm Core length 110cm good core 110cm Bottom topography small basin along side volcanic peak containing stratified sediments. No trigger weight core
16 MAY 67	T-GRAD 92	0744	0900	1441	1438	17°55'	146°01'	123	GOOD RECORD - APPROX H.F. 0.66 μcal/cm²/sec
16 MAY 67	CORE CAMERA 96	0744	0900			17°55'	146°01'	123	38 mg. No orientation.
16 MAY 67	CAMERA 105	0728	0854			17°55'	146°01'	123	38 mg 0 hits
16 May 67	Bio 399-402	0800	0847			17°55'	146°01'	123	

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Research Vessel VEMA
CRUISE N° 24
CRUISE LEG—From MIDWAY To MANILA

#135 TIME ZONE -10

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. E	LOG	REMARKS
14 May 67	JN 46	1533	1604			15°32'	150°11'	—	
15 May 67	Bio 395-398	0805	0914			17°55'	149°09'	122	
15 May 67	Mill. 77	1100		Surface		17°55'	149°09'	122	
May 67	IK-8	1536	1655	200Fm		18°00'	148°22'	—	
15 MAY 67	CORE 115	0726	0946 Lift 0824	2940	2940 2940	17°55'	149°09'	122	Soft, structureless red clay overlying a compact, clay structureless red clay. Penetration 481cm core length 531cm. Good core 300cm. Bottom topography gently rolling sloping bottom with moderately stratified undulating subbottoms.
15 MAY 67	T-GRAD 91	0726	0946	2940	2940	17°55'	149°09'	122	GOOD RECORD - 2 PROBES H.F. = 0.60 μcal/cm²/sec
15 MAY 67	CORE CAMERA 95	0726	0946			17°55'	149°09'	122	18 mg Mn oxidation.
15 MAY 67	CAMERA 104	0710	0927			17°55'	149°09'	122	9 mg. 10 hits. sediment + extensive O. signs of bottom life.

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Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From MIDWAY To MANILA

#134 TIME ZONE Z-10

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. D	POSITION Long. E	LOG	REMARKS
14		0743	1015	3163	3170	14°42'	150°33'	121	Red clay containing an indurated, brittle red
MAY	CORE	Init	0814	3170					clay layer near bottom of unit. Penetration
67	114								714cm. Core length 1097cm. Good core ¢10cm.
									Bottom topography moderately rolling with
									thin, stratified pelagic sediments.
14		0743	1015	3163	3170	14°42'	150°33'	121	GOOD RECORD - 4 PROBES
MAY	T-GRAD								
67	90								H.F. = 0.81 μcal/cm²/sec
14						14°42'	150°33'	121	20 mg. no orientation
MAY	CORE	0743	1015						
67	CAMERA								
	94								
14						14°42'	150°33'	121	9 mg 10 hits. sediment + bottom life
MAY	CAMERA	0725	0958						
67	103								
14						14°42'	150°33'	121	750 Fm. Layer Light
MAY	NEPHO	0718	1001						
67	108								
14	Bio 389-	0745	0930			14°42'	150°33'	121	
May	394								
67									
14	Milli 76	1100	—	Surface		14°42'	150°33'	121	
May									
67									

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PALISADES

#133

Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From MIDWAY To MANILA

TIME ZONE Z-10

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. E	LOG	REMARKS
13		0731	0956	3100	3100			120	Primarily structureless brown lutite containing
MAY	CORE	Lit	0825	3100		11°19'	152°05'		3 dark Brown layers Penetration 1310 (core
67	113								head partially burned) core length 1150cm good
									Core 1150? Bottom topography flat, very gently
									sloping with stratified flat to sub bottom.
13		0731	0956	3100	3100	11°19'	152°05'	120	GOOD RECORD - 4 PROBES
MAY	T-GRAD								
67	89								H.F. = 1.25 μcal/cm²/sec
13						11°19'	152°05'	120	
MAY	CORE	0831	0956						Crossover lead shorting
67	CAMERA								
	94A								
13						11°19'	152°05'	120	
MAY	CAMERA	0917	0946						bimag > 4 lls. sediment + signs of
67	102								bottom life.
13						11°19'	152°05'	120	250 Fa. Layer Light.
MAY	NEPHO	0911	0949						
67	107								
13	Bio 383-	0785	0926			11°19'	152°05'	120	
MAY	386								
67									
13	Milli 75	1030	—	Surface		11°20'	152°05'		
MAY									
67									

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#132

Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From MIDWAY To MANILA

TIME ZONE Z-11

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. E	LOG	REMARKS
12 MAY 67	CORE 112	0742	0937	2638	2638	7°56'	153°32'	119	Structureless and primarily homogeneous brown lutite Penetration 750cm, Core length 1420cm good core x 800cm Bottom topography; small peaks & troughs with stratified sediment in the trough. Pipe bent
		but 0822		2638					
12 MAY 67	T-GRAD 88	0742	0937	2638	2638	7°56'	153°32'	119	GOOD RECORD - 2 PROBES H.F. = 1.82 μcal/cm²/sec
12 MAY 67	CORE CAMERA 93	0742	0937			7°56'	153°32'	119	30 mg. DO orientation.
12 MAY 67	CAMERA 101	0724	0921			7°56'	153°32'	119	8 mg 9 hits. sediment - bottom life present.
12 May 64	Bio. 377-382	0725	0905			7°56'	153°32'	119	
12 May 67	Mill 74	1530	—	Surface		8°46'	153°12'	—	
	JN 45	1629	1701					—	
12 May 67	JK-7	2138	2234			9°11'	152°48'	—	

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#131

Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From MIDWAY To MANILA

TIME ZONE Z-11

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. E	LOG	REMARKS
11								118	Foram ooze containing mostly broken foram tests. Penetration 1104cm, core length 1173
MAY	CORE	1103	1225	2157	2155	5°38'	155°00'		cm. Good core 1010cm. Bottom topography: gently
67	111	Lit	1137	2157					dipping, rolling bottom with highly stratified
									sloping sediments. Pipes bent
11								118	GOOD RECORD - 3 PROBES
MAY	T-GRAD	1103	1225	2157	2155	5°38'	155°00'		
67	87								H.F. = 0.92 μcal/cm²/sec
11						5°38'	155°00'	118	
MAY	CORE								
67	CAMERA	1103	1225	2157	2155				
	392								
						5°28'	155°08'	117	
11									Starting magnet knocked out of position
MAY	NEPHO	0010	0844						when U. lifted over the side + count
67	106A								un noticed.
11	Bio 374-	0800	0850			5°28'	155°08'	117	
May	376								
67									
11	JN-44	2109	2140					—	
May						6°38'	154°10'		
67									
12		0109	0849			7°56'	153°32'	~~118~~ 119	0 no layer.
MAY	NEPHO								
67	106								

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#130

Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From MIDWAY To MANILA

TIME ZONE >—11

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. E	LOG	REMARKS
10						2°20'	156°42'	116	
MAY	CAMERA								Failure due to leaking lead from
67	100A								camera to strobe light. Only leaks
									under pressure & camera functions
									on deck before + after station.
10						2°20'	156°42'	116	
MAY	NEPHO	0010	0844						Layer possible to surface.
67	105								
9	Sonob	1522				0°15'	157°51'		Fair record - only about 5 miles useful -
May	38		1700			0°13'	157°40'		very strong shallow refraction.
67									
10	Bio 368-	0725	0840			2°20'	156°42'	116	
May	373								
67									
10	Milli 73	0915	—	Surface		2°20'	156°42'	116	
May									
67									
10	JN 43	1521	1549			3°17'	156°26'	—	
May									
67									
11						05°28'	155°08'	117	4 sig 5 kits. sediment showing bottom
MAY	CAMERA								8 life
67	100B								

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#129

Research Vessel VEMA
CRUISE N° 24
CRUISE LEG—From Midway To Manila

TIME ZONE Z - 11

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. E	LOG	REMARKS
9						826'	158°48'	115	Lays to surface.
MAY	NEPHO	0712	0848						
67	104								
9	Bio 363	1010	1038			0°26'	158°48'	115	Net slid down core wire after reaching
May	367								surface — no damage. Shallow
67									component non-quantitative.
9	Milli 72	0945		Surface		0°26'	158°48'	115	
May									
67									
9	JN-42	1825	1906			1°25'-1	15 7'34'	—	
May									
67									
10		0732	0842	1384	1401	02°20'	156°42'	116	Predominantly bluish gray Globigerina ooze containing
MAY	CORE	Lit	0758		1401				a few thin thin green layers Penetration 1071 cm
67	110								Core length 1709 cm Good core 760 cm Bottom topography
									flat gently rolling bottom with highly stratified
									undulating sediments. Core similar to V24-109
10		0732	0842	1384	1401	2°20'	156°42'	116	GOOD RECORD - 3 PROBES
MAY	T-GRAD								
67	86								H.F. = 0.86 μcal/cm²/sec
10		0832	0842			2°20'	156°42'	116	
MAY	CORE								
67	CAMERA								
	91								

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#128

Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From MIDWAY To MANILA

TIME ZONE Z-11

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. E	LOG	REMARKS
8						01°13'	162°12'	114	
MAY 67	NEPHO 103	0721	0917						layer to surface.
8	Bio 360-	0700				10 13'	16292'	114	
May 67	362		0914						
8	Milli 71	1400	—	Surface		10 02'	161°29'	—	
May 67									
9		0739	0845	1269	1260	0°26'	158°48'	115	Predominantly pale blue globigerina ooze containing a few thin compact green layers. Penetration 1880 core length 1825cm. Good core 1326cm. Bottom topography slightly hilly rolling with highly stratified undulating sediments.
MAY 67	CORE 109	lit	0805		1269				
9		0739	0845	1269	1260	0°26'	158°48'	115	GOOD RECORD 4 PROBES
MAY 67	T-GRAD 85								H.F. = 0.85 μ cal/cm²/sec
9						0°26'	158°48'	115	17 ion print
MAY 67	CORE CAMERA 90	0739	0845						
9	CAMERA 99	0723	0843			0°26'	158°48'	115	1 mg 10 Hilo — camera advanced film & got pictures of compass not bottom.
MAY 67									

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#127

Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From MIDWAY To MANILA

TIME ZONE Z-11

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. E	LOG	REMARKS
7								113	27 mg. 1 orient.
MAY 67	CORE CAMERA 88	0904	1053			02°04'	165°19'		
7						02°04'	165°19'	113	10 mg 11 hits. Sediment + signs of bottom 29e.
MAY 67	CAMERA 987	0949	1041						
7						02°04'	165°19'	113	
MAY 67	NEPHO 102	0837	1045						Lays to surface.
8		0740 lid	0900 0815	2195	2195 2195	01°13'	162°12'	114	Extensively interbedded buffoas overlying a structureless white siliceous calcareous ooze. Age Pre-Pleistocene. Penetration 1426 cm Core length 1663 cm good core app. 1500 cm. Bottom topography gently rolling with moderately stratified undulating beds. GOOD RECORD - 3 PROBES
MAY 67	CORE 108								
8		0740	0900	2195	2195	01°13'	162°12'	114	H.F. = 1.06 μcal/cm²/sec
MAY 67	T-GRAD 84								
8						01°13'	162°12'	114	9 mg 1 orient.
MAY 67	CORE CAMERA 89	0740	0900						
8						01°13'	162°12'	114	3 mg 11 hits sediment - signs of bottom 0.14e.
MAY 67	CAMERA 988	0724	0913						

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Research Vessel VEMA
CRUISE N° 24
CRUISE LEG—From Midway To Manilla

126

TIME ZONE Z - 11

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. E	LOG	REMARKS
6								112	Layer appears to surface.
May 67	Nepho 101	1425	1612			02°43'	167°46'		
6 May 67	Bio 348-353	0700	0830			02°49'	168°11'	111	
7 May 67	Core 107	0904 (Lit)	1053 0948	2220 2220	2220	02°04'	165°19'	113	Extensively interbedded and laminated calcareous lutite Penetration 1592cm Core length 1680cm Good core 1130cm. Bottom topography flat with highly stratified undulating beds. Age Pre-Pleistocene
7 May 67	Bio 354-359	0900	1038			02°04'	165°19'	113	
7 May 67	Milli 70	1130	—	Surface		02°04'	165°19'	113	
7 May 67	JN 41	1944	2030	19Fm		01°42'	163°55'	—	
7 MAY 67	T-GRAD 83	0904	1053	2220	2220	02°04'	165°19'	113	GOOD RECORD - 4 PROBES H.F. = 1.08 μcal/cm²/sec

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#125

Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From MIDWAY To GUAM

TIME ZONE Z-11

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. E	LOG	REMARKS
6 MAY 67	CORE 105	0733 Lit 0812	0935	2350	2343	02°49'	168°11'	111	Extensively interbedded and burrowed ooze. Penetration 1722 core length 1614 good core 1176 Depth of bottom overestimated, Core hit before anticipated, Bottom topography: gently rolling with highly stratified undulating sediments. Age Pleistocene
6 MAY 67	T-GRAD 82	0733	0935		2343	02°49'	168°11'	111	GOOD RECORD - 3 PROBES
									H.F. = 1.32 μcal/cm²/sec
6 MAY 67	CORE CAMERA 86	0733	0935			02°49'	168°11'	111	37 mg. 7 orientations possible.
6 MAY 67	CAMERA 9[illegible]5	0710	0910			02°49'	168°11'	111	10 mg 11 hits Compass shows current at 135° Sediment + signs of bottom life.
6 MAY 67	CORE CAMERA 106	1438 Lit 1519	1601	2400 2400	2400 2400	02°43'	167°46'	112	Extensively burrowed calcareous siliceous ooze. Penetration 716 cm core length 1100 cm good core 710 cm. Bottom topography rolling, slightly hilly with stratified subbottom outcrops Age - Pleistocene
6 MAY 67	CORE CAMERA 87	1438	1601			02°43'	167°46'	112	7 mg no orientations
6 MAY 67	CAMERA 9[illegible]6					02°43'	167°46'	112	5 mg 6 hits EACH DEP SHOWS A DIFFERENT TYPE OF BOTTOM. Bottom Life on pucks of rock in two — deposition like marks — one with like a gravel bottom.

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#124

Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From MIDWAY To MANILA

TIME ZONE Z-12

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. E	LOG	REMARKS
5 MAY 67	NEPHO 100A					04°51'	170°55'	110	DIDN'T TURN LIGHT SOURCE ON.
4 MAY 67	SONOB. 36	1456	1703			06°10' 06°00'	172°52' 172°36'	—	GOOD RECORD - HIGH S/N RATIO - TWO REFRACTIONS: 5.0 and 6.1 km/sec
5 May 67	Sonob 37	1503	1600			04°22' 04°18'	170°15' 170°08'		Fair Record - Buoy failed after ~45 min.
5 May 67	Bio 342 -347	0820	0923			04°51'	170°55'	110	Good example of nemichthyida captured in 500m-1000m range of core net.
5 May 67	Milli 69	0945	—	Surface		04°51'	170°55'	110	
5 May 67	JN 39 JN 40	1814 1947	1859 2032	35Fm 35Fm	35Fm 35Fm	04°08' 03°54'	169°54' 169°37'	—	JN working perfectly. These two tows are identical with respect to towing depth, duration, spd, etc, except that JN 39 was taken just before the beginning of the dusk migration, and JN-40 taken immediately after migration complete.
6 MAY 67	NEPHO 100	0701	0915.			02°49	168°11'	111	Possible layer to surface. Much darkening of film.

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#123

Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From MIDWAY To MANILA

TIME ZONE Z-12

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. E	LOG	REMARKS
4	[illegible]							109	
May 67	Milli 68	1715	—	Surface		06°34'	173°30'		
4 May 67	JN-38	1059	1315			06°34'	173°30'	109	For the first time we were able to eliminate the sample loss experienced previously. Due to the extremely large sample derived, towing time will be reduced from the standard 2hrs to 30 min in the future.
4 May 67	IK 6	0919	1028	40 Fm	40 Fm	5°39'	172°03'	—	Very successful tow with respect to handling + catch. This tow sampled a very dark surface SL (0-100 Fm) at a depth of about 40 Fm. Two naut. miles were sampled which will be the standard distance in the future
5 MAY 67	CORE 104	0737 Lift	0931 0824	2395	2398 2397	04°51'	170°55'	110	Extensively burrowed, interbedded lutite containing foram sand and ooze layers. Age Pre-Pleistocene. Penetration - buried core head. core length 1071 cm Good core 1071 cm Bottom topography - flat with highly stratified horizontal sediments
5 MAY 67	T-GRAD 81	0737	0931	2395	2398	04°51'	170°55'	110	GOOD RECORD - 4 PROBES H.F. = 1.1 μcal/cm²/sec
5 MAY 67	CORE CAMERA 85	0737	0931			04°51'	170°55'	110	22° - no orientation
5 MAY 67	CAMERA 9[illegible]4	0724	0917			04°51'	170°55'	110	9mm 10 kHz sediment - bottom life

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#122

Research Vessel VEMA
CRUISE N° V24
CRUISE LEG—From MIDWAY To OAHU LB

TIME ZONE Z-12

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. E	LOG	REMARKS
3 May 67	Mill 67	1130	—	Surface		68°14'	176°16'		
4 MAY 67	CORE 103	0737	0944	2660	2652	06°34'	173°30'	109	Interbedded radiolarian and foram oozes overlying a pebble conglomerate. Penetration 932cm, core length 820cm. Good core 820cm. Cutting edge smashed in. Bottom topography hilly with highly stratified undulating sediments.
4 MAY 67	T-GRAD 80	0737	0944	2660	2652	06°34'	173°30'	109	GOOD RECORD - 4 PROBES H.F. = 1.67 μcal/cm²/sec
4 MAY 67	CORE CAMERA 84	0737	0944			06°34'	173°30'	109	42 mg. Zoeint.
4 MAY 67	CAMERA 993	0726	0933			06°34'	173°30'	109	9 mg 10 hits. Sediment - little bottom life - possible pieces of basalt.
4 MAY 67	NEPHO 99	0717	0936			06°34'	173°30'	109	150 FD. Layr Light.
4 May 67	Bio 336 - 341	0810	0954			06°24'	173°30'	109	

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#121

Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From MIDWAY To MANILA

TIME ZONE Z+12

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. E	LOG	REMARKS
2 May 67	JN 37	2100	0018			9°08'	177°52'	—	Still unable to locate the flaw in the JN which reduces its capturing ability
						8°52'	177°26'		
3 MAY 67	CORE 102	0752 hit 0853	1004	2652 2707	2707	8°19'	176°25'	108	Brown, homogeneous lutite containing hard indurated brown layers Penetration 666 cm. core length 1198 cm. Good core 668 cm. Cutting edge smashed. Trigger weight sediment lost. Highly stratified undulating sediments
3 MAY 67	T-GRAD 79	0752	1004	2652	2707	8°19'	176°25'	108	GOOD RECORD - 3 PROBES H.F. = 2.25 μcal/cm²/sec
3 MAY 67	~~CORE CAMERA 84~~							~~108~~	
3 MAY 67	CAMERA 982	0740	1055			8°19'	176°25'	108	9 mg 10 Kgs. Magnese Nodules - Large pieces of possible magnese.
3 MAY 67	NEPHO 98	0731	1059			8°19'	176°25'	108	no Layer.
3 May 67	Bio 330 335	0925	1015			8°19'	176°25'	108	

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Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From MIDWAY To MANILA

#120
TIME ZONE Z-12

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. E	LOG	REMARKS
1		0810	1008	1818	1784	13°10'	178°53'	107	Foram ooze with basalt pebbles scattered throughout. Penetration could not be determined. Core length 71cm. Good core 57cm. Bottom depth overestimated. Core bit went unnoticed; excess cable laid out. Bottom topography - alongside seamount.
MAY	CORE	hit 0847			1784				
67	101								
1		0810	1008	1818	1784	13°10'	178°53'	107	GOOD RECORD - 1 PROBE
MAY	T-GRAD								
67	78								HF = 2.38 μcal/cm²/sec
1						13°10'	178°53'	107	
MAY	CORE								
67	CAMERA								
	83								
28	Bio 318	0808	0830			18°32'N	179°30'W	105	
Ap	319								
67	JN 36	0953	1435						
	Mill 66	0845	—	Surface					
30	Bio 320	0850				16°08'	179°53'E	106	
Ap	321, 322								
67	323, 324								
	325.		1102						
1	Bio 326	0923				13°10'	178°53'	107	
May	-329		0944						
67									
1	IK 5	1433	1707			13°10'	178°53'	—	
May									
67									

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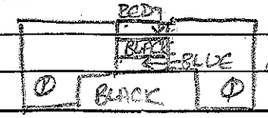
PALISADES

#119

Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From MIDWAY To MANILA

TIME ZONE Z+12

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. E	LOG	REMARKS
30						16°08'	179°44'	106	Structureless and essentially homogeneous brown lutite overlying a dark brown lutite. Penetration 1168cm good Core length 1147. Bottom topography gently rolling with highly stratified undulating subbottom
APRIL 67	CORE 100	0834 (Lit)	1057 0937	2828	2827 2830				
30						16°08'	179°44'	106	
APRIL 67	T-GRAD 77	0834	1057	2828	2827				GOOD RECORD - 4 PROBES
									H.F. = 1.30 μ cal/cm²/sec
30						16°08'	179°44'	106	46 mg. 100 Orientation
APRIL 67	CORE CAMERA 82	0834	1057						
30						16°08'	179°44'	106	8 mg 10 Kts Magnisc Modulus - small
APRIL 67	CAMERA 91A	0820	1038						
30						16°08'	179°44'	106	no layer. - used plastic strip in Attenuator.
APRIL 67	NEPHO 97	0809	1045						Black grids on film.  appear black
MAY 1 67	NEPHO 98					13°10'	178°53'	107	LOST Camera
1 MAY 67	CAMERA 92A					13°10'	178°53'	107	Lost camera

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#118

Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From MIDWAY To MANILA

TIME ZONE Z+12

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. W	Stn ~~LOG~~	REMARKS
27						21°47'	178° 47'	104	
APRIL 67	NEPHO 95	0750	1037						Ono Lays.
27	Bio 312	0843				21°47'	178°47'	104	
Ap	-317		1052						
67									
27	Milli 65	1345	—	Surface		21°47'	178°47'	104	
Ap									
67	[redacted]								
28						18°32'	179°30'	105	Ono Lays.
APRIL 67	NEPHO 96	0721	0818						
28						18°32'	179°30'	105	4 mg 5 hits sediment, current markings.
APRIL 67	CAMERA 90	0730	0816						
28						18°32'	179°30'	105	Globogerina sand containing several hard compact layers. Penetration could not be determined. Core length 932 cm. Hammer vibration method used to extrude first 300 cm of core. Bottom topography crest of sea mount.
APRIL 67	CORE 99	0739 (Lift) 0754	0804	B70 862	B51				
28	CORE	0739	0804			18°32'	179°30'	105	7 mg — Poor — no orientation
APRIL 67	CAMERA [redacted]1								

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Research Vessel VEMA
CRUISE N° 24
CRUISE LEG—From Midway To Manila

TIME ZONE Z+12

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. W	LOG	REMARKS
26	Bio 306	0821				24°48'	178°04'	103	
Ap	-311		1003						
67									
26	JN 34	1618	1824			23°57'	178°20'	—	Sparse sample
Ap						23°38'	178°25'		
67									
26	JN 35	2210	0010			23°07'	178°30'	—	
Ap						22°50'	178°33'		
67									
27						21°47'	178°47'	104	Essentially structureless pale brown lutite overlying a brown lutite. Penetration 1174cm Core length 1089 cm. Bottom topography: small peaks rising from gently rolling bottom with a highly stratified, undulating sub-bottom
April	CORE								
67	98	0816	1032	2885	2887				
		Lit	0914		2888				
27	T-GRAD					21°47'	178°47'	104	GOOD RECORD - 4 PROBES
April	76								
67		0816	1032	2885	2887				H.F. = 1.46 μcal/cm²/sec
27	CORE	0816	1033			21°47'	178°47'	104	CAMERA CONDUCTION WIRE CUT.
April	CAMERA								WIRE FROM STROBE TO CAMERA.
67	81B								
27		0804	1024			21°47'	178°47'	104	9 REC. 10 HITS. SEDIMENT SIGNS OF
April	CAMERA								BOTTOM LIFE.
67	89								

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Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From MIDWAY To MANILA

TIME ZONE Z+12

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. W	LOG	REMARKS
26						24°48'	178°04'	103	Pale brown, structureless lutite overlying a dry compact brown lutite. Penetration 1049cm core length 1143cm, good core 770cm Nolmud on piston. Bottom topography = small peaks in flat undulating sediments
APRIL	CORE								
67	97	0745	1016	2883	2860				
		Lit	0848	28	90				
26						24°48'	178°04'	103	GOOD RECORD - 4 PROBES
APRIL	T-GRAD								
67	75	0745	1016	2883	2860				H.F. = 1.17 μ cal/cm²/sec
26						24°48'	178°04'	103	MICRO SWITCH SHORTING.
APRIL	CORE	0745	1016						
67	CAMERA								
	8 B A								
26						24°48'	178°04'	103	SAMPLE COULD NOT BE CENTRIFUGED. CENTRIFUGE ON THE BLINK. BEARINGS AND CASE PART OF HOUSING.
APRIL	WATER								
67	BARREL								
	66								
26						24°48'	178°04'	103	9 DEG. 10 HITS.
APRIL	CAMERA	0722	0951						MAGNESSE NODULES, SCATTERED-SMALL TO
67	88								AVERAGE.
26						24°48'	178°04'	103	
APRIL	NEPHO	0713	0955						O2 MIN LAYER.
67	94								
26	Milli 64	1100	—	Surface		24°48'	178°04'	103	
Ap									
67									

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#115

Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From HONOLULU To MIDWAY

TIME ZONE Z+11

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. W	LOG	REMARKS
21								102	0 100 Layers.
APR 67	NEPHO 93	0521	0712.			27°46'	177°59'		
21						27°46'	177°59'	102	10 for 10 Sediment Light in color.
APR 67	CAMERA 88	0527	0708						Little sign of bottom, ripple or current markings. Slight fish print
20 Apr 67	Bio 281-283	2048	2145			27°52'	179°06'	←	No station associated with this series.
21	Biology					27°46'	177°59'	102	
Apr 67	284-6 OMPS	0437	0510						
	287-9 CMPS	0634	0654						
	290-SF	0642	0724						
	291 V	0801	0808						
	292 V	0825	0833						
21	293-5 OMPS	0942	1207						
	296 M²	1323	1628			27°46'	177°59'		
	297-9 CMPS	1835	1844			27°48'	177°46'		
	300-1 OMPS	2058	2106						
21	302-V	2138	2144						
	303-V	2202	2209						
	304-SF	2100	2120						
	305 M²	2230	2345			27°48'	177°46'		

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Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From HONOLULU To MIDWAY

#114
TIME ZONE Z+11

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. W	LOG	REMARKS
20								101	
APRL 67	WATER BARREL 64					27°36'	179°42'		Sample Centrifuged - discarded contaminated from dirt in centrifuged
20	Bio 270	1021	1523			27°36'	179°42'	101	
Ap 67	280								
20	Milli 63	2130	2131	Surface		27°52'	179°34'	101	
Ap 67									
21						27°46'	177°59'	102	Foram ooz overlying calcarious sand Hammer vibration method of extrusion destroyed part of cores possible structure Age - recent Penetration could not be determined. Bottom topography crest of seamount
APRL 67	CORE 96	0545 & 0620	0703	1760	1770 1770				
21		0545	0703	1760	1770	27°46'	177°59'	102	GOOD RECORD - 2 PROBES
APRL 67	T-GRAD 74								H.F. = 1.04 μcal/cm²/sec
21						27°46'	177°59'	102	NO. Core Camera - the Camera not sent down. - Cables broken.
APRL 67	CORE CAMERA 82								
21						27°46'	177°59'	102	Sample Centrifuged
APRL 67	WATER BARREL 65								

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#113

Research Vessel VEMA
CRUISE N° 24
CRUISE LEG—From Honolulu To Midway
TIME ZONE Z+12

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. E	LOG	REMARKS
20	Bio 261	1148	1158					100	
Ap	262	1158	1203			26°34'	177°46'		
67	263	1203	1208						
	264	1156	1217						
	265	1217	1228						
20	Bio 266	1228	1250			26°34'	177°46'	100	
Ap	267	1134	1200						
67	268	1225	1232						
	269	1242	1248						
20						27°36'N	179°42'W	101	Bedded brown lutite containing a few
APR	CORE	1129	1418	2808	2808				manganese micronodules. Penetration, 1352 cm
67	95	hit	1241	2808					Core length 1238 Good core length 710cm.
									Bottom topography gently rolling, highly
									stratified gently rolling sub bottom
20		1129	1418	2808	2808	27°36'N	179°42'W	101	GOOD RECORD - 4 PROBES
APR	T-GRAD								
67	73								H.F. = 1.21 μcal/cm²/sec
20						27°36'N	179°42'W	101	Dead trip.
APR	CORE								
67	CAMERA								
	81A.								
20						27°36'N	179°42'W	101	0 for 3. hit bottom 3 times, slip stand on
APR	CAMERA	0939	—						core after 3rd hit. Lost 3 hundred lbs.
67	87								Undialed + wired up. Stopping + checking.
									wire added more light + more, and stops
									weight. Camera was there.
20						27°36'N	179°42'W	101	Possible layer.
APR	NEPHD	0934	1229						
67	92								

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Research Vessel VEMA
CRUISE N° V24
CRUISE LEG—From HONOLULU To MIDWAY

1M

TIME ZONE Z-12

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. E	LOG	REMARKS
20								100	Structureless brown lutite with an extremely
APRIL	CORE					26°34'	177°46'		low coarse fraction of mostly manganese
67	94	1013	1243	3018	3020				micronodules. Penetration 1201a core length 1214a
		(Lit)	1109	3020					Good core length could not be determined. Bottom
									topography: very hilly, with highly stratified subbottom
20						26°34'	179°46'	100	
APRIL	CORE	1013	1243						45 NOEG. NO ORIENTO
67	CAMERA								
	80								
20		1013	1243	3018	3020	26°34'	177°46'	100	GOOD RECORD - 4 PROBES
APRIL	T-GRAD								
67	72								H.F. = 1.35μ cal/cm²/sec
20						26°34'	177°46'	100	
APRIL	WATER								
67	BARREL								
	613								
19								—	
APRIL	SONO	1308				25°51'	176°11'		
67	BUOY		1321						
	35A								
19	SONO	1332						—	
APRIL	BUOY		1542			25°52'	176°13'		
67	35					25°56'	176°25'		
20	Dredge	1404	1715	2928	2900	26°34'	177°46'	100	Dredge was empty
APRIL	2A								
67									

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Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From HONOLULU To MIDWAY

TIME ZONE Z-12

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. E	LOG	REMARKS
19						25°48'	176°13'	99	0 Layers.
APRIL 67	NEPHO 90	0640	0929						
19						25°48'	176°13'	99	12 for 13. Magnese Nodules Large, small + dense.
APRIL 67	CAMERA 85	0647	0922						
19						25°48'	176°13'	99	Structureless pale brown lutite overlying a layered light brown lutite. Penetration 1055 cm core length 1222 good core 691 cm. Bottom topography gently rolling with highly stratified undulating sediments.
APRIL 67	CORE 93	0719 (Lift) 0817	0954	3060	3078 3061				
19						25°48'	176°13'	99	
APRIL 67	CORE CAMERA 79	0719	0954						43 recd. Camera OK.
19 APRIL 67	T-GRAD 71	0719	0954	3060	3061	25°48'	176°13'	99	Good RECORD - 4 PROBES H.F. = 1.04 μcal/cm²/sec
20						26°34'	177°46'	100	0 no Layers.
APRIL 67	NEPHO 91	0943	1249						
20						26°34'	177°46'	100	8 FOR 10 Magnese Nodules + Large Chunk of rock of magnese.
APRIL 67	CAMERA 86	0954	1243						

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Research Vessel VEMA
CRUISE N° 24
CRUISE LEG—From Honolulu To Midway

TIME ZONE Z-12

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. E	LOG	REMARKS
19	Biology	~~0340~~						99	
Ap	220-OMPS	0400	0421			25°48'	176°13'		
67	221-OMPS	0421	0431						
	222-OMPS	0431	0442						
	223-SF	0422	0454						
	224-V	0459	0521			25°48'	176°13'	99	
	225-OMPS	0608	0620						
	226-OMPS	0620	0626						
	227-OMPS	0626	0631						
	228-CMPS	0829	0836						
	229-CMPS	0836	0840			25°48'	176°13'	99	
	230-CMPS	0840	0845						
	231-CMPS	0840	0858						
	232-CMPS	0858	0912						
	233-CMPS	0912	0924						
	234-V	1009	1016			25°48'	176°13'	99	
	235-V	1058	1104						
	236-SF	~~1130~~	~~1202~~						
	237-90MPS	1130	1202						
	240-2 CMPS	1715	1753			+ 25°56'	176°23'		
	243-5 CMPS	1832	1847			~~25°48'~~	~~176°13'~~	99	
	246-SF	1833	1903						
	247-V	1832	1837			25°56'	176°23'		
	248-50 OMPS	1915	1953						
	251-3 CMPS	2039	2051						
	254-OMPS	2141	2157			~~25°48'~~	~~176°13'~~	99	
	255-OMPS	2157	2205			25°56'	176°23'		
	256-OMPS	2205	2213						
	257-SF	2142	2212						
	258-V	2050	2057						
	259-V	2226	2233			~~25°48'~~	~~176°13'~~	99	
	260-V	2256	2303			25°56'	176°23'		

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PALISADES

#109

Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From HONOLULU To MIDWAY

TIME ZONE Z - 12

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. E	LOG	REMARKS
18	—					24°37'	174°00'	98	43rd Cr Orient. Ck.
April	CORE								
67	CAMERA								
	78								
18						24°57'	174°00'	98	Brown clutite containing a grayish orange pink carbonate layer. Penetration 1186cm. Core length 1405cm. good core @ 1300. Bottom topography gently hilly rolling, with small peaks in highly stratified sediments
April	CORE								
67	92	0952	1219	3126	3126				
		(Lit) 1056		3126					
19		1004	1219	3126	3126	24°57'	174°00'	98	GOOD RECORD - 3 PROBES
April	T-GRAD								
67	70								H.F. = 1.10 μcal/cm²/sec
18	Bio 214-	1110	1240			24°57'	174°00'	98	
Apr	219								
69									
18	Milli 62	1400	1400			24°57'	174°00'	98	
Apr									
69									
18	JN-32	1043	2244			25°24'	175°42'	—	
Apr						25°31'	175°30'		
69									
19						25°48'	176°13'	99	Sample Centrifuged
April	WATER								
67	BARREL								
	6B2								

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#108

Research Vessel VEMA
CRUISE N° V24
CRUISE LEG—From HONOLULU To MIDWAY

TIME ZONE Z-12

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long E	LOG	REMARKS
17						23°39'	170°52'	97	7 for 10. Sediment - Little signs of bottom life - Possible scatterd of organic Nodules. - Dredge lost bal with 2000 of wire, Deep tow camera., apparat- im proved Possible to Marcher, liter Sediment.
APRIL 67	CAMERA 83	0954	1226						
						23°39'	170°52'	97	Wouldn't Attempt in rough Weather or Strong current areas.
17 APRIL 67	NEPHO 88	0926	1243						300 Fr. Layer Light.
17 Apr 67	Bio 208 -213	1041	1152			23°39'	170°52'	97	
17 Apr 67	Milli 61	1400	1460			23°39'	170°52'	97	
18 APRIL 67	NEPHO 89	0922	1210			24°57'	174°00'	98	One Layer. Compus gets current at 340°
18 APRIL 67	CAMERA 84	0934	1207			24°57'	174°00'	98	13 for 13 Bottom is sediment with few signs of bottom life, Possible Very light Scattering of Nagenes.
18 APRIL 67	WATER BARREL 61					24°57'	174°00'	98	Sample Centrifuged

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PALISADES

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Research Vessel VEMA
CRUISE N° 24
CRUISE LEG—From Hawaii - To Midway

TIME ZONE Z - 12

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. E	LOG	REMARKS
16 Apr 67	Bio 202 - 207	1107	1309			22°12'	168°02'	96	
16 Apr 67	Mill. 60	1430	1430			22°2'	168°2'	96	
16 Apr 67	JET NET #30 202μ Net	2031	2230			22°41' 22°50'	169°00' 169°18'	—	
17 APRIL 67	CORE 91	1013 (Lit) 1106	1230	3140 3140	3140	~~2354~~ 2339	170°52'	97	Brown Lutite containing an orange, calcareous bed. Penetration 1024cm, core length 1507 Good core length 800cm. Bottom topography flat, slightly rolling with small peaks in stratified undulating beds. Trigger weight lost during pullout or retrieve
17 APRIL 67	CORE CAMERA 77	1013	1230			~~2259~~ 2339	170°53'	97	42 exp. ORIENT OK.
17 APRIL 67	T-GRAD 69	1013	1230	3140	3140	~~2347~~ 2339	170°52'	97	GOOD RECORD - 3 PROBES H.F. = 1.14 μcal/cm²/sec
17 APRIL 67	WATER BARREL G & B	1013	1230			~~2259~~ 2339	170°52'	97	Sample Centrifuged

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#106

Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From HONOLULU To MIDWAY

TIME ZONE Z-12

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. E	LOG	REMARKS
15 APR. 67	JET NET #29 202μ	2018	2229			21°20'	166°10'		Sparse sample
						21°28'	166°28'		
16 APRIL 67	NEPHO 87	1005	1244			22°12'	168°02'	96	150 Fm. Layer Light o
16 APRIL 67	CAMERA 82	1021	1236			22°12'	168°02'	96	9 for 10 Scattered Magnese Nodules.
16 APRIL 67	CORE 90	1043 (list)	1246 1123	2960 2962	3000	22°12'	168°02'	96	Bedded brown lutites containing manganese micronodules. Perforation 919 cm Core length 1479 cm Good core length 20 cm Bottom topography slightly hilly, rolling. Trigger line fouled on water barrel - piston core did not trip
16 APRIL 67	T-GRAD 68	1043	1246	2960	2962	22°12'	168°02'	96	GOOD RECORD 1 PROBE H.F. = 1.30 μcal/cm²/sec
16 APRIL 67	CORE CAMERA 76	1043	1246			22°12'	168°02'	96	23 neg. NO ORIENT.
16 APRIL 67	WATER BARREL 61A	1043	1246			22°12'	168°02'	96	Sample Centrifuged N.

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#105

Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From HONOLULU To MIDWAY

TIME ZONE Z-12

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. W	LOG	REMARKS
								95	Brown lutite containing thin orange pink layers near bottom of core. Penetration 1242cm. good core length 508cm. Bottom topography flat, with highly stratified undulating sediments.
15	CORE					20°52'	165°07'		
APRIL	89	1038	1241	2940	2940				
67		Lit	1123	2940					
		1038	1241	2940	2940	20°52'	165°07'	95	GOOD RECORD — 4 PROBES
15									
APRIL	T-GRAD								H.F. = 0.91 μcal/cm²/sec
67	67								
						20°53'	165°07'	95	39 DEG. 2 orientations.
15	CORE	1038	1241						
APRIL	CAMERA								
67	75								
15						20°53'	165°07'	95	9 for 10 Maginse Modulus, - not dense - appear to be other than round.
APRIL	CAMERA	0938	1156						
67	81								
15						20°52'	165°07'	95	450 FDS. Layer Light.
APRIL	NEPHO	0926	1200						
67	86								
15	Bio 196-	1055	1243			20°55'	165°8'	95	
Apr	201								
67									
15	Mill 59	1930	1930			21°18'	166°04'	—	
Apr									
67									

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PALISADES

#104

Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From HONOLULU To MIDWAY

TIME ZONE Z-12

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat N	POSITION Long E	LOG	REMARKS
14						19°52'	162°58'	94	9 for 10 Hagenese Nodules in Moderately Small
APRIL	CAMERA	1415	1623						Compass reading ave. 250°
67	80								
14						19°52'	162°58'	94	350 Fm. Layer Light.
APRIL	NEPHO	1411	1629						
67	85								
14	Bio 190	1600	1606			19°52	162°58'	94	
Apr.	191	1619	1625						
67	192	1423	1456						
14	Bio 193	1532	1541			19°52'	162°58'	94	
Apr.	194	1541	1546						
67	195	1546	1551						
14	Mill. 58	1730	1730	Surface		19°52'	162°58'	94	
Apr									
67									
14	JET NET	2043	2241	0-20 fm		20°04'	163°29'		
APR	28					20°07'	162°26'		
67	202μ mesh								
						20°52'	165°07'	95	Sample Centrifuged
15	WATER								
APR	BARREL								
67	60								

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PALISADES

#103

Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From HONOLULU To MIDWAY

TIME ZONE Z-12

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat N	POSITION Long E	LOG	REMARKS
13	BIO	2132	2205					93	
IV	Core MPS					19°04'	161°23'		
67	183								
13	B10	2230	2325			19°04'	161°23'	93	
IV	OBL								
67	MPS								
	186-188								
13	B10	2333	2341			19°04'	161°23'	93	
IV	189 V								
67									
14						19°52'	162°58'	94	Bedded tuffite overlying sorted volcanics and sedimentary rocks. Penetration could not be determined. Good core length 413cm. Bottom topography, glauthy rolling sediments in basin Between Seamounts
APRIL	CORE								
67	88	1428	1615	2560	2573				
		1512	(hit)		2558				
14		1428	1615	2560	2558	19°52'	162°58'	94	GOOD RECORD 2 PROBES
APRIL	T-GRAD								
67	66								H.F. = 1.92 μcal/cm²/sec
14						19°52'	162°58'	94	20 neb. — Orient. O.K.
APRIL	CORE	1428	1615						
67	CAMERA								
	79								
14		1428	1615			19°52'	162°58'	94	Sample Centrifuged
APRIL	WATER								
67	BARREL								
	59								

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PALISADES

#102

Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From HONOLULU To MIDWAY

TIME ZONE Z-12

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long E	LOG	REMARKS
13						19°04'	161°23'	93	Structureless brown lutite with a very low coarse fraction. Penetration 1242 cm Core length 1169cm. Bottom topography steep slope over crest of sea mount. P.D.R. depth at hit difficult to determin.
APRIL 67	CORE 87	1627	1834	2660	2460				
		hit	1720		2595?				
13						19°04'	161°23'	93	KC73 39 mg and orientation
APRIL 67	CORE	1627	1834						
	CAMERA 73								
13						19°04'	161°23'	93	3 for 4 Stagenise Nodules. Dense. 4 larger than 8oz. although they are average size for area.
APRIL 67	CAMERA 79	1616	1813						
13						19°04'	161°23'	93	NO Layers. NO Densitometer Scale.
APRIL 67	NEPHO 84	1608	1818						
13	Bio.					19°04'	161°23'	93	
APR 67	174-175	1746	1814						
	176 SF	1738	1815						
13	Bio	1740	1806			19°04'	161°23'	93	
IV 67	Core MPS 177-179								
13	Bio	1941	2033					93	
IV 67	OBL. MPS. 180-182					19°04'	161°23'		

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PALISADES

#101

Research Vessel VEMA
CRUISE N° 24
CRUISE LEG—From Honolulu To Midway

TIME ZONE Z-12

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. E	LOG	REMARKS
12	Milli 57	2000	2000	Surface				—	
Apr	Bio 165	1213	1404			19°03'	161°19'	92	
67	-173								
13						19°03'	161°19'	92	14 for 15 - Manganese Nodules. Bottom mud
APRIL	CAMERA	1033	1237						Sample in dredge.
67	78								
13						19°03'	161°19'	92	0 no bags.
APRIL	NEPHO	1026	1240						
67	83								
13						19°03'	161°19'	92	7BA. trigger pin not pulled.
APRIL	CORE	1052	1227						
67	CAMERA								
	73								
13						19°03'	161°19'	92	Sample Centrifuged
APRIL	WATER	1052	1227						
67	BARREL								
	58								
13						19°03'	161°19'	92	Manganese nodule bed overlying reddish brown
APRIL		1052	1227	2170	2260?				Lutite. Penetration - pipe laid down.
67	CORE	(hit)	1131	2130?					good core length 56 cm. core length 434 cm.
	86								Bottom topography steeply sloping down
									crest of Seamount. PDR. depth difficult to determine.
13	T-GRAD					19°03'	161°19'	92	NO RECORD ONE PROBE PENETRATION
APRIL	66D								PIPE LAID DOWN
67									NO EQUILIBRIUM

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PALISADES

#100

Research Vessel VEMA
CRUISE N° 24
CRUISE LEG—From Honolulu To Midway

TIME ZONE Z-12

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. E	LOG	REMARKS
12		1021				17°51'	158°52'	91	Sample Centrifuged
APRIL	WATER								
67	BARREL								
	57								
12		1021				17°51'	158°52'	91	Hang. No orientation
APRIL	CORE								
67	CAMERA								
	72								
12						17°51'	158°53'	91	16 WIRE 17 HITS.- Magense Nodules. Largest seen so far.
APRIL	CAMERA	1001.	1236.						
67	77								Sample in dredge.
12	NEPHO	0954	1241			17°51'	158°52'	91	150 Fms. Layo Light.
APRIL	82								
67									
12	Sonobuoy	1447				17°54'	159°01'		
APRIL	34		1610			17°58'	159°10'		
67									
12	Bio 159	1146	1153			17°51'	158°52'	91	
April	160	1209	1215						
67	161	1100	1130						
12	Bio 162	1137	1146			17°51'	158°52'	91	
Apr.	163	1146	1152						
67	164	1152	1157						

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#99

Research Vessel VEMA
CRUISE N° 24
CRUISE LEG—From Honolulu To Midway

TIME ZONE Z-12

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. E	LOG	REMARKS
11 Apr 67	Bio 153 / 154 / 155	0953	1100	1000m	0	16°48'	160°04'	90	
11 Apr 67	Milli 56	1300	1300			16°49'	160°58'		
11 Apr 67	JN 28	1405	1530						Entire effort of this tow wasted because of leaky storage bag.
11 Apr 67	Sonobuoy 33	1327	1506			16°50' / 16°52'	160°54' / 160°41'		~11 miles of record, Possible refraction 7.7 Km/sec.
11 April 67	Bio 156 / 157 / 158	2109	2223			17°13'	159°48'		
12 APRIL 67	CORE 85	1021 / Lwt 1118	1241	2931 / 2922	2940	17°51'	158°52'	91	Structureless brown lutite containing Mn micro nodules, fish teeth and authigenic minerals. Penetration 1242 cm core length 1240 cm. Good core length 730 cm. Bottom topography Small peak rising from flat bottom
12 APRIL 67	T-GRAD 66C	1021				17°51'	158°52'	91	NO RECORD. SHORT IN BATTERY PACK

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Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From HONOLULU To MIDWAY

#98

TIME ZONE Z-12

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. ~~W~~ E	LOG STN.	REMARKS
11		0929	1135	2970	2970	16°48'	161°04'	90	Structureless brown lutite containing mostly Mn nodules and an authigenic mineral. Penetration 1249 cm core length 1794 cm. Bottom topography: flat with stratified slightly undulating sub bottom. cutting edge good. Pipe bent.
APRIL	CORE	hit	1020	29	70				
67	84								
11		0929				16°48'	161°04'	90	STRUCT. NOD BRIEN.
APRIL	CORE								
67	CAMERA								
	71								
1		0929				16°48'	161°04'	90	NO RECORD FILM STOPPED BEFORE HIT
APRIL									
67	T-GRAD								
	66B								
11		0929				16°48'	161°04'	90	SAMPLE CENTRIFUGED.
APRIL	WATER								
67	BARREL								
	56								
11						16°48'	161°04'	90	1450 FD. LIGHT LAYER.
APRIL	NEPHO	0901.	1154.						
67	81								
11						16°48	161°04	90	19 DEP - 20 HITS. Camera did not seem to orient itself in current, more like as if it were sideways. Bottom shows signs of currents.
APRIL	CAMERA	0909.	1150.						
67	76								
11	Bio 150	1007	1043	0-10m		16°48'	161°04'	90	
Apr.	151	1116	1123						
67	152	1133	1139						

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#97

Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From HONOLULU To MIDWAY

TIME ZONE Z-12

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. E	LOG	REMARKS
						15°23'	164°16'	89	150 Fm. Light Layer.
10 April 67	NEPHO 80	0921	1158						
10 April 67	CAMERA 75	0945	1154			15°23'	164°16'	89	8 locs - 9 hrs. Sediment + Modulus. - Compass readings not concurrent - modulus not rotated as previous - Scattered on sediment. - 3 pieces in dredge. Hoist.
10 April 67	Bio 144	1040	1110	0-10m		15°23'	164°16'	89	
	145	1141	1148	196m	0				
	146	1202	1208	188m	0				
10 April 67	Core MPS 147, 148, 149	1105	1125	1000m	0	15°23'	164°16'	89	
10 April 67	Mill. 55	1245	1245	Surface		15°23'	164°16'	89	
10 Apr. 67	JET NET #26	1605	1649	0-19 fm.		15°25' 15°37'	163°47' 163°39'	—	
10 April 67	JN-27	2046	2243	19F	19F	15°55' 16°05'	162°58' 162°38'	—	Light plankton conc.

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Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From HONOLULU To MIDWAY

TIME ZONE Z-12

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. W	LOG	REMARKS
9						14°08'	166°48'	88	5 mg 6 hits. Sediment mostly (signs of life).
APRIL	CAMERA	1857	1507						Marks in sediment oriented to ET
67	74								Compus readings. Constant changes.
									Compus moved 6" up on rig - DO SHOOTOUT.
9						14°08'	166°48'	88	200 Fs. Layus Light.
APRIL	NEPHO	1240	—						
67	79								
9	138-143 OBLIQUE	1550	1707			14°08'	166°48'	88	3 good, rich tows
Apr	MPS								
67	0-125m								
	125-250m								
	Mill: 54	1715	1715	Surface					
10						15°23'	164°16'	89	Brown white overlying reddish orange white
APRIL	CORE	1001	1155	2760	2760				possibly containing Cretaceous forams
67	83	hit	1046	2758					Penetration 600 cm core length 573 cm
									Bottom topography: gently rolling with stratified
									undulating sub bottom. Cutting shoe bashed in, pipe bent
10						15°23'	164°16'	89	35 Deg. CORE ORIENTATION POSSIBLE.
APRIL	CORE								
67	CAMERA								
	70								
10						15°23'	164°16'	89	Sample Centrifuged
APRIL	WATER								
67	BARREL								
	58								
10	T-GRAD					15°23'	164°16'	89	NO RECORD - ONE PROBE PENETRATION
APRIL	66A								P4 IS LEAKING
67									

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PALISADES

#95

Research Vessel VEMA
CRUISE N° 24
CRUISE LEG—From Honolulu To Midway

TIME ZONE -12

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long.	Stn ~~Log~~	REMARKS
8	Bio 133-V	1155	1203	117Fm	0	11°51'	169°41'	87	
April	134-V	1218	1225	127Fm	0				
67									
8	Milli 53	1445	1445	Surface		11°51'	169°41'	87	
April									
67									
8	OBLIQUE	1910	2040			12°33'	168°50'		Rich hauls in all 3 nets. Sampling coincident
Apr.	MPS 135 137								with upward DSL migration.
67	0-125 m								
	125-250m								
	250-500m								
9						14°08'	166°48'	88	Interbedded foram sand with foram ooz and
APRIL	CORE	1315	1456	2962	2961				brown lutite. Penetration 785cm. Core length
67	82 (Wt)	1401		2962					519cm. Bottom topography flat with
									stratified subbottom. Cutting edge good,
									pipe bent
9						14°08'	166°48'	88	Trigger Malfunction.
APRIL	CORE								
67	CAMERA								
	70A								
9						14°08'	166°48'	88	Sample Centrifuged.
APRIL	WATER								
67	BARREL								
	54								
9		1315	1456	2962	2962	14°08'	166°48'	88	GOOD RECORD - 2 PROBES
APRIL	T-GRAD								
67	65								H.F. = 1.04 μ cal/cm²/sec

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PALISADES

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Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From HONOLULU To MIDWAY

TIME ZONE Z -12

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat N	POSITION Long E	LOG	REMARKS
7	Sonobuoy	2128				11°21'	171°43'		
Apr	32		2300			11°24'	171°30'		
67									
8						11°51'	169°41'	87	Calcareous sand with graded bedding. Penetration
APRIL	CORE	1003	1157	2728	2730				1378cm. Core length 600cm. Hammer method
67	81	1103		2728					of extrusion destroyed original structure of
									sediment. Bottom topography - flat with
									highly stratified sub-bottom.
8						11°51'	169°W'	87	DID NOT SEND DOWN. REPAIRS
APRIL	CORE								ON CAMPUS. RIG.
67	CAMERA								
	70								
8						11°51'	169°41'	87	Sample Centrifuged
APRIL	WATER								
67	BARREL								
	53								
8		1003	1157	2728	2728	11°51'	169°41'	87	GOOD RECORD - 2 PROBES
APRIL	T-GRAD								
67	64								H.F. = 0.188 μcal/cm²/sec
8		0945	1205			11°51'	169°41'	87	~~DIVE~~ DHITS. Fairly smooth sediment, bottom
APRIL	CAMERA								shows plenty of bottom life, some present,
67	73								Compass reading not constant.
8						11°51'	169°41'	87	Ono Layer.
APRIL	NEPHO	0929	1210						
67	78								

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PALISADES

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Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From HONOLULU To MIDWAY
TIME ZONE Z-12

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat N	POSITION Long E	LOG	REMARKS
7						10°53'	173°03'	86	16 DEP. 19 HITS, Sediment with Signs
APRIL	CAMERA	0947	1232						of bottom life. Light scattering of
67	72								Magnetic Particles.
7						10°53'	173°03'	86	100 FM LIGHT.
APRIL		0936	1239						
67	NEPHO								
	77								
7	Bio 127-	1039	1206	1000m	0	10°53'	173°03'	86	
April	129 CMPS								
67									
7	Bio 130-V	1217	1229	228m	0	10°53'	173°03'	86	
April	131-V	1245	1253	220m	0				
67	132-SF	1102	1135	0-10					
7	Mill 52	1315	1315	Surface		10°53'	173°03'	86	
April									
67									
7	JN-25	2132	2205	19 Fm	19 Fm	11°22'	171°42'	—	
April						11°23'	171°38'		
67									
7	Sonobuoy	0236				10°27'	174°11'		
Apr	32A		0345			10°31'	174°00'		
67									

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PALISADES

#92

Research Vessel VEMA
CRUISE No. 24
CRUISE LEG—From Honolulu To Midway
TIME ZONE Z-12

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. E	Str ~~Log~~	REMARKS
4									
Apr	IKMT-4	1803	2008	0	400	~~19°14'~~	~~178°27'~~	85	Swivel parted; lost entire rig.
1967						09°13'	178°54'		
4	Bio 124-V	1110	1116	231	0	09°17'	178°57'	85	Dense band 40-60Fm thick, exists in surface SL.
April	125-V	1130	1138	209	0				Scatterers forming this band made an unusual
67	126-SF	1243	1315	0 - 10					mid-morning migration to this level from a range
									of 240-300Fm. They began moving upward at
									7Fm/min when descending core entered layer.
6	JN-24	2033	2230			10°06'	175°08'		
April						10°12'	174°50'		
67									
7		1010	1224	2840	2820	10°53'	173°03'	86	Brown radiolarian ooze containing several thin
APRIL	CORE	hit	1116		2850				radiolarian sand layers. Penetration 1898+
67	80								(Core head partially buried). core length 1848
									good core 1500 Bottom topography flat, highly
									stratified subbottom
7						10°53'	173°03'	86	Sample Centrifuged
APRIL	WATER								
67	BARREL								
	52								
7						10°53'	173°03'	86	40 Recs. NO ORIENTATION.
APRIL	CORE								
67	CAMERA								
	69								
7						10°53'	173°03'	86	GOOD RECORD - 4 PROBES
APRIL	T-GRAD								
67	63								H.F. = 1.78 μcal/cm²/sec

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PALISADES

#91

Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From HONOLULU To MIDWAY

TIME ZONE Z +12

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. E	LOG	REMARKS
									Bedded brown homogeneous lutites, containing manganese nodules. Penetration 1850
4 Apr 67	Core 79	0943 (Lit)	1148 1046	3060 3022	3042	09°17'	178°57'	85	core length 1788 cm, good core 1590 Bottom topography very hilly with vaguely stratified undulating sediments
									GOOD RECORD - 3 PROBES
4 Apr 67	T-Grad 62					09°17'	178°57'	85	H.F. = 1.60 μ cal/cm²/sec
4 Apr 67	Water barrel 51	0903	1148			09°17'	178°57'	85	Sample Centrifuged
4 Apr 67	Camera 71	0923	—			09°17'	178°57'	85	6 EXP. 7 HITS. ~~Large~~ Magnese Nodules.
									4/1265. ORIENTATION POSSIBLE. - BEST ORIENTATION SHOT SOFAR. BOTTOM CLEAR.
4 Apr 67	Core Camera 68	0943	1148			09°17'	178°57'	85	
									0 100 LAYER.
4 Apr 67	Nepho 77	0903	1157			09°17'	178°57'	85	
4 Apr 67	Dredge 1	1306 to bottom	1625 1433	3080	3170 1515	09°17'	178°57'	85	Dredge contained 10 manganese nodules the size of baseballs plus 4 large flat rocks containing radiolarian ooze, thin layers of silica, pyrolusite dendrites and manganese.

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Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From HONOLULU To MIDWAY

TIME ZONE Z+10

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. W	LOG	REMARKS
3									44 DEG. NO ORIENTATION
Apr 67	Core	0956	1215			10°28'	177°46'	84	
	Camera 67								
									O NO LAYER.
3									
Apr. 67	Nepho 76	0924	1221.			10°28'	177°46'	84	
3 April 67	Bio 120, 121-CMPs	1118	1136	1000	0m.	10°28'	177°46'	84	
3 April 67	Bio 122-V	1224	1232	228	0 m.	10°28'	177°46'	84	
	123-SF	1240	1245	Surface					
3 April 67	Milli 67	1315	1315	Surface		10°28'	177°46'	84	
3 Apr 67	JN-22	1530	1734	10m	10m	10°12' 10°00'	178°08' 178°25'	—	
3 April 67	JN-23	2104	2202	10m	10m	09°45' 09°40'	179°00' 179° 19'	—	

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PALISADES

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Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From HONOLULU To MIDWAY

TIME ZONE Z+12

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. W	LOG	REMARKS
									Brown lutites contain large pebble size
2									manganese nodules. Penetration 1260+ -
Apr.	Core 77	1546	1814	2798	2800	12°01'	175°37'	83	Full penetration - mud on core head and piston.
67		hit (1702)		2800					core length 1244 cm. Bottom topography, rolling
									slightly hilly with stratified, undulating subbottom
									GOOD RECORD - 3 PROBES
2									
Apr.	T-Grad	1546	1814	2798	2800	12°01'	175°37'	83	H.F. = 1.71 μcal/cm²/sec
67	60								
2	TKMT-3	1042	1244			12°11'	175°19'	83	Hauling net in at 40 Fm/min, at half ahead
April									placed too much strain on the depresser,
67	Bio 115-119	1731	1835						causing it to warp and break several welds. No
									gear lost. This is the first tow to include
	Mill 50	1315	1315	Surface				—	multiple cod-end which functioned smoothly.
									Interbedded siliceous sand and ooze very
3									firm and indurated. Penetration 680 cm.
Apr.	Core 78	0956	1215	2850	2888	10°28'	177°46'	84	Good core length 14 cm. Piston caught before
67		(hit) 1056		2818					broken pipe. Mud on piston. Relative
									orientation
		0956		2850					GOOD RECORD - 2 PROBES
3									
Apr.	T-Grad					10°28'	177°46'	84	H.F. = 1.60 μcal/cm²/sec
67	61								
3									Sample Centrifuged
Apr.	Water					10°28'	177°46'	84	
67	barrel								
	50								
3									RICE 13 HITS MAGNESIUM NODULES.
Apr.	Camera	0938	1216			10°28'	177°46'	84	
67	70								

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PALISADES

#88

Research Vessel VEMA
CRUISE N° 24
CRUISE LEG—From Honolulu To Midway

TIME ZONE +12

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long W	Sta. Log	REMARKS
1	~~Bris~~								
April	Milli 49	2100	2100	Surface		13°12'	178°07'	←	
67									
1	JN-20	1325	1609			13°32'	172°38'		
April						13°20'	172°52'		
67									
1	JN-21	2325	2433			13°02'	173°28'		
April						12°68'	173°40'		
67									
									Dist. 23 Hits — Negative Readings.
2	CAMERA	—	—			12°01'	175°37'	83	
APR	69								
67									
2	DEPTH.					12°01'	175°37'	83	DEPTH CAMERA NOT SENT DOWN. CASE LEAKED SLIGHTLY ON LAST LOWERING, I DIDN'T WANT TO TAKE A CHANCE OF FLOODING WITH THE CAMERA IN CASE.
APR	25								
67									
									57 Hits. NO ORIENTATION.
2	CORE	1546	1814			12°01'	175°37'	83	
APR	CAMERA								
67	66								
2	WATER	1546	1814			12°01'	175°37'	83	BARREL DIDN'T TRIP
APR	BARREL								
67	50A								

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PALISADES

#87

Research Vessel VEMA
CRUISE N° V24
CRUISE LEG—From HONOLULU To MIDWAY

TIME ZONE Z+11

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. W	LOG	REMARKS
1						13°18'	172°55'	82	15 DEG. 16 HITS.
APRIL									Bottom life - Sediment.
67	CAMERA 68	1636	1918						
1						13°18'	172°55'	82	100 Layers. Film stopped after some
APRIL	NEPHO 74	1623	1923						of hits.
67									
31	IKMT-2	0914	1022			14°37'	169°49'	—	
Mar									
67									
1	Bio 108-SF	0040	0100	0	10	14°20'	170°55'	81	
April									
67									
1	Bio 109-111-CMPS	1729	1841	950	0	13°18'	172°55'	82	
April									
67									
1	Bio 112-V	1856	1904	215	0	13°18'	172°55'	82	
April	113-V								
67									
1	Bio 114-SF	1850	1921	0	10	13°18	172°55'	82	
April									
67									

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Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From HONOLULU To MIDWAY

#86
TIME ZONE Z+11

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. W	LOG	REMARKS
1						14°20'	170°55'	81	6 mg bottles -
APRIL	CAMERA	0036	0243						
67	69								
1						14°20'	170°55'	81	no layers.
APRIL	NEPHO	0231	0247						
67	73								
1						14°20'	170°55'	81	Brown lutite overlying basalt. Penetration
APRL	CORE	0057	0233	2291	2400				193 cm, core length 73 cm. Bottom topography
67	75	Lit 0145		2360					steep slope along side seamount. Cutting
									edge bashed in, pipe bent (15°) 6' above cutting
									edge. Some sediment poured out from cutting edge
1		1655	1908	3012	3010	13°18'	172°55'	82	. Brown structureless lutite. Penetration 642 cm
APRIL	CORE	Lit 1755		3010					Core length 422. Pipe bent (120°) at bottom of
67	76								second pipe. Bottom topography: hills & valleys
									moderately stratified, undulating beds.
1		1655	1908	3012	3010	13°18'	172°55'	82	GOOD RECORD - 3 PROBES
APRIL	T-GRAD								
67	59								HF 1.67 μcal/cm²/sec
1		1655	1908			13°18'	172°55'	82	Sample Centrifuged
APRIL	WATER								
67	BARREL								
	49								
1		1655	1908			13°18'	172°55'	82	55 deg. No Orientation.
APRIL	CORE								
67	CAMERA								
	65								

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#85

Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From Honolulu To MIDWAY

TIME ZONE Z+11

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long W	LOG	REMARKS
		1118	1356	2996	3000			80	Brown lutite containing numerous authogenic
31	CORE	1118	1226	3004		14°53'	169°51'		minerals Penetration app. 294cm. core length
MAR	74								243cm Bottom topography - gently sloping
67									near base of seamount. Highly stratified beds.
									Eocene age??
31		1118				14°53'	169°51'	80	NO RECORD
MAR	T-GRAD								
67	59A								
31						14°53'	169°51'	80	14 hrs 15 Min. rig again flooded by
MAR	CAMERA	1059	1350						sediment. On bottom.
67	66								
31						14°53'	169°51'	80	Layer thin. ~300 m.
MAR	NEPHO	1051	1357						
67	72								
31	Bio 102-SF	1354	1414	Surface		14°53'	169°51'	80	
Mar	103, 4, 5	1251	1309	1000m	0				
67	CMPS								
	106-OB	1331	1338	187	0				
	107-OB	1355	1403	177	0				
31	Mill 48	1420	1420	Surface		14°53'	169°51'	80	
Mar									
67									
1						14°20'	170°55'	81	
APRIL	CORE								
67	CAMERA								
	64								

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#84

Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From HONOLULU To MIDWAY

TIME ZONE Z+11

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long W	LOG	REMARKS
						16°29'	166°47'	79	Homogeneous and structureless light brown lutite
30									overlying brown cutite Penetration 1190cm.
MARCH	CORE	0919	1135	2813	2794				core length 1172cm Bottom topography hilly,
67	73	hit	1018	2780					with highly stratified, undulating sediments
30						16°29'	166°47'	79	GOOD RECORD - 4 PROBES
MAR	T-GRAD								
67	58								H.F. = 1.71 μ cal/cm²/sec
30						16°29'	166°47'	79	no layer.
MAR									
67	NEPHO	0847.	1139.						
	71								
30						16°29'	166°47'	79	47 mg. No core orientation
MAR	CORE								
67	CAMERA								
	63								
30						16°29'	166°47'	79	7 mg. 8 hits mg appear blurred
MAR	CAMERA	0903	1134.						Advance of sediment in water. Descrip-
67	65								tion unclear. No rock on bottom left.
30						16°29'	166°47'	79	
MAR	WATER								
67	BARREL								
	47								
31						14°53'	169°51'	80	
MAR	WATER								
67	BARREL								
	48								

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PALISADES

#83

Research Vessel VEMA
CRUISE N° 24
CRUISE LEG—From Honolulu To Midway

TIME ZONE Z+11

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. W	Stn. ~~LOC~~	REMARKS
29 Mar 67	92-CMPS	1633	1649	927m	0	17°31'	164°41'	78	All nets triggered properly, but event marker attached to TDR failed to record opening of middle + shallow nets. Deep net opened at 927 m, and was recorded by event marker.
29 Mar 67	Bio 93-V	1638	1715	228	0	17°31'	164°41'	78	
	94-V ~~Bio 95-SF~~								
29 Mar 67	Milli 46	1750	1750	Surface		17°31'	164°41'	78	
29 Mar 67	Bio 95-SF					17°31'	164°41'	78	
30 Mar 67	Bio 96, 97	~~0932~~	~~1145~~			16°29'	166°47'	79	
	98-CMPS,	1039	1057	1000m	0				
	99-SF,	0932	1116	0	10m				
	100-V,	1113	1121	210	0				
	101-V	1136	1145	205	0				
30 Mar 67	Milli 47	~~[illegible]~~	1315	Surface		16°25'	166°58'	—	
67	JN 18	1344	1520			16°24' 16°18'	167°02' 167°16'	—	
30 Mar 67	JN 19	2017	2223	10Fm	10Fm	15°56' 15°45'	169°58' 168°16'	—	

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Research Vessel VEMA
CRUISE N° 24
CRUISE LEG—From Honolulu To Midway

TIME ZONE Z+11

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat N	POSITION Long W	Stn. ~~LOG~~	REMARKS
29 Mar 67	IK-1	0858	0945			17°51'	163°59'	—	
									Structureless brown lutite Penetration 607cm
29 Mar 67	Core 72	1504 hit 1603	1722	2903 2903	2898	17°31'	164°41'	78	Core length 532 cm. Bottom topography: very hilly with highly stratified bottom beds. Pipe bent, piston caught before bend in pipe.
									GOOD RECORD - 3 PROBES
29 Mar 67	T-Grad 57					17°31'	164°41'	78	H.F. = 1.62 μcal/cm²/sec
									Smooth sediment - appears to be sediment in water, pictures blurry from sediment; little sign of bottom life.
29 Mar 67	Camera 61	1442	1732			17°31'	164°41'	78	
									Layer Light - 100 Ft.
29 Mar 67	Hopho 70	1432	1736			17°31'	164°41'	78	
									Trigger pin not removed.
29 Mar 67	Core Camera 63A					17°31'	164°41'	78	
28 MAR 67	WATER BARREL 46					17°31'	164°41'		TRIPOD - SAMPLE CENTRIFUGED.

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Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From HONOLULU To MIDWAY

81
TIME ZONE Z+10

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat N	POSITION Long W	LOG	REMARKS
									Core could not be extruded aboard ship.
28									Penetration 298cm Pipe bent 6' below
Mar	Core 71	0956	1341	2706	2680	19°18'	161°19'	77	first couple. Bottom topography: gently
67		hit	1048	2706					rolling hills with moderately stratified
									undulating sediments
									GOOD RECORD - 2 PROBES
28									
Mar	T-Grad	0956	1341	2706	2680	19°18'	161°19'	77	H.F. = 0.68 μcal/cm²/sec
67	56								
	WATER BARREL #5					19°18'	161°19'	77	TRIED - SAMPLE CENTRIFUGED
28									
Mar	Camera	0937	1228			19°18'	161°19'	77	Camera returned upside down.
67	64A								adding weights.
28	Core	0956	1341						87 mgo Do Core orientation o
Mar	Camera					19°18'	161°19'	77	
67	62								
									Do Layer.
28									
Mar	Nepho	0928	1232			19°18'	161°19'	77	
67	69								
28	Bio 90-V	1104	1244	228	0	19°18'	161°19'	77	Unusl SL configuration. Sound scattering
Mar	91-V								confined to upper 120fm. Intensity, medium.
67									Small volume of sample indicates plankton-poor
									waters.
28	Milli 45	1515	1515	Surface		19°18'	161°19'	77	
Mar									
67	JN-17	1410	?	10m	10m	19° 18'	161° 19'	—	

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Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From PANAMA To HONOLULU

80

TIME ZONE Z+10

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. W	LOG	REMARKS
									Two dark sand layers in an otherwise structureless
21									and homogeneous brown Lutite. Penetration 551cm
Mar	Core 70	0934	1116	2940	2936	14°57'	155°18'	76	core length 911cm, Pipe fell below 1st couple.
67		hit 1023		2937					Bottom topography: hilly, with subbottom sediments
									outcropping on surface.
									16mm DSRTS CURRENT 250°
21									NOT TOO MANY SIGNS OF BOTTOM LIFE.
Mar	Camera	0914	1151			14°57'	155°18'	76	BOTTOM RIPPLED MORE THAN OTHERS.
67	63								
21	Core								SAND LAYER BOTTOM DEEP.
Mar	Camera					14°57'	155°18'	76	
67	61								
21									400 FT. LIGHT LAYER
Mar	Mesho	0904	1154			14°57'	155°18'	76	
67	68								
21	Water					14°57'	155°18'		Barrel contents centrifuged and placed in
Mar	barrel								bottle #44
67	#44								
21	Nanbury	1532	1655			15°33'	153°35'		Good Reflections
Mar	31					15°42'	155°39'		
67									
21	Mill 44	2315	2315	Surface		16°47'	156°09'	—	
Mar									
67									

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PALISADES

#79

Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From PANAMA To HONOLULU

TIME ZONE Z+10

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. W	LOG	REMARKS
20 MAR 67	CORE CAMERA 60					13°08'	154°32'	75	49 net 2 bottoming.
20 MAR 67	CAMERA 63A	1941	2208			13°08'	154°32'	75	CAMERA RETURNED UPSIDE DOWN.
20 MAR 67	NEPHO 67	1928	2212			13°08'	154°32'	75	100 LAYER
20 Mar 67	Bio 88 89	2105	2136	226	0	13°08'	154°32'	75	New vertical rig. SL's extremely dark and more or less continuous down to 220 Fm, however less plankton taken than would be expected. Ostracods + arrow worms reappearing. Few representatives of the encarida.
20 Mar 67	Milli 43	2215	2215	Surface		13°08'	154°32'	75	
20 Mar 67	Water barrel #43	2200	hit 2256	2883	2892	13°08'	154°32'	75	Barrel contents centrifuged and particulate matter placed in bottle #43
21 May 67	T-Grad 55	0934	1116	2940	2937	14°57'	155°18'	76	GOOD RECORD — 2 PAGES

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#78

Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From PANAMA To HONOLULU

TIME ZONE Z+10

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long W	LOG	REMARKS
20								74	Radiolarian ooze overlying lutite. Age Eocene.
MAR	CORE	0915	1101	2792	2770	11°46'	154°02'		Penetration 687 cm, core length 685 cm,
67	68	hit	1003	27	67				good core 405 cm. Piston core had "sidecar"
									attached to it. Pipe bent 30° cutting edge
									bashed in. Bottom topography: flat, rolling
20	CORE	0915	1101			11°46'	154°02'	74	
MAR	CAMERA								40 web. NO Bottom web.
67	57								
20						11°46'	154°02	74	4 mg 14 hits. Current 270°
MAR	CAMERA	0851	1119						WEB 1-3 SHOWS SEDIMENT WITH NODULES
67	60								IN IT. WEB 4 SHOWS CRUST FORMATION
									BROKEN UP. — GOOD WEB —
20						11°46'	154°02	74	NO LAYER
MAR	NEPHO	0845	1122						
67	66								
20	Water	0915	1101	2772	2770	11°46'	154°02'	74	Barrel contents centrifuged and particulate
Mar.	barrel	hit	1003	27	67				matter placed in bottle #42.
67	#42								
20		2000	2150	2883	2890	13°08'	154°32'	75	Bedded lutites, homogeneous and structureless
MAR	CORE	hit	2056	28	92				throughout. Age: Eocene? Penetration 914 cm,
67	69								core length 1216 cm. Bottom topography: hilly
									with sandrock peaks. Thin layers of sediments
									over lying basement.
20		2000	2150	2883	2892	13°08'	154°32'	75	GOOD RECORD - 4 PROBES
MAR	T-GRAD								
67	54								

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PALISADES

Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From PANAMA To HONOLULU

#77

TIME ZONE Z+10

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. W	LOG	REMARKS
19	Core	1937	2124						45 Wet.
Mar	Camer					10°13'	155°01'	73	
67	58								
									300 Fm. Layer Light.
19									
Mar	Repho	1905	2148			10°13'	155°01'	73	
67	65								
									Interbedded lutite and radiolarian ooze. Age Eocene.
19									Penetration 706cm. Core length 532cm. Good core
Mar	Core 67	1937	2124	2818	2800	10°13'	155°01'	73	484cm Broken Pipe resulted in loss of sediment above
67		hit 2032		2812					1st pipe. Difficult extrusion reduced good core length.
									Bottom topography: rolling, highly stratified beds
19		1225	1430			09°28'	155°31'		two poor refractions
MAR	SONOBOUY					09°39'	155°23'		
67	30								
									Basal contacts centrifuged and placed
19	Water	1937	2124	2818	2800				in bottle #41
Mar	based	hit 2032		2812		10°13'	155°01'	73	
67	#41								
19	Bio 87-V	1953	2000	226m	0	10°13'	155°01'	73	Two SLs: 0-80, 160-200Fm. Surface SL very dark
Mar								83	Several new species of amphipod appear in this sample.
67									One type posses large, heavily pigmented eyes, flattened, crescent-shaped pleopods, and pigment spots on
									transparent carapace. Masses of eggs also present.
20								74	GOOD RECORD - 3 PROBES
MAR	T-GRAD	0915	1101	2772	2770	11°46'	154°02'		
67	53								

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PALISADES

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Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From PANAMA To HONOLULU

TIME ZONE Z+10

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. W	LOG	REMARKS
									NO LAYER
19		0816	1057						
Mar	Nepho					09°18'	155°37'	72	
67	64								
									Bedded lutites overlying radiolarian ooze. Age
19									Eocene Penetration 1625cm core length 2017cm.
Mar	Core 66	0845	1032	2788	2788	09°18'	155°37'	72	Good core 1577cm. Bottom topography: hilly
67		hit 0941		2777					with small peak. Pipe bent ≠30°
19	Water	0845	1032	2788	2788				Barrel failed to close returned to DL
Mar	barrel	hit 0941		2777		09°18'	155°37'	72	Surface open.
67	#41A								
19	Bio 85-V	0922	0949	1225Fm	0	09°18'	155°37'	72	Three SLs: 0-60, 60-80, 180-280 Fm. Surface
Mar	86-V								SL, consisting of parabolic traces, unusually
67									thick + dark for daytime SL. Plankton numbers
									and variety increased.
19	Milli 42	1910	1910	Surface		10°13'	155°01'	73	
Mar									
67									
		1937	2124	2818	2800				GOOD RECORD - 1 PROBE
19									
Mar	T-Grad					10°13'	155°01'	73	
67	52								
		1917	2148						14 mg 14 hits Current?
19	Camera					10°13'	155°01'	73	bottom covered with manganese
Mar	61								nodules.
67									

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Research Vessel VEMA
CRUISE N° 24
CRUISE LEG—From PANAMA To HONOLULU

TIME ZONE Z+10

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. W	LOG	REMARKS
18						06°40'	157°32'	71	10 mg 11 hits Current 160°
MAR	CAMERA	0838	1053						slight rippling — Motor active
67	59								with 10 sec
18						06°40'	157°32'	71	Brushes in motor muded clearing
MAR	CORE	0910	1037						
67	CAMERA								
	57A								
18						06°40'	157°32'	71	200 Fms. Layer Light
MAR	NEPHO	0826	1101						
67	63								
18									
Mar	Water	0910	1037	2510	2510	06°40'	157°32'	71	Barrel contents centrifused and particulate
67	barrel #40	hit 0951		2513					matter stored in bottle #40
									GOOD RECORD - 3 PROBES
19									
Mar	T-Grad	0845	1032	2788	2788	09°18'	155°37'	72	
67	51								
									13 mg 15 hits Current 250°
19									Starfish Knives present
Mar	Camera	0827	1053			09°18'	155°37'	72	
67	60								
19									35 mg. No Corpus
Mar	Core	0845	1032			09°18'	155°37'	72	
67	Camera								
	57								

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#74

Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From PANAMA To HONOLULU

TIME ZONE Z+10

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. W	LOG	REMARKS
17						04°10'	159°04'	70	12mg 1 hits. Current 315° Bottom is covered with signs of bottom life.
MAR	CAMERA	1308	1458						
67	58								
17						04°10'	159°04'	70	25mg and bottom shots.
MAR	CORE	1330	1445						
67	CAMERA								
	56								
17		1255	1501			04°10'	159°04'	70	200 Fr. light layer.
MAR									
67	NEPHO								
	62								
17									
17									
MAR	Water	1330	1445	2102	2100	04°10'	159°04'	70	Barrel did not close Surfaced open no sample.
67	Barrel	hit 1405		2100					
	#40A								
17									
MAR.	SONOBOOY	1127				02°17'	141°45'		
67	25		1307			02°18'	142°00'		
18						06°40'	157°32'	71	Interbedded of calcareous sand and radiolarian ooz. Age: Recent Bottom part of core head penetrated sediment app. 1908cm. core length 1605cm. Bottom topography, flat rolling, at base of peak. Highly stratified sediments.
MAR	CORE	0910	1037	2510	2510				
67		hit 0951		2513					
	65								
18		0910	1037	2510	2510	06°40'	157°32'	71	GOOD RECORD - 3 PROBES
MAR	T-GRAD								
67	50								

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PALISADES

#73

Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From PANAMA To HONOLULU
TIME ZONE Z+10

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. W	LOG	REMARKS
16									36 mg. 1 bottom shot including
Mar	Core	2107	2238			03°45'	157°07'	69	0 Triggers weight 0
67	Camera								
	55								
									750 Fr. Layer light tint thicker
16		2030	2202						then previous
Mar	Nepho					03°45'	157°07'	69	
67	61								
16	Milli 41	2045	2045	Surface		03°45'	157°07'	69	
Mar									
67									
~~16~~									
16	Bio 81-V	2230	2259	210	0	03°45'	157°07'	69	Two SLs: 0-100 Fm, 220-280 Fm. Extremely dark
Mar	82-V								upper SL yielded a large and varied sample,
67									representing nearly all types of planktonic life.
									Unusually large numbers of gelatinous eggs present.
17 Mar	TN-16	1519	1830	56 Fm	33 Fm	4°11'	159°05'	70	Lost depresser due to parted cable.
									2 Fair refractions
17									
MAR	SONOBUOY	0823				03°59'	158°49'		
67	29		1035T			04°01'	158°54'		
17		1330	1445	2102	2100	04°10'	159°04'	70	Bedded calcareous ooze sand and gravel. Age
MAR	CORE	hit	1405		2100				Recent. Penetration 6.42 m, core length 5.30 m
67	64								good core 3.11 m. Pipe broken at top of Cust
									Pipe. Bottom topography at base of
									outcropping peak. Highly stratified, unconsolidated seds.
17		1330	1445	2102	2100	04°10'	159°04'	70	GOOD RECORD - 2 PROBES
MAR	T-GRAD								
67	49								

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#72

Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From PANAMA To HONOLULU
TIME ZONE Z+10

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat N	POSITION Long. W	LOG	REMARKS
		0904	1031	2484	2511			68	No sediment retained in core. Penetration 1707cm.
16 Mar 67	CORE 63A	hit 0946		2505		03°27'	155°32'		Pipe bunken at top of 2ND pipe, 1st pipe slightly bent. 30cc of sediment retained on outside of core by first thermograd probe. Silicious calcarious ooze Age: Miocene
16 Mar 67	Water barrel #39 A.	0904 hit 0946	1031	2484 2505	2511	03°27'	155°32'	68	Barrel did not close, hence no sample. Core trigger wire caught around compass and prevented proper triggering of Core. Core however did trigger.
16 Mar 67	JN-15	1531	1726	55Fm	55Fm	03°40' 03°41'	156°20' 156°35'	—	TDR clock malfunctioned despite overhaul + lubrication. This tow sampled just inside the lower boundary of the upper SL for ~ 1hr 55min. Principal constituent was copepod. Large percentage of females carrying eggs. Very small post-embryonic teleost; occasional euphausiid; forams abundant.
16 Mar 67	Sonobuoy 28	1529	1705			03°40' 03°41'	156°19' 156°33'		Poor refractions due rough sub-bottom
16 Mar 67	Water barrel #39	2107 hit 2154	2238	2396 2394	2390	03°45'	157°01'	69	Barrel contents centrifuged and placed in bottle #39 Interbedded silicious and calcarion ooze. Age: Pliocene. Penetration 1877cm, core length 1993cm gondcore 1414cm. Pipes 3&4 bent approximately 10°. Bottom topography flat bottom surrounding peak GOOD RECORD 13 PROBES
16 Mar 67	Core 63	2107 hit 2154	2238	2396 2394	2390	03°45'	157°01'	69	
16 Mar 67	T-Grad 48	2107	2238	2396	2396	03°45'	157°01'	69	
16 Mar 67	Camera 37	2042	2259			03°45'	157°01'	69	15 exp 16 hits Current 100° bottom ooze — sediment ripples

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PALISADES

#71

Research Vessel VEMA
CRUISE N° 24
CRUISE LEG—From Panama To Hawaii
TIME ZONE +10

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. W	LOG	REMARKS
15 Mar 1970	Bio: 79-V —80-V	2023	2052	0	228 m.	03°04'	153°35'	67	Three SLs: 0-60, 60-100, 170-220 Fm. Surface SL intensity diminishes with increasing depth, so that it merges with lighter middle SL. This tow sampled the 2 upper SLs in their entirety, and yielded a fine variety of marine organisms.
15 Mar 68	Milli 40	2146	2145	Surface		03°04'	153°35'	67	
15 Mar 1962	JN 14	2145	0014	~~Leave the~~ 73 Fm	73 Fm	02°50'	150°41'	67	Very sparse plankton, even considering that it was a 2hr tow, instead of 3hr. One bony fish; great variety of copepods representing many species, but total number of individuals small. A few enphausiids and phytoplankton make up remainder of sample
						03°27'	155°32'	68	
16 MAR 67	CAMERA 57A	0842	1049						Trigger Cable hung up.
						03°27'	155°32'	68	29 mg. Trigger wright wrapped around Dredge arm. Arm is broken off at Lit
16 MAR 67	CORE CAMERA 54	0904	1031						
						03°27'	155°32'	68	
16 MAR 67	NEPHO 60	0828	1053						no clays.
16 MAR 67	T-GRAD 48A	0904	1031	2464	2511	03°27'	155°32'	68	NO RECORD – NO PENETRATION

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#70

Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From PANAMA To HONOLULU

TIME ZONE Z+10

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. W	LOG	REMARKS
Mar	Water	0924	1102	2686	2695	02°54'	152°68'		
15	barrel	hit 10	10	2696				66	
67	#38B								
15		1944	2117	2570	2570	03°04'	153°35'	67	Silicious Calcarious ooze overlying bedded lutites.
MAR	CORE	hit 2028		2570					Penetration was above bottom of core head -
67	62								1917+. Core length 1800 good core 1414.
									Pipe slightly bent. Bottom topography hilly
									rolling with stratified, undulating sub-bottom
15	—	1944	2117	2570	2570	03°04'	153°35'	67	GOOD RECORD - 3 PROBES
MAR	T-GRAD								
67	47								
15						03°04'	153°35'	67	8 mg 9 hits Current?
MAR	CAMERA	1924	2135						signs of bottom life.
67	56								
						03°04'	153°35'	67	
15	CORE	1944	2117						DIDN'T TRIP
MAR	CAMERA								
67	54A								
						03°04'	153°35'	67	200 Fr. — light
15	NEPHO	1913	2138						
MAR	59								
67									
Mar	Water	1944	2117	2570	2570				
15	barrel	hit 2028		2570		03°04'	153°35'	67	Contents of barrel centrifuged and placed
67	#38								in bottle # 38

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#69

Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From PANAMA To HONOLULU
TIME ZONE Z+10

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. W	LOG	REMARKS
									12 mg 13 kts Current 850 Signs of Tottan life.
15 Mar 67	Camera 55	0903	1116			02°54'	152°08'	66	
									34 mg. no Tottan kts Bums trigger cable over compass arm.
15 Mar 67	Core Camera 53	0924	1102			02°54'	152°08'	66	
									200 Fm. Light.
15 Mar 67	Nepho 58	0852	1121			02°54'	152°08'	66	
15 Mar 67	~~#6 30~~ Milli 39	1630	1630	Surface		02°50'	149°52'	—	
	Bio 77-1 78-V	0946	1013	2695 Fm		02°48'	149°00'		Plentiful pteropods, + forams, Three SL: 0-10, 10-70 190-320
13 Mar 67	JN 13	1535	1715			02°38' 02°40'	146°16' 146°27'	—	This tow was intended to sample beneath the surface SL, but by the end of the tow, the SL had increased in thickness by 40 Fm, so that the JN was in the SL during the last few minutes. Very few plankton taken.
13 Mar 67	Sonobuoy 26	1523	1700			02°38' 02°40'	146°15' 146°25'		Excellent refractions
15 Mar 67	Sonobuoy 27	0621	0753			02°53' 02°53'	157°43' 151°55'		doubtful refraction

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#68

Research Vessel VEMA
CRUISE N° V-24 CRUISE LEG—From PANAMA To HONOLULU
TIME ZONE Z+10

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. W	LOG	REMARKS
									Silicious ooze containing manganese pebble layer at bottom of unit. Pipe broken between 2ND & 3RD couple. Penetration 607cm, core length 344cm. Bottom topography: hilly with basement nearing top of undulating sediments. 13 mg/l Cl⁻ Current 270° 0 signs of bottom life present.
14 Mar 67	Core 61	1832 hit	1955 1909	2395 2388	2366	02°51'	150°10'	65	
14 Mar 67	Camera 54	1813	2017			02°51'	150°10'	65	no bottoming.
14 Mar 67	Core Camera 50	1832	1955			02°51'	150°10'	65	
14 Mar 67	Nepho 56	1801	2020			02°51'	150°10'	65	200 Fm. Tight
14 Mar 67	Water bottle #38A.	1832 hit	1955 1909	2395 2388	2366	02°51'	150°10'	65	~~Bottle contents confiscated~~ Bottle closed on the way ~~up~~ down.
15 Mar 67	Core 62 A	0924 hit	1102 1010	2686 2696	2695	02°54'	152°08'	66	Piston core and trigger core did not retain any sediment. Penetration 704cm.
15 Mar 67	T-Grad 46	0924	1102	2686		02°54'	152°08'	66	GOOD RECORD - 2 PROBES

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PALISADES

~~#~~ 67

Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From PANAMA To HONOLULU

TIME ZONE Z+10

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. W	LOG	REMARKS
14									
Mar 67	Core 60	0902	1033	2583	2583	02°48'	149°00'	64	Extensively burrowed and mottled siliceous ooze.
		hit	0944		2583				Age: Pliocene Penetration 1885cm, core length
									1786, good core 1314cm. Bottom topography
									hilly with highly stratified, undulating, sub-bottom
									GOOD RECORD → 3 PROBES
14									
Mar 67	T-Grad 45	0902	1033	2583	2583	02°48'	149°00'	64	
									8 mg 9 hits Current 950
14									signs of bottom life - sediment
Mar 67	Camera 53	0843	1046			02°48'	149°00'	64	smooth.
									29 mg.
14	Core	0902	1033						no bottom pictures
Mar 67	Camera 49					02°48'	149°00'	64	
14	Hepho	0829	1048			02°48'	149°00'	64	no layers.
Mar 67	55								
14									
Mar 67	water barrel #37	0902 hit	1033 0944	2583	2583 2583	02°48'	149°00'	64	Barrel contents centrifuged and placed in bottle #37
14									NO RECORD - INSTRUMENT FLOODED THROUGH
Mar 67	T-Grad 46A	1832	1955			02°51'	150°10'	65	PASS-TARU

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#76

Research Vessel VEMA
CRUISE N° 24
CRUISE LEG—From Panama To Hawaii

TIME ZONE +9

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
12 Mar 67	Bio 75	1544	1606	548Fm	0			61	~~This initial core MPS sampled all SIs from 548 Fm → surface. The shallow net failed to open completely, so that it received only 1/4 of its sample, the other 3/4 contaminating the middle net~~ Previously Entered
									Highly bioturbated and mottled radiolarian ooze. Penetration 1702cm, core length 1747cm. Good core 1292cm. Bottom topography, rolling, sloping bottom with highly stratified, dipping beds. Age: Pliocene
13 Mar 67	Core 59	0904	1034	2483	2480	02°34'	145°32'	63	
		Lit 0948		2480					
		0904	1034	2483	2480				GOOD RECORD - 4 PROBES
D Mar 67	T-Grad 44					02°34'	145°32'	63	
B Mar 67	Camera 52	0841	1049			02°34'	145°32'	63	11 mg 13 hits. Current? bottom life present.
B Mar 67	Core Camera 49	0904	1034			02°34'	145°32'	63	3 mg 1 bottom picture
B Mar 67	Nepho 54	0833	1052			02°34'	145°32'	63	no layer.
MB Mar 67	Water Barrel # 36	0944 Lit 0948	1034	2483 2480	2480	02°34'	145°32'	63	Barrel Contents Centrifuged and placed in bottle # 36

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#65

Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From PANAMA To HONOLULU

TIME ZONE Z+9

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat N	POSITION Long. W	LOG	REMARKS
12 Mar 67	Core 58	0904	1034 hit 0944	2395	2395 2391	02°16'	141°40'	62	Interbedded siliceous and calcareous oozes. Penetration 1310cm core length 1692cm, good core 1229cm. Bottom topography - flat, gently rolling with lightly stratified sediments.
		0904	1034	2395	2395				GOOD RECORD - 3 PROBES
12 Mar 67	T-Grad 43					02°16'	141°40'	62	
									2 mg 0 hits.
12 Mar 67	Camera 51A	0843	1057			02°16'	141°40'	62	didn't hit bottom.
									30 mg. 1 hit on mg.
12 Mar 67	Core Camera 48	0904	1034			02°16'	141°40'	62	
									no hits
12 Mar 67	Nephlo 53.	0827	1100.			02°16'	141°40'	62	
12 Mar 67	Water bottel. #35	0904	1034 hit 0944	2395	2395 2391	02°16'	141°40'	62	Barrel Contents Centrifuged and particulate matter placed in bottle # 35.
12 Mar 67	JN-12	1107	1317	44Fm	44Fm	02°17' 02°19'	141°43' 142°03'	62	This tow sampled the lower margin of the mid-day surface SL, for 2hr 10min at 5.7 Kt. The bulk of the sample consisted of large copepods.

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#64

Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From PANAMA To HONOLULU

TIME ZONE Z+9

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. W	LOG	REMARKS
									Bedded siliceous and calcareous oozes. Penetration 1318cm
11									core length 1565 good core 1190 cm.
Mar 67	Core 57	1459	1633	2270	2278	02°16'	138°36'	61	Bottom topography: flat gently rolling with
		hit	1540	2268					highly stratified, slightly rolling sub-bottom.
									11 mg 13 hits Current 2750
11 Mar 67	Camera 51	1437	1652			02°16'	138°36'	61	Signs of bottom life, sediment rippled.
									30 mg. - 2 bottom mg.
11 Mar 67	Core Camera 47	1459	1633			02°16'	138°36'	61	
11 Mar 67	Nepho 52	1424	1655			02°16'	138°36'	61	no layer.
Mar 67	water bottel #34	1459 hit	1633 1540	2270 2268	2278	02°16'	138°36'	61	Bottel Contents centrifused and particulate matter stored in bottle #34.
11 Mar 67	Bio 75- MPS	1544	1606	1070 fm	0	02°16'	138°36'	61	This initial cove MPS sampled all SL visible on PDR: 0-50, 70-120, Third (shallow) net failed to open completely causing some contamination of "middle" net with "shallow" plankton. Also, wind destroyed shallow flowmeter readmg.
11 Mar 67	Milli 38	1800	1800	Surface		02°15'	138°49'		

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PALISADES

#63

Research Vessel VEMA
CRUISE N° 27
CRUISE LEG—From Panama To Hawaii

TIME ZONE +9

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. W	LOG	REMARKS
									Bedded Siliceous and calcareous oozes. Penetration ≈ 137cm
10						02°14'	136°15'		core length 1603cm. Good core 1580cm.
Mar	Core 56	2138	2303	2318	2314			60	Bottom topography: flat, somewhat rolling with
67		hit	2221	23	15				highly stratified, undulating sub-bottom.
10	Water	2138	2303	2318	2314	02°14'	136°15'	60	Barrel contents centrifuged and particulate
Mar	barrel	hit	2221	23	15				matter placed in bottle #33
67	#33								
9	Cavera	1351.	1550			01°51'	131°42'	58	5 mg. Thits Current. 045° Signs of
Mar	48								bottom life - Sediment grabby.
67									
9									
Mar	Depth	1335	—			01°51'	131°42'	58	no layers.
67	50								
9									2 mg 2 bottoming. cable wrapped
Mar	Core	1408	1530			01°51'	131°42'	58	around core pipe.
67	Cavera 45								
11	Sonobuoy	0959	1140			02°17'	137°52'		Noisy - Refractions very doubtful
Mar	24					02°17'	138°08'		
67									
		1459	1633	2270	2278				Good Record - 4 probes
11	T-Grad					02°16'	138°36'	61	
Mar	42								
67									

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Research Vessel VEMA
CRUISE N° V24
CRUISE LEG—From PANAMA To HONOLULU

62
TIME ZONE Z+9

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. W	LOG	REMARKS
10 Mar 67	Sonobuoy 23	1543	1717			02°09'	135°30'		Quite noisy. Some topography trouble.
						02°11'	135°41'		
10 Mar 67	JN 11	1548	1727	37 Fm	36 Fm	02°10'	135°30'		Advantageous to coordinate JN and sonobouy stns because JN depresser is 30% more effective at 6 kt than at 9.5 kt. Frequently a 3 hr. tow yields more plankton than JN can accomodate, so 2 hr. sono. stn at 6 kt. is ideal.
						02°11'	135°42'		
	Bio 73-V	1002	1027	227	0	02°03'	134°38'	59	At the time of this sampling, extremely dense schools of fish appeared on the PDR at about 170 Fm. These dark parabolic masses seemed to be independent of the existing horizontal SLs: 0–40 Fm, 160–220 Fm.
10 Mar 67	74-V								
10 Mar 67	[redacted]								
6A	Milli 37	1105		Surface		02°05'	134°43'		
10 Mar 67	Camera 50	2119	2348			02°14'	136°15'	60	9 mg // kits Current 050° Signs of bottom life, sediment rippled.
10 Mar 67	Core Camera 46					02°14'	136°15'	60	35 mg. 1 bottom mg.
10 Mar 67	Nepho 51	2117	2348			02°14'	136°15'	60	no layrs.
		2138	2303						GOOD RECORD – 3 PROBES
10 Mar 67	T-Grad 41					02°14'	136°15'	60	

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PALISADES

#61

Research Vessel VEMA
CRUISE N° 29
CRUISE LEG—From Panama To Hawaii

TIME ZONE +9

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. W	LOG	REMARKS
9 Mar 67	JN-10	1656	1909	35Fm	35Fm	01°51'	131°42'	58	This was a 3hr 13 min tow at 9.5 Kt. which sampled the surface SL before + after the dusk migrations. Vast numbers of organisms taken — primarily phytoplankton with a high proportion of pteropods + polychaet worms.
		0858	1017	2238	2290				Extensively burrowed calcarious ooze overlying a white calcarious ooze. Penetration 1250cm
10 Mar 67	Core 55	hit 0933		2335		02°03'	134°38'	59	core length 1532cm. Good core 940cm Bottom topography hilly, rolling with highly stratified undulating sub-bottom.
									Long White.
10 Mar 67	Camera 49	0838	1030			02°03'	134°38'	59	
10 Mar 67	Core Camera 45	0858				02°03'	134°38'	59	27 mg. Flattening.
10 Mar 67	Hepho 51	0819	1038			02°03'	134°38'	59	600 fs. Lays Light
		0858	1017	2238	2290				GOOD RECORD — 3 PROBES
10 Mar 67	T-Grad 40					02°03'	134°38'	59	
10 Mar 67	Water bottel #33B	0858 hit	1017 0933	2238 2335	2290	02°03'	134°38'		Bottel returned to surface open, lanyard used to close barrel parted but single marlin used to prevent premature closing did not part.

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#60

Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From PANAMA To HONOLULU

TIME ZONE Z+8

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. W	Std. LOG	REMARKS
8		2035	2203	2386	2356				Highly burrowed radiolarian and foraminifera.
Mar		hit 2117		2383		01°51'	129°01'		Penetration 1613, core length 1692 cm, good core
67	Core 53							57	1240 cm. Bottom topography hilly, rolling with
									multiple sub-bottom reflections.
		2035	2203	2386	2356				GOOD RECORD - 3 PROBES
8									
Mar	T-Grad					01°51'	129°01'	57	
67	38								
8	Milli 36	2245	2245	Surface		01°51'	129°01'	57	
Mar									
67									
8	JN-9	2227	0038	43Fm	43Fm	01°51'	129°01'	57	JN-9 was towed through the night time surface SL for 3hr 11min, averaging 9.6 Kt. It yielded a large volume of nekton-plankton, including squid, numerous teleosts, and large euphausiids.
Mar									
67									
9	water	1408	1530	2400	2383				
Mar	barrel	hit 1448		2385		01°51'	131°42'	58	water barrel did not close
67	#33A								
9									Bedded calcareous and siliceous ooze. Penetration 1455 cm
Mar	Core 54	1408	1530	2400	2383	01°51'	131°42'	58	Core length 1718 cm, good core ≥1090 cm.
67		hit 1448		2385					Bottom topography hilly rolling with multiple
									sub-bottom reflections
									GOOD RECORD - 3 PROBES
9	T-Grad	1408	1530	2400	2383	01°51'	131°42'	58	
Mar	39								
67									

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PALISADES

#59

Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From PANAMA To HONOLULU

TIME ZONE Z+8

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. W	LOG	REMARKS
8	CAVECA	0850	1044						Orng & Lts Camera returned upside
MAR	47A					01°49'	127°00'	56	down. Hope to remedy this
67									with installation of a stop block on
									Compass arm.
	DEPTH	0934	1049						
8	48					01°49'	127°06	56	no layer.
MAR									
67									
	CORE	0908	1024						22 mg.
8	CAVECA					01°49'	127°00'	56.	
MAR	43								
67									
						01°51'	129°01'	57	7 mg 9 hits. Current East. Totter life
8	CAVECA	2017	2219						present, trails, slight rippling.
MAR	47								
67									
						01°51'	129°01'	57	Can not make reading
8	DEPTH	2006	2222.						
MAR	49								
67									
						01°51'	129°01'	57	4 mg. 2 Totter mg.
8	CORE	2055	2203						
MAR	CAVECA								
67	43								
8	Water	2035	2203	2356	2356				Sample centrifuged and particulate matter
MAR	barrel	hit 217		2383		01°51'	129°01'	57	stored in Bottle # 32.
67	#32								

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Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From PANAMA To HONOLULU

TIME ZONE Z+8

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. W	LOG	REMARKS
7								~~56~~	GOOD RECORD - 3 PROBES
MAR	T-GRAD	1901	2021	2438	2442	01°54'	125°25'	55	
67	36								
7								~~56~~	No piston core. Messenger did not arm tripping
MAR	CORE					01°54'	125°25'	55	mechanism. Trigger core length 38cm. containing
67	52C	1901	2021	2438	2442				a radiolarian ooze. Pipe bent, cutting edge good.
		(hit) 7	1936	2447					Bottom topography: hilly, rolling with multiple
									sub. bottom reflections
7	Water	1901	2021	2438	2442	01°54'	125°25'	55	Core did not trigger but water barrel
Mar	barrel	(hit)	1936	2447					Closed prematurely on the way down.
67	32E								
7	Bio 72-V	1430	1518	224	0	01°54'	124°49'	54	Fouled with camera wire. Relative positions of Bio
Mar									and camera wires were safe until net was at about 60Fm.
67									Apparently a surface current moving contrary to the deeper
									water carried Bio net into camera wire. Neither wire
									was damaged. Two SLs: 0-50Fm, 160-240Fm.
7	Milli 35	1545	1545	Surface		01°54'	124°49'	54	
Mar									
67	JN-8	2116	0029	55Fm	55Fm	01°54'	125°25'	55	This tow averaged 9.5Kt for 3 hr. 13 min. at a depth
									of 55Fm. It sampled the region immediately
									below a very dark surface SL.
									White calcareous and siliceous ooze. Miocene
8									Penetration ~~1455~~cm 1220cm core length 1564cm
Mar	Core 52	0908	1024	2405	2380	01°49'	127°00'	56	Good core 1430cm. Bottom topography hilly
67		hit	0939	2386					rolling with multiple sub-bottom reflections
									GOOD RECORD - 2 PROBES
8	T-Grad 37	0908	1024	2405	2380	01°49'	127°00'	56	
Mar									
67									

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PALISADES

#57

Research Vessel VEMA
CRUISE N° V24 PANAMA To HONOLULU
CRUISE LEG—From

TIME ZONE Z+8

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. W	LOG	REMARKS
7		1321	1440	2492	2500	01°54'	124°49'	54	No piston core. Messengers did not trip triggering
MAR	CORE	(hit) ±	1354	2500					mechanism (spring too stiff). Trigger core length
67	52 B								38cm. containing a radiolarian ooze. Pipe bent
									cutting edge good. Bottom topography
									hilly, rolling with multiple sub-bottom reflections.
7									
MAR	CALDERA	1304	1517			01°54'	124°49'	54	5 mg 6 hits - Current 45°. mug too light
67	45								for make accurate deflection
7	ECHO	1251	1527			01°54'	124°49'	54	200 fm. Very light.
MAR	46								
67									
7	CORE	1321	1440			01°54'	124°49'	54	27 mg. 1 bottom mug.
MAR	CALDERA								
67	41								
	CALDERA	1837	2038						8 mg 9 hits Current? bottom life
7	46					01°54'	125°25'	55	present - Sediment rippled.
MAR									
67									
	ECHO	1822	2041						
7	47					01°54'	125°25'	55	no clays.
MAR									
67									
7	CORE	1901	2021						34 mg.
MAR	CALDERA					01°54'	125°25'	55	
67	42								

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PALISADES

#56

Research Vessel VEMA
CRUISE N° 24
CRUISE LEG—From PADAUTA To HAWAII

TIME ZONE 2+8

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. W	STD LOG	REMARKS
6									
MAR 67	12 PHO 44	0823	1049.			01°40'	120°20'	52	no layer. - density stronger through out covering bough.
6 MAR 67	CORE CAMERA 39	~~2145~~ 0851	~~2322~~ 1020			01°40'	120°20'	52.	31 mg bottom shots.
6 MAR 67	CAMERA HSA	2113	2342			01°47'	120°22'	53	2 mg 6 hits - camera never hit bottom.
6 MAR 67	12 PHO 45	2105	2349			01°47'	122°22'	53	no layer reading possible.
6 MAR 67	CORE CAMERA 40	2145	2322			01°47'	122°22'	53	36 mg. 3 bottom shots - trigger line wraped around core pipe.
7 MAR 67	water barrel #32D	1321 hit	1440 1354	2492	2500 2500	01°54'	124°49'	54	Core did not trigger however water barrel closed on the way up probably some 500 fms above the bottom.
7 MAR 67	T-GRAD 35	1321	1440	2492	2500	01°54'	124°49'	54	GOOD RECORD - 3 PRAISES

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Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From PANAMA To HONOLULU

#55
TIME ZONE Z+8

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. W	LOG	REMARKS
Mar 67	Water barrel 32B.					01°40'	120°20'	52	Core closed prematurely thus no sample.
6 Mar 67	Bio 70-V 71-V	0957	1029	205	0	01°40'	120°20'	52	Two SLs: 0-40Fm, 180-220Fm. Lower SL boardered above and below by two fainter SLs: 140-180Fm, 220-250Fm. Surface SL consists of well defined parabolic traces, diminishing with depth.
6 Mar 67	Milli 34	1105	1105	Surface		01°40'	120°20'	52	
6 MAR 67	CORE 52A	2145 (hit)	2322 2229	2475 2466	2472	01°47'	122°22'	53	No piston core. Messenger did not arm tripping mechanism because trip arm was bent. Trigger core length 39cm. containing a radiolarian ooze. Pipe bent, cutting edge good. Bottom topography, hilly, rolling with multiple sub bottom reflections
6 MAR 67	T-GRAD 35A	2145	2322	2475	2472	01°47'	122°22'	53	NO RECORD
6 Mar 67	Water barrel #32C	2145 (hit)	2322 2229	2475 2466	2472	01°47'	122°22'	53	Core did not trigger thus barrel did not close. no sample.
6 MAR 67	Camera 45A	0833	1047			01°40'	120°20'	52	Amp bulbs. Triggers each Lunagrip.

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PALISADES

#54

Research Vessel VEMA
CRUISE N° V-24 PANAMA To HONOLULU
CRUISE LEG—From

TIME ZONE Z+7

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. W	LOG	REMARKS
									Messenger did not trip core counting devise.
5									No piston core. Trigger core length: 149cm.
Mar	Core 51A	1423	1538	2167	2162	01°46'	117°12'	51	Trigger core is a foram & radiolarian ooze.
67		(hit approx	1504	approx.	2170				Bottom topography: hilly, rolling. Pipe bent
									approx. 40°
5	water	1423	1538	2167	2162	01°46'	117°12'	51	Core did not trigger hence no water barrel
Mar	barrel	(hit)	1504	21	70				sample.
67	#32A								
5	Bio 68-SF	1655	1727	10m	10m	01°46'	117°12'	51	Fast current prevented use of vertical net.
Mar	69-SF								Two dark SLs: 0-50Fm, 100-200Fm. Large
67									volumes of plankton in usual proportions
									encountered at surface.
5	Milli 33	1800	1800	Surface		01°46'	117°12'	51	
Mar									
67									
5	JN-7	1745	2107	35Fm	35Fm	01°46'	117°12'	51	This tow sampled surface SL at about 30Fm depth.
Mar									SL configuration was: 0-40Fm, 120-160Fm, 180-220Fm.
67									One bony fish and about 10 euphausiids noted in
									sample.
6		0851	1020	2361	2310	01°40'	120°20'	52	Interbedded radiolarian and foram ooze.
Mar	CORE	hit	0927	2350					penetration 1407, core length 1636, good core
67	51								1103cm. Pipe bent slightly, cutting edge good
									Bottom topography, hilly, rolling with multiple
									sub-bottom reflections.
6		0851	1020	2361	2310	01°40'	120°20'	52	GOOD RECORD — 3 PROBES
Mar	T-GRAD								
67	35								

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#53

Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From PANAMA To HONOLULU
TIME ZONE Z+7

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat N	POSITION Long W	LOG	REMARKS
									Bedded foram and radiolarian ooze. Penetration 1010 cm.
4									Core length 1800 cm. Good core: 617 cm.
Mar	Core 50	2138	2248	2060	2059	01°48'	114°32	50	Bottom topography: hilly rolling. Pipe bent
67		(hit)	2211	2060					opp. 35° Mud present on piston of core
									GOOD RECORD - 3 PROBES
4									
Mar	T-Grad					01°48'	114°32	50	
67	32								
4	Water	2138	2248	2060	2059	01°48'	114°32	50	Barrel contents centrifuged and particulate
Mar	barrel	(hit)	2211	2060					matter stored in bottle #31
67	#31								
5									5 mg. 6 hits current 90° trails from
MAR	CADECA	1386	1549			01°46'	117°12'	51	bottom pipe.
67	44								
5	DCPHO.	1517	1549						200 Fs. Very light.
MAR	43					01°46'	117°12'	51	
67									
5	CORE	1523	1528						Shows cable hooked on core pipe.
MAR	CADECA					01°46'	117°12'	51	
67	38								
									Good Record - 1 PROBE
5	T-Grad					01°46'	117°12'	51	
Mar	33								
67									

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PALISADES

Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From PANAMA To HONOLULU

~~#~~ 52

TIME ZONE Z+7

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. W	LOG	REMARKS
	VEPHO								
4	41					01°49'	112°44'	49	
MAR									
67									
4	COBB								
MAR 67	CAMECA					01°49'	112°44'	49	
	36								
									Ang. & Hits. - camera returned upside down.
	CAMECA	2102	2310			01°48'	114°32'	50	
4									
MAR	44B								
67									
									no lays.
4	VEPHO	2102	2310						
MAR						01°48'	114°32'	50	
67	42								
									33 mg. 2 bottoming.
4	COBB	2136	2248			01°48'	114°32'	50	
MAR	CAMECA								
67	37								
4	Bio 66-V	0946	1037			01°49'	112°44'	49	Flowmeter # 1452 showed eccentric reading on 67-V.
Mar	67-V								Two Sts: 0-45 Fm, 190-250 Fm. One specimen of Phronema
67									sedentaria (amphipod) was using its transparent cylindri-
									cal case as a perambulator for transporting it's larval
									young. (Rarely preserved intact in vertical tows.)
4	Milli 32	1130	1130	Surface		01°49'	112°44'	49	
Mar									
67									

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PALISADES

Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From PANAMA To HONOLULU

51

TIME ZONE Z+7

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. W	LOG	REMARKS
4 MAR 67	T-GRAD 32A	0931				01°49'	112°44'	49	NO RECORD
4 Mar 67	Water barrel #30	0931 (hit)	1040 1003	2074	2072 2072	01°49'	112°44'	49	Barrel contents centrifuged and particulate matter stored in bottle #30.
4 MAR 67	Core Camera #36	0931	1040			01°49'	112°44'	49	25 mg. Showing sediment leaving dig on wide sweep.
4 MAR 67	CAMERA 44A	0907	1056			01°49'	112°44'	49	Trigger Wt Hung up on way down Cond. & Lite
4 MAR 67	NEPHO' 41	0852.	1100			01°49'	112°44'	49	1500 FD. — Light
3 MAR 67	Sono buoy 22	1900	2030			01°45' 01°46'	110°25' 110°39'	—	Chipping hammer fish caused large background noise. Believe redone usable
4 MAR 67	CAMERA 44A					01°49'	112°44'	49	

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PALISADES

#50

Research Vessel VEMA
CRUISE N° 24
CRUISE LEG—From PANAMA To HAWAII

TIME ZONE 2+7

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long W	S.W. LOG	REMARKS
3									7 MCS 10 HITS. Current 90° Variety of
MAR	CAMECA	1108	1239			01°43'	109°20'	48	bottom life. Sediment stained
67	43								tent cluttered with trails.
3									
MAR	12 PHO	1054	1245			01°43'	109°20'	48	700 fms. Light.
67	40								
3									15 mg. shows cable on compass
MAR	CORE	1127	1235			01°43'	109°20'	48	pipe.
67	CAMECA								
	35								
3									Bedded foram and radiolarian ooze Penetration 780cm
Mar	Core 48	1127	1235	1987	1987	01°43'	109°20'	48	Core length 567cm. Bottom topography hilly, with
67		(bit) 1157		1988					parallelling sub-bottom layers. Scope entangled
									on compass arm. Effective length of scope
									reduced.
									GOOD RECORD - 3 PROBES
3									
Mar	T-Grad	1127	1235	1987	1987	01°43'	109°20'	48	
67	31								
3	Water	1127	1235	1987	1987	01°43'	109°20'	48	Barrel contents centrifuged and particulate
Mar	barrel	(bit) 1157		1988					matter placed in bottle #29
67	#29								
4		0931	1040	2074	2072	01°49'	112°44'	49	Bedded foram and radiolarian ooze. Penetration
MAR	CORE	(bit) 1003		2072					1108 cm. Core length 1175cm. Bottom topography.
67	49								Highly stratified, undulating sediments.
									Mud on piston of core

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PALISADES

#49

Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From PANAMA To HONOLULU

TIME ZONE Z+7

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. W	LOG	REMARKS
									GOOD RECORD 4 PROBES
2 Mar 67	T-Grad 30	1851	1967	1946		01°43'	106°54'	417	
2 Mar 67	Core 47	1851 (hit)	1957 1920	1946	1934 1952	01°43'	106°54'	417	Bedded foram and radiolarian ooze. Penetration 1019cm core length, 817cm. Bottom topography: flat, gently sloping. Core was gaseous. Bottom part of core poured out from cutting edge when core was hauled aboard. Part of this liquid was retained and stored in plastic jar.
2 DAP 67	CALCEA 42	1805.	2008.			01°43'	106°54'	47	7 mg 8 HITS. Current 30° Signs of bottom life. Bottom covered with tubicolous works more smooth sediment.
2 DAP 67	Core CALCEA 34	1851.	1957.			01°43'	106°54'	47	25 mes - 180 HOW DEEP.
2 DAP 67	DEPHO 39	1820.	2015.			01°43'	106°54'	47	200 FA. — Light
2 Mar 67	Bio 64-V 65-V	1908	1937	228	0	01°43'	106°54'	47	Three SLs: 0-30 Fm, 120-160 Fm, 180-220 Fm. Two lower SLs consist of multiple dark bands. Schools of bonito + squid seen in ship's lights during station
	Milli 31	2100	2100	Surface		01°43'	106°54'	47	
2 Mar 67	JN-6	2020	2317	25Fm	25Fm	01°43'	106°54'	47	This was a 3-hour tow with 100 Fm wire out which sampled the nighttime surface SL exclusively. One teleost and about 10 large euphausiids noted in sample.

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PALISADES

~~#~~ 48

Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From PANAMA To HONOLULU

TIME ZONE Z+7

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. W	LOG	REMARKS
		0630	0736	1922	1908				Bedded foram and radiolarian ooze. Penetration 1129
2		(hit)	0659	1910					Core length 900cm. Bottom topography: ridges
Mar 67	Core 46					01°40'	105°09'	46	and troughs.
		0630	0736	1922	1908				GOOD RECORD - 4 PROBES
2									
Mar 67	T-Grad 29					01°40'	105°09'	46	
2	Water	0630	0736	1922	1908	01°40'	105°09'	46	Barrel Contents Centrifuged and particulate
Mar 67	barrel #27	(hit)	0659	1910					matter placed in bottle #27
2	CAMERA	0611	0749			01°40'	105°09'	46	8 mg. 10 HITS. Current 40°
MAR 67	41								signs of bottom life, sediment rippled
2	DEPTH	0603	0753			01°40'	105°09'	46	no layers.
MAR 67	38								
2	CORE	0630				01°40'	105°09'	46	21 mg. 2 bottom slots.
MAR 67	CAMERA 33								
2	Water	1851	1957	1946	1954	01°43'	106°54'	47	Barrel contents centrifuged and particulate
Mar 67	barrel #28	hit	(1920)	1952					matter placed in bottle # 28

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PALISADES

#47

Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG From PANAMA To HONOLULU

TIME ZONE Z+7

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. W	STA # ~~LOG~~	REMARKS
1	Water	2113	2213	1842	1842				Barrel contents centrifuged and particulate
Mar	barrel	(hit) 2143		1848		01°38'	103°56'	45	matter placed in bottle #26.
67	#26								
1		2113	2213	1842	1842	01°38'	103°56'	45	Bottled foram and radiolarian oozes.
MARCH	CORE	hit 2143		1848					Penetration 953; core length 956.
67	45								Bottom topography ridges & troughs.
1		2113	2213	1842	1842	01°38'	103°56'	45	GOOD RECORD - 4 PROBES
MARCH	T-GRAD								
67	28								
1	CAMERA	2052	2226						1 WEB 12 HITS Current 165° bottom
MAR	40					01°38'	103°56'	45	trails + life - sediment rippled.
67									
1	DEPTH	2026	2230						
MAR	37					01°38'	103°56'	45	1 NO bays.
67									
1	CORE	2113	2213						25 mg 2 Bottom Nets.
MAR	CAMERA					01°38'	103°56'	45	
67	32								
1	Bio 62-1	2125	2203	228	0	01°38'	103°56'	45	Abundant squid on surface. Two SLs: 0-80 Fm.
Mar	63-1								130-160 Fm, Bony fish and euphausiids present
67	Milli 30	2240	2240	Surface					in sample.

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PALISADES

Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From PANAMA To HONOLULU

~~H~~46
TIME ZONE Z+7

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. W	Sta LOG	REMARKS
1 Mar 67	Water bottle 25	1346	1442 hit 1412	1760	1737 1737	01°33'	103°02'	44	Barrel Contents Centrifuged and particulate matter placed in bottle # 25.
1 Mar 67	Core 44	1346 (hit)	1442 1412	1760	1737 1737	01°33'	103°02'	44	Bedded foram and radiolarian oozes. Penetration 958; core length 1017 Bottom topography: ridges & troughs
									GOOD RECORD - 4 PROBES
1 Mar 67	T-Grad 27	1346	1442	1760	1737	01°33'	103°02'	44	
1 MAR 67	CAMERA 39	1328	1455			01°33'	103°02'	44	6 DEG 8 HITS. Current & rippled sediment, bottom life present + trails
1 MAR 67	ECHO 36	1315	1501			01°33'	103°02'	44	no layers.
1 MAR 67	CORE CAMERA 31	1346	1442			01°33'	103°02'	44	17 mg. 2 bottom shots
1 Mar 67	Bio 60-V 61-V	0619	0647	225	0	01°28'	102°04'	43	Sound scatterers more or less continuous down to 280 Fm. SLs might be defined as: 0-30 Fm, 70-120 Fm, 200-260 Fm. Usual planktonic population. Compare these tows with 58-V + 59-V (night time, same vacinity)

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PALISADES

#45

Research Vessel VEMA
CRUISE N° 29
CRUISE LEG—From Panama To Hawaii

TIME ZONE +7

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. W	Stn LOG	REMARKS
28 Feb 67	Bio 58-V, 59-V	2430	2459	226	0	01°27'	101°21'	42	Three SLs: 0-80 Fm, 120-180 Fm, 210-250 Fm. An unusually deep SL can be seen at 380 Fm. During this station it gradually ascended.
~~28 Feb 67~~ 1 Mar 67									
1 Mar 67						01°28'	102°04'		Bedded brown & pale orange lutites with pieces of obsidian present near bottom of core.
Mar 67	Core 43	0602 (hit)	0659 0631	1670 1667	1642			43	Penetration 435cm. Core length 348cm. Bottom topography: ridges & troughs. Pipe penetrated through sediments and hit bedrock. Cutting edge bashed in, pipe bent in 3 places.
1 Mar 67	T-Grad 27c	0602		1670		01°28'	102°04'	43	NO RECORD - SPOOL FROZE DUE TO GEARS BINDING
1 MAR 67	CADECA 39A	0544	0714			01°28'	102°04'	43	Triggs weight wraped around compressor. Over 10 HITS.
1 MAR 67	ICEPHO 35	0528	0714			01°28'	102°04'	43	no layers.
1 MAR 67	CORE CADECA 30	0602	0659			01°28'	102°04'	43	19 wire.

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PALISADES

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Research Vessel VEMA
CRUISE N° 24
CRUISE LEG—From PAPEETE To HALOA II

TIME ZONE 24 7

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. W	STD. LOG	REMARKS
									5 DEG. 8 HITS. BOTTOM LIFE + TRAILS - RIPPLE
28	CALDERA	1551	1726			01°25'	100°18'	41	MARKS. CURRENT? COMPASS MOVED
FEB	37								UP ON RIGHT SIDE OF RIG TO REMOVE
67									SHADOW IN PICTURE.
									500 FM. LAYER VERY LIGHT.
28	NOEPHO	1538	1726.			01°25'	100°18'	41	
FEB	33.								
67									
									21 DEG. 2 BOTTOM DEG.
28	CORE	1612	1715			01°25'	100°18'	41	
FEB	CALDERA								
67	38								
									13 DEG 14 HITS. Current 270° SEDIMENT AND.
28	CALDERA	2355	0150			01°27'	101°21'	42	PIECES OF LAVA. NO. 142 SHOW RECENT
FEB	38								MOVEMENT OF LAVA FRAGMENTS. BOTTOM
67									LIFE PRESENT.
									no layer.
28	NOEPHO	2341	0155			01°27'	101°21'	42	
FEB	34								
67									
									33 neg.
28	CORE	2315	0031			01°27'	101°21'	42	
FEB	CALDERA								
67	29								
1	Water	0602	0659	1630	1642	01°28'	102°04'	43	Barrel ~~contents~~ centrifuged and particulate
MAR	barrel	hit 0631		1667					matter placed in bottle # 24
67	# 24								

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PALISADES

#43

Research Vessel VEMA
CRUISE N° 24
CRUISE LEG—From Panama To Hawaii

TIME ZONE Z+7 / Z+6

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. (N)	POSITION Long. (W)	Str. LOG	REMARKS
27 Feb 67	JN-5	1800	2107	58Fm	15Fm	03°04'	97°08'	40	TDR showed that depresser was separated from jet-net after about 1 hr. of towing. Wire connecting jet-net with depresser parted where copper nicopress fitting had been used to make an eye. Electrolytic corrosion probably weakened wire.
27 Feb 67	Milli 28	1830	1830	Surface		03°04'	97°08'	40	
28 Feb 67	Bio 56-V 57-V	1629	1703	226	0	01°25'	100°18'	41	Whales + sharks observed this area. Three well-defined SLs: 0-35 Fm, 120-145 Fm, 145-265 Fm. Sampler reached into but not through middle SL. Lower SL very faint and lying just below middle SL.
28 Feb 67	Milli 29					01°25'	100°18'	41	
28 Feb 67	water barrel #23	2315 hit	0031 2354	2065 2080	2120	01°27'	101°21'	42	Barrel contents centrifuged and particulate matter placed in bottle #23
28 Feb 67	Core 42	2315+ (hit)	0031 2354	2065 2080	2120	01°27'	101°21'	42	Obsidian grading from sand at top to pebbles at bottom. Core hit bedrock. No trigger wt. core. Core length 1857cm. Bottom topography: ridge & trough + Time zone change
28 Feb 67	T-Grad 2713					01°27'	101°21'	42	NO RECORD - NO PENETRATION

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PALISADES

#42

Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From PANAMA To HONOLULU

TIME ZONE Z+6

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. W	LOG	REMARKS
									foraminiferal and radiolarian lutites, possibly
									Pleistocene. Penetration 663cm, core length 818cm
27	Core 40	1630	1730	1640	1715	03°04'	97°08'	40	Pullout hard, extrusion hard. Bottom topography
Feb		hit	1658	1715					Ridges & troughs
67.									
									7 mg 8 hits. Current 260° light rippling.
27	CAMERA	1611	1747			03°04'	97°08'	40	bottom fairly course. - bottom life-
Feb	36								ing. Improved by new reflector
67									installed.
									no layr.
27	DEPTH.	1554	1749			03°04'	97°08'	40	
FEB	32								
67									
									2 mg. 2 bottom shots. (FAIR)
27	CORE	1630	1730			03°04'	97°08'	40	
FEB	CAMERA								
67	27.								
28	Water	1682	1715	1640	1715	01°25'	100° 18'	41	Barrel contents centrifuged and particulate
Feb	barrel								matter placed in bottle # 22
67	#22								
									Bedded foram and radiolarian lutite
28						01°25'	100°18'		Penetration 793cm, core length 758 cm
Feb.	Core 41	1612	1715	1865	1854			41	Bottom topography: ridges & hills.
67.		(hit)	1640		1857				
									NO RECORD - INSTRUMENT FLOODED
28						11° 25'	100° 18'		
Feb.	T-Grab	1612	1715	1865				A1	
67	27A								

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PALISADES

41

Research Vessel VEMA
CRUISE N° 24
CRUISE LEG—From Panama To Hawaii

TIME ZONE Z+6

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. W	Sta LOG	REMARKS
26 Feb 67	JN-4	1645	1945	60Fm	60Fm	04°58'	93°34'	39	This is the first jet-net tow to have a reliable TDR record. The sampling was at 60Fm for a duration of 3 hrs at an average speed of 8.5 kt. The main constituents of the sample were again euphausiids.
26 Feb 67	Milli 27	1700	1700	Surface		04°53'	93°34'	39	
26									6 brass Twits Bottom Life - Hoth Ripple Mk Current 220°.
Feb 67	CAMERA	1452	1633			04°53'	93°34'		
60	35								
26 Feb 67	NEPHO 31	1450	1637			04°53'	93°34'		no layer.
26 Feb 67	CORE CAMERA 26	1523	1615			04°53'	93°34'		20 mg. 1 poor bottom picture.
27 Feb 67	Water barrel #21	1630	1730	1640	1715	03°04'	97°08'	40	Barrel contents centrifuged and particulate matter stored in bottle #21
		1630		1620	1715	03°04'	97°08'		GOOD RECORD - 2 PROBES
27 Feb 67	T-Grad 26							40	HF = 1.29 μcal/cm²/sec

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PALISADES

#40

Research Vessel VEMA
CRUISE N° 24
CRUISE LEG From Panama To Hawaii

TIME ZONE +6

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. W	Stn LOG	REMARKS
25 Feb 67	Water barrel #19	1625 hit 1653	1727	1945 1951	1951	06°19'	90°37'	38	Successfully barrel contents centrifuged and particulate matter stored in bottle # 19
25 Feb 67	Bio 54-V 55-V	1655	1728	220	0	06°19'	90°37'	38	Duration of tow longer than usual due to wire drifting under hull. Three SLs: 0-70 Fm, 170-200 Fm, 220-250 Fm. Middle SL consists of alternating light and dark bands 10 Fm thick. Large volumes of plankton abounding in this area.
25 Feb 67	JN-3	1745	2040	25 Fm	25 Fm	06°19' 06°04'	90°37' 90°57'	–	This was the first attempt to tow jet-net at full speed. Successful. No TDR accompanied this tow because of modifications being made in the mounting. The greater part of this tow took place after dusk and sampled heart of nighttime SL.
25 Feb 67	Milli 26	1830	1830	Surface		06°15	90°40'	–	Fairly heavy concentration of nanoplankton.
26 Feb 67	Water barrel #20	1513 hit	1615 1542	1831 1828	1822	04°53'	93°34'	39	Barrel contents centrifuged and particulate matter stored in bottle #20
26 Feb 67	Core 39	1513 (hit)	1615 1542	1831 1828	1822	04°53'	93°34'	39	Bedded foraminiferal and radiolarian lutite containing discoasters and Pliocene radiolaria. Penetration 1136, core length 874cm Bottom topography: hills. Extrusion - hard
26 Feb 67	T-Cored 25	1513	1615	1831		04°53'	93°34'	39	GOOD RECORD - 4 PROBES H.F. = 0.64 μcal/cm²/sec

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PALISADES

#39

Research Vessel VEMA
CRUISE N° 24
CRUISE LEG—From Panama To Hawaii

TIME ZONE Z+6

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. W	Stn -LOG	REMARKS
25 Feb 67	JN-2	1615	1715	50 Fm?	50 Fm?	06°56'	87°21'	37	As in JN-1, this tow showed a high percentage of rapidly-moving crustaceans. TDR used with this tow was vague because of wide, short duration deflections due to eddy currents around pressure vessel.
25 Feb 67	Bio 52-V	1502	1531	228	0	06°56	87°21'	37	PDR ambiguous because of bottom trace superimposition + lack of adjustment. Three SLs: 0-80 Fm, 170-200 Fm, 220-250 Fm. Abundant crustaceans: euphausiids, mysids, occasional amphipods, and large volumes of copepods.
	53-V	1550	1739						
25 Feb 67	CANOPA 34					06°19'	90°37'	38	no layer.
									3 mg. 14 hits - Trigger line hung up.
25 Feb 67	NEMO 30	1538	1742.			06°19	90°37'	38	Current? bottom life present, bottom seems pebble like.
									2 bottom shots, not good. — 22 mg.
25 FEB 67	CORE CANOPA 25	1625	1727			06°19	90°37	38	
25 feb 67	Core 38	1625 (hit)	1727 1653	1945 1951	1951	06°19'	90°37	38	Radiolarian & foram ooze containing one white ~~turbidite~~ CaCO3 layer. Penetration 1060 cm. Core length 781 cm. Botton topography: rolling, with parallel sub-bottom beds
									GOOD RECORD - 2 PROBES
25 feb 67	T-Grad 24	1625	1727	1945	1957	06°19	90°37	38	HF = 1.148 μcal/cm²/sec

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PALISADES

#38

Research Vessel VEMA
CRUISE N° 24
CRUISE LEG—From PANAMA. To HAWAII

TIME ZONE 2+6

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. W	STN. LOG	REMARKS
									6 mg 11 kits. current 140° mg. light blue it is because of dark sediment. Two bottom creatures. Have moved compass to opposite side of rig.
24 Feb 67	CORE A 33	1417	1553			06°36'	87°21'	37	
									400 Fr. Layer strong. Life showing in filter.
24 Feb 67	CORE A. 33	1403	1558			06°56'	87°21'	37	
									19 mg. 2 bottom mg. (Poor)
24 Feb 67	CORE CAMERA. 24	1442	1537			06°56'	87°21'	37	
24 Feb 67	Water barrel 18	1442 (hit)	1537 1507	1695	1690 1690	06°56'	87°21'	37	Successful barrel contents centrifused and particulate matter stored in bottle #18
									Radiolarian & foram lutite containing one white volcanic ash layer. Penetration 7.98m, Core length
24 Feb 67	Core 37	1442 (hit)	1537 1507	1695 1690	1690	06°56'	87°21'	37	Bottom topography: gently sloping and undulating
									GOOD RECORD - 2 PROBES
24 Feb 67	T-Grad 23	1442	1537	1695	1690	06°56'	87°21'	37	H.F. = 2.21 μcal/cm²/sec
24 Feb 67	Bio 50-V 51-V	2451	0000	228	0	06°30'	85°13'	36	~~PDR ambiguous because of bottom trace superimposition + lack of adjustment. Three SLs: 0-80 fm, 170 200 fm, 230-250 fm.~~ Abundant crustaceans. ~~This tow taken same vicinity as~~ One SL: 0-70 fm.

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#37

Research Vessel VEMA
CRUISE N° 24
CRUISE LEG—From Panama To Hawaii

TIME ZONE Z+6

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. W	Stn LOG	REMARKS
23 Feb 67	JN-1	1030	1130	30 Fm	30 Fm	06°23'	83°09'		The relatively large numbers of very motile animals in this initial jet-net tow suggests that avoidance may have been a significant factor in standard vertical tows taken up to this point. Tow duration 60 min. with 100 Fm of wire out to sample surface SL, 0–50 Fm.
						06°22'	83°17'		
		2436	0029	1010	1009				Good RECORD – 4 PROBES
23 Feb 67	T-Grad 22					06°30'	83°13'	36	H.F. = 1.88 μ cal/cm²/sec
23 Feb 67	Core 36	2436†	0029	1010	1009	06°30'	85°13'	36	Foram ooze containing 4 volcanic ash layers. Penetration 815cm, core length 788cm. Bottom topography: ridge & valley.
		time(hit)	2456	1010					
									†Time zone change.
24 FEB 67	CANREA. 32	0016	0131			06°30'	85°13'	36	10 mg. 12 hits current 315° signs of Cocton life. Starfish-prevent. Cotton-pieble like.
24 FEB 67	DEPTH. 28	0309	036			06°30'	85°13'	36	no layer. — reading is strong from surface?
24 FEB 67	Core CANREA. 23	0036 ~~2436~~	0129 ~~0029~~			06°30'	85°13'	36	12 mg. 2 cotton-poor-too close.
24 FEB 67	CORE BARREL 17	2436 hit(2456)	0029	1010 1010	1009	06°30'	85°13'	36	Barrel contents centrifuged and Particulate matter stored in bottle # 17

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PALISADES

#36

Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From PANAMA To HONOLULU

TIME ZONE Z+5

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat N	POSITION Long. W	LOG	REMARKS
		1051	1150	1480	1560	7°06'	79°59'	35	NO RECORD
22									
Feb	T-Grad								
67	22A								
22						7°06'	79°58'	35	Grayish olive lutite, hard & compact. Homogeneous throughout. Penetration 231' (?). Core
Feb	CORE	1051	1150	1480	1560				
67	35	(hit)	1121	1540					length 152+. Core not completely extruded on
									ship. Trigger core sediment disturbed & rearranged
									during extrusion due to faulty core catcher. Bottom topography steep slope
22	CAMERA					7°06'	79°58'	35	6 DEG 9 HITS CURRENT: 020° SIGNS OF BOTTOM
FEB	31								LIFE.
67									LIGHT ROLLING OF BOTTOM.
						7°06'	79°58'	35	650 FM. LAYER STRONG.
22	DEPTH-								
FEB	27								
67									
						7°06'	79°58'	35	100 BOTTOM SHOTS 22
22	CORE								
FEB	CAMERA								
67									
						7°06'	79°58'	35	Door unlatched when it surfaced. Slide does not indicate door flapped.
22	CORE	1051	1150	1480	1560				
FEB	BARREL	(hit)	1121	1540					
67	16								
22	Bio 49-Y	1155	1203	224	0	7°06'	79°58'	35	Very large volume + variety of planktonic organ-
Feb	Milli 25	1955	1955	Surface				—	isms. Three SLs: 0-40 Fm, 110-140 Fm, 160-220 Fm.
67									Evidently these were only local SLs, because once
									underway, they soon disappeared.

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PALISADES

#35

Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From MIAMI To PANAMA
TIME ZONE E+5

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long W	STD. LOG	REMARKS
18	CANDELA	1644	1811						GRAB THIS - Current 135°
FEB	30					10°40'	79°06'	34	ripple marks - starfish imprint
67									signs of bottom life
18	DEPH.	1637	1816						
FEB	26					10°40'	79°06'	34	no layes.
67									
	CORE	1657	1754						21 mg - 2 bottom shots.
18	CANDELA					10°40'	79°06'	34	
FEB	21								
67									

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PALISADES

#34

Research Vessel VEMA
CRUISE N° 24
CRUISE LEG—From MIAMI To PANAMA

TIME ZONE 5+5

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. W	STD. LOG	REMARKS
17 FEB 67	CARIBBA 89	2102	2229			10°00'	77°04'	33	Long & Lots Current? ripple marks, signs of bottom life
17 FEB 67	DEPTH 25	2050	2233			10°00'	77°04'	33	no layers.
17 FEB 67	Core CARIBBA 20	1657	1754			10°00'	77°04'	33	
18 FEB 1967	WATER BARREL 16A	1656	1753	1886	1883	10°40'	79°06'	34	TELLTALE SLIDE INDICATES BARREL TRIPPED ON WAY
18 Feb 67	T-Grad 21					10°40'	79°06'	34	GOOD RECORD - 2 PROBES 2 PROBES DEFECTIVE AT HIT
18 Feb 67	Core 34	1657 thru hit A	1754 1719	1885 1885	1885	10°40'	79°06'	34	Bedded green lutite. Penetration 1061 Core length 840. Bottom topography: flat bottom just a feet of basin.

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PALISADES

#33

Research Vessel VEMA
CRUISE N° 24
CRUISE LEG—From MIAMI To PANAMA

TIME ZONE 2+5

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. W	STD. LOG	REMARKS
16	SONOBUOY	1251						—	PITLOG; START 4805.57 – END 4819.20 SLOW PROFILER TRAVERSE
FEB	21		1440			13°07'	76°58'		SAT. FIX 1322 13°03.3'N 76°57.1'W
1967						12°54'	76°52'		
									GOOD RECORD - 4 PROBES PENETRATE
16									
Feb	T-Grad	0732	0823			11°12'	76°06'	32	
67	19								
									Homogeneous grayish olive lutite penetration 921
16									core length 11'02 Bottom topography:
Feb	Core 32	0732	0823	1490	1448	11°12'	76°06'	32	undulating & rolling.
67		time(ut)	0853	1496					
16	WATER	2116	2211	1670	1670	10°00'	77°04'	33	TELETALE SLIDE INDICATES BOTTOM TRIP
FEB	BARREL								
1967	15								
									GOOD RECORD – 4 PROBES PENETRATE
16									
Feb	TGrad	~~0732~~	~~0823~~			10°00'	77°04'	33	
1967	20	2116	2214						
									Bedded green lutites and thixotropic sand.
16									penetration 934; core length 813.
Feb	Core 33	2116	2214	1671	1670	10°00'	77°04'	33	Bottom topography: flat (Columbia Basin)
67		time(ut)	2141	1670					Difficult retrusion due to bend in pipe
17	BIO 47	2145	2223	224	0	10°00'	77°04'	33	No distinct boundaries between SLs. — continuous
Feb	48								from surface down to 220 Fm, decreasing in
67									concentration as depth increases.

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PALISADES

#32.

Research Vessel VEMA
CRUISE N° 24
CRUISE LEG—From MIAMI To PANAMA.

TIME ZONE 5

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. W	STD-LOG	REMARKS
16 FEB 67	CORE CAMECA 18	2134	~~2034~~ 2234			12°15'	76°38'	31	Bottom shot to close. -
16 FEB 67	CORE 31	2134 (initial)	2234 2004	1928	1929 1929	12°15'	76°38'	31	Interbedded lutites and quartz sands. Penetration 117cm; core length 919cm. Bottom topography: flat, gently dipping.
16 FEB 1967	WATER BARREL 14	2137	2234	1928	1929	12°15'	76°38'	31	TELLTALE SLIDE INDICATES BOTTOM TRIP
17 FEB 1967	WATER BARREL 15A	0734	0823	1440	1466	11°12'	76°06'	32	TELLTALE SLIDE INDICATES BARREL TRIPPED ON WAY DOWN SAMPLE DISCARDED
17 FEB 67	CAMECA 28					11°12'	76°06'	32	10 mg 13 hits Current? bottom life, ripple marks.
17 FEB 67	NEPHO 24					11°12'	76°06'	32	no layers.
17 FEB 69	CORE CAMECA 19					11°12'	76°06'	32	20 mg. bottom shot. mostly sediment in water.

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PALISADES

#31

Research Vessel VEMA
CRUISE N° 24
CRUISE LEG—From MIAMI To PANAMA

TIME ZONE Z+5

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. W	LOG	REMARKS
									Interbedded brown & green lutites and quartz sand.
16						12°26'	76°43'		Penetration 1171, core length 1139. Bottom
Feb	Core 30	1821	1928	1990	1990			30	topography: sloping, ripple marked.
67		time hit	1848		1990				
									6 sig 7 hits Current 280°
16	CARIBEA	1805	1946			12°26'	76°43'	30	ripple marks. - signs of bottom
FEB	26								life.
67									
									no layer.
16	DEPTH	1757	1950			12°26'	76°43'	30	
FEB	22								
67									
									35 lbs. two bottom shots - sediment in
16	CORE	1821	1928			12°26'	76°43'	30	water.
FEB	CARIBEA								
67	17								
16	WATER	1822	1929	1990	1987	12°26'	76°43'	30	TELLTALE SLIDE INDICATES BARREL TRIPPED SOON AFTER
FEB	BARREL								LOWERING
1967	17B								SAMPLE DISCARDED
		2117	2248						5 sig 6 hits current? ripple marks - bottom
16	CARIBEA					12°15'	76°38'	31	life.
FEB	27								
67									
16									no layer.
FEB	DEPTH	2115	2253			12°15'	76°38'	31	
67	23								

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PALISADES

Research Vessel VEMA
CRUISE N° 24
CRUISE LEG—From MIAMI To PANAMA

TIME ZONE Z+5

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. W	STN LOG	REMARKS
									Bedded sand and lutites. Penetration 137(?)
16									core length 675cm. Bottom topography: Flat -
Feb	~~Attempted~~					13°50'	77°18'	29	Colombia Basin. Core hit bottom before Inspenger
67	Core 29	0636	0746	2143	2143				triped ~~firing~~ firing device. Hit was not noticed.
									GOOD RECORD - 1 PROBE
16	T-Grad					13°50'	77°18'		P_3 & P_2 NO PENETRATION
Feb	~~Core 28m~~	0636	0746	2143	2143			29	P_1 DEFECTIVE
67	17								
16	WATER	0636	0746	2143	2143	13°58'	77°18'	29	TELLTALE SLIDE INDICATES BARREL TRIPPED PART WAY
FEB	BARREL								DOWN
1967	14A								SAMPLE DISCARDED
16		0609	0809			13°50'	77°18'	29	5DEG 6HITS Current 195° ripple marks -
Feb	CAMERA								signs of bottom life.
67	25								
16		0602	0817			13°50'	77°18'	29	no layers.
Feb	~~Camera~~								
67	21								
									25mg. no bottom shots - sediment
16	~~Core~~					13°50'	77°18'	29	in water.
Feb	CAMERA	0636	0746						
67	16								
									GOOD RECORD 4 PROBES PENETRATE
16						12°26'	76°43'		
Feb.	T-Grad	1821	1928					30	
67	18								

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#29

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PALISADES

Research Vessel VEMA
CRUISE N° 24
CRUISE LEG—From MIAMI To PANAMA

TIME ZONE 2+5

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. W	STD. LOG	REMARKS
									5 DEG 7 HITS. CURRENT 225°
14	CARIBBEAN	1546				18°05'	79°53'	27	VERY BUMPY FROM BOTTOM LIFE. - WORM MARKS.
FEB	03								
67									
14	DEPH.	1541				18°05'	79°53'	27	MAGNET LOST AFTER LOWERING.
FEB	~~20~~ A								
67	19								
14	CORE	1609	1798						3 1 DEG. SEDIMENT TO WATER.
FEB	CARIBBEAN					18°05'	79°53'	27	
67	15								
		1831	2100						9 DEG 10 SHOTS. CURRENT 330° RIPPLE MARKS -
15	CARIBBEAN					15°19'	77°37'	28	SIGNS OF BOTTOM LIFE.
FEB	24								
67									
		1828	2103						NO LAYER.
15	DEPH.					15°19'	77°37'	28	
FEB	20								
67									
15	CORE	1906	1946			15°19'	77°37'	28	TRIGGER JAMMED.
FEB	CARIBBEAN								
67	16A								
15	MILLI 24	1700	1700	Surface				28	
FEB						15°19'	77°37'		
67									
16 FEB	BIO 45, 46	0707	0737	226	0	13°56'	77°18'	29	THESE TOWS TAKEN DURING DOWN MIGRATIONS

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#28

Research Vessel VEMA
CRUISE N° 24
CRUISE LEG—From Miami To Panama

TIME ZONE Z+5

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. W	Stn. ~~Log~~	REMARKS
14 Feb 67	Bio 43-V 44-V	0631	0701	224	0	19°02'	80°32'	27	Three SLs discernable: 0-90 Fm, 140-180 Fm 220-300 Fm. These tows + observations made immediately after dawn migrations.
14 Feb 67	T-GRAD 16A	1609	1718			18°05'	79°53'	27	~~GRAD~~ NO RECORD - ~~2 PROBES~~ $P_4 \times P_3$ DEFECTIVE $P_2 \times P_1$ NO PENETRATION
14 Feb 67	CORE 27	1609 time hit	1718 1641	2450 2450	2450 2450	18°05'	79°53'	27	Bedded & Interbedded Lutite. Penetration 545 cm Core length 564cm. Bottom topography: small hills & valleys.
14 Feb 1967	WATER BARREL 13A	1609	1718	2450	2450	18°05'	79°53'	27	TELLTALE SLIDE INDICATES BARREL TRIPPED ABOUT HALF WAY DOWN SAMPLE DISCARDED
15 Feb 67	~~T-GRAD~~ Core 28	1906 time hit	1946 1923	1216 1216	1215	15°19'	77°57'	28	Bedded brown lutite overlying grayish green lutite. Penetration 1265cm Core length 933cm. Bottom topography: rolling; profiler indicates ridge rising from bottom basement sediments
15 Feb 67	T-GRAD Core 28 16	1906 time hit	1946 1923	1216 1216	1215	15°19'	77°57'	28	GOOD RECORD - 2 PROBES PENETRATE
15 Feb 1967	WATER BARREL 13	1907	1946	1220	1215	15°19'	77°57'	28	TELLTALE SLIDE INDICATES BOTTOM TRIP

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Research Vessel VEMA
CRUISE N° 24
CRUISE LEG—From MIAMI To PANAMA.

TIME ZONE 5

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. W	STN LOG	REMARKS
13									11 KC. 12 HITS CURRENT 220° Bottom life
FEB	CARIBEA	2013	2150			19°57'	81°07'	25	Brainy type bottom - no ripple marks.
67	22								
									no layer.
13	DEPTH	2013	2150			19°57'	81°07'	25	
FEB	19								
67									
									2 ang. one bottom shot not clear. showing
13	CORE					19°57'	81°07'	25	reflection of compass on bottom.
FEB	CARIBEA	0458	0722						
67	13								
14	CORE					19°02'	80°32'	25	45 ang. no bottom shots, particles in
FEB	CARIBEA								water from hit
67	14								
14	WATER	0458	0722	3640	3641	19°02'	80°32'	26	TELLTALE SLIDE INDICATES BOTTOM TRIP
FEB	BARREL								
1967	12								
14						19°02'	80°32'	26	Interbedded lutite and foram sand. Penetration
Feb	CORE	0458	0722	3640	3641				725cm. Core length 683. Bottom topography:
67	26	time hit 0605		3641					trench. Pipe lent: extrusion hard
14	T-GRAD	0458	0722			19°02'	80°32'	26	GOOD RECORD 2 PROBES
FEB	15								
67									

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PALISADES

Research Vessel VEMA
CRUISE N° 24
CRUISE LEG—From MIAMI To PANAMA.

TIME ZONE 2+5

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long W	STN LOG	REMARKS
13	CORE								DIVER. NO BOTTOM SHOTS.
FEB	CAMERA	0905	1036			20°45'	82°30'	24	
67.	12	↓							
13	WATER	0906	1036	2356	2356	20°45'	82°30'	24	BARREL DID NOT CLOSE
FEB	BARREL								SAMPLE DISCARDED
1967	11A								
13	SONOBUOY	0242	0432			20°52'	83°25'		PIT LOG START 4089.41 END 4103.29
FEB	#30					20°50'	83°11'		SLOW PROFILE TRAVERSE
1967									
13		2140	2238			19°57'	81°07'	25	GOOD RECORD - 2 PROBES
Feb	T-GRAD								
67	14								
13	CORE	2140	2238	1518	1526	19°57'	81°07'	25	Gray lutite interbedded with thin foram beds.
FEB	25	time lit	2204	15	20				penetration 981, core length: 1070 Bottom
67									topography: ridges & valleys.
13	BIO 41-V	0956	1029	225m	0	20°45'	82°30'	24	This area not especially prolific with respect to
Feb	42-V								numbers of plankton, but there was an extra-
67	MILLI 23	1105	1105	SURFACE					ordinary diversity of organisms in this pair of
									tows. Indistinct boundaries between the 3 SLs
									present: 0-100 Fm, 120-140 Fm, 220-290 Fm.
13	WATER	2041	2135	1515	1525	19°57'	81°07'	25	TELLTALE SLIDE INDICATES BOTTOM TRIP
FEB	BARREL								
1967	11								

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PALISADES

#25

Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From MIAMI To PANAMA

TIME ZONE 5+

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long W	LOG	REMARKS
									Interbedded lutite, foram ooz & foram sand.
13									Penetration 1245, Core length 949. Bottom
Feb	Core 24	0905	~~1036~~	2357	2358	20°45'	82°30'	24.	topography: flat
67		time hit	0951	2358					
									GOOD RECORD 4 PROBES
13	T-Grad	0905	1036			20°45'	82°30'	24	
Feb	13								
67									
12	CAMERA.	~~1140:15~~	~~1209:30~~			21°27'	85°42'	23	14 NEG 20 HITS CORRECT 340° SIGNS OF BOTTOM LIFE
FEB	20	1114	1259						RADIAL MARKS THROUGH OUT. DOES NOT APPEAR TO BE SMOOTH
68									MUD TYPE SEDIMENT, VERY WHITE & COARSE. 1 SHOT LOOKS
									LIKE AN OUT CROPPING.
12	DEPTH.	~~1338~~	~~1604:15~~			21°27'	85°42'	23	LAYER EITHER THIN OR THERE IS NONE.
FEB	17	1111	1304						
69									
12	CORE					21°27'	85°42'	23	16 DEG. NO BOTTOM SHOTS. FILM
FEB	CAMERA	1153	1321						STRUCK BY SAFE LIGHT.
69	11								
									20 DEG. 21 HITS CORRECT 105° BOTTOM LIFE - PURPLE
13	CAMERA	0822	1050.			20°45'	82°30'	24	MARKS.
FEB	21								
69									
13	DEPTH.	0822	1111						NO NOTICEABLE LAYER, FILM VERY LIGHT.
FEB	18					20°45'	82°30'	24	
69									

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PALISADES

Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From MIAMI To PANAMA

#24

TIME ZONE Z+5

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat N	POSITION Long. W	37N LOG	REMARKS
10 Feb 67	Sonobuoy #18	1937	2118			23°35'	92°07'		Pitlog start 3548.32 end 3559.98. Slow profiler traverse.
						23°31'	91°53'		Sat fix 1956 23-34.8 92-05.9
11 Feb. 67	Sonobuoy #19	1417	1624			22°45'	89°00'		Pitlog start 3735.20 end 3744.95 Fast profiler traverse
						22°41'	88°43'		Sat Fix 1424 22-44.3 88-57.9
11 Feb 69	Milli 21	1750	1750	Surface		22°37'	88°28'		
12 Feb 67	T GRAD 12	1153	1321			21°27'	85°42'	23	GOOD RECORD — 3 PROBES
12 Feb 1967	WATER BARREL 10	1153	1321	1105	1110	21°27'	85°42'	23	TELLTALE SLIDE INDICATES BOTTOM TRIP
12 Feb 67	Bio 39-V 40-V	1208	1237	226m	0	21°27'	85°42'	23	Sparse SLs on PDR. Net hauls indicate plankton-poor waters
	Milli 22	1300	1300	Surface					
12 Feb 67	Core 23	1153 Wt 18 16	1321	1102	1115 1110	21°27'	85°42'	23	Predominantly dark gray lutite overlain by brown and light gray foraminiferal lutites penetration 353 (?) Core length 1757. Bottom topography: slightly upwarped

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Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From MIAMI To PANAMA

TIME ZONE Z+5

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. W	LOG	REMARKS
									Predominantly dark gray lutite overlain & inter-
10						23°35'	92°08'		bedded with foraminiferal brown & light gray
Feb.	Core 22	1430	1543	1986	1989			22	lutites. Depth of penetration 129, Core
67		Time hit (1502)		1989					length 1051. Rock dredge retained nothing.
									Bottom topography: flat
		1430	1543					22	GOOD RECORD
10						23°35'	92°08'		3 PROBES
FEB	T-GRAD								
67	#11								
		1410.15	1609.30						ENDED. 9 HITS. CORRECT 340°
10	CAMERA					23°35'	92°08'	22	LIGHT RIPPLING. — BOTTOM LIFE.
FEB	19								
67									
		1338	1612.45						650 FM. LAYER LIGHT.
10	DEPTH.					23°35'	92°08'	22	
FEB	10								
67									
									21 LEG. SEDIMENT ON COMPASS FEED
10	CORE	1430	1543			23°35'	92°08'	22	BOTTOM CONTACT.
FEB	CAMERA								
67	10								
10	WATER	1430	1542	1990	1989	23°35'	92°08'	22	BARREL TRIPPED AT SURFACE FROM TELETALE SLIDE
FEB	BARREL								SAMPLE DISCARDED
1967	10A								
10	Milli 20	1500	—	Surface				22	Routine millipore, but the 2 vertical tows, 37-V + 38-V,
Feb	Bio 37-V	1710	1835	0 ↔ 224m		23°35'	92°08'		yielded myriads of planktonic tunicates — probably
67	38-V								salps. An additional surface tow confirmed the
									suspicion that these masses of salps were a surface
									phenominon.

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Research Vessel VEMA
CRUISE N° 24
CRUISE LEG—From Miami To Panama

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TIME ZONE Z+5

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. W	Sta. LOG	REMARKS
05 Feb 67	Milli 18	1705	1705	Surface				21	
	Bio 35-V	1557	1627			24°23'	90°06'		Sampled surface SL which extended down to 60 Fm. Conspicuous lack of usual deeper SLs.
	36-V						0		On 35-V, nylon thread from net may have interfered with flowmeter.
05 Feb 67	Sonobuoy 13	2129	~~2210~~ 2540			23°38' 23°33'	90°42' 90°12'		Pit Log, Start 2540.10 – End 2550.39 Slow profiler traverse.
06 Feb 67	Sonobuoy 14	0536	~~0744~~ 0744			23°09' 23°00'	91°46' 91°58'		Pit log, start 2620.55 – End 2634.85 Slow profiler traverse.
06 Feb 67	Sonobuoy 15	1323	~~1501~~ 1501			22°29' 22°24'	92°48' 93°00'		Pit log, start 2660.65 – End 2672.00 Slow profiler traverse.
09 Feb. 67	Milli 19	1440	–	Surface		20°54'	93°28'		
08 Feb (67)	Sonobuoy 16	0900	~~1100~~ 1100			20°22' 20°14'	94°42' 94°30'		Pit log, start 3065.71 – End 3079.90 Slow profiler traverse
9 Feb 1967	Sonobuoy 17	2203	0007			21°45' 21°53'	93°02' 93°08'		Pit Log, Start 3376.24 – End 3392.11 Slow Profiler Traverse

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PALISADES

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Research Vessel VEMA
CRUISE N° 24
CRUISE LEG—From MIAMI To PANAMA

TIME ZONE Z+5

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. W	STN LOG	REMARKS
5 FEB 1967	SONOBUOY 12	1121	~~1330~~ 1330			24°42'	89°39'		PITLOG, START 2459.98 - END 2474.69 SLOW PROFILER TRAVERSE
5 FEB 1967	WATER BARREL 9	1536	1637	1942	1942	24°23'	90°06'	21	TELLTALE SLIDE INDICATES BOTTOM TRIP
5 FEB 67	T GRAD 10	1541	1637			24°23'	90°06'	21	GOOD RECORD - 3 PROBES HF = 0.92 μcal/cm²/sec
5 Feb 67	Core 21	1541 time hit	1637 (1601)	1942 - 1945	1942	24°23'	90°06'	21	Lutite containing several distinct foraminiferal beds within top two meters of core. Depth of penetration 840cm. Core length 820 cm. Bottom topography: gently dipping beds.
5 FEB 67	CAMERA 18	1546.45	1652.15			24°23'	90°06'	21	8 HITS - 7 NEG. ROBOT AND SIGNS OF ANIMAL LIFE.
5 FEB 67	DEPTH 15	1515.	1656.12			24°23'	90°06'	21	925 LAYER. FAIRLY LIGHT BUT CONSISTENT
5 FEB 67	Core CAMERA 8					24°23'	90°06'	21	17 NEG. 9 HIT SHOW BOTTOM - TRIPPER LIGHT + Cable. TWO compasses used to determine DISTANCES FROM CORE PIPE NEEDED

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PALISADES

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Research Vessel VEMA
CRUISE N° 24
CRUISE LEG—From MIAMI To PANAMA

TIME ZONE 2+5

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. W	STN LOG	REMARKS
3	SONOBUOY	0916	~~1010~~			26°48	86 36		PITLOG, START 2006.20 - END 2016.11 PROFILER ON FAST TRAVERSE
FEB	6A		1010			26°54	86 39		
1967									
3	SONOBUOY	1027	~~1152~~			26 55	86 38		PIT LOG, START 2018.94 - END 2027.57 FAST PROFILER TRAVERSE
FEB	6		1152			27°06	86 43		
1967									
3	SONOBUOY	1814	~~2033~~			27°53	86°53		PITLOG, START 2073.00 - END 2084.13 SLOW PROFILER TRAVERSE
FEB	7		2033			28 01	87 02		
1967									
4	SONOBUOY	0108	~~0229~~			28°51	86°54		PITLOG, START 2132.08 - END 2141.67 SLOW PROFILER TRAVERSE
FEB	8		0229			29°00	86°58		
1967									
4	SONOBUOY	0841	~~1022~~			27°59	89°34		PITLOG, START 2210.65 - END 2222.57 SLOW PROFILER TRAVERSE
FEB	9		1022			27°47	87°40		
1967									
4	SONOBUOY	1901	~~2057~~			26°42	88°16		PITLOG, START 2297.41 - END 2310.72 SLOW PROFILER TRAVERSE
FEB	10		2057			26°30	88°22		
1967									
5	SONOBUOY	0305	~~0455~~			25°44	88°48		PITLOG, START 2379.39 - END 2392.35 SLOW PROFILER TRAVERSE
FEB	11		0455			25°31	88°59		
1967									

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PALISADES

#19

Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From MIAMI To PANAMA.

TIME ZONE 5

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long W	STN, LOG	REMARKS
									Depth of penetration 1145cm. Core length 968cm.
4									Bottom topography: Slightly undulating.
Feb.	Core 20	1401	1500	1420	1422	27°17'	87°57.5'	20	Predominantly gray brittle, homogeneous
67.		Time Hit (1421)		- 1420					structureless, plastic.
		1340.35	1514.-						
4	CAMERA					27°17	87°57.5'	20	~~CAMERA~~ 17 HITS - 16 REC.
FEB	17								ONE REC SHOWING EXCESSIVE MUD FLOW. STARFISH PRINT-
67									BOTHOS RIPPLED SLIGHTLY THROUGH OUT.
									CORRECT. - APPLY-SE.
4	WOPHO.	1333.20	1517.25			27°17	87°57.5'	20	650 FMS. LAYER ALMOST CONSISTANT FROM
FEB	14								SURFACE.
67									
4	CORE	8				27°17'	87°57.5'	20	18 REC. REC. 6+8 SHOWING BOTHOS HIT, MOSTLY
FEB.	CAMERA	1401	1500						CLOUDED WATER, SEDIMENT KICK UP FROM
67.	8								CORE CONTACT.
4	Milli 17	1515	1575	Surface		27°17'	87°57.5'	20	
Feb	Bio 33-V	1407	1511	226m - 0					Sampled upper SL exclusively.
67	34-V								
Feb	SONOBUOY	2157				24°01'	85°36'		PITLOG, START 1703.88 - END FAST PROFILER TRAVERSE
1	4								
67									
Feb	SONOBUOY	2111	2243			25°22'	85°53'		PITLOG, START 1879.33 - END 1890.18 FAST PROFILER TRAVERSE
2	5					25°21	86°00'		
67									

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PALISADES

#18

Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From MIAMI To PANAMA

TIME ZONE Z+5

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. W	STN LOG	REMARKS
						27°28'	86°49'		GOOD RECORD – 3 PROBES
3									
Feb	T-Grad	1446	1537					19	HF = 0.95 μcal/cm²/sec
67	8								
								19	11 hits – 9 neg. STARFISH IMPRESSIONS, ODD LOOKS
3	CAMERA.	1417.05	1551.10			27°28'	86°49'		LIKE CREATURE EMERGING FROM SMALL MOUND OF
FEB	16.								SEDIMENT. BOTTOM IS RELATIVELY SMOOTH.
67									
								19	300 FM. LAYER CONSISTENT THROUGHT LOWERING
3	DEPTH.	1404.30	1557.00			27°28'	86°49'		LAYER SHOWS FROM SURFACE.
FEB	13.								
67									
								19	
3	CORE	1446	1537			27°28'	86°49'		PIN WAS PULLED BUT RELOCATING AND
FEB	CAMERA.								JAMMED IN SLOT. (WILL BE FIXED.) CAMERA
67	BA.								DIDN'T TRIGGER.
3	Milli 16	1630	1630	Surface		27°28'	86°49'	19	
Feb	Bio								Tows 33-V and 34-V no good because of
67	33-V								extreme wire ∠.
	34-V								
4	WATER	1401	1500	1420	1422	27°17'	87°57½	20	TELLTALE SLIDE INDICATES BOTTOM TRIP
FEB	BARREL								
1967	8								
4	T-GRAD	1401	1500			27°17'	87°57½	20	GOOD RECORD 3 PROBES
FEB	9								HF = 0.45 μcal/cm²/sec
67									

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PALISADES

#17

Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From MIAMI To PANAMA

TIME ZONE 2+5

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long (W)	STN. LOG	REMARKS
2	CORE	1410	1531						23 DEG. POSSIBLE BOTTOM SHOTS. 13+14.
FEB	CAMERA					25°24.4'	85°52.3'	17	DARKENING OF DEG. POSSIBLE REFLECTION
67	6								FROM BOTTOM OR THICKNESS OF SEDIMENT
									IN WATER.
									Predominantly gray lutite overlain by two small
2									brown lutite beds. Depth of penetration 1100 cm.
Feb.	Core 18	1805	1902	1732	1736	25°25'	85°53'	18	Core Length 836cm. Bottom topography: flat.
67		Time Hit (1833)		1732					
									15 HITS - 15 DEG. - NEGATIVES SHOW ALOT
2	CAMERA.	1904:55	2046						OF SEDIMENT IN WATER AT BOTTOM.
FEB	15					25°35'	85°53'	18	
67									
									925 - LAYER ISN'T STRONG BUT
2	DEPTH.	1900	2062.20			25°25'	85°53'	18	CONTINUOUS ALMOST FROM SURFACE.
FEB	12.								
67									
									21 DEG. - POSSIBL BOTTOM SHOTS ON 20, 10+11.
2	CORE.	1805	1902			25°25'	85°53'	18	NO ACTUAL BOTTOM OR SEDIMENT SHOTS BUT.
FEB	CAMERA.								A DARKNESS TO NEGITIVE. MIGHT BE SEDIMENT
67	7								IN WATER.
3	WATER	1446	1537	1617	1608	27°28'	86°49'	19	TELLTALE SLIDE INDICATES BOTTOM TRIP
FEB	BARREL								
1967	7								
									Predominantly gray lutite overlain by two
3		1446	1537	1615	1608	27°28'	86°49'		thin brown lutite beds. Depth of penetration
Feb	Core 19	time hit	(1506)	1608				19	1009cm. Core length, 944 cm. Bottom topography
67									flat, gently dipping.

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PALISADES

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Research Vessel VEMA
CRUISE N° V-24
CRUISE LEG—From MIAMI To PANAMA

TIME ZONE Z+5

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long W	STN LOG	REMARKS
31 Jan 67	Milli 14	2100	2100	Surface		24.3'	81°14'		
2 Feb 67	Core 17	1410 Time hit (1456)	1531	1733 1737	1735	25°24.4'	85°52.3'	17	Brown lutite. Depth of penetration 585cm. Core length app. 11 cm. Messenger was lost somewhere during its course down cable, hence trigger mechanism was never armed. Bottom topography: flat
2						25°24.4'	85°52.3'	17 17	
Feb 67	T-Grad 8A								
2 FEB 1967	WATER BARREL 7A	1412	1530	1733	1735	25°24.4	85°52.3	17	BARREL DID NOT TRIP. SAMPLE DISCARDED
2 Feb 67	Milli 15	1645	1645	Surface		25°24.4	85°52.3	17	
2 FEB	OMEGA 15A	1400	1540			25°24.4	85°52.3	17	OMEGA CASE FLOODED. REMOVED & REPLACED O-RING CLEANED SURFACES. SHOT DOWN BOTH OUT OMEGA TO 100 FSS. LOWLACE FOUND TO BE FOUL FROM SEAL.
2 FEB 67	DEPTH 11	1356	1546 20			25°24.4	85°52.3	17	NO BOTTOM HIT SHOWN ON K FILM OR ON RIL. POSSIBLE HIT ON N.11 FILM.

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#15

Research Vessel VEMA
CRUISE N° 24-27
CRUISE LEG—From New York To Miami

TIME ZONE 5

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat N	POSITION Long W	STD. LOG	REMARKS
28 Jan 67	Carrera IAO 14	130	1501			24°42'	73°44'	16	5-7 kts. SMALL MOUNDS OF SEDIMENT AND ROCKS.
28 Jan 67	Cepho IAO 10	1312	1521			24°42'	73°44'	16	700 FOS. — LIGHT TO MODERATE.
28 Jan 67	Core IAO Carrera 62	1325	1500			24°42'	73°44'	16	STROBE DID NOT FLASH.
28 Jan 67	Core 16	1325 Time Hit (1408)	1500	2785 -2785	2785	24°42'	73°44'	16	Brown lutite overlying large manganese nodules. Penetration 40cm. Core length 32cm. Topography: gently rolling. Pipe bent, cutting edge torn off and lost on bottom with core catcher. No trigger core.
28 Jan 67	Bio 31-V 32-V	1353	1922	225m	0	24°42'	73°44'	16	
	Milli 13	1800	1800			24°30'	73°58'		

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Research Vessel VEMA
CRUISE N° 24
CRUISE LEG—From NEW YORK To MIAMI

~~#~~ 14

TIME ZONE Z+5

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. W	STN LOG	REMARKS
27 JAN 1967	WATER BARREL 4	1920	2103	2818	2818	24°44'	73°42'	14	TELLTALE SLIDE INDICATES BOTTOM TRIP SAMPLE CENTRIFUGED
28 JAN 1967	WATER BARREL 5					24°44'	73°45'	15	TELLTALE SLIDE INDICATES BOTTOM TRIP SAMPLE CENTRIFUGED
28 JAN 1967	CAMERA 13	0128	0457			24°44'	73°45'	15	1 – 9 TRIGGER STUCK ON CAMERA. POOR EXPOSURES.
28 JAN 1967	NEPM 9	0728	0957			24°44'	73°45'	15	750 FRS THIN TO MODERATE.
28 JAN 1967	CORE CAMERA 68	0958	0941			24°44'	73°45'	15	STROBE DIDN'T FLASH.
28 JAN 1967	CORE 15	0758 Time hit (0845)	0941	2795 2800	2802	24°44'	73°45'	15	Core could not be extruded. Penetration 434cm Core length 627cm. Cutting edge good, pipe bent. Topography - ripply Discoasters found in core contained in cutting edge of pipe
28 JAN 1967	WATER BARREL 6	1325	1500	2785	2785	24°42'	73°44'	16	TELLTALE SLIDE INDICATES BOTTOM TRIP SAMPLE CENTRIFUGED

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#13

Research Vessel VEMA
CRUISE N° 24
CRUISE LEG—From New York To Miami

TIME ZONE Z+5

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat N	POSITION Long. W	LOG	REMARKS
27						24°44'	73°42'		GOOD RECORD - ONE PROBE PENETRATION
Jan	T-Grad	1920	2103	2818	2818			14	H.F. = 6.700 μcal/cm²/sec (?)
67	7								NO CONDUCTIVITY RECORD SINCE CORE
									NOT EXTRUDED
									Core could not be extruded. Penetration 280cm.
27						24°44'	73°42'		Core length 432cm. Pipe bent, cutting edge
Jan	Core 14	1920	2103	2818	2818			14	good. Topography - flat with some ripples.
67		Time hit (2007)		-2818					
27	Bio								
Jan	27-V	1117	1144	228	0	24°44'	73°41'	13	
67	28-V								
27	Bio								
Jan	29-V	1916	1948	226	0	24°44'	73°42'	14	
67	30-V								
	Milli #12								
27	CORER	1804	2116.			24°44'	73°42'		18-20 HITS ROCK FORMATIONS, MOUNDS
JAN	12							14	OF SEDIMENT, MOLE LIKE TRAILS,
67									CLOUDS OF SEDIMENT.
									DRIVE SHAFT LOCK SCREW LOOSENED.
27	DEAD	1804	2116			24°44'	73°42'	14	
JAN	QR.								
67									
27	Core	1920	2103			24°44'	73°42'		MOTOR BURNT OUT. TO BE REPLACED.
JAN	CORER							14	
67	6A.								

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#12

Research Vessel VEMA
CRUISE N° 24
CRUISE LEG—From New York To Miami

TIME ZONE Z+5

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long W	Stn. LOG	REMARKS
26	Bio	2244	2317	223	0	24°39'	73°50'	12	
Jan	25-V								
67	26-V								
	Milli II	1600	1600	Surface					Increased nanoplankton concentration.
									Soupy brown lutite overlying a small hard
27									bed of salmon colored clay. Penetration: 392 cm.
Jan	Core 13	1009	1306	2795	2838	24°44'	73°41'	13	Core length: 139 cm. Pipe good, cutting edge slightly
67		TIME HIT (1054)		+ 2810					damaged. Bottom topography: flat
								13	GOOD RECORD 21 PROBE PENETRATION
27						24°44'	73°48'		
Jan	T-Grad	1009	1306						NO DISPLACEMENT AT HIT
67	6								ASSUMING NO HEAT FLOW
27	WATER	1009	1303			24°44'	73°41'	13	TELLTALE SLIDE INDICATES BARREL TRIPPED
JAN	BARREL								SOON AFTER LOWERING
1967	4B								SAMPLER DISCARDED
27	CAMERA	0926	1304			24°44'	73°41'	13	23 FOR 27 hits
JAN	11								Constant sign of small mounds of
1967									sediment, rock fabrications (Ridges) +
									upset sediment.
27	NORM	0926	1304			24°44'	73°41'	13	Fell - came off side of camera + jammed
JAN	9A								into adjusting wheel so unbalanced.
1967									
27	CORE	1009	1306			24°44'	73°41'	13	55 shots - appear light struck
JAN	CAMERA								on upper ridge. NO PICTURES OF
1967	5								BOTTOM -

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#11

Research Vessel VEMA
CRUISE N° 24
CRUISE LEG—From NEW YORK To MIAMI°

TIME ZONE +5

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. W	STN LOG	REMARKS
25	CORE	2107	2245			22°47'	72°57'		40 MDG, 100 SHOTS OF BOTTOM.
JAN	CAMERA							11	
67									
26	WATER	2157	0040	2811	2812	24°39'	73°50'	12	TELLTALE SHOWS THAT BARREL TRIPPED HALFWAY DOWN
JAN	BARREL								SAMPLE DISCARDED
1967	4A								
									Brown and pale yellow lutite, moist, firm and
26									compacted containing a 29 cm calcareous sand
Jan	Core 12	2157	0040	2811	2812	24°39'	73°50'	12	layer. Depth of penetration: 315 cm; core length
67		TIME	HIT (2249)	-2812					487 cm. Pipe bent, cutting edge slightly damaged.
									Bottom Topography - flat, gently dipping.
26									
JAN	T-GRAD	2157	0040			24°39'	73°50'	12	WATER TEMP RECORD BUT NO PROBES
67	5								P_4 RIPPED OFF P_3 DEFECTIVE AT HIT
									P_2 AND P_1 DID NOT PENETRATE
26									13 — 17 BOXES 4 HOLE LIKE TRACKS.
JAN	QUEEN	2206	0110						
67	10					24°39'	73°50'	12	
26									LIGHT IN STRENGTH — 650 FIX.
JAN	QUEEN	2206	0110			24°39'	73°50'		LIGHT SOURCE DIMMED AFTER
67	8							12	BOTTOM SHOTS.
26	CORE	2157	0040			24°39'	73°50'		NO BOTTOM SHOTS - SHOWS TRIGGER WEIGHT
JAN	4								& CABLE.
67	QUEEN							12	

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Research Vessel VEMA
CRUISE N° 24
CRUISE LEG—From NEW YORK To MIAMI

TIME ZONE Z+5

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. W	STN LOG	REMARKS
25	WATER	1432	1627	2525	2521	22°42'	72°40'	10	TELLTALE SLIDE SHOWS THAT BARREL CLOSED AT SURFACE
JAN	BARREL								SAMPLE DISCARDED
1967	3C								
								10	Brown lutite overlying gray lutite which has
25						22°42'	72°40'		several calcareous layers in it. Depth of
Jan.	Core 10	1432	1627	2525	2521				penetration 1003 cm. Core length 690 cm.
1967		TIME HIT (1533)		- 2525					Bottom topography: flat - gently sloping
25								11	Bedded brown & gray lutites containing a
JAN	CORE 11	2107	2245	2520	2510	22°47'	72°57'		hard, indurated limestone layer. Depth of
1967		Time hit (		)- 2530					penetration 782 cm. Core length 932 cm. Pipe
									was bent & cutting edge damaged. Bottom
									topography: rippley near base of steep slope.
25	WATER	2107	2244	2520	2510			11	TELLTALE SLIDE INDICATES BOTTOM TRIP
JAN	BARREL					22°47'	72°57'		SAMPLE CENTRIFUGED
1967	3								
25	Bio	1050	1124	0	- 224m	22°46'	72°58'	9	Sargasso interfered with flowmeter. These
Jan	23-V								tows sampled the dense surface SL (0-40 Fm)
67	24-V								Whales + sharks observed this area.
25		2043	2321						NEGATIVES WERE DESTROYED IN DARK
JAN	CAMERA					22°47'	72°57'		ROOM ACCIDENT 0-6
67	10A							11	
	T-GRAD	2107	2244			22°47'	72°57'	11	GOOD RECORD 3 PROBE PENETRATION
	4								H.F. = 4.8 μcal/cm²/sec (??)
25		2043	2321						LIGHT WENT OUT ON RATHOD ALTS
JAN	DEPTH					22°47'	72°57'	11	WASN'T BRIGHT ENOUGH ON WAY
67	CAMERA								DOWN FOR DEPTH READINGS.
	8A								

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Research Vessel VEMA
CRUISE N° V24
CRUISE LEG—From NEW YORK To MIAMI

9

TIME ZONE 5

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. W	LOG	REMARKS
		0925	1153.45			22°46'	72°58'		5 — 8 — GOOD REC
25	CORECA								CORECUT MARKS. HOLES IN
JAN								9	SEDIMENT, MOUNDS OF SEDIMENT
67	8								
25	DEPHO	0925	115346			22°46'	72°58'		THIN TO VERY STRONG — 650 FMS.
JAN	CAMERA							9	
67	6								
		~~0925~~	~~1153.45~~						30 REC. NO BOTTOM PICTURES
25	CORE	0954	1119			22°46'	72°58'		
JAN	CAMERA							9	
67	1								
25	CAMERA	1403	1645			22°42'	72°40'		3-9 - SOME GOOD - WEST ARE LIGHT
JAN	9							10	STRUCK. RIPPLES - MOUNDS - MORE
67									LIKE TEXAS
25									
JAN	DEPHO	1403	1645			22°42'	72°40'		LIGHT TO STRONG. — 750 FMS
67	CAMERA							10	
	7								
	CORE	1430	1627						
25	CAMERA					22°42'	72°40'		16 REC. NO BOTTOM PICTURES
JAN	9							10	
67									
25		1432	1627	2524	2525	22°42'	72°40'	10	GOOD RECORD 2 PROBES PENETRATE
JAN	T-GRAD								
67	3								HF = 0.28 μ cal/cm²/sec

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PALISADES

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Research Vessel VEMA
CRUISE N° 24
CRUISE LEG—From New York To Miami

TIME ZONE Z+5

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. W	Stn. LOG	REMARKS
24 Jan 67	Bio 21-V 22-V	2212	2241	228m	0m	22°36'	72°36'		This pair of tows samples full extent of typical night-time surface SL (0-80 Fm).
24 Jan 67	Chaser 7	2105	2349			22°36'	72°36'	8	5-6 / SCRATCHED. VERY BUMPY BOTTOM - CURRENT RIPPLES
24 Jan 67	Dredge Chaser 5	2105	2349			22°36'	72°36'	8	THIN TO STROUD - 950 FOX
24 Jan 67	Core Chaser 1C	2125	2304			22°36'	72°36'	8	DID NOT SEND DOWN. REQUIRED LIGHT HEAD & MAKING NEW CROSS OVER LEAD.
24 Jan 67	Core 8	2125 TIME HIT (2213)	2304	2585	2581	22°36'	72°36'	8	Depth of Penetration 1148; core length 870 cm. no flow-in; Brown lutite overlying gray lutite which is bedded with 3 calcareous layers (sand)
25 Jan 67	Core 9	954 TIME HIT (1034)	1119	2535 - 2537	2539	22°46'	72°58'	9	Depth of Penetration 1150; core length 857; no flow-in. Brown lutite lying above gray lutite which has several calcareous sand layers in it.
25 Jan 1967	WATER BARREL 3B	0955	1119	2535	2539	22°46'	72°58'	9	TELLTALE SLIDE SHOWS THAT BARREL CLOSED OVER AFTER LOWERING SAMPLE DISCARDED

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PALISADES

Research Vessel VEMA
CRUISE N° 24
CRUISE LEG—From NEW YORK To MIAMI

TIME ZONE 2+5

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. W	STN LOG	REMARKS
									Depth of penetration 1190; core length 745 - No flow in. Brown lutite overlying gray lutite
24		1245	1435	2585	2562	22°39'	72°40'		which contains several calcareous sand
Jan	Core 7	time hit (1343)		2570				7	layers. Bottom topography - base of steep
67									slope
		~~1259~~	~~1315~~						
24	CAMERA	1318	1419			22°39'	72°40'		7 — 9 GOOD DEP. VERY BUSTY.
JAN	6							7	
67									
24	DEPTH	1318	1419			22°39'	72°40'		THIN TO STBD 6 - 750 FDS.
JAN	CAMERA							7	
67	4								
24	CORE	1245	1435			22°39'	72°40'		FILM ADVANCED BUT STBD LIGHT
67	CAMERA							7	DIDN'T FLASH.
JAN	1F								
24	WATER	1247	1434	2582	2564	22°39'	72°40'	7	TELLTALE SLIDE INDICATES BOTTOM TRIP
JAN	BARREL								SAMPLE CENTRIFUGED
1967	2								
24	WATER	2125	2304	2586	2580	22°36'	72°36'	8	TELLTALE SLIDE INDICATES BARREL TRIPPED ABOUT
JAN	BARREL								ONE THIRD OF WAY DOWN.
1967	3A								SAMPLE DISCARDED
24	BIO 17-SF,							7	Coupled with subsequent night tows #21-V and 22-V,
JAN	18-SF, 19-V	1255	1431			22°39'	72°40'		this series should yield info. pertaining to shifting
67	20-V, ~~21-V,~~								animal densities in the upper 200m after dusk at
	~~22-V,~~								this location. Day and night tows of same range
	Milli 8, 9, 10	1530	1515	0m - 36m - 72m.					and duration for easy comparison.

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PALISADES

#6

Research Vessel VEMA
CRUISE N° 24
CRUISE LEG—From NEW YORK To MIAMI

TIME ZONE Z+5

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. W	LOG	REMARKS
									Core length - 800 cm. core pipe bent at
23									coupling with second core pipe.
JAN	CORE 6	1533	1758	2916	2916	24°58'	71°06'	6	Brown lutite overlying intercalated layers
67		TIME HIT (1646)	-2916						of brown, gray & and greenish ashy lutite.
									Smaller firmer units exist within core.
		1533	1758					6	
23						24°58'	71°06'		NO RECORD - MOTOR FREEZE
JAN	T-GRAD								P2 P3 P4 RIPPED OFF OR RUINED
67	3B								
23	WATER	1533	1758	2916		24°58'	71°06'	6	TELLTALE SLIDE INDICATED BOTTOM TRIP
JAN	BARREL								SAMPLE CENTRIFUGED
1967	1								
23	CAMERA	~~1459~~	~~1815~~						0 - 12 HITS.
JAN	6A	~~HIT~~	~~1720~~			24°58'	71°06'		BAD - LIGHT STRUCK OR BAD FILM
1967		1459	1815					6	DEVELOPED PIECE OF FILM FROM ORIGINAL
									SPOOL, SHOWED LIGHT STRUCK OR BAD
									FILM.
23	NEPHO-	1459	1815						
JAN	LOMETER					24°58'	71°06		THIN METHOD STROBE - 850 FPS.
1967	3							6	
23	CORE	1593	1758						CAMERA ADVANCED BUT SHOWED ONLY
JAN	CAMERA					24°58'	71°06'		5 NEGATIVES. STROBE LIGHT DID NOT
1967	1F							6	FLASH UNDER PRESSURE.
23	Bio 13-V,					24°58'	71°06'	6	This series covered a very active upward
Jan	14-V, 15-SF	1601	1815						migration of small scatterers at dusk
67	16-SF								
	Milli #7	1500	1500						

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PALISADES

#5

Research Vessel VEMA
CRUISE N° 24
CRUISE LEG—From NEW YORK To MIAMI

TIME ZONE Z+5

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. W	STN LOG	REMARKS
									depth of penetration - 1163cm. core length 1080.
22									Brown lutite near top changing to a gray
Jan	Core 5	1451	1657	2860	2858	28°35'	71°05'	5	ash lutite to bottom. 5 soupy layers of
67		TIME HIT (1553) - 2858							ash interpolated with lutite.
22									
JAN	T-GRAD					28°35'	71°05'	5	NO RECORD - MOTOR FROZE BEFORE
67	3A								HIT
22		1451		2860		28°35'	71°05'	5	BARREL DID NOT CLOSE - SAMPLE DISCARDED
JAN	WATER								
1967	BARREL								
	1D								
		1435	1715.50						12 HITS - 11 usable
22	CAMERA					28°35'	71°05'		
JAN	5							5	
67									
	DEPH.	1435	1715.50			28°35	71°05'		VERY THIN - 460 FMS.
22	2.							5	
JAN									
67									
									TRIGGER MAGNET DID NOT FUNCTION -
22	CORE.	1451	1553			28°35'	71°05'		JAMMED. BECAUSE OF UNEVEN
JAN	CAMERA							5	TIGHTENING.
67	1e								
22	Milli 6	2115	2115	2856	2856	28°35'	71°05'	5	
Jan	Bio 9-V,	1454	1611	2857	2857				
67	10-V, 11-SF								
	12-SF								

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PALISADES

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Research Vessel VEMA
CRUISE N° 24
CRUISE LEG—From NEW YORK To MIAMI

TIME ZONE 7+5

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. W	STN LOG	REMARKS
21 JAN 1967	WATER BARREL 1C	1050	1234	2495		27°46'	74°39'	4	BARREL DID NOT CLOSE - SAMPLE DISCARDED
								4	Depth of penetration 1290cm Core length 938cm
21 Jan 67	Core 4	1050 TIME HIT (1136)	1234	2493 - 2500	2495	27°46'	74°39'		Gray lutite interbedded with light brown lutite. Small coarse fraction contained predominantly quartz.
21 JAN 67	T GRAD #2	1050	1234	[redacted]		27°46'	74°39'	4	GOOD RECORD 4 PROBES IN H.F. - 1.10 μ cal/cm²/sec
21 JAN 67	CAMERA 4	1033	1308			27°46'	74°39'	4	11 pits - 5 usable (4 good - 1 poor) SMALL MOUNDS OF SEDIMENT. DOES NOT SHOW MUCH SIGN OF WATER CURRENT.
21 JAN 67	DEPH. 1	1024	1308:30			27°46'	74°39'	4	VERY STRONG NEPHELOID LAYER - 950 FMS.
21 JAN 67	CORE CAMERA LD.	1050	1234			27°46'	74°39'	4	STARTING PIN WAS NOT REMOVED.
21 Jan 1967	Milli 5 6-V 7-V 8-SF	1035 1116 1149 1157	1035 1130 1205 1228			27°46'	74°39'	4	Abundant sargasso; poor net hauls Rapid descent caused wire to foul on 2nd haul.

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PALISADES

#3

Research Vessel VEMA
CRUISE N° 24
CRUISE LEG—From NEW YORK To MIAMI

TIME ZONE 2+5

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. W	STA LOG	REMARKS
19	Water	1948	2147	2545				3	BARREL TRIPPED ON WAY DOWN — SAMPLE DISCARDED
JAN	Barrel					31°33'	74°18'		
1967	1 B								
19									
JAN	CAMERA	1920	2209			31°33'	74°18'		14 hits 11 usable pictures
67	3							3	SMOOTH SURFACE — ROCKS — MOLE LIKE
									TRAIL — PENETRATIONS
		1920	2209						CAMERA FUNCTIONED PROPERLY, LIGHT
19	WEPH,					31°33'	74°18'		BULB BROKE — BULB HOLDER EXTENDS
JAN	CAMERA							3	TOO FAR FORWARD OF BATTERIES ON ONE
67	1c								OF THE BATTERY CASES, WILL BE
									CORRECTED. · ABOUT. 1 FT. OF USABLE DATA.
19	Core	1946	2147			31°33'	74°18'		GROUND WIRE RIPED OFF CAMERA
JAN	Camera							3	BEFORE CORE HEAD WAS DROPPED.
67	1c								WIRE TO BE REPLACED BY CABLE.
20	Sounding	1430	1730			29°30'	73°54'	●	
Jan	#1					29°24'	73°58'	—	
67		(1600-1730)							
19	Milli #3	1630	1630			29°27'	73°36'	3	Pre-station check — low nanoplankton conc.
Jan	3-SF	1955	2025			31°33'	74°18'		2 SLs. Bottom trace superimposed on lower SL, so
67	5-V	2113	2123						characteristics uncertain. 12 Ha operational but
	4-SF	2128	2158						indistinct. Continue to experience difficulty in
									transferring all organisms from nets to containers.
20	Milli #4	2145	2145	2395		28°45'	79°16'	—	Intre-station check — low nanoplankton concen-
Jan									tration at surface.
67									

Chief Scientist

#2

Columbia University
in the City of New York
DEPARTMENT OF GEOLOGY
LAMONT GEOLOGICAL OBSERVATORY
PALISADES

Research Vessel VEMA
CRUISE N° 24
CRUISE LEG—From NEW YORK To MIAMI

TIME ZONE Z+5

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. W	STD. LOG	REMARKS
		1128	1358						
18 JAN 67	CAMERA 2					34°26'	71°42'	2	12 HITS - 10 PICTURES - LINOGRAPH PAN FILM.
18 JAN 67	NEPHOLOMETER 1B	1126	1404			34°26'	71°42'	~~2~~ ~~1B~~ 2.	DID NOT TRIP - STARTER MAGNET POINT FIGURED ON WITH MAGNET AT 90° TO MAGNET ON RIG.
18 JAN 67	CORE CAMERA 1B					34°26'	71°42'	2	RAN FILM OUT WHILE RIGGING WATER BARREL. - CAMERA IS TO FAST. FOR. CORE HEAD CAMERA, SWITCHING TO SLOWER CAMERA.
18 JAN 1967	WATER BARREL 1A	1156	1342			34°26'	71°42'	2	WITH CORE? BARREL TRIPPED ON WAY DOWN BY TELLTALE SLIDE BARREL DID NOT PASS MESSENGER TO ARM CORE SAMPLE DISCARDED
18 Jan 67	Milli. 2 1-SF 2-SF	1148 1290	1217 1300	2410fm 2410fm		34°26'	71°42'	2	Sparse nanoplankton 3 SLs {3 SLs Impossible to transfer entire sample quantitatively from codend to freezer bag.
19 Jan 67	Core 3	1948 TIME	2147 HIT (2047)	2545		31°33'	74°18'	3	Depth of penetration 679 cm Core length Light brown lutite overlying gray and blue lutites. Lutite is moderately foraminiferal. Pipe bent due to extremely hard pull out
19 JAN 67	T-GRAD 2A	1948	2147			31°33'	74°18'	3	NO RECORD DUE TO LOOSE CONNECTION TO LIGHT SOURCE

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PALISADES

#1

Research Vessel VEMA
CRUISE N° V24
CRUISE LEG—From NEW YORK To MIAMI

TIME ZONE Z+5

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long W	STN LOG	REMARKS
						36°30'	73°30'	1	70 MM - 7 PICTURES LINOGRAPH PAN FILM
17 JAN 1967	CAMERA 1	1422	1604						SMOOTH SEA FLOAT - STARFISH - POCKMARKED
								1	
17 JAN 1967	NEPHROPS 1A	1422	1604			36°30'	73°30'		DIDN'T START. TRIPPING MECHANISM DIDN'T WORK. - STARTER MAGNET LOCATED WRONG.
								1	
17 JAN 1967	CORE CAMERA 1A	1427	1616			36°30'	73°30'		DIDN'T TRIP. STARTING MAGNET LOCATED WRONG. FILM DIDN'T ADVANCE
17									
Jan 1967	Core 1	1427 TIME	1546 HIT (1519)	1610 - DEPTH	1610 1610	36°30'	73°30'	1	Depth of penetration 618cm Core length 386 cm Medium gray foram lutite Continental slope
17 Jan 1967	Millipore #1	1100	1100	1335 Fm		36°55'	73°55'	—	Plankton poor waters; filter passed water easily after 8.0 L.
18									
Jan 1967	Core 2	1156 TIME	1342 HIT (1239)	2415 - DEPTH	2422 2420	34°21'	71°42'	2	Depth of penetration 1260 cm; core length 1075 cm Gray and brown interbedded foram lutite. Messenger was not released from water hand: good core length 123 cm. gently sloping topography
18	T-Grad #I					34°26'	71°42'	2	
I		1156	1342						GOOD RECORD - 3 PROBES LOST BEFORE HIT
18									H.F. = 0.8μ cal/cm²/sec

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