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Columbia University in the City of New York

DEPARTMENT OF GEOLOGY
LAMONT GEOLOGICAL OBSERVATORY
PALISADES

Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG 11 From HONOLULU To SUVA

TIME ZONE +11

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
7	SONOBUOY	0843	1025	2675		11°02'N	166°23'W		RECIVING CHANEL #1 SONOBUOY TRANS. CHANEL 15. SMALL GUN
OCT	118								FEEL TRIP. "B" DELAYED 4 SEC. SB (PHONE) 60 FEET. SPEED 5' F.T.
1968									PROFILER 1270 FILTRES $A_1 \frac{40}{110}$ $A_2 \frac{60}{150}$; $B_1 \frac{5}{25}$; $B_2 \frac{30}{90}$
									DISTANCE 9.3 MILES. NOT RECORDED J.K.
7	SONOBUOY	1028	1140	2657		10°52'N	166°20'W		RECEIV. CH. 1. SB TRANS. CH. 16
OCT	119								SAME AS 118; PROFILER 1271; FILTER $A_1 \frac{20}{60}$;
1968									DISTANCE 6.6 MILES. J.K.
7	Jet Net	1353	1422	2555	2919	10°25.3'N	166°12.1'W	220.1	Good Sample
Oct	#71					to.			
1968						10°21'N	166°11'W		
7	Jet Net	1936	1912	1695	2540	9°45'N	166°03.5'W	220.2	Good Sample
Oct	#72					to			
1968						9°45'N	166°09.5'W		
8	CORE	1036	1408	2768	2763	9°41'N	168°42'W	221	PENETRATION: 1160±10 cm TOTAL LENGTH: 1186 cm TRUE LENGTH: 1152 cm
OCT.	195	1237	HIT	2771					CLAY + RADIOLARIAN CLAY; PREDOMINANTLY MODERATE BROWN BUT
68									CONTAINS LIGHTER SHADES OF BROWN + YELLOWISH BROWN (MOST
									PROMINANT BETWEEN 660±718, 858±872, 981±997, & 1062±1075 cm)
									MIOCENE OR PLIOCENE AGE. BOTTOM UNDULATING. (DUE TO Cocco-
									WHICH HAVE A LOW TO MODERATE CARBONATE CONTENT liths + Discoasters)
8	CORE	1036	1408			9°41'N	168°42'W	221	
OCT	CAMERA	1237	HIT	2771					
68	~~69~~ 70								
8	GEOCHEM	1036	1408			9°41'N	168°42'	221	SAMPLERS DID NOT FILL
OCT	Sol. #1A								
68									

R. Gerard
Chief Scientist

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Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG 4 From Honolulu To Suva

TIME ZONE +12

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
Oct	Bottom	1315	1615	3045	3011	9°45.6	175°26.6	223	Rough bottom. Very little mud. Nodules.
10	Camera	1434	5 hits	3017		N	W		C.M.A.
1968	157								
									27 nodules
Oct	Tapelometer	1229	1629	3045	3011			223	two nepheloid layer
10	152	1434		3017					C.M.A.
1968									
Oct	Current	1315	1615	3045	3011			223	a general trend towards S.W. with a vane
10	meter	1434	5 hits	3017					deflection of .7 to .4 mm. corresponding to
1968	115								a velocity of C.M.A.
Oct	One	1340	1540	3045	3011			223	Bottom not in focus. Direction not consistent
10	Camera	1420	hit	3011					from frame to frame. Probably there were water
1968	~~72~~ 72								pictures. C.M.A.
8	SONOBUOY	0854	1005	2748		9°42'N	168°35'W		SPD 5, RECEIV. CH #1 SB TRANS. CH. 13, FREQ #1279
OCT	120								REL TRIP 'B' DELAY FILTRES: A, 4/90 | 60/150; B, 5/25 B2 30/80
1968									DISTANCE 7.2 MILES. NOT RECORDED
									SMALL GUN D.K.
8	Free Grab	1038	1425	2770		9°43'N	168 40W	221	Released 2 samplers, recovered 2. 4.5 lbs Mn nods.
OCT	168								
1968									
8	Vertical	1115	1123	2770		9°43'N	168 40W	221	
Oct	Plankton								
1968	tow # 307								

R. Gerard
Chief Scientist

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PALISADES

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Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG—From HONOLULU To SUVA

TIME ZONE _____

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
8 Oct 1968	Mill, Pore # 181 (Surface)	1030		2770		9°43'N	168°40'W	221	
8 Oct 1968	Surface tow # 308 Plankton	1136	1208	2770		9°43N	168°40W	221	
8 Oct 1968	Jet Net #73	2152	2232	2415	2482	09-44.5N	169-58W	221.1	
8 Oct 1968	T-GRAD #100	1036 1237	1409 HIT	2770 2771	2771	9°43'N	168°40W	221	3 PROBES IN MUD P_2 SHORTED OUT UNDER PRESSURE P1 & P_3 GOOD. LONG WAIT (72 MIN) AT 1750 FMS. FOR GEOCHEM. EXPERIMENT. 5 CONDUCTIVITY MEASUREMENTS
9 to 10 Oct 1968	Core Camera 71	0030 0234	0405 HIT	3098 3090	3087	9°45.7 N	174°17.5 W.	222	Core head completely intered in mud C.M.A.
10 OCT 1968	STD #22	0030 0234	0405 HIT	3098	3087	9°45.7'	174°17.5	222	S.T.D. STA TO 5000 M — RECORDING DOWN + UP ON ANALOG + DIGITAL RECORDERS — 5 BOTTLES
10 OCT 1968	SOL #1	0030 0234	0405 HIT	3098	3687	9°45.7'	174°17.5	222	ONLY ONE SAMPLER WORKED. ONE GOOD SAMPLE AT 3000 METERS CALCITE AND BARITE USED.

R. Conrad
Chief Scientist

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PALISADES

Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG II From HONOLULU To SUVA (13)

TIME ZONE +11 +12

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
9	SONOBUOY								SMALL AIR GUN, RECEIVE CH. #1 SB TRANS. CH 14
OCT	121	1524	1645	3120		9°44'N	169°58'W		F.T. "B" DELAY, SPD 5; DISTANCE 9.4, SB PHONE 60 FT.
1968									SB. FOR POOR PERFORMANCE of AIR GUN & LATER FOR COMPLETE STOP
									NOT COMPLETED. PROF. 1287. SAME FILTERS AS PREVIOUS
									SB # 120 D.K.
10	CORE	0030	0405	3098	3087	9°45.7'N	174°17.5'W	222	PENETRATION: 1219.5 TOTAL LENGTH: 1123 cm TRUE LENGTH: ≥1086 cm
OCT	196	0234	HIT	3090					SANDY CLAY, DARK YELLOWISH BROWN + BETWEEN VERY DARK YELLOW-
68									ISH BROWN + MODERATE BROWN (0-~200); GRADING TO MODERATE
									BROWN + GRAYISH BROWN CLAY. COARSE FRACTION REPRESENTS
									30 TO 1%, DECREASES WITH DEPTH. ROLLING HILLS, 5 to 40 m RELIEF
9	Millipore	2330		3095		9°46'N	174°18'W	222	
Oct	(Surface)								
68	#182								
10	Vertical	0104	0130	3095	3095	9°46'N	174°18'W	222	Surface current wound NET around core wire
Oct	plankton								No damage to net - only time delay in bringing in
68	tow #309								
10	Surface	0144	0214	3095	3095	9°46'N	174°18'W	222	
oct	Plankton								
1968	tow #310								
10	Surface	1300		3045		9°46'N	175°37'W	223	
Oct	Mill. pore								
1968	Sample #183								
10	Vertical	1328	1336	3045		9°46'N	175°37'W	223	
Oct	Plankton								
1968	tow #312								

R. Gerard
Chief Scientist

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Research Vessel ROBERT D. CONRAD
CRUISE N° 12 (14)
CRUISE LEG—From HONOLULU To SUVA

TIME ZONE +12

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
10 Oct 1968	Surface Plankton tow #313	204	235	3045		9°46N	175°37W	223	unusually light sample - probably because of lot sunny weather
10 Oct 68	CORE 197	1340	1540	~3050	3011	9°45.6N	175°36.6W	223	PENETRATION: 1625±5 TOTAL LENGTH: 1674cm. TRUE LENGTH: ~1600cm. CLAY & RARELY SANDY CLAY, DARK YELLOWISH BROWN AT TOP OF CORE, GRADES TO VERY DARK YELLOWISH BROWN & TO GRAYISH BROWN & MODERATE BROWN BELOW ~250cm. COARSE FRACTION GENERALLY REPRESENTS <5%; RARELY 10 OR 15%. SIDE OF SEAMOUNT, >150 fm RF
10 Oct 1968	T-GRAD 101	0030	0405	3098	3087	9°45.7N	174°17.5W	222	3 PROBES IN MUD 3 TRACES ON FILM BUT SCALE SHIFT AFTER PULL OUT 4 CONDUCTIVITY MEASUREMENTS
		0234	HIT	3090					
10 Oct 68	Free Grab 169	0123	0345	3098		9°46'N	174°18'W	222	Two grabs launched, one recovered. 0.7 lb. mn nodules.
10 Oct 68	Free Grab 170	1355	1645	3045		9°46'N	175°37'W	223	Recovered 4.8 lbs Mn nodules.
10 Oct 68	Free Grab 171	1408	1655	3045		9°46'N	175°37'W	223	Recovered 5.8 lbs Mn nodules.
11 Oct	FREE GRAB 172	0100	0400	3024	3024	09°45'N	176°51W	224	SAMPLE 8.4 lbs Mn NODULES
11 Oct 1969	Surface Millipore #184	440		2900		9°45'N	176°51'W	224	

R. Gerard
Chief Scientist

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PALISADES

Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG—From HONOLULU To SUVA

TIME ZONE _____

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
11 Oct. 68	CORE 98	1335	1725 HIT	3154 3147	3144	9°42.4'N	177°59'W	225	PENETRATION: 1215 ± 10 cm. TOTAL LENGTH: 1066 cm TRUE LENGTH: 1066 cm SANDY CLAY, DARK YELLOWISH BROWN TO VERY DARK YELLOWISH BROWN (0-14 cm); CLAY, BETWEEN MODERATE BROWN & VERY DARK YELLOWISH BROWN AT TOP & GRADING TO MODERATE BROWN BELOW ~150 cm (14-1033 cm); RADIOLARIAN CLAY, MODERATE BROWN (1033-1066 cm). GENTLY UNDULATING.
11 Oct 1968	T-GRAD 102	1335 1542	1728 HIT	3154 3147	3144	9°42.4'N	177°59'W	225	P1 SHORTED OUT SHORTLY BEFORE HIT P2 & P3 GOOD 4 CONDUCTIVITY MEASUREMENTS
11 Oct 1968	Surface Millipore #185	1250		3162		9°42'N	177°59'W	225	
11 Oct 1968	Vertical Plankton tow #315	1321	1328	3162		9°42'N	177°59'W	225	Good sample
11 Oct 1968	Surface plankton tow #316	1408	1438	3162		9°42'N	177°59'W	225	Ship turned into wind & cut net but net was recovered torn. Most of sample retained in intact part of codend. Not quantitative sample!
11 OCT 1968	STD #23	~~0044~~ 0220	0353 BOTTOM	3024		09°45.1	176°50.7	224	RECORDED DOWN & UP ON ANALOG & DIGITAL RECORDERS MAX DEPTH OF 5000 M.
11 OCT 1968	SOL. #2 GEOCHEM	0044	0353	3024		09°45.1	176°50.7	224	BOTH SAMPLERS WORKED WELL. CALCITE AND BARITE IN EACH ONE. SAMPLE DEPTH 3000 meters

R. Gerard
Chief Scientist

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Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG 10 From Honolulu To Suva (16)

TIME ZONE +11

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
11	Vertical								good sample - amphipod, euphausiid, pteropods evident
Oct	Plankton								probable decapod larvae
1968	tow #313	0134	0142	2900		09°45'N	176°51'W	224	
11	surface	0204	0235	2900		09°45'N	176°51'W	224	
Oct	Plankton								
1968	tow #314								
Oct.	Bottom	1312	1624	3164	3162	9°42.4	177°59'	225	mud with nodules. 17 nodules
11	Camera	1437	5 hits	3152		N	W		
1968	158								
Oct	Nephelometer	1245	1639	3164	3162			225	No nepheloid layer in my opinion. Needs closer
11	153	1437		3152					viewing
1968									
Oct	Current	1312	1624	3164	3162			225	direction: South 29 nodules
11	Meter	1437	5 hits	3152					velocity: 2.5 cm./sec.
1968	116								
Oct	Core	1335	1728	3152	3144			225	Corehead was buried in the mud. 0 nodules
11	Camera	1542	hit	3147					
1968	73								
11	SONOBUOY	0915	1030	~~1030~~	3178	9°45N	177°35W		CH. RECEIVER # 1 SB TRANS. CH. # 6 SPD 5; SB PHONE 60 FT
OCT	122								FILTERS A1 40/60; A2 40/150; B1 4/20 B2 2/60; FEL TRIP, B DELAY F.T
1968									SMALL AIR GUN. PROF 1297. SB SANK FASTER THAN EXPECTED.
	123A	1035	1100		3167	9°45N	177°43W		FAILURE - AIR GUN OFF !!! J.K.

R. Gerard
Chief Scientist

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Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG—From HONOLULU To SUVA

TIME ZONE _____

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
11 OCT 1968	FREE GRAB #173	1335	1725	3154	3144	9°42.4'N	177°59'W	225	SAMPLE 3.5 LBS MN NODS. LOST ONE SAMPLER (174-A).
11 OCT 1968	GEOCHEM SOL. 3	1335	1725	3154	3144	9°42.4'	177°59'	225	BOTH SAMPLERS WORKED WELL. CALCITE AND BARITE USED. SAMPLE AT 2000 meters
12 OCT 1968	S.T.D. #24	0215	0540 AT BOTTOM 0400	3150	3150	9°39.7'	179°19'	226	TOOK DOWN TRACE TO 5000 M UP RECORD FAILED AT 800 FMS. — POWER FAILURE — WIRE SHORTED IN SEA CABLE.
12 OCT 1968	GEOCHEM SOL #4	0215	0540	3150	3150	9°39.7'	179°19'	226	ONLY ONE SAMPLER WORKED. CALCITE AND BARITE USED. SAMPLE AT 4000 METERS
12 Oct 1968	Jet Net #74	1036	1108	3145		9°45'S to 9°45'S	179°59.5'E to 179°58.1'E	226.1	
12 Oct 1968	Millipore (surface) #186	1445		3076				227	
12 Oct 1968	Vertical Plankton tow #317	1509	1577	3076				227	

R. Gerard
Chief Scientist

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PALISADES

Research Vessel ROBERT D. CONRAD
CRUISE N° 12 (18)
CRUISE LEG—From HONOLULU To SUVA

TIME ZONE -12

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
12 OCT 1968	#174 FREE GRAB	0300	0600	3150		09°39.7'N	179°9'W	226	5 OZ SAMPLE Mn NODULES
12 OCT 1968	FREE GRAB 175 176	1500	1830	3160		09°43'N	179°22'E	227	#175 = 1.6 Lbs Mn NODS. #176 = 1.2 Lbs Mn. NODS
13 OCT 1968	STD# 25	0130	0430	3223	3223	08°51'N	178°52'E	228	LOWERED TO 5000 M. TOOK ANALOG + DIGITAL RECORDS. ONE OF LEADS TO SAMPLING BOTTLE UNIT FAILED ON WAY UP.
13 OCT 1968	FREE GRAB 177 178	0130	0430	3223		08°51'N	178°52'E	228	#177 - 4 Lbs. Mn NODS. #178 - 6 Lbs. Mn NODS.
13 OCT 1968	GEOCHEM SOL# 5	0130	0430	3223		08°51'N	178°52'E	228	1500 M. SAMPLE. BOTH SAMPLERS WORKED WELL. CALCITE AND BARITE USED.
13 OCT 1968	FREE GRAB 179 180	1400	1745	2955		07°35'N	178°25'E	229	#179 - 0.2 Lb Mn NODS. #180 - 0.2 Lb Mn NODS.
13 OCT 1968	GEOCHEM SOL# 6	1413	1728	2955	2980	07°35'N	178°25'E	229	5300 M SAMPLE. ONLY ONE SAMPLER WORKED. CALCITE AND BARITE USED.

R. Gerard
Chief Scientist

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LAMONT GEOLOGICAL OBSERVATORY
PALISADES

Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG 1 From Hono. To Suva — TIME ZONE

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
Oct.	Bottom	1446	1745	3077	3048	9°43	179°22	227	Nodules of manganese; 17 nodules
12	Camera	1539	shot	3073		N	E		
1968	159								
Oct.	Nephelometer	1405	1802	3077	3048			227	No layer
12	154	1559		3073					
1968									
Oct.	Current	1446	1745	3077	3048			227	direction: a bit north of west 8 nodules
12	meter	1539	shot	3073					velocity: 1.8 to 2.8 cm./sec.
1968	117								
Oct.	Bottom	1339	1633	2932	2950	9°35	178°25	229	Very soft bottom: 9 nodules
13	Camera	1453	shot	2932		N	E		
1968	160								
Oct.	Nephelometer	1259	1655	2932	2950				No layer
13	155	1453		2932					
1968									
Oct.	Current	1339	1633	2932	2950				direction: east
13	meter	1453	shot	2932					velocity: 5.4 to 6.8 cm./sec.
1968	118								3 nodules
Oct.	Core	1413	1728	2955	2980				Bottom not in focus
13	Camera	1559	hit	2950					Orientation: Southeast
1968	74								

R. Gerard
Chief Scientist

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PALISADES

Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG—From HONOLULU To SUVA (20)

TIME ZONE -12

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
12 Oct 1968	Surface Plankton tow # 318	1538	1611	3026				227	
13 Oct 1968	Mill, Pore (Surface) Sample # 187	0100		3223		8°51'N	178°52E	228	
13 Oct 1968	Surface Plankton tow #319	0145	0248	3223		8°51'N	178°52E	228	large sample — very long tow (63 mw) Chaetognaths, pteropods, pink larvae, etc
13 Oct 1968	Vertical Plankton tow	0217	0224	3223		8°51'N	178°52E	228	good sample
13 Oct 1968	CORE 199	1413	1728	~2955	2980	7° 35 N	178° 25' E	229	PENETRATION: 1600 ± 30 cm TOTAL LENGTH: 1611 cm TRUE LENGTH: 1611 cm RADIOLARIAN CLAY, SHADES OF YELLOWISH BROWN (0-104 cm); CLAY, SHADES OF YELLOWISH BROWN + GRAYISH BROWN (104-204 cm); CLAY, SHADES OF LIGHT BROWN + YELLOWISH BROWN (204-566 cm); CLAY GRADING WITH DEPTH TO VERY GENTLY UNDULATING WITH OCCASIONAL LOW HILLS. YELLOWISH RADIOLARIAN OOZE, VARIEGATED COLORS, PREDOMINANTLY SHADES of ORANGE
13 Oct 1968	T-GRAD 103	1413	1720	2932	2980	↓	↓	229	P1 SHORTED AGAIN P2 UNDER PRESSURE TRACE ON FILM P3 + P4 GOOD 6 CONDUCTIVITY MEASUREMENTS
		1550		2933					

R. Gerard
Chief Scientist

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LAMONT GEOLOGICAL OBSERVATORY
PALISADES

Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG II From HONOLULU To SUVA

TIME ZONE _____

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
15	SONOBOUY	0847	1049	3095		5°30'N	177°12E		RECEIVE CH. 1, SB TRANS. CH. 4., SPD 4.
OCT	123								PROFILERS. 1312 & 1313. REFL TRIP FT. 5" DELAY
68									SMALL AIR GUN. DISTANCE. 9.7 MILES SB PHONE
									60 FT. FILTRES: 50/120; 60/150; 4/25 30/80
									O.K.
15	SONOBOUY	1053	1315	3117		5°09'N	177°11'E		RECEIVE CH 1 SB TRANS. CH. 3 SPD 4. PROF.
OCT	124								1314 & 1315 DISTANCE 10 MILES. SB PHONE
68									60 FT FILTRES SAME AS 123.
									O.K
15	Millipore	1230				5°14'N	177°12E	229.1	
Oct	(Surface)								
1968	# 189								
15	Jet Net	1211	1246	3115		5°14'N	177°26	229.7	Very large sample consisting tow at 4 Speed
Oct	# 75								
1968									
16	Millipore	0130				3°35'N	176°11E		
Oct	(Surface)								
1968	# 190								
16	Millipore	0915				0°5.4'N	175°30.2'	229.2	
Oct	(Surface)								
1968	# 191								
16	Jet Net	0958-	1032			0°09'N	175°9E.	229.7	
Oct	# 76								
1968						0°00'N	175°15'E		

R. Gerard
Chief Scientist

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CRUISE N° 12

CRUISE LEG II From Honolulu To Suva

Columbia University in the City of New York

DEPARTMENT OF GEOLOGY
LAMONT GEOLOGICAL OBSERVATORY
PALISADES

-12 TIME ZONE

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
16 Oct '68	Bottom Camera 161	1452	1713	2503	2502	1°27.5'	174°52'	230	firm slightly rough bottom made up of possibly manganese pebbles. C.M.H. 29 noddles
16 Oct '68	Nephelometer 156	1245 1552	1529					230	Too large C.M.H.
16 Oct '68	Current Meter 119	1452 1552	1713 5hrs		↓			230	Direction: East Velocity: 5.3 to 6.8 cm./sec. Noddles: 15 C.M.H.
16 Oct '68	Core Camera 75	1534 1717	1846 hit	2493 2495	2480	↓	↓	230	N.W. orientation; bottom not in focus. 16 noddles C.M.H.
16 OCT '68	FREE GRAB 181 182	1530	1900		2493	1°27.5'N	174°52'E	230	#181 - 6 LBS Mn NODS, #182 - 4 LBS Mn NODS.
16 OCT '68	GEOCHEM. SOL # 7	1534	1846	2493	2480	1°27.5'N	174°52'E	230	ONLY ONE SAMPLER WORKED. SAMPLE AT 2500M. CALCITE AND BARITE USED

R. Gerard
Chief Scientist

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PALISADES

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Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG—From HONOLULU To SUVA

TIME ZONE -12

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
16	CORE	1534	1846	2493	2480	1°27.5'N	174°50.0'E	230	PENETRATION: 510 ± 10 cm TOTAL LENGTH: 435 cm TRUE LENGTH: 435 cm
OCT	200	1717	HIT	2495					BOTTOM PIPE OF 3 WAS BROKEN 450cm FROM BASE; SMALL AMOUNT OF
68									TOP OF CORE LOST. RADIOLARIAN CLAY OOZE, MODERATE YELLOWISH BROWN TO PALE
									YELLOWISH BROWN (0-206 cm); RADIOLARIAN MARL, VERY PALE ORANGE (206-236 cm)
									BOTTOM HILLY, 10 TO 60 fm RELIEF.
									COCCOLITHS + DISCOASTERS COMMON THROUGHOUT, MIOCENE - PLIOCENE AGE.
16	T. GRAD	1534	1846	2493	2480	1°27.5'N	174°53.0'E	230	BOTTOM PIPE OF 3 BROKEN AT 450 cm
OCT	104	1717	HIT	2495					FROM BASE. P4 ONLY PROBE IN SEDIMENT
1968									ALL 4 TRACES PRESENT BUT P4 ONLY ONE
									DISPLACED - EXTREMELY POOR DEVELOPING
									JOG BUT READABLE. 3 CONDUCTIVITY MEASUREMENTS
16	Surface	1445		2503		1°28'N	174°52'E	230	
Oct	Millipore								
1968	#192								
16	Vertical	1531	1539	2503		1°28'N	174°52'E	230	Very good catch — fish larva, amphipods, etc
Oct	Plankton								
1968	tow #								
	323								
16	Surface	1618	1657	2503		1°28'N	174°52'E	230	Very good catch
Oct	Plankton								
1968	tow #								
	324								
17	Surface	0920		2538		0°33'S	173°41'E	230.1	
Oct	Millipore								
1968	# 193								
17	Jet Net	0906	0936	2538		0°32'S	173°40.5'E	230.1	Very light sample
Oct	# 97								
1968									

R. GERARD
Chief Scientist

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CRUISE N° 12
CRUISE LEG—From HONOLULU To SUVA

TIME ZONE -12

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
17	SONOBOUY	0718	0852	2540		0°30'S	173°42'E		SB TRANS CH. #1 RECEIVING CH 1 SPD 4;
OCT	125								EEL TRIP. FILTERS: 50/20 60/150 4/25 30/80 DISTANCE 9.8 Miles.
68									PROF: 1325; SMALL AIRGUN NOT RECORDED
									J.K.
18	SONOBOUY	0600	0751	2658		3°30S	174,45E		SB TRANS CH #2 Rec CH: 1. SPD 5,2.
OCT	126								60/100; 60/150; 30/25; 30/90; DISTANCE 9.4 / PROFILERS
68									1332 & 1333 (1333 FAILURE)
									J.K.
18	CORE	1909	2236	2674	2665	4°16.5'S	176°11.5'E	231	PENETRATION: 1286±5 cm, TOTAL LENGTH: 1122 cm TRUE LENGTH: 1122 cm
OCT	201	2110	HIT	2672					RADIOLARIAN CLAY TO RADIOLARIAN MARL OOZE; INTERBEDDED SHADES
68									OF PALE TO DARK YELLOWISH BROWN, MODERATE BROWN & VERY PALE GRAYISH
									ORANGE (0-1066cm); RADIOLARIAN CHALK, VERY PALE ORANGE TO PALE ORANGE
									(1066-1122cm). DISCOASTERS & COCCOLITHS GENERALLY ABUNDANT (PLIOCENE-MIOCENE) LOW HILLS 10 TO 20 fm RELIEF.
18	Jet Net	1045	1118	2650		03°52S	175°09'E	230.2	
Oct	#78								
68									
18	Millipore	1100				03°52S	175°09'E	230.2	
Oct	(Surface)								
68	#195								
18	Millipore					4°16.5S	176°11.5E	231	
Oct	Surface								
68	#196								
18	Vertical					4°16.5S	176°11'E	231	
Oct	Plankton								
1968	tow #								
	325								

R. Gerard
Chief Scientist

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TIME ZONE _____

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
17	Surface	2100				02°13'S	174°14'E		
Oct	Millipore								
68	#194								
18	Surface					4°16.5'S	176°11.5'E	230	
Oct	Plankton								
1968	tow-326								
18	Free Grab	~~16~~							
OCT	183	1854	2312	2674	2674	4°16.5S	176°11.5E	231	4 lbs Mn nodules
1968	184	1858	2320	2674	2674	"	"		5.4 lbs Mn nodules.
19	Millipore	1125				04°54'S	177°52'E	231.1	
Oct	197								
1968									
19	Vert Net	1111	1143			04°54'S	177°52'E	231.1	
Oct	#79								
1968									
18	SOL.	1915	2221	2674	2665	4°16.5'S	176°11.5'E	231	ONLY ONE SAMPLER WORKED. SAMPLE AT 3500 M.
Oct	#8								CALCITE AND BARITE USED.
1968									
									ONE 30 L. NISKIN AT 3500 M. FOR SURFACE P-T
									SOLUBILITY ON ALL SAMPLES.
18	T'GRAD	1909	2236	2674		4°16.5	176°11.5	231	BATTERIES DIED NO FILM RECORD
OCT	105A								OBTAINED
1968									

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Chief Scientist

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Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
18 OCT 1968	CORE CAMERA ~~105A~~ 76A	1909	2736	2674		4°16.5'S	176°11.5'E	231	CAMERA TRIGGERED PREMATURELY NO USEABLE FRAMES
20 Oct 1968	Surface Millipore #149	0010				05°47'S	179°46W		
20 Oct 1968	#199 Surface Millipore	1730						232	
20 Oct 1968	Vertical Plankton tow #327	1816	1828					232	
20 Oct 1968	Surface Plankton tow #328	1831	1901					232	
20 Oct 68	CORE 202	1719 1929	2109 HIT	3137 3195	3174	6°34'S	177°14.8'W	232	PENETRATION: 920-10 cm TOTAL LENGTH: 928 cm TRUE LENGTH: 928 cm. CLAY, BETWEEN MODERATE BROWN + VERY DARK YELLOWISH BROWN (0-100, + 632-928 cm); CLAY, PREDOMINANTLY DARK YELLOWISH BROWN (100-238, + 598-632 cm); MARL, PALE YELLOWISH BROWN TO VERY PALE ORANGE, CONTAINS ABN. DISCOASTERS (PRE-PLEISTOCENE) + COCCOLITHS (238-598), HILLY, 30 TO 150 fm RELIEF
20 Oct 1968	T-GRAD 105	1719 1929	2109 HIT	3137 3175	3174			232	ALL TRACES GOOD ALL 3 PROBES GOOD 5 CONDUCTIVITY MEASURMENTS

R. Gerard
Chief Scientist

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Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
21 OCT 68	CORE 203	0930	1256	3135	3140	7°07.5'S	175°36.3'W	233	PENETRATION: 1185±10cm TOTAL LENGTH: 1078 cm TRUE LENGTH: 1078 cm INTERBEDDED CLAY, MODERATE BROWN & VERY DARK YELLOWISH BROWN (0-305, 367-600, 622-637, 653-790, 973-1011 AND 1031-1078 cm) WITH MARL, PALE YELLOWISH BROWN (WHICH CONTAINS ABUNDANT COCCOLITHS & DISCOASTERS), & FORAM MARL OOZE (950-973 cm). HILLY
20 OCT 68	CORE	1719	2109	3137	3174	6° 34' South	177° 16.8 West	232	Bottom not in core
	CAMERA 76	1929	hit	3125					Orientation: Northeast Marbles: 13
20 OCT 68	CAMERA 162	1708	2044	3137	3174			232	Soft muddy bottom
		1840	Shot						17 marbles.
20 OCT 68	NEPHELOMETER 157	1606	2658	3137	3174			237	No nepheloid layer
		1840	—						
20 OCT 68	CURRENT METER 120	1708	2044	3137	3174			232	marbles: 17 direction: mainly west to southwest velocity: 2.2 to 3.1 cm./sec.
		1840	Shot						
20 OCT 68	FREE GRAB 185	1730	2120	3140				232	#185 - 3 LBS. MN NODS.
	186								#186 - 2.4 LBS. MN NODS.
20 OCT 68	GEOCHM. SOL. 9A	1719	2109	3137	3174			232	FAILED TO COLLECT SAMPLE

R. Heezen
Chief Scientist

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Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
21	CORE	0930	1256	3135	3137	7°07.5	175° 36.3'	233	Core head itself went into the mud. Hence
OCT	CAMERA	1109	hit	3137		South	West		no usable frames were exposed
'68	77								C.M.U.
21	TGRAD	0930	1259	3135	3137			233	ALL THREE PROBES GOOD
OCT	~~105~~	1109	HIT	3137					
68	106								
21	S.T.D.	0915	1245	3135	3137			233	TOOK STA. TO 5000M. 3 NISKIN
OCT	#27								BOTTLES ON WIRE SEE XBT
68									#368
21	FREE			3135				233	
OCT	GRAB								
68	187A								
21 OCT	GEOCHEM	0947	1248		3137			233	BOTH SAMPLERS WORKED. 4000 M
68	19E								SAMPLES. CALCITE ONLY USED
21	Millipore	0900		3136		07°08'S	175°36'W	233	
Oct	(Surface)								
1968	#200								
21	Vertical	0930	0945	3136		07°08'S	175°36'W	233	
Oct	Plankton								
1968	tow #229								
21	Surface	1004	1034	3136		07°08'S	175°36'W	233	
Oct	Plankton								
1968	Tow #330								

R. Gerard
Chief Scientist

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Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
21-22	CORE	2240	0154	2893	2893	7°36.4S	174°16'W	234	PENETRATION: ≥1315cm BASE OF HEAD. TOTAL LENGTH: 1142 cm TRUE
OCT	204	0027	HIT	2893					LENGTH: 1142 cm. SANDY CLAY, BETWEEN DARK YELLOWISH BROWN
68									+ VERY DARK YELLOWISH BROWN (0-91cm); SANDY CLAY, GRAYISH BROWN
									(91-238cm); CLAY, SHADES OF MODERATE BROWN (238-1142cm). GENERALLY
									UNDULATING WITH OCCASIONAL HILLS UP TO 80fm RELIEF.
									HOMOGENEOUS, MODERATELY COMPACTED, CARBONATE CONTENT NIL
21	Surface	2200		2893		7°36.4'S	174°16'W	234	
Oct	Millipore								
68	#201								
21	SONOBUOY	0610		2890		7°01'S	175°52E		FAILURE –
OCT68	127A		0635						
21	Vertical	2248	2257	2893		7°36.4'S	174°16'W	234	
oct	Plankton								
68	tow #								
	331								
21	Surface	2319	2349	2893		7°36.4'S	174°16'W	234	
Oct	Plankton								
68	tow 332								
21-22	CORE	2240	0154	2893	2893	7°36.4S	174°16'W	234	Mud covered core head. Hence no usable frames
OCT	CAMERA	0027	hit	2893		↓	↓		[signature]
1968	78								
21-22	CAMERA	2240	0145	2893	2893			234	Passthrough leading from bottom camera to strobe
OCT	163A			2893					light unit that served as light source for both
1968	Current								bottom and current meter camera broke as
	Meter								wept descended. No exposures consequently took
	121A								place [signature]
21-22	NEPHEL	2148	0148	2893	2893			234	No nepheloid layer
OCT	OMETER	2337		2893					[signature]
1968	158					↓	↓		

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Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
21-22 OCT 1968	CURRENT METER 121A	2220	0145	2893 2893	2893	0°36.4' S	174°16' W	234	Refer to bottom camera 163A on previous page C.M.H.
21-22 OCT 1968	GEOCHEM SOL. #10	2240	0154	2893		0°36.4' S	174°16' W	234	BOTH SAMPLERS WORKED. REPEAT OF SOL #9A. CALCITE ONLY USED. 4000M SAMPLE.
22-23 OCT 68	CORE 205	2135	0029	2574	2578	8°28' S	171°31.2' W	235	PENETRATION: ~1335* cm TOTAL LENGTH: 955 cm. TRUE LENGTH: 955 cm *~20 cm of BASE OF CORE HEAD PENETRATED. SANDY CLAY, VERY DARK YELLOWISH BROWN TO MODERATE BROWN (0-34, +87-300 cm); FORAM OOZE, VERY PALE ORANGE (34-87 cm); CLAY, GRAYISH BROWN TO VERY DARK YELLOWISH GRAYISH ASH (737-741, +644-649 cm). DISCOASTERS IN BASAL 50 cm (PLIOCENE) BROWN (300-625 cm); RADIOLARIAN CLAY, MODERATE BROWN (625-955 cm) HILLY
22 Oct 1968	Surface Milliporé #202	2100		2575		08°28' S	171°31' W	235	
22 Oct 1968	Vertical Plankton Sample # 333	2127	2136			08°28' S	171°31' W	235	
22 Oct 1968	Surface Plankton Sample #334	2157	2236			08°28'	171°31' W	235	Some bioluminescence
22 OCT 1968	SONOBUOY 127	0509	0730	2890		7°45' S	173°41' W		RECEIVE CHNL: #1 SONOBUOY'S CHNL 6 11 SPEED 5.4 FILTERS: A1 60/110; A2 50/120; B1 4/25 B2 30/90; DISTANCE 12 MILES; PROF: 1358 & 1359

J.K.

R. Heezen
Chief Scientist

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Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
21-22 OCT 1968	CORE CAMERA 79	2135	0029	2575		08°28'S	171°31.2W	235	NO USEABLE FRAMES - CORE RIG WENT INTO SEDIMENT TO CORE WEIGHT
21-22 OCT 1968	T GRAD 107	2135 2305	0029 HIT	2575 2576		08°28S	171°31.2W	235	3 PROBES IN SED. P3 OFF SCALE AS 20 cm OF THE CORE HEAD WAS BURIED 5 CONDUCTIVITY MEASUREMENTS
21-22 OCT 1968	STD #28	2115	0029	2575		08°28'S	171°31.2W	235	STATION TO 5000 M RECORDED ON ANALOG + DIGITAL RECORDERS
21-22 OCT 1968	FREE GRAB 187-B			2575		08°28'	171°31.2	235	GRABBER CAME UP EMPTY
21-22 OCT 68	GEO-CHEM SOL #11	2135	0029	2575		08°28'	171°31.2'	235	30 L. NISKIN SAMPLER USED ON S.T.D. WIRE AT 2000 M DEPTH. CALCITE ONLY USED. 4000M SAMPLE DEPTH. NEITHER FILLED COMPLETELY. BOTH STILL USABLE.
22-23 Oct 68	Core Camera 80	2224 0022	0157 hit	2803 2806	2807	9°25.5S	169°00'W	236	Orientation: just east of south Bottom: not in focus Marbles: 26
23-24 OCT 68	CORE 206	2224 0022	0157 HIT	2803 2806	2807	9°25.5'S	169°00'W	236	PENETRATION: 390 ± 40 cm TOTAL LENGTH: 992 cm TRUE LENGTH: 430 cm CLAY, VERY DARK YELLOWISH BROWN ABOVE 40 cm, DARK YELLOWISH BROWN BELOW; LAMINATIONS ABUNDANT; VERY WELL COMPACTED; COCCOLITHS + DISCOASTERS RARE BETWEEN ~40 + 206 cm; COARSE FRACTION <5 TO 1%.

R. Heezen
Chief Scientist

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Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
23-24 OCT 1968	T-GRAD 108	2224 0022	0157 HIT	2803 2806	2807			236	CORE PIPE BENT ABOUT 4 METERS FROM BASE. P3 ONLY ONE TO PENETRATE. GOOD TRACE ON FILM
Oct 23 1968	Suntrace Million #203					90°25'S	169°00'W	236	
						90°25'S	169°00'W		
23 Oct 1968	Vertical Plankton Sample #335	1858	1906					236	
23 Oct 68	Subsurface Plankton Sample #336	1943	2013			9°25.8	169°00'W	236	
22 OCT '68	CAMERA 163	1905 2015	2205 5 hits	2825 2830	2803 6	9°25.2	169°W	236	25 FRAMES: Not much evidence of mud; Rather rough and rocky.
22 OCT '68	NEPHELOMETER 159	1835 2015	2225 —			9°25.2	169°W	236	Deep layer
22 OCT '68	CURRENT METER 121	1905 2015	2205 5 hits			9°25.2'	169°W	236	Upables: 25 Orientation: North Velocity; from 10.3 to 15.9 cm./sec.

R. GERARD
Chief Scientist

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Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. S	POSITION Long.	LOG	REMARKS
22-23 OCT 1968	STD 29	2219	0210	2805		9°25.2'	169°W	236	PLACED INSTRUMENT TO 25 FMS ABOVE BOTTOM USING PINGER- RECORDED ON ANALOG AND DIGITAL RECORDERS. ANALOG SAL. TRACE NOISEY
22-23 OCT 1968	FREE GRAB 187-188			2805		9°25.2'	169°W	236	#187 — 18 LBS MN NODS #188 — 1.06 MN NODS
22-23 OCT 1968	GEOCHEM SOL 12A			2805		9°25.2'	169°W	236	NEITHER SAMPLER WORKED. DESIRED DEPTH 300M.
22-23 OCT 1968	GEOCHEM SOL #17			2805		9°25.2'	169°W	236	BOTH SAMPLERS WORKED. CALCITE ONLY USED. 4000 M. DEPTH OF SAMPLE
25 OCT 68	CORE 207	1728 1917	2038 HIT	2677 2676	2676	14°37'S	168°30'W	237	PENETRATION: ≈260 cm TOTAL LENGTH: 449 cm TRUE LENGTH: 437 cm CORING DEVICE FELL OVER SHORTLY AFTER HIT. CORE DISTURBED AS TAKEN + EXTRUDED; TRUE LENGTH UNCERTAIN. ASH-RICH CLAY BETWEEN BROWNISH GRAY + DARK YELLOWISH BROWN (0-175cm); DIATOMACEOUS, RADIOLARIAN ASH, GRAY-ASH-RICH CLAY, BETWEEN DARK + MODERATE YELLOWISH BROWN (175-300cm); ISH BLACK NEARLY FLAT AT STATION, BUT HILLS NEARBY.
25 OCT 1968	T-GRAD 109 A	1728 1917	2038 HIT	2677 2676	2676	14°37'S	168°30'W	237	CORE PIPE LAID OVER ON ITS SIDE — PIPE BENT — NO PROBES IN SEDIMENT
24 Oct 68	Millipore (Surface #204					12°06'S	168°34'W		

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Chief Scientist

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Date	STATION and Nº	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
25 Oct 1968	Surface Millipore #205	1600		2680		14°37'S	168°30'W	237	
25 Oct 1968	Vertical Plankton Sample # 237	1633 ~~1939~~	1641 ~~[illegible]~~	2680		14°37'S	168°30'W		Very light Sample
25 Oct 1968	Surface Plankton Sample # 238	1929	1960	2680		14°37'S	168°30'W		light Sample
25 Oct. 1968	Bottom Camera 164	1634 1838	—	2682 2677	2676	14°37' South	168°30' West	237	Very firm yet smooth bottom. Some ~~[illegible]~~ tracks. Usables: 9 CMH
25 Oct. 1968	Nephelometer 160	1611 1838	2101	↓	↓	↓	↓	↓	No layer CMH
25 Oct. 1968	Current Meter 122	1634 1838	—	↓	↓	↓	↓	↓	Usables: 11 Direction: East. velocity: 6.8 to 7.9 cm./sec. CMH
25 Oct. 1968	Core Camera 81	1728 1917	2038 hit	2677 2676	2676	↓	↓	↓	Pipe was bent and core head fell on its side CMH.

R. Gerard
Chief Scientist

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Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
25 OCT 1968	STD 29X (HYDRO STA)	1611	2101	2680		14°37'S	168°30'W	237	STD NOT USED BUT HYDRO OBS. TAKEN BETWEEN 4000 M AND BOTTOM AT 5 LEVELS. TEMP, SALINITY AND O_2 MEAS. OBTAINED
25 OCT 1968	GEOCHEM STA # 13	1728	2038	2677	2676	14°37	168°30W		ONLY ONE SAMPLER WORKED. CALCITE ONLY USED. SAMPLING DEPTH 4000 M. ONE 30 LITER NISKIN FOR pCO_2 AND ΣCO_2 at 4000 M.
26 Oct 1968	Surface Millipore # 206	1915				16°38'S	170°4'W		
27 OCT 68	CORE 208	1007	1450	3700	3380	16°44.5'S	172°22'W	238	PENETRATION: 160 ± 10 cm. TOTAL LENGTH: 156 cm TRUE LENGTH: 156 cm SANDY CLAY, DARK YELLOWISH BROWN (6-18cm); VERY SANDY CLAY, BETWEEN MEDIUM DARK GRAY + DARK BLUISH GRAY (18-127cm); SAND, BETWEEN DARK GRAY + GRAYISH BLACK, GRADED (TURBIDITE?) (127-156cm). CORING DEVICE FELL OVER AFTER HIT. SLOPE, WESTERN WALL OF TONGA TRENCH
27 OCT 68	SONOBUOY 128	0228	0356	2795		16°39'S	171°30W		RECEIVING CM. # 1 SB CH # 12 SP 0.5 MEDIUM AIRGUN; DISTANCE 7.4 MILE, FILTERS B 4/25 A 5/20; SONOBUOY'S "D" LINE NOT COMPLETED (BOTTOM CAME DOWN SLIP VERY (RAPIDLY) NOT RECORDED. PROF. # 1379 J.K.
27 Oct 68	Surface Millipore Sample # 209	0800		3500		16°44.5'S	172°22'W	238	
27 Oct 1968	Vertical Plankton Sample # 339	0958	1007	3700		16°44.5'S	172°22'W	238	

R. Conrad
Chief Scientist

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CRUISE LEG—From HONOLULU To SUVA

TIME ZONE -12

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
27 Oct 1968	Surface Plankton Sample # 346	1045	1057	3200		16°44.5'S	172°22'W	238	
28 Oct 68	Surface Millipore Sample #208	0905							
28 OCT 68	SONOBUOY 129	1125	1233	1266		17°11'S	175°05'W		MEDIUM AIR GUN CH 1 SB CH 9 SPD 7.4 SB PAUSE 60 PROF #1387 DISTANCE 8.7 MILES, FILTERS SAME. BUOY LOST → 15 db GAIN. 10 MINUTES AFTER LAUNCH. ROUGH SEA. VESEL YAWING MODERATELY SPEED TO HIGH BECAUSE OF STRONG SWELL (ESE 7.7K) J.K.
28 OCT 68	CORE 209	1750	1910	1245	1130	17°19'S	175°34'W	239	PENETRATION: 150 ±50 cm TOTAL LENGTH: 76 cm TRUE LENGTH: 76 cm CORING DEVICE FELL OVER AFTER HIT + WAS DRAGGED AT LEAST A SHORT DISTANCE OVER BOTTOM DURING "PULL OUT". FORAMINIFERAL MARL OOZE, MODERATE YELLOWISH BROWN, RICH IN FINE GRAIN TO PEBBLES OF PUMICE, ESPECIALLY BELOW 71 cm. HIT ON SIDE OF SEAMOUNT
28 Oct 68	Surface Millipore Sample # 209	1500		1248				239	
29 Oct 68	Vertical Plankton Sample #341	1523	1533	1248				239	
28 Oct 68	Surface Plankton Sample 3/4	1719	1729	1248				239	

R. GERARD
Chief Scientist

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PALISADES

Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG II From Honolulu To Java (37)

TIME ZONE -12

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
Oct. 27 1968	Core Camera 82	1007 1246	1450 hit	3700 3506	3380	16°44.5 S.	172°22' W.	238	Bottom: not in focus. Orientation: 1 west of south. Losables: 9 - CORE RIG HAD BADLY FELL OVER AFTER HIT - SEE CORE 209 DESCRIPTION. C.M.-D.
Oct. 28 1968	Bottom Camera 165	1511 1602	1711 3hrs	1248 1248	1250	17°19' S	175°34' W	239	Bottom: soft, ripples visible. losables: 16 C.M.-D.
	Current meter 123								6 losables direction: S.W. velocity: 2.5 cm./sec. C.M.-D.
	Nephelometer 161	1444 1602	152/ hit	1248 1248	1250				nepheloid layer (a weak one) approximately 130 fathoms thick at the bottom. C.M.-D.
	Core Camera 83	1750 1833	1910 hit	1245 1074	1130				Compass ripped out. Bottom out of focus. Camera Camera functioned well. No orientation C.M.-D.
28 oct 1968	STD #30	1730	1930	1130		17°19.5'	175°34' W	239	STATION TO 2000 METERS WITH 4 NISKIN BOTTLES ON WIRE PLUS ONE 30 LITER SAMPLER FOR GEOCHEM AT 100 FMS. RECORDED ANALOG + DIGITAL
28 oct 1968	GEOCHEM SOL. # 15	1510	1730	1250		17°19.5'	175°34' W	239	NISKIN FOR pCO_2 AND ΣCO_2. ONLY ONE SAMPLER WORKED. SAMPLE DEPTH 200 M. CALCITE ONLY USED.

R. Gerard
Chief Scientist

Columbia University
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Research Vessel ROBERT D. CONRAD
CRUISE N° 12 (38)
CRUISE LEG—From HONOLULU To SUVA

TIME ZONE -12

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
28 OCT 1968	T'GRAD 110A	1750 1833	1910 HIT	1250 1074	1130	17°19'S	175°34'W	239	NO PENETRATION — CORE DRAGGED ALONG BOTTOM.
27 OCT 1968	GEOCHEM SOL # 14	1007	1450	3165	3290	16°44.5'S	172°22'W	238	SAMPLE DEPTH 3500 FMS. CALCITE ONLY USED. BOTH SAMPLERS WORKED
29 OCT 68	Millipore (Surface Sample) #210	2100				17°57'S	178°45'W		
29 OCT 68	SONOBUOY 130	2208	0019	406		18°02'S	178°54'W		RECEIVING CH. # 1 SB TRANS. CH. 12 SPD 4K. EEL TRIP SWITCHED CHANNELS — "A" PROFILER LOW FREQUENCY. PROF. NUMBERS 1396 & 1397. DISTANCE 8.1 FILTERS SAME O.K.
30 OCT 68	SONOBUOY 131	0725	0900			18°14'S	179°49'W		RECEIV. ON #1 SB CH # 11 SB PHONE 300 FT. FILTERS: A 60/100 A2 60/150 B 4/25 B2 30/90 DISTANCE 8.0 BECAUSE OF HIGH SWELLS SB PHONE 380 FT. PROF. 1400 & 1401 O.K.
30-31 OCT 68	Geochem Sol. 16	09:10 10/30	04:00 10/31	1170	6000 to	18°15'S 18°18'S	179°58'W 178°22'E		CONTINUOUS FLOW OF SURFACE WATER, SAMPLED AT 4 INTERVALS, OVER ALL TYPES OF CALCITE AND BARITE.
30 OCT 68	Geochem Sol. 17	2030	2200			18°28.5'S to 18°30'S	178°52'E 178°42'E		SURFACE WATER SOLUBILITY EXPERIMENTS ON CALCITE USING SAME VOLUME AS IN DEEP SAMPLER.

R. Gerard
Chief Scientist

Columbia University
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Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG—From SUVA To MAR DEL PLATA
TIME ZONE

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS				
1	2	3	4	5	6	7	9	10	11	12	15	19	Messaged
STA	DATE	LAT	LONG	CORE	CORE CAM	T-GRAD	CAMRA	NEPH	DREDG.	SONOBY	CURR METER	GRAB	
240	9/11	24-14	177-36	210	84		166	162		132	124	189	✓
	1400			6	16		8	00		5	8/1	1	
241	10/11	26-45	175-04	211	85		167	163		133	125	190	✓ T-G probes wiped
	1300			9	24		16	130		12	2/1	1	
242	10/11	27-04	174-27	212	86		168	164		134	126		✓ EOCENE?
	2000			4	3		14	1000		12	4/1		T-G probes wiped
243	12/11	31-31	170-45	213	87		169	165		135	127		✓ T-G batteries
	1400			4	10		15	0		12	4/0		dead
244	12/11	34-44	171-22	214						136			✓ CORE CAM. LEAKS
	1500			4						10			BOW PROP OUT
245	13/11	35-28	167-54	215		110	170	166		137	128		✓ 3.5 son. is good
	1400			10		1	9	260		10	4/1		HYDRO. WINCH SLOW
246	14/11	36-16	164-20	216									✓ CORE CAM. STILL
	1300			4									LEAKS
247	15/11	37-28	160-27	217		111	171	167			129		✓ REPLACE HYDRO
	1400			10		2	11	75			3/1		WINCH GAUGE.
248	16/11	39-30	157-42	218		112✓	172	168			130	191/192	✓ CORE CAM FILM DRIVE
	1400			9		3	2	130			7/1	5/2	BAD. WINCH OK
249	17/11	41-42	154-37	219	88		173	169			131		✓ T-G batteries dead
	1500			16	11		12	260			7/1		
250	18/11	43-42	151-17	220	89		174	170			132	193/194	✓ BENT PIPE
	1400			14	0		12	320			7/1	4/2	
251	19/11	46-26	146-03	221	90		175	171			133	195/196	✓
	22			10	11		4	450			6/1	0/12	
252	20/11	48-02	142-29	222	91		176	172			134		✓ Core compass broken
	22			1	37		8	260			1/1		H.H. Tangle Tripod
253	21/11	49-48	138-10	223			177	173			135		✓ trigger int. in
	23			6			25	130			8/1		rough seas
254	22/11	51-13	133-41	224	92							197	✓
	23			11	13							3	
255	24/11	53-40	123-08	225	93		178	174			136		✓
	22			4	0		7	0			4/1		

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Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG—From SUVA To MAR DEL PLATA

TIME ZONE _____

Date	STATION and N°	TIME		SOUNDING		POSITION		LOG				REMARKS	
		Start	End	Start	End	Lat.	Long.						
STA	DATE	LAT	LONG	CORE	CORE CAM.	T-GR'D	BOTT. CAMRA	NEPH	DREDG	SONOBY	CURR METER	GRAB	Messaged
1	2	3	4	5	6	7	9	10	11	12	15	19	
256	25/11	54-29	117-44	226	94			175		138			✓
	22			1	8			60		7			
257	26/11	55-14	111-56	227	95	113	179	176			137	197	✓
	22			9	0	2	10	0			7/0		
258	27/11	55-27	106-09		96		180	177			138	198	✓
	22				0		8	130			1/1	199	
259	28/11	55-35	100-18	228			181	178			139		✓ Possible Miocene
	23			7			13	130			1/2		
260	29/11	55-21	94-25	229	97	114	182	179			140		✓ core compass buried
	22			8	5	2	8	0			2/1		rough topog.
261	30/11	55-04	88-57	230	98	115	183	180			141		✓ " " "
	22			11	0	2	5	130			4/1		" "
262	1/12	55-32	82-57	231	99	116	184	181			142		✓ " " "
	22			10	0	2	13	260			7/2		" "
263	2/12	56-00	77-17	232		117	185	182		139	143		✓ Good 3.5 sonob.
	22			1		2	23	260		7	1/1		1st stage RIX
264	4/12	56-50	66-56	233			186	183		140	144		✓ cable coil cracked.
	15			2			17	0		8	4/3		
265	5/12	55-08	64-00	234			187	184		141	145		✓ 12 Kc OUT
	09			4			19	0		8	2/2		only 19 XBT left
266	7/12	50-25	54-09	235			188	185		142	146		✓
	10			3			13	0		9	1/3		
267	8/12	48-13	58-36	236			189	186		143	147		✓
	10			2			7	260		6	8/2		
268	8/12	47-46	57-39	237	100		190	187		144	148		✓
	20			5	4		31	130		4	8/3		
269	9/12	47-21	54-56	238	101		191	188		145	149	200.	✓
	11			9	10		12	520		7	4/2		
270	11/12	44-43	51-12	239			192	189		146	150		
	10			12			16	460		6	3/3		
271	13/12	43-55	56-44	240			193	190		147	151		
	00			4			4	130		11	5/1		

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STATION SUMMARY

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Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG—From SUVA To MAR DEL PLATA

TIME ZONE _____

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG				REMARKS
STA	DATE	LAT	LONG	CORE	CORE CAM	T-GRD	BOTT. CAM	NEPH	SONOB	CURR METER	GRAB	Messaged
1	2	3	4	5	6	7	9	10	12	15	19	
272	13/12	43-28	57-40	241			194	191	148	152		✓ outcrop
	14			2			12	390	10	2/1		
	13/12	"	"	242								outcrop; can't extrude core
	16			2								
273	15/12	40-51	54-29	243			195	192	149	153		✓
	01			6			6	260	7	7/1		
274	15/12	39-34	55-51	244								
	17			1								
275	15/12	39-05	56-08	245								
	20			0								

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PALISADES

Research Vessel ROBERT D. CONRAD
CRUISE N° _____
CRUISE LEG—From _____ To _____

TIME ZONE _____

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
8 Nov 68	Surface Millipore Sample #212	0815				20°24'S	179°59'E		
9 Nov 68	Surface Millipore Sample # 213	0015				22°34'S	178°42'W		
9 Nov. 68	CORE 210	1335	1425	830	828	24°14'S	177°36'W	240	PENETRATION: ~50cm CORING DEVICE FELL OVER AFTER HIT. TOTAL LENGTH: 63cm, TRUE LENGTH: 63cm TOP 5 OR 10cm of CORE MIXED WITH WATER IN PIPE + WAS LOST. FORAMINIFERAL OOZE, PALE YELLOWISH BROWN, TOP HALF IS EXTREMELY DISTURBED, CONTAINS ABUNDANT DARK BROWNISH + GRAYISH SCORIACEOUS ASH TO CINDERS. MOUNTAINOUS, UP TO 200 fm RELIEF
9 Nov. 68	Bottom Camera 166	1312 1346	1437 shot	834 830	830			240	Hard bottom with ripples ; 7 or 8 usables
9 Nov. 68	Current Meter 124							240	direction : South by west velocity : from 13.7 cm/sec. to 6.1 cm/sec usables: 13
9 Nov. 68	Nephelometer 162	1235 1346	1502					240	No nepheloid layer
9 Nov. 68	Core Camera 84	1335 1355	1425 hit	830 820	828			240	Bottom not in clear pictures Orientation: Northeast usables: 16

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Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG 13 From Suva To Puerto Ayora

TIME ZONE _____

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
5	Core	1906	2134	2756	2754	25°03.7'	174° 27.4'	242	Weather: 3
Nov	Camera	1951	Ad	2757		S	W.		Orientation: East of north
68	86								Bottom: not in focus
									C.M.H.
8	Surface	1340		830		24°14'S	177°36'W	240	
Nov	Millipore								
68	Sample #								
	214								
8	Vertical	1314	1321	830		↓	↓	240	
Nov	Plankton								
68	Sample								
	#343								
8	Surface	1357	1429	830		↓	↓	240	
Nov	Plankton								
68	Sample								
	#344								
9	Surface	0940		4200		23°48'S	177°53'W		
Nov	Millipore								
68	Sample #								
	215								
9	BOTTOM	1312	1437	830		24°45	177°36'W	240	MILLIPORE FILTERS 1A & 1B FROM N 3/4 L
NOV.	MILLIPORE	1346	HIT						~~OFF~~ RECEIVED WATER FROM NISKIN BOTTLE ON ~~HYDROWIRE~~
68	~~SHIPEK~~ FILTER								~~STA 240~~ TRIPOT
	# 1								J.K.
9/NOV/68	BCMC # 189A	1345	1450	821				240	NO SAMPLE
9	SONOBUOY	2209	2248	362		25°20 S	176° 55W		RECEIV. CH # 1 SB TRANS CH # 9 SPD 5
NOV	132								EFL TRIP REVERSED CHNLS A & B
68									J.K.

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Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG—From SUVA To PUNTA ARENAS

TIME ZONE _____

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
9	T-GRAD	1335	1425	830	828	24°14'S	177°36'W	240	NO PENETRATION
NOV	110 B	1355	HIT	820					
1968									
10	Surface	1100		3097		26°44.7S	175°04'W	241	
NOV	Mill. pore								
68	Sample #								
	216								
10	Vertical	1142	1150	2992		26°44.7S	175°04'W	241	
NOV	Plankton								
68	Sample								
	#345								
10	Surface	1242	1313	2992		26°44.7S	175°04'W	241	
NOV	Plankton								
68	Sample								
	346								
10	CORE	1208	1426	2987	2958	26°44.7S	175°04'W	241	PENETRATION: 852 ± 5 cm TOTAL LENGTH: 881 cm TRUE LENGTH: ≥ 807 cm ASH-RICH CLAY, DARK YELLOWISH BROWN & MODERATE YELLOWISH BROWN (0-327 cm); ASH, DARK BROWNISH GRAY (327-333 cm); CLAY, MODERATE YELLOWISH BROWN (333-427 cm); ASH-RICH CLAY, DARK YELLOWISH BROWN & MODERATE YELLOWISH BROWN (427-≥807 cm). GENTLE SLOPE, TOP EASTERN SLOPE TONGA TRENCH
NOV.	211	1254	HIT	2964					
68									
10	BCMC	1207	1500	2992				241	#189: 1/4# SAMPLE RESEMBLES POMAS
NOV	SAMPLER								#190: 3/4# " " "
68	189, 190								

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PALISADES

Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG 12 From Suva To Punta Arenas

TIME ZONE _____

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
10 Nov '68	Bottom Camera 167	1141	1440	2997	2964	26°44.7' S	175°04' W.	241	nodules: 16
		1256		2970					Bottom: very muddy; a few nodules. Some animal tracks CMA
									direction: generally northeast
10 Nov. '68	Current Meter 125								velocity: from 0 to 4.4 cm/sec.
									nodules: 17
									CMA
10 Nov. '68	Nephelometer 163	1104	1456						A noticeable nepheloid layer having a thickness of 2470 fms. reaching bottom and becoming really strong in the last 130 fms.
		1256							at the bottom CMA
10 Nov. '68	Core Camera 85	1208	1426	2487	2458				nodules: 24
		1254	hit	2964					orientation: South of west to northwest
									Bottom: not within focus
									CMA
10 Nov. '68	Bottom Camera 168	1843	2131	2758	2757	29°08' S	174°22.4' W.	242	nodules 14
		1955		2758					bottom: Hard packed sediment.
									CMA
10 Nov. '68	Current Meter 126	1843	2131						direction: Southeast to a bit south of east
		1955							velocity: 2.8 cm/sec.
									nodules: 12
									CMA
10 Nov. 68	Nephelometer 164	1801	2148						An apparently weak layer beginning at 1430 fms. of depth and ending at 2600 fms. The layer, beside, does not reach bottom. Layer difficult to define CMA

Chief Scientist

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PALISADES

Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG 12 From SUVA To PUNTA ARENAS

TIME ZONE _____

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
10 NOV 68	BOTTOM MILLIPORE FILTER #2	1133	~~1350~~ 1446 MIT	2997				241	MILLIPORE FILTERS 2A & 2B 1/2 ℓ TRIPOT NINSKIN BOTTLE. J.K.
NOV 10 68	Surface Millipore Sample # 217							242	
10 NOV 68	Surface Plankton Sample # 348							247	
10 NOV 68	Vertical Plankton Sample # 347							242	
10 NOV 68	CORE 212	1906 1951	2134 HIT	2756 2757	2754	29°03.7'S	174°27.4'W	242	PENETRATION: 415±20 cm TOTAL LENGTH: 435 cm TRUE LENGTH: 2410 cm TURBIDITE, ASH-RICH CLAY, DARK YELLOWISH BROWN. GRADING TO FORAMINIFERAL ASH, MODERATE YELLOWISH BROWN (0-39cm, 235-354cm); ASH, DARK BROWNISH GRAY (39-48cm); CLAY, SHADES OF YELLOWISH BROWN (48-235cm, 354-365cm); INTERBEDDED CLAY + ASH (365-376cm); BASAL ≥50cm MAY BE EOCENE. GENTLE SLOPE-CLAY GRADING TO ASH WITH DEPTH, YELLOWISH BROWNS (376-435?cm). BASE LOUISVILLE RIDGE
10 NOV 68	PARTICULAR BOTTOM WATER FILTERS 3	1906	2134					242	NONE. TRIPOT NINSKIN BOTTLE DIDN'T CLOSE TO BRING A SAMPLE. J.K.
10 NOV '68	BCMC SAMPLER 191A, ~~221~~ 191B	1902	2130	2755				242	NO SAMPLE

Chief Scientist

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PALISADES

Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG 12 From SUVA To PUNTA ARENAS

TIME ZONE _____

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
11	SONOBUOY	0246	0248	2800					RECEIVING CH 2 SB TRANS CH. 10 SPD. 4
NOV	133 A								FAILED – RECEIVER MALFUNCTION
68									PROF 1429
									J. K.
11	SONOBUOY	0252	0427	2800		27°23'S	173°42'W		RECEIV. # 2 SB CH. 12 SPD 4.0
NOV	133	–	0513						EEL TRIP. 'B' DELAY TEST 3.5 REFRACTION ON 12 KC PDR
68									SB PHONE 60 FT. (ANY REFRACTION) LOST BUT SEEMS TO BE
									FEASABLE. PROF 1429 & 1430 J. K.
11	SONOBUOY	0520	–	2742		27°28'S	173°29.7W		RECEIVE. # 2 SB CH 9 SPD 4.0 EEL TRIP. B DELAY
NOV.	134	–	0730						SB PHONE 300 FT. (12KC PDR) BUOY SIGNAL 3-4
68									KHz PING 2.0 MS. & DWF PROF 1431 & 1432
11 NOV	SONOBUOY	2105	2307	~2860		29°05'S	171°32.W		RECIEV. # 2 SB CH 12 PHONE ~~600~~ 300 FT SPD 4. PHONE 300 FT
68	135								B' NORM. TRIP. PROF 1437 J. K. J. K.
11	Surface	1240				27°58'S	172°29'W		
Nov	Millipore								
68	Sample								
	#218								
12	Surface	1238		3038		31°30.7'S	170°45'W	243	
Nov	Millipore								
68	Sample #								
	219								
12	Vertical	1245		3038		31°30.7'S	170°45'W	243	Wire pulled loose near end of reel
Nov	Plankton								420 wire out - too much strain when
68	Haul #								winch engaged. Lost NO # wire
	349								
12	CORE	1303	1512	3038	3016	31°30.7'S	170°45'W	243	PENETRATION: 435 ± 15 cm TOTAL LENGTH: 371 cm TRUE LENGTH: 350 cm
NOV.	213	1349	HIT	3020					CLAY, DARK YELLOWISH BROWN, HOMOGENEOUS (0-262 cm; 276-350 cm);
68									ASH, PALE YELLOWISH BROWN, FAINTLY LAMINATED (262-276 cm); BASE OF
									TRUE CORE CONTAINS FRAGMENTS OF A VERY HARD ASH LAYER. GENTLE SLOPE

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STA 243 TZ-12 Nov 12
and
STA 244 TZ+11 Nov 12'

Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG 12 From SUVA To PUNTA ARENAS

TIME ZONE

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
12 Nov 68	PARTICULATE MILLIPORE MATTER FILTER 4							243	NONE BOTTOM COVER ON MINSKIN BOTTLE DIDN'T CLOSE UP. SPRING WAS ACTUALLY BLOCKED BY THIS COVER. T.K.
12 Nov 68	CORE 214	1359 1450	1636 HIT	3049 3050	3046	34°43.5'S	171°22'W	244	PENETRATION: ~420 cm TOTAL LENGTH: 781 cm TRUE LENGTH: ≈420 cm CLAY, DARK YELLOWISH BROWN (0-180cm); ASH, PALE YELLOWISH BROWN TO LIGHT BROWNISH GRAY (180-196cm); CLAY, DARK YELLOWISH BROWN (196-211cm); ASH, VERY LIGHT GRAY TO PINKISH GRAY (211-218cm); CORE + FLOW IN: MODERATE TO DARK YELLOWISH BROWN CLAY WITH ASH, 518-525, 575-582, 595-605cm. GENTLE SLOPES
12 Nov 68	Bottom Camera 169	1248 1405	1600 5 hits	3040 3020	3016	31°30.7 S	170°45' W	243	Soft undulating bottom with no ripple marks; soft mud well packed. 15 usables C.M.H.
12 Nov 68	Current Meter 127	↓	↓	↓	↓	↓	↓	243	Direction: Approx. between east of south and SE usables: 10 deflection: .3mm or 2cm/sec. C.M.H.
12 Nov 68	Nephelometer 165	1207 1405	1614	↓	↓	↓	↓	243	No nepheloid layer C.M.H.
12 Nov 68	Core Camera 87	1303	1512 1349 HIT	3038 3020	3016	↓	↓	243	Orientation: North of west by a small angle usables: 10 Bottom: not in focus C.M.H.
12 Nov 68	Core Camera 88A	1359 1450	1636 hit	3049 3050	3046	34°43.5 S	171°22' W	244	No film because camera casing was flooded; water damaged camera which has been completely fixed. Reason for leak: cap came loose when one of screws holding camera to core head broke away. Therefore camera was hitting against core head since it had play. That seemed to loosen caps. C.M.H.

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Research Vessel ROBERT D. CONRAD
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CRUISE LEG 12 From SUVA To PUNTA ARENAS

TIME ZONE _____

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
13	SONOBUOY	0634	0806			35°15'S	168°50'W		RECEIVE. CH 2 SB TRANS. CH. # 12 SPD 6.2
NOV	136			2628					$ DELAY PROF. 1452
68									J.K.
13	SONOBUOY	0909	1035	2652		35°20'S	168°29.3'W		RECEIVE. CH 1 SB TRANS CH. # 9 SPD 5
NOV.	137								$ DELAY ALSO ON PDR 12KC.
68									J.K.
13	BOTTOM Millipore							245	5A & 5B. RECEIVED N 1/4 of LITER OF A SAMPLE
NOV.	FILTERS		HIT.						DEPTH 26 07 FTM. CORE HIT # 215
68	5								J.K.
13	CORE	1340	1538	2610	2614	35°28'S	167°53.6'W	245	PENETRATION: ~950cm. TOTAL LENGTH: 1136 cm TRUE LENGTH: 993? cm CLAY, DARK YELLOWISH BROWN (0-231, 238-250 & 256-298cm); CLAY, BETWEEN DARK YELLOWISH BROWN & MODERATE YELLOWISH BROWN (298-765cm & 776-993cm) INTERBEDDED WITH ASH PALE ORANGE TO MEDIUM LIGHT GRAY (231-238, 250-256, 298-298, 765-776 & 991-993cm). ASH EXTREMELY WELL COMPACTED. GENTLE SLOPE
NOV.	215	1420	HIT	2611					
68									
13	Millipore	1255		2608		35°28'S	167°53.5'W	245	
NOV	(Surface)								
68	#220								
13 NOV	BCMC	1348	1615	2647				245	#'s 191 A, B, C, EMPTY
68	SAMPLER								
13	Vertical	1316	1325	2608		35°28'S	167°53.5'W	245	
NOV	plankton								
68	Sample #								
	350								
14	Millipore	1230		2548		36°15.5'S	164°20'W	246	
NOV	(Surface)								
68	Sample #								
	221								

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Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
13 Nov '68	Bottom Camera 170	1309 1419	1604 5 hits	2607 2610	2614	38°38' S	167°53.5 W	245	Poff well packed bottom full of sediment. 9 markers C.H.A.
13 Nov '68	Current Meter 128								direction: east by south; i.e. a bit east of south. deflection: 1.8 to 2.8 mm. or 5 to 6.6 cm/sec. 15 markers C.H.A.
13 Nov 68	Nephelometer 166	1214 1419	1630	2610 2611	2614				Nepheloid layer approx. 260 fms. thick at the bottom and of a weak nature. C.H.A.
14 Nov 68	CORE 216	1242 1320	1431 HIT	2548 2602	2635	36°15.5'S	164°20'W	246	PENETRATION: ~652 cm (BASE of CORE HEAD). TOTAL LENGTH: 435 cm TRUE LENGTH: 435 cm. MANGANESE CRUST OR POSSIBLY A NODULE FRAGMENT, GRAYISH BLACK (0-4cm); CLAY, MODERATE YELLOWISH BROWN IN TOP 10 cm, THEN BETWEEN MODERATE YELLOWISH BROWN & DARK YELLOWISH BROWN; FAINTLY MOTTLED; MODERATELY COMPACTED. VERY HILLY, 60 TO 120 cm RELIEF.
14 Nov 68	Vertical Plankton Sample #357	1335	1345	2608		36°15.5S	164°20W	246	Good Sample
13 Nov 1968	T-CRAD 116	1340 1420	1538 HIT	2608 2609	2614	35°28' S	167°53.5 W	245	P3 IOST COMPLETELY P2 RIPPED OFF PIPE P1 GOOD. 4 CONDUCTIVITY MEASUREMENTS TRIPOD THERMOMETERS 1165 t 2.28 T 1.38 7971 t 2.27 T 1.37 3325 t 2.28 T 1.40
15 Nov 68	CORE 217	1330 1413	1531 HIT	2632 2626	2608	37°27.7'S	160°27'W	247	PENETRATION: 1005 ± 10 cm. TOTAL LENGTH: 1085 cm TRUE LENGTH: 1007 cm CLAY, DARK YELLOWISH BROWN AT TOP & BASE OF CORE BUT BETWEEN DARK YELLOWISH BROWN & MODERATE YELLOWISH BROWN BETWEEN ABOUT 100 & 625 cm; FAINTLY MOTTLED; CARBONATE CONENT NIL. UNDULATING, UP TO 50 fm.

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CRUISE LEG—From ______ To ______

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Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
15	Surface	1236		2630		37°28'S	160°27'W	247	
Nov	Millipore								
68	Sample								
	#222								
15	Vertical	1255	1303	2630		37°28'S	160°27'W	247	
Nov.	Plankton								
68	Sample #								
	352								
15	Bottom	1247	1538	2632	2602	37°27.7'	160° 27'	247	Well packed very smooth bottom with
Nov.	Camera	1357	5 hits	2632		S	W		a rock or two. Little or no undulations;
'68	171								no ripple marks or animal tracks.
									11 nodules.
15	Current								direction: N.E. and east by south
Nov.	meter								velocity: 1.8cm. sec. to 3.3cm/sec.
'68	129								nodules: 20
15	Penetrometer	1205	1549						medium strength layer 70 or 80 cms.
Nov.	167	1357							thick.
'68									
15	T-Prob	1330	1531	2632	2608			247	P2 SHORTED OUT P1 & P3 GOOD
Nov.	111	1413	HIT	2625					4 CONDUCTIVITY MEASUREMENTS
'68									TRIPOD THERMOMETERS FAILED
									TO TRIP
15	BCMC	1339	1603	2630					8 MIN P.O SHOULD BE FAIRLY STANDARD
NOV	SAMPLER								
'68	191, EF6.								

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CRUISE LEG—From ______ To ______

TIME ZONE ______

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
16	CORE	1309	1512	2559	2570	39°30.3S	157°41.6W	248	PENETRATION: 1120± 10cm TOTAL LENGTH: 896 cm TRUE LENGTH: 896 cm
NOV.	218	1351	HIT	2567					CLAY, PREDOMINANTLY BETWEEN DARK YELLOWISH BROWN + MODERATE
68									YELLOWISH BROWN BUT MOTTLED WITH SLIGHTLY DIFFERENT SHADES;
									CONTAINS BURROW-FILLINGS OF PALE GRAYISH ORANGE THROUGHOUT, + LAMINATIONS
									OF THIS COLOR IN BASAL 1/3 OF CORE. FORAMS ABUNDANT AT TOP OF CORE, OTHERWISE NIL. ROLLING HILLS + GENTLE SLOPES.
16	T-GRAD	1309	1512	2554	2570	39°30.3	157°41.6	248	ALL 3 PROBES GOOD + CONDUCTIVITY
NOV	112	1351	HIT	2567		S	W		MEASUREMENTS. TRIPOD THERMOMETERS
1968									11656 t 1.77 T 2.58
									7971 t 1.76 T 2.57
									3325 t 1.80 T 2.60
16	Bottom	1257	1530	2555	2570			248	Mud all over the place. 2 usable frames
Nov.	Camera	1409	4 hits	2564					showing scattered nodules. There is shown [illegible]
'68	172								in bottom camera film yet none
									in current meter film. C.M.G.
16	Current							248	direction: West — [illegible] still seems
Nov.	Meter								deflection: 2mm — to spread out
'68	130								Speed or velocity: 5.3 cm/sec — excessively.
									Nodules: 12 C.M.G.
16	Nephelometer	1205	1540					248	A weak nepheloid layer 130 fms. thick at the bottom.
Nov.	168	1409							The framelike exposures have reappeared in this film. They are
'68									definitely not caused by premature strobe light flashes. On the other
									hand the film to all appearances ran at a constant speed as evinced
									in pressure trace. Upon discussing problem with chief scientist have not been able to arrive at a satisfactory answer to problem. C.M.G.
16	Core Camera	1309	1512	2559	2570			248	Camera and strobe light are fine, but a magnetic switch broke
Nov.	88B	1351	HIT	2567					in a strange manner or disconnected itself from circuit. Therefore
'68									strobe light ~~[illegible]~~ relay did not receive 6 volt charge. C.M.G.
16	BCMC	1312	1600	2569				248	#191: 4 3/4# LARGE NODULES
Nov	SAMPLER	~~T~~							#192: 2 1/4# " " — LOST ONE NOD. ON RETRIEVAL
'68	192, 191								

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Date	STATION and Nº	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
16	Surface	1245		2570		39°30.3S	157°41.6W	248	
Nov	Millipore								
68	Sample #								
	223								
16	Vertical	1410	1417	2570		39°30.3S	157°41.6W	248	Good Sample
Nov	Plankton								
68	Sample #								
	353								
17	CORE	1411	1603	2665	2652	41°42'S	154°37'W	249	PENETRATION: 1660±10cm TOTAL LENGTH: 1599 cm TRUE LENGTH: ~1300cm?
NOV.	219	1446	HIT	2660					THOUGH BASE OF CORE APPEARS "TRUE", SEDIMENT BETWEEN ~1300 + 1520cm
68									IS APPARENTLY FLOW-IN. CLAY, PREDOMINANTLY DARK YELLOWISH BROWN
									AT TOP, GRADES TO BETWEEN DARK YELLOWISH BROWN + MODERATE YELLOWISH BROWN BELOW ~620cm + TO PALE YELLOWISH BROWN BY BASE OF CORE.
									CONTAINS BURROW-FILLINGS + BURROWED LAMINATIONS OF GRAYISH ORANGE. ROLLING, 10-100 fm.
	Bottom	1327	1559	2665	2652	41°42'	154°37'	249	very scattered nodules on soft bottom mud
	Camera	1431	shots	2664		S	W.		12 frames usable
	173								C.M.H.
	Current								direction: West
	Meter								deflection: 1 mm. to 1.5
	131								velocity: 3.7 to 4.6 cm./sec.
									usable: 16 C.M.H.
	Nephelometer	1308	1612	2567	2570				weak nepheloid layer at bottom approx.
	1169	1431	HIT	2567					260 fms. thick
									C.M.H.
	Core Camera								Orientation: a bit north of east
	88		HIT						bottom; not within focus
									usable: 11 C.M.H.

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CRUISE LEG—From _____ To _____

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Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
17 Nov 68	Millipore (Confirmed) Sample # 224	1315		2630		41°42'S	154°37'W	249	
17 Nov 68	Vertical Plankton Sample # 354	1331	1338	2630		41°42'S	154°37'W	249	
18 Nov 68	CORE 220	1335	1546	2800	2804	43°42'S	151°16.5'W	250	PENETRATION 330 ± 15cm? TOTAL LENGTH: 1652 cm TRUE LENGTH: 1430 cm CLAY, RANGING BETWEEN DARK YELLOWISH BROWN + MODERATE YELLOWISH BROWN ABOVE 8 OR 9 METERS + BETWEEN MODERATE YELLOWISH BROWN + PALE YELLOWISH BROWN BELOW; CONTAINS ABUNDANT THIN LAYERS OF PALE GRAYISH ROLLING HILLS, GENERALLY 5-50 fm RELIEF, VERY RARELY UP TO 200 fm. ORANGE IN LOWER HALF OF CORE. COARSE FRACTION ≤ 1%. CARBONATE NIL.
17 NOV. 68	BOTTOM MILLIPORE FILTER 8	1327	1559	2665		41°42'S	154°37'W	249	1/5- l. TRIPOT MINSKIN BOTTLE IS LEAKING AFTER CLOSING!! FILTERS 8A - 8B ~~HIT~~ CORE HIT 219 NO SAMPLES RECEIVED FOR FILTERS 6A, B, 7A, B; J.K.
18 NOV. 68	BOTTOM MILLIPORE FILTER 9	1431.	HIT	2800		RE'A		250	1¼ l. of SAMPLE. CORE HIT 220 FILTERS 9A & 9B J.K.
18 NOV '68	BCMC SAMPLER 193, 194	1400	1615	2795		~~41°42'S 151°37'W~~		250	#193: 4¼#, 194: 1½# DCKJ.

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Research Vessel ROBERT D. CONRAD

CRUISE N° 12

CRUISE LEG D From Suva To Mar del Plata

Columbia University in the City of New York

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TIME ZONE ______

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
18	Bottom	1258	1549	2795	2811	43°42'	151°16.5	250	Nodules widely scattered on mud bottom
Nov.	Cameras	1416	(hit)	2800	↓	S	W.	↓	12 nodules.
'68	174	↓	↓	↓		↓	↓		C.M.H.
18	Current								~~A medium nephel[illegible] layer approx. 320 fms~~
Nov.	Meter								~~thick at the bottom~~
'68	132								direction: west
									deflection: 1mm. ??
									Nodules: 7 velocity: 3.5 cm/sec. ? C.M.H.
18	Nephelometer	1210	1602						a medium nepheloid layer approx. 320 fms
Nov.	170	1416							thick at the bottom.
'68									
									C.M.H.
18	Core Camera	1335	1546	2800	2804				Pipe bent. ∴ not a good core camera stn.
Nov.	89	1417	Hit	2811					
'68									C.M.H.
18	Surface	1254		[illegible]	2795	43°42'S	151°17'W	250	
Nov	Millipore								
68	Sample #								
	225								
18	Vertical	1310	1319		2795	43°42'S	151°17'W	250	
Nov	Plankton								
68	Sample #								
	355								

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Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
19	CORE	2136	2336	2668	2690	46°25'S	146°03'W	251	PENETRATION: 1039±10 cm TOTAL LENGTH: 1024 cm TRUE LENGTH: 751 cm
NOV.	221	2215	HIT	2674					CLAY, PREDOMINANTLY DARK YELLOWISH BROWN IN TOP 129 cm, BROWNISH
68									GRAY BETWEEN 129 + 160 cm, DARK YELLOWISH BROWN BETWEEN 160 + 195 cm
									+ PALE TO MODERATE YELLOWISH BROWN IN LOWER SECTION OF CORE; FORAMS
									COARSE FRACTION GENERALLY <1%. HILLY, NEAR 500 fm SEAMOUNT.
									ARE ABUNDANT AT TOP OF CORE BUT OTHERWISE RARE, ALSO TRUE of RADIOLARIA.
19/20	BOTTOM	2112	2347	2668				251	10A & 10B FILTERS AMOUNT OF 3/4 Liter Ea
NOV	MILLIPORE	2221	HIT						HIT # 221
68	FILTERS								
	10								
19	BCMC	2135	2300	2664				251	195A: PASSED BY ONCE THEN LOST
NOV	SAMPLERS								196: 12# LARGE NODULES
68	195A, 196								195
	195								
19	Millipore	2030		2668		46°25'S	146°03'W	257	
NOV	(Surface)								
68	Sample #								
	226								
19	Vertical	2120	2129	2664		46°25'S	146°03'W	257	Amphipod, Chaetognaths abound, Larval fish present
NOV	Plankton								
68	Sample #								
	356								

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Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
19 Nov '68	Bottom Camera 175	2112 2221	2347 5 hits	2666 2670	2690	46°25.5 S	146° 03' W	251	large manganese nodules on sediment quite visible 4 usables. [signature]
19 Nov. '68	Current Meter 133								direction: South + Northwest; ~~deflection~~: 4.3 cm/sec + 1.9 cm/sec : velocity; ~~[illegible]~~: 1.3 mm + .3 mm : deflection; usables: 9 [signature]
19 Nov. '68	Nephelometer 171	2028 2221	0002 at +10 zone or 0102 at +9 zone						medium nepheloid layer approx. 455 fms. thick at the bottom. [signature]
19 Nov. '68	Core Camera 90	2136 2215	2336 HIT	2668 2674	2690 hit				usables: 11 widely scattered large manganese nodules Orientation: South [signature]
20 Nov 68	Surface Millipore Sample #227	2045		2666				252	High Phytoplankton Conc
20 Nov 68	Vertical Plankton Sample 257	2100	2109	2666				252	

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Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
20	CORE	2117	2302	2529	2582	48°02'	142°28.5'	252	PENETRATION: 360± 10 cm TOTAL LENGTH: 4 cm TRUE LENGTH: 4 cm
NOV.	222	2154	HIT	2566		S	W		FRAGMENT OF A MANGANESE NODULE OR CRUST JAMMED IN
68									THE CUTTING EDGE + PREVENTED SEDIMENT FROM ENTERING PIPE
									GRAYISH BLACK; EXTREMELY HARD; DRUSY, CONVEX UPPER SURFACE.
									CORE HIT ON SLOPE. VERY MOUNTAINOUS TERRAIN, 300 fm RELIEF
20	BOTTOM			2530				252	11 A & 11 B 1/5 l.
NOV	MILLIPORE		HIT						CORE HIT 222 TRIPOT MINSHIN BOTTLE.
68	FILTERS								
	11								JK.
	Bottom	2056	2322	2528	2582				large manganese nodules densely packed
	Camera	2200	5 hits	2572					together.
	176								8 usables
	Current								direction: generally north; one set however, read
	Meter								a bit south of west
	134								velocity: 4.1 cm./sec ± 5.3
									13 usables
	Nephelometer	2004	2335						A medium nepheloid layer at the bottom
	172	2200							260 fathoms thick
	Core	2117	2302	2529	2582				Orientation: a bit east of north
	Camera	2154	hit	2566					Bottom not within focus.
	91								37 usables
21	BOTTOM	2202	0103					253	12 A & 12 B 1 Liter OF SAMPLE.
NOV	MILLIPORE	2324	HIT						CORE HIT 223
68	FILTERS								JK.
	12								

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21 Nov 68	CORE 223	2219 2255	2356 HIT	2435 2442	~2435	49°47.7 S	138°09.5 W	253	PENETRATION: >510 cm. TOTAL LENGTH: 630 cm. TRUE LENGTH: 630 cm. CLAY, PREDOMINANTLY MODERATE YELLOWISH BROWN TO DARK YELLOWISH BROWN INTERBEDDED WITH FORAMINIFERAL CLAY + MARLY CLAY, PALE ORANGE, VERY PALE ORANGE + WHITE (0-463 cm); CLAY, PALE ORANGE TO MODERATE YELLOWISH BROWN. FORAMS + RADIOLARIA PREDOMINATE. MOUNTAINOUS, UP TO 200 fm
21 Nov 68	Surface Millipore Sample # 228	2140		2435		↓	↓	253	High phytoplankton - high concentration
21 Nov 68	Vertical Plankton Sample # 358	2205	2213	2435		↓	↓	253	Amphipods, fish larvae, etc.
↓	Bottom Camera 177	2202 2324	0103 hit	2435 2440	2445	↓	↓	253	Soft packed sediment; tracks of crustaceans are visible. 25 usables [signature]
↓	Current meter 135	↓	↓	↓	↓	↓	↓	↓	direction: west by north velocity: 3.5 to 4.2 cm/sec usables 22 [signature]
↓	Nephelometer 173	2049 2324	0125	↓	↓	↓	↓	↓	weak or no nepheloid layer at the bottom 130 fms thick. [signature]
↓	Core Camera 92A	2219 2255	2356 HIT	2435 2442	2435	↓	↓	↓	Bottom not in focus and compass arm broke. [signature]

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Date	STATION and N°	TIME		SOUNDING		POSITION		LOG	REMARKS
		Start	End	Start	End	Lat.	Long.		
22-23	CORE	2218	0007	~2550	~2460	51°12.5'S	133°40.5'W	254	PENETRATION: > 870 cm TOTAL LENGTH: 1101 cm TRUE LENGTH: 1101 cm
Nov	224	2257	HIT	~2490					CLAY, PREDOMINATELY MODERATE YELLOWISH BROWN TO DARK YELLOWISH
68									BROWN, INTERBEDDED WITH FORAMINIFERAL MARL + MARLY CLAY, VERY PALE
									ORANGE TO PALE YELLOWISH BROWN (0-330cm); CLAY, MODERATE YELLOWISH
									BROWN TO DARK YELLOWISH BROWN, MODERATELY COMPACTED, WELL BURROWED. VERY HILLY, 20 TO 80 fm RELIEF.
22	Surface	2155		~2580		51°12.5S	133°40.5W	254	High phytoplankton conc. in sample
Nov	Millipore								
68	Sample #								
	229								
22	Vertical	2306	2316	2490		51°12.5S	133°40.5W	254	
Nov	Plankton								
68	Sample #								
	359								
22	BCMC	2230	2459	2539		51°12.5S	133°40.5W	254	# 196 3#
NOV	SAMPLER								
'68	# 196								
24	CORE	2200	2308	1550	1558	53°39.5'S	123°08'W	255	PENETRATION: 540±20 cm TOTAL LENGTH: 635 cm TRUE LENGTH: 360? cm
Nov	225	2223	HIT	1598					FORAMINIFERAL OOZE, BETWEEN PALE ORANGE + VERY PALE ORANGE
68									(0-50cm); FORAMINIFERAL MARL OOZE, RANGING BETWEEN SHADES OF
									VERY PALE ORANGE + PINKISH WHITE, NEAR BASE OF LAYER BECOMES
									NEARLY WHITE + VERY STICKY (50-360? cm). TRUE CORE POSSIBLY > 360cm. MOUNTAINOUS, UP TO 200 fm RELIEF.
↓	Core Camera	2200	2308	↓	↓	53°39.5	123°08'	255	Pipe was bent, bottom not within focus
	93	2223	HIT			S	W.		and no consistent orientation
									[signature]
23	Core Camera	2218	0007	2560	2460	51°12.5	133°40.5'	254	Bottom: not within focus
Nov.	92	2257	HIT	2490		S	W		Orientation: [illegible]
									Needles: 13 [signature]

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Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG 12 From Suva To Mandal Plate

TIME ZONE _____

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
24 Nov 68	Bottom Camera 178	2128	~~2338~~ 3 hits	1540	1577	53°39.5' S	123°08' W	255	sediments well-packed bottom 7 useables
	Current Meter 136								Direction: South by east Deflection: 2 mm to 2.5 Velocity: 5.3 cm/sec to 6.1 Number: 5
	Nephelometer 174	2029 2235	2155						No nepheloid layer.
24 Nov 68	Surface Millipore Sample # 230	2105		1550		53°39.5'S	123°08'W	255	High conc. of Phytoplankton in sample
24 Nov 68	Vertical Plankton Sample # 360	2134	2144	1550		53°39.5'S	123°08'W	255	
24 XNov 68	BOTOM MILLIPORE FILTERS 13	2128 2235	2338 HIT					255	13A & 13B 1/2 l.t.u. CORE HIT 225
25 Nov 68	BOTTOM MILLIPORE FILTERS 14	2109	 HIT					256	14A & 14B. 1/2 l.t.u. CORE HIT 226. ACCORDING TO CAMERAMAN STATEMENT STILL THERE WAS MADE A REGULAR HIT AND SO HEAVY ONE THAT THE SPIGOT WAS ~~TEARED~~ LOUD OFF

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Research Vessel ROBERT D. CONRAD

CRUISE N° ______

CRUISE LEG—From ______ To ______

TIME ZONE ______

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
25	CORE	2135	2247	1540	1540	54°29'S	117°43.5W	256	PENETRATION: ? cm TOTAL LENGTH: 31cm, TRUE LENGTH: 31cm
NOV	226	2159	HIT	1533					CORING DEVICE FELL OVER AFTER HIT + WAS DRAGGED OVER
68									THE BOTTOM AS THE CORE WIRE WAS REELED IN. ONE FIN WAS
									BENT IN THE PROCESS. FORAMINIFERAL OOZE, PALE YELLOWISH BROWN +
									CREST OF ANTARTIC-PACIFIC RIDGE, HILLY, 10-100 fm RELIEF. BETWEEN PALE ORANGE + PALE RED (0-25cm); TACHYLYTE GRANULES, BLACK
25	Surface	2058		1540		54°29'S	117°43.5W	256	High phytoplankton sample core.
Nov	Millipore								
68	# 231								
25	SONOBUOY	0945	1041	1784		54°04S	120°42W		RC. CH. 1 SBCH. 11 SPD 5— SB PHONE 60 FT.
NOV.	138								PROF. 1526 J.K.
25	Vertical	2127	2136	1540		54°29'S	117°43.5W	256	Heavy sample (possibly due to upwelling of Sub-
Nov	Plankton								Antarctic Convergence zone)
68	Sample #								
	361								
	Bottom	2104	—	1540	1532				Counter for reading amount of wire out
	Camera	NO HIT		—					broke. It was difficult to take hit
	179A								with heavy rolls and counter broken.
	Current								Same as above
	Meter								
	374								
	Nephelometer	2017	2321						a weak nephaloid layer 260 fms.
	175	—							thick at bottom of near bottom
	Core	2135	2247	1540	1540				Coring device fell over.
	Deflection	2159	HIT	1533					Deflection (if any good due to [illegible]
	94								[illegible]) was [illegible]
									[illegible]

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Research Vessel ROBERT D. CONRAD
CRUISE N° 12/12
CRUISE LEG—From SILVA To MAR DEL PLATA

TIME ZONE ______

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
26 Nov. 68	BOTTOM MILLIPORE FILTER 15	2158 2229	2329 HIT					257	15A & 15B 3/4 liter. CORE HIT 227 JK.
26 Nov. 68	CORE 227	2158 2229	2329 HIT	2050 2044	2053	55°14'S	111°56.2W	257	PENETRATION: 1110±10cm TOTAL LENGTH: 899 cm TRUE LENGTH: >713 cm FORAMINIFERAL MARL OOZE, SHADES OF PALE ORANGE TO MODERATE YELLOWISH BROWN (0-129cm); FORAMINIFERAL MARL + RADIOLARIAN CLAY (129-433cm); CHALK, PINKISH WHITE + WHITE (433-570cm); FORAMINIFERAL MARL + RADIOLARIAN CLAY, PINKISH WHITE TO MODERATE YELLOWISH GRAY (570-713); FORAMINFERAL MARL +/OR FLOW-IN VERY HILLY, 5-70fm RELIEF.
26 Nov 68	Surface Millipore Sample # 232	2115		2050		55°13.9S	111°56.2W	257	
26 Nov 68	Vertical Plankton Sample # 362	2144	2153	2050		55°13.9'S ↓	111°56.2W ↓	257 ↓	
26 Nov. '68	Core Camera 95	2158 2229	2329 Hit	2050 2044	2053	↓	↓	↓	Compass buried in mud and bottom not infocus. ∴ no usables [illegible]
↓	Bottom Camera 179	2133 2230	2351 4hits	2018 2057	2053	↓	↓	↓	Very soft muddy bottom; some burrows; 0 usable [illegible]
↓	Current Meter 137	↓	↓	↓	↓	↓	↓	↓	direction: west to west of north deflection + velocity: .5mm! ?? or approx 2cm. per. usables: 9 [illegible]
↓	Nephelometer 176	2026 2230	2005 —	↓	↓	↓	↓	↓	to nephaloid layer [illegible]

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Research Vessel ROBERT D. CONRAD
CRUISE N° _____
CRUISE LEG—From _____ To _____

TIME ZONE _____

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
26	T-GRAD	2158	2329	2050	2053	55°14'S	111°56.2W	257	P_2 OUT P_1 P_3 GOOD 3 CONDUCTIVITY
NOV.	113	2229	HIT	2044					MEASUREMENTS ‖ TRIPOD THERMOMETERS
68									11656 t 2.13 T 1.36
									7971 t 2.14 T 1.36
									3325 t 2.16 T 1.39
27	CORE	2140	2326	2340	2290	55°27'S	106°09'W	258	PENETRATION: ~0 cm TOTAL LENGTH: 0 cm TRUE LENGTH: 0 cm
NOV	228A	2212	HIT	2312					PIPE EMPTY; CUTTING EDGE VERY BADLY BENT; TWO BOTTOM
68									PIPES [of a TOTAL of THREE] WERE SLIGHTLY BENT, APPARENTLY
									ON IMPACT. ALSO NO TRIGGER WEIGHT CORE. HIT WAS POOR BUT
							106°09'W		VERY HILLY, 5 TO 150 fm RELIEF. DEFINITE, YET AS MORE WIRE WAS LET OUT SEEMED TO BE A 2ND HIT
27	Surface	2035		2340		55°26.9'S	106°09'W	258	
NOV	Millipore								
68	Sample #								
	233								
27	Vertical	2057	2105	2340		55°26.9'S	106°09'W	258	
NOV	Plankton								
68	Sample #								
	363								
27	BOTTOM							258	16A & 16B 1 liter
NOV	MILLIPORE								CORE HIT 228A
68	FILTER								
	16								JK
26	BC MC							257	#197: 20g
NOV	#197								
68									
27	BCMC							258	#198: 40g
NOV	#198								
68									

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PALISADES

Research Vessel ROBERT D. CONRAD
CRUISE Nº 12
CRUISE LEG 12 From [illegible] To Mar del Plata

TIME ZONE

Date	STATION and Nº	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
27	Bottom	2046	2302	2280	2350	58°27'	106° 09'	258	a hard well packed mud. Ripple marks
Nov.	Camera	2142	Ship	2335		S	W.		forming the general pattern of the arc of a
1968	180								circle pointing towards the west.
									8 usables
	Current								direction: North
	Meter								deflection: 2mm.
	138								velocity: 5.3 cm/sec.
									usables: 6
	Nephelometer	1942	2318						an apparently weak nepheloid layer
	177	2142							approximately 130 fms. thick.
	Core	2140	2326	2340	2290				Compass broke and bottom was not
	Camera	2212	HIT	2312					within focus. No trouble with camera
	96								
28	CORE	2207	2343	2368	2341	55°34.5S	100° 18'W	259	PENETRATION: 720±15 cm TOTAL LENGTH: 1109 cm TRUE LENGTH: 708 cm
NOV	228	2239	HIT	2366					FORAMINIFERAL MARL TO CLAY, PREDOMINANTLY PALE YELLOWISH BROWN TO
68									DARK YELLOWISH BROWN (0-37cm); ALTERED ASH(?), GRAYISH ORANGE WITH
									GRAYISH BLACK Mn, EXTREMELY HARD (37-42); CLAY, DARK YELLOWISH BROWN to MODERATE (42-156)→
									YELLOWISH BROWN; CHALK, VERY PALE ORANGE (156-327cm), MARL, SHADES YELL. BR. (327-708cm) COCCOLITH + DISCOASTERS (MIOCENE-PLIOCENE) BELOW 156cm. HILLY, 5-50 fm.
28	Surface	2120		2368		55°34.5S	100°18'W	259	
Nov	Millipore								
68	Sample #								
	234								
28	Vertical	2152	2200	2368		55°34.5S	100°18'W	259	
Nov	Plankton								
68	Sample #								
	364								

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Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG 12 From Peru To Mar del Plata

TIME ZONE ______

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
28	Bottom	2146	0002	2385	2358	55° 34.5	100° 18'	259	Apparently a hard well packed muddy bottom
Nov.	Camera	2142	5hit	2365		S	W		with a few nodules or small rocks scattered
1968	181								randomly and very widely. No ripples.
									Bussible
									[signature]
	Current Meter								direction: North
									deflection: from 5mm. to 7mm
	139								velocity: from 9.6cm./sec to 11.6cm./sec
									usables: 20
									[signature]
	Nephelometer	2113	0018						a medium nephaloid layer at the bottom
	178	2142							approximately 130 fathoms thick
									[signature]
	No Pre-Camera station because compass arm was not possible to be made quickly enough								
	for ship station 259								[signature]
28	BOTTOM	2146	0002					259	17 A & B 1 LITER
NOV	MILLIPORE	2142?	HIT						CORE HIT 228
68	FILTER								
	18								JK
29	CORE	2137	2340	2817	2819	55°20.7S	94°25'W	260	PENETRATION: >1100 cm TOTAL LENGTH: 792cm TRUE LENGTH: 792cm
Nov	229	2214	HIT	2816					RADIOLARIAN CLAY, BETWEEN DARK YELLOWISH BROWN + VERY DARK YELLOWISH
68									BROWN IN TOP 150cm, PALE TO DARK YELLOWISH BROWN BETWEEN 290 + 415cm, +
									OTHERWISE DARK YELLOWISH BROWN. POORLY COMPACTED; BURROWED; CARBONATE
29	T-GRAD	2137	2340	2817	2819	55°20.7	94°25W	260	CONTENT NIL; COARSE FRACTION 10 TO 20%. GENTLY UNDULATING SLOPE.
NOV	114	2214	HIT	2816		S			P2 OUT AGAIN P1 + P3 GOOD
1968									3 CONDUCTIVITY MEASUREMENTS
									TRIPOD THERMOMETERS FAILED TO TRIP

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Research Vessel ROBERT D. CONRAD
CRUISE N° ______
CRUISE LEG—From ______________ To ______________

Columbia University in the City of New York
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PALISADES

TIME ZONE ______

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
29 Nov 68	Surface Millipore #235	2050		2817		55°20.7S	94°25W	260	
29 Nov 68	Vertical Plankton Sample # 365	2123	2130	2817		55°20.7S	94°25'W	260	
	Bottom Camera 182	2114	2347	2820	2819				very soft bottom mud with tracks and burrows. Very smooth surface 8 usable
									[illegible signature]
		2212	Shut	2816					
	Current meter 140								direction : northeast
									deflection : .5 to 2.7 mm
									velocity : 2.5 to 6.4 cm. sec
									usable : 16 [illegible signature]
	Nephelometer 179	2025	0006 or						No nepheloid layer
		2212	0106 for Zone +5						[illegible signature]
	Core Camera 97	2137	2340	2811	2819				Compass was buried in mud, but pictures show evidence of very muddy bottom. A few usable with respect to mud description
		2214	hit	2816					[illegible signature]
30 Nov. 68	CORE 230	2140	2325	~2500	2516	55°03.5S	88°56.5'W	261	PENETRATION: ~~55 65~~ 1150±10 cm TOTAL LENGTH: 1080 cm TRUE LENGTH: 1072? cm
		2212	HIT	2504					RADIOLARIAN CLAY + CLAY, RANGING BETWEEN DARK YELLOWISH BROWN + VERY DARK YELLOWISH BROWN WITH BURROW-FILLINGS OF GRAYISH YELLOW. POORLY TO MODERATE COMPACTION. COARSE FRACTION <5 TO 6%. MOUNTAINOUS BUT MODERATE SLOPES; 200 fm RELIEF

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PALISADES

Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG—From SUVA To MAR DEL PLATA

TIME ZONE

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
30	BOTTOM	2114	2324	2520				261	19A & 19B 1 LITER. (FILTERS 18A & 18B NO SAMPLE RECEIVED)
NOV	MILLIPORE	2204	HIT						CORE HIT 230
68	FILTERS								
	19								
									D.K.
30	T-GRAD	2140	2327	2534	2516	55°03.3'S	88°56.5'W	261	P1+P3 GOOD 4 CONDUCTIVITY MEASUREMENTS
NOV	115	2212	HIT	2500		$			TRIPOD THERMOMETERS
1968									11656 ± 2.42 T 1.04
									7971 ± 2.42 T 1.04
									3325 ± 2.42 T 1.05
	Bottom	2114	2324	2520	2516	55°03'S	88°56.5W		very smooth muddy bottom
	Camera	2204	Shot	2507					5 usable
	183								
	Current Meter								direction: Southeast
	141								deflection: 1.5 to 2.5 mm
									velocity: 4.6 to 6.1 cm/sec.
									usable: 7
	Nephelometer	2038	2339						A weak to medium nepheloid layer of the
	180	2204							bottom approx. 130 fms. thick
	Core	2140	2324	2500	2516				bottom not in focus.
	Camera	2212	HIT	2500					compass wt buried in mud
	98								
30	Surface	2045		2530		55°03'S	88°56.5W	261	
NOV	Millipore								
68	Sample #								
	236								

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PALISADES

Research Vessel ROBERT D. CONRAD
CRUISE N° _____
CRUISE LEG—From _____ To _____

TIME ZONE _____

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
30	Vertical	2111	2119	2530		55°03'$	88°56.5'W	261	
Nov	Plankton								
68	Sample#								
	366								
1	CORE	2141	2357	2762	2722	55°32'$	82°56.7'W	262	PENETRATION: 1190±5 cm TOTAL LENGTH: 983 cm TRUE LENGTH: 979 cm
DEC	231	2227	HIT	~2850					CLAY, GRADING WITH DEPTH FROM BETWEEN DARK YELLOWISH BROWN + VERY
68	"								DARK YELLOWISH BROWN TO BETWEEN DARK YELLOWISH BROWN + MODERATE YEL-
									LOWISH BROWN (0-688 cm); RADIOLARIAN CLAY, PALE ~~DARK~~ MODERATE TO YELLOWISH
									BROWN (688-979 cm). DIATOMS COMMON IN LOWER HALF of CORE HILLY, 5-80 fm.
1	TGRAD	2141	2357	2762	2722	55°32'$	82°56.7'W	262	P2 OUT AGAIN BUT THE TROUBLE HAS FINALLY MANIFESTED
DEC	116	2227	HIT	~2850					ITSELF— A PASS THRU WHICH WAS FAILING AT DEPTH FINALLY
68									FAILED AT THE SURFACE — THERMOMETERS 11656 t 2.13 T 1.15
									4 CONDUCTIVITY MEASUREMENTS — 7971 t 2.15 T 1.12
									3325 t 2.20 T 1.06
1	Surface	2045		2762		55°32'$	82°56.7'W	262	
Dec	Millipore								
68	Sample #								
	237								
1	Vertical	2126	2133	2762		55°32'$	82°56.7'W	262	
Dec	Plankton								
68	Sample #								
	367								
1	BOTTOM	2114	2339	2762				262	20A & 20F 1¼ liter.
DEC	MILLIPORE	2227	HIT						CORE HIT 231
68	FILTER								
	20								
28	BCMC							259	#199: ½ #
Nov	#199								
68									

J.F

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PALISADES

Research Vessel ROBERT D. CONRAD

CRUISE N° ______

CRUISE LEG—From ______________ To ______________

TIME ZONE ______

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
1st Dec 1968	Bottom Camera 184	2114 / 2211	2339 / 5hits	2710 / 2800	2722	55°32' S	82 56.7 W	262	very smooth muddy bottom with ripple marks having an approximate bearing of 45°. Bals[illegible]
	Current Meter 142								direction: West; deflection: 2 to 8.5 mm.; velocity: 5.3 to 8.9 cm/sec.; [illegible]: 23
	Nephelometer 181	2045 / 2211	2352						A medium nepheloid layer at the bottom approximately 260± fms. thick.
	Core Camera 99	2141 / 2227	2357 / HIT	2762 / 2850	2722				very muddy smooth bottom. Compass was buried again. ∴ no orientation possible.
2 DEC 68	CORE 232	2053 / 2139	2246 / HIT	2302 / 2300	2311	56°00'S	77°17'W	263	PENETRATION: 903±5 cm. TOTAL LENGTH: 130 cm. TRUE LENGTH: 130 cm. GRAVITY CORE, APPEARS THAT CORE TRIPPED BEFORE BOTTOM. FORAMINIFERAL CLAY, SHADES of DARK TO PALE YELLOWISH BROWN, GRADING TO CLAY PREDOMINANTLY SHADES of LIGHT OLIVE GRAY, BELOW ABOUT 15 cm. RADIOLARIA PREDOMINATE EXCEPT AT TOP of CORE. VERY HILLY, USUALLY 10 TO 60 fm, RARELY UP TO 300 fm RELIEF.
2 Dec 68	Vertical Plankton Sample # 368	2148	2156	2300		56°00'S	77°17'W	263	
2 Dec 68	Surface Millipore Sample # 238	2055		2300		56°00'S	77°17'W	263	

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Research Vessel ROBERT D. CONRAD
CRUISE N° _____
CRUISE LEG—From _____ To _____
TIME ZONE _____

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
Dec.	Bottom	2052	2250	2300	2311	56° 00'	77° 17'	263	Muddy smooth bottom with a few sharp
2nd	Camera	2137	Shot	2300		S	W		rocks here and there.
1968	185								23 knots
	Current Meter								direction: Southwest to North
									deflection: .5 mm. @ 2.0
	193								velocity: 2.5 to 6.3 cm/sec.
									knots: 15
	Nephelometer	2013	2302						A very strong nepheloid layer 260 fms.
	182	2137							thick.
	Core	2053	2246	2302	2311				Core pipe bent and trigger wire connected to
	Camera	2139	HIT	2300					inlet spring broke. Hence no appearance.
	60A								
2	T-GRAD	2053	2246	2302	2311	56°00'	77°17'	263	P3 + P4 ONLY PROBES IN SEDIMENT - BOTH GOOD
DEC	117	2139	HIT	2300		S	W		2 CONDUCTIVITY MEASUREMENTS
1968									
4	CORE	1505	1554	993	1060	56°50'S	66°56'W	264	PENETRATION: ~325 cm TOTAL LENGTH: 687 cm TRUE LENGTH: 209 cm
DEC	233	1522	HIT	1010					VERY SANDY CLAY, SHADES OF GREENISH GRAY + OLIVE GRAY, COARSE
68									FRACTION REPRESENTS 40 TO 70% (0-59 cm); SANDY CLAY, PREDOMINANTLY
									BETWEEN MEDIUM GRAY + MEDIUM BLUISH GRAY, COARSE FRACTION GENERALLY
									VERY HILLY, UP TO 400 cm RELIEF. CONTINENTAL SLOPE.
									<10% (59-208 cm). FINE QUARTZ SAND PREDOMINATES; FORAMS ABUNDANT IN TOP 12cm.

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Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG 12 — From SUVA To MAR DEL PLATA

TIME ZONE ________

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
3 DEC 68	SONOBUOY 139	0634	0733	2238		56°07S	75°38W		REC. CHL. 1 SONOBUOY CHL. 10 SPD 6KT. PROF. 1572 EEL TRIPPING. USED BIG AIRGUN "B" DELAY, ALSO RECORDED ON PDR SB. PHONE 300FT. F.T. J.K.
3 DEC 68	SONOBUOY 140	1152	1330	2330		56°14S	74°15'W		REC. CHL. 1 SB CHL. 2 SPD 6KT. SB PHONE 300FT. PROF. 1574; EEL TRIPPING; F.T. BIG AIRGUN "B" DELAY, FILTERS "A" 4/25; "B" 40/100; ON PDR 3.5Kc J.K.
3 DEC 68	SONOBUOY 141	2231	2354	2237		56°28S	71°21W		RC CHL. 1. SB CHL. 9 SPD 5 KT. SB PHONE 300F PROF. 1578. EEL TRIPPING. F.T. BIG AIRGUN "B" DELAY, FILTERS: "A" 4/25; "B" 40/100; ON 3.5Kc PDR; No SONOBUOY SIGNAL RECEIVED UNTIL 2233!! J.K.
4 Dec 68	Surface Millipore Sample # 239	1428		993		56°50'S	66°56'W	264	
4 Dec 68	Vertical Plankton Sample # 369	1447	1500	993		56°50'S	66°56'W	264	large sample
4 Dec. 68	Core Amero 100B	1535 / 1522	1554 / 1415	993 / 1010	1060	56°50S	66°56'W	264	Bottom out of focus Oscillation of readable Besides, pipe was bent [signature]

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PALISADES

Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG 12 —From [illegible] To Mar del Plata

TIME ZONE ______

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
4	Bottom	1438	1600	986	640	56°50'	66°56'	264	Ripple marks on soft bottom?? indicative of a very strong
Dec.	Camera	1508	Starts	990		S	W		current. Direction of ripples is southeast. On one frame there
68	186								appears as sloping surface composed of slabs of lava. Other
									frames show smoother lava formations.
									17 usables [signature]
	Current								Direction: South of east
	meter								deflection: 9.5 mm. to 11.3
	144								velocity: 19.7 cm./sec. 25 ?? cm./sec.
									usables: 18
									[signature]
	Nephelometer	1424	1616						Unfortunately nephelometer light source had its light fuse
	183	1508							out 130 fms before trip [illegible] reached bottom. However,
									up to point where there is still light no nepheloid layer
									is visible. Particles are visible [illegible] scattering layers.
									[signature]
5	CORE	0841	0935	1107	1090	55°08.5	63°59.5	265	PENETRATION: 410 ± 10 cm. TOTAL LENGTH: 419 cm TRUE LENGTH: 419? cm
DEC.	234	0902	HIT	1098		S	W.		SANDY FORAMINIFERAL OOZE, LIGHT OLIVE GRAY (0-26 cm) + MEDIUM BLUISH
68									GRAY (59-69 cm); VERY SANDY FORAMINIFERAL CLAY OOZE, OLIVE + BLUISH
									GRAYS (26-59, 69-127 cm); INTERBEDDED VERY SANDY CLAY + SAND, OLIVE GRAYS
									(127-347 cm); VERY SANDY CLAY, LIGHT OLIVE GRAY TO DARK YELLOWISH GRAY. CONTINENTAL SLOPE WITH SUPERIMPOSED HILLS UP TO 70 fm RELIEF.
4	SONOBUOY	1753	1921	2000		56°50S	66°24W		REC. CHL. 1 SB CHL. 3 SPD 5 SB PHONE 60 FT.
DEC	142								PROF. 1584 NOT ON PDR. FT.
68									"B" NOT DELAYED
									J.K.
5	Core Camera	0841	0935	1107	1090	55°08.5	63°59.5	265	Bottom not visible [signature]
Dec.	100C	0902	HIT	1098		S	W		No current orientation visible
68									and no evidence of pictures having
									been taken on bottom. Anyway core
									had tripped over.
5	Nephelometer	0811	0947	1095	1093			265	No nepheloid layer
Dec.	184	0847		1091					[signature]
'68									

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Research Vessel ROBERT D. CONRAD
CRUISE N° ~~12~~ 1
CRUISE LEG ~~1~~ From Dive To Woods Hole

TIME ZONE _____

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
5 Dec. 68	Bottom Camera 187	0823	0937	1095	1091	55°08.5	63° 59.5	265	No soft mud or sediment. Very noticeable ripples running generally north. 19 stables //
	Current Meter 145								direction: Northerly deflection: 3.2 to 10.0 min. velocity: 7.2 to 20+ cm./sec. stable: 16
5 Dec 68	Surface Millipore Sample # 240	0800		1107		55°09'S	63°60'W	265	
5 Dec 68	Vertical Plankton Sample # 370	0833	0841	1107		55°09'S	63°60'W	265	High Plankton Count
6 DEC 68	SONOBUOY 143	2141	2230	439		57°26'S	66°10'W		RC. CHL. #1. SBCHL. #1 SPD 5. SB PHONE CORT PROF 1546 FEL. TRIP. "B" FT. "A" SLOW T. UNTIL 2147 FILTERS "A" 40/100 "B" 4/25 NOT ON PDR. JK.

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Research Vessel ROBERT D. CONRAD
CRUISE N° _____
CRUISE LEG—From _____ To _____

TIME ZONE _____

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
7 Dec 68	Surface Millipore Sample # 241	0010				51°15.3S	55°42.5W		
7 DEC. 68	CORE 235	0944	1021	830	824	50°25.5'S	54°08'W	266	PENETRATION: ~400 cm TOTAL LENGTH: 640 cm TRUE LENGTH: <254 cm (>220) GLAUCONITIC FORAMINIFERAL OOZE, YELLOWISH GRAY & DARK GRAY, EXTREMELY DISTURBED (0-10 cm); GLAUCONITIC SAND, BETWEEN BLACK & OLIVE BLACK ABOVE 135 cm & RANGING BETWEEN OLIVE BLACK & OLIVE GRAY BELOW, FORAMS RARE TO ABSENT EXCEPT BETWEEN 146 & 147 cm. NEARLY FLAT, 50 cm HILLS ~5 MILES OFF
		1001	HIT	830					
7 Dec 68	Surface Millipore Sample # 242	0910		830		50.25.1S	54°09.2W	266	
7 Dec 68	Vertical Plankton Sample # 371	0934	0947	830		50°25.1 S	54°09.2W	266	Good Sample
7 DEC 68	SONOBUOY 144	0830	0902	857		50°28'S	54°03W		REC. CHL. # 1 SB CHL. 4 SPD 5 SB PHONE 60 FT. PROF 1600 FEL TRIP. NOT ON PDR. O.K.
	Core Camera Run	0944	1021	830	824	50°25.1 S	54° 09.2 W.	266	Core Pipe bent. Documentation of fracture of bottom
		1001	HIT	830					
5									

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Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG 12 From Siva To Mar del Plata

TIME ZONE

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
7	Bottom	0924	1030	830	818	58 28	58° 09'	260	Hard sand bottom with slight ripples
Dec.	Camera	0943	Still	830	Still	S	"		Busalle
1968	188								
	Current								Direction: North
	Meter								Deflection: 7.5 to 9.3mm
	146								Velocity: 12.8cm/sec to 18.5
									watts: 9
	Nephelometer	0906	1044						No Nephelometer
	185	0903							
8	SONOBUOY	0011	0112	330		49°03S	56°51W		RC. CHL. 1 SB CHL. 4 SPD 5 SB PHONE 60 FT.
DEC	145								EEL TRIP. FT. PROF. 1604; NOT ON PDR.
68									FILTER: "A" 40/100 "B" 4/25;
									J.K.
8	CORE	1002	1035	760	758	48°12.5S	58°35.5'W	267	PENETRATION: >130 cm. TOTAL LENGTH: 492 cm TRUE LENGTH: >100 cm
DEC	236	1018	HIT	760					VERY SANDY CLAY, OLIVE BROWN GRADING WITH DEPTH TO MODERATE YELLOWISH
68									BROWN, ROCK FRAGMENTS ABUNDANT AT TOP OF CORE (0-72cm); VERY SANDY CLAY,
									DARK BROWNISH GRAY IN TOP 9cm, THEN BETWEEN OLIVE BLACK + GRAYISH
									BLACK + VERY HOMOGENEOUS (72->100cm) BASE of TRUE CORE IS OBSCURE. VERY GENTLY UNDULATING, <5 fm RELIEF
				763		48°12.5S	58°35.5W		
8	Surface	0924						267	
Dec	Mill. Pore								
68	Sample #								
	243								
8	Vertical	0952	0959	763		48°12.5S	58°35.5W	267	Good sample
Dec	Plankton								
68	Sample #								
	372								

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PALISADES

Research Vessel ROBERT D. CONRAD
CRUISE N° _____
CRUISE LEG—From _____ To _____

TIME ZONE _____

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
8 Dec. 1968	Bottom Camera 189	0939 1000	1039 Hit bottom	762 761	761	48° 13' S	58° 36' W	267	Hard sandy bottom full of ripples in northeast direction. / / / Two tails
	Current Meter 147								direction: South by west deflection: 8.9 mm. velocity: 16.7 cm./sec recalls: 6
	Nephelometer 186	0919 1000	1048						a strong nepheloid layer 260 fms. thick at bottom.
	Core Camera 100 E	1002 1018	1035 Hit	760 760	758				No consistent orientation reading at bottom not within focus.
8 Dec 68	CORE 237	1911 1941	2031 HIT	~2000 ~1965	~1925	47° 45.7' S	57° 38.5' W	268	PENETRATION: 430 ± 30 cm TOTAL LENGTH: 452 cm TRUE LENGTH: 452 cm GRAVEL & SAND, TURBIDITES?, BETWEEN DARK YELLOWISH BROWN & BROWNISH GRAY (0-22 cm, 112-138 cm); SANDY CLAY, DARK YELLOWISH GRAY TO MODERATE YELLOWISH BROWN (22-50 cm); CLAY & SANDY CLAY, DARK YELLOWISH GRAY & YELLOWISH GRAY, DIATOMS PREDOMINATE BELOW ~ 200 cm (50-112 cm, 138-452 cm). CONTINENTAL SLOPE
8 Dec 68	Surface Millipore Sample # 244	645		~2000		47° 45.7' S	57° 38.5' W	268	
8 Dec 68	Vertical Plankton Sample # 373	1900	1908	~2000		47° 45.7' S	57° 38.5' W	268	

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PALISADES

Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG 12 From Suva To Mar del Plata
TIME ZONE

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
8 Dec. 1968	Bottom Camera 190	1852 1932	2041 5 hits	2020 1996	1920 5 hits	47°45.7 S	57°38.5 W.	268	Nodules of manganese all over. 3 (?) no apples [signature]
	Current Meter 148	↓	↓	↓	↓	↓	↓	↓	direction: northwest but mostly west by north-west. deflection: 11 mm. + 10 mm. velocity: 25+ cm. /sec. rotations: 28 [signature]
	Nephelometer 187	1838 1932	2054						weak nepheloid layer 130 fms thick at bottom [signature]
	Core Camera 100								Bottom not within focus. Orientation: northeast [signature]
9 Dec 68	Surface Millipore Sample # 245	0850		3045		47°21'S	54°56'W	269	Very high Conc.
9 Dec 68	Vertical Plankton Sample # 374	0941	0952	3045		47°21'S	54°56'W	269	Waters literally saturated!
9 Dec 68	CORE 138	1000 1041	1216 HIT	3045 3045	3047	47°21'S	54°56'W.	269	PENETRATION: ≥ 840 cm. TOTAL LENGTH: 1091 cm TRUE LENGTH: 930? cm SANDY RADIOLARIAN CLAY, FROM DARK YELLOWISH BROWN TO BETWEEN MEDIUM OLIVE GRAY + PALE YELLOWISH BROWN (0-190cm); CLAY, MANY SIMILAR SHADES OF MEDIUM + DARK OLIVE + GREENISH GRAYS, VERY HARD BETWEEN ~~366 + 377~~ 439-443, 450-453, 547-567, 660-744 + 928-930 cm (190-930cm); POSSIBLY FLOW-IN BELOW 878cm. EXTREMELY GENTLE SLOPES.

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PALISADES

Research Vessel ROBERT D. CONRAD
CRUISE Nº 12
CRUISE LEG 12 From [illegible] To [illegible]

TIME ZONE

Date	STATION and Nº	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
8	BOTTOM	1852	2041	2020		48°12.5	58°35.5'	267	21A 21B 3/4 l.
DEC	MILIPORE	1932	HIT.			S	W.		CORE HIT 236
68	FILTER								
	21								
9	Bottom	0931	1300	3048	3050	47°21'	56° 56'	269	Very soft sediment well packed. No ripples
Dec.	Camera	1053	5 hits	3045		S	W.		1 [illegible]
1968	191								
	Current								Direction: Southeast to east of south
	meter								Deflection: 3.50mm. to 10.3mm.
	149								Velocity: 7.5cm./sec. to 25+cm./sec.
									usable: 10
	Nephelometer	0842	1311						Very strong nephaloid layer at bottom approx.
	188	1053							520 fms. thick.
	Core	1000	1216	3045	3047				Bottom not within focus.
	Camera	1041	HIT	3045					Orientation: east of north.
	101		#						It must be kept in mind that core pipe
									was slightly bent.
									10 usable
11	CORE	0928	1143	3072	3073	44°43'	51° 12'	270	PENETRATION: 1313cm. To BASE of CORE HEAD. TOTAL LENGTH: 1165 cm
DEC	239	1012	HIT	3071		S	W.		TRUE LENGTH: 1165cm. SANDY RADIOLARIAN CLAY, BETWEEN DARK YELLOWISH BROWN
68									+ OLIVE GRAY ABOVE 9cm + BETWEEN MODERATE YELLOWISH BROWN + MEDIUM OLIVE GRAY BELOW
									(0-34cm); CLAY + SANDY CLAY, PREDOMINANTLY SHADES of OLIVE GRAY BUT CONTAINS VERY
									NEARLY FLAT. ABUNDANT BLACK LAYERS RICH IN HYDROTROILITE IN WHICH PYRITE IS RARE
	Core								Bottom not within focus. No consistent
	Camera								orientation available.
	102A								

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PALISADES

Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG 2 From Azores To Iceland

TIME ZONE _____

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
11	Bottom	0911	1204	3072	3073	44° 43'	5° 12'	270	Sedimentations smooth bottom with very
DEC.	Camera	1026	5 hits	3070		S	W.		slight undulations in a generally east
1968	192								direction or current direction.
									Noticable
	Current								direction : east
	Meter								deflection : 8.7 to 9.8 mm.
	150								velocity : from 16.0 to 24.0 cm. /sec.
									readings : 1 M
	Nephelometer	0833	1215						A medium nepheloid layer at bottom
	189	1026							approx. 460 fms. thick.
11	Surface	0905		3070		44°43'N	51°12'W	270	
Dec	Millipore								
68	~~Sample #~~								
	246								
11	Vertical	0920	0928	3070		44°43N	51°12W	270	Good Sample
Dec	Plankton								
68	~~Sample #~~								
	375								
11	BOTTOM	0911	1204	3072		44°43N	51°12W	270	FILTERS 22A & 22B
DEC	MILLIPORE	1026	HIT						CORE HIT 239
68	SAMPLE								
	22								
11	SONOBUOY	1227	1310	3077		~~44°10N 5°20W~~			~~FAILED~~ OK.
DEC	146					44°21S	55°02W		RC CHL 1. SP CHL. 10; SPD 5; SB PHONE CO. FT
68									PROF 1624 NOT ON PDR.

_____
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PALISADES

Research Vessel ROBERT D. CONRAD
CRUISE N° _____
CRUISE LEG—From _____ To _____

TIME ZONE _____

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
11	SONOBUOY	1313	1500	3085		44°40S	55°20W		RC. CHL. 1 SB CHL 3 SPD 5 SB PHONE 60FT
DEC	147								PROF 1624 NOT ON PDR.
68									
									JK.
12	SONOBUOY	1551	1718	2843		44°18S	55°33W		RC CHL 1 SB CHL 11 SPD 6 SB PHONE 60FT
DEC	148								PROF 1633. NOT ON PDR
68									25 KNOT W WIND — CHOP
									JK.
12-13	CORE	2334	0137	2607	2623	43°55'S	56°44'W	271	PENETRATION: 679cm TO BASE of CORE HEAD. TOTAL LENGTH: 441cm
DEC	240	0028	HIT	2607					TRUE LENGTH: 441cm. SANDY CLAY, DARK YELLOWISH BROWN TO BETWEEN
68									DARK YELLOWISH BROWN + BROWNISH GRAY (0-6cm); CLAY, SHADES BETWEEN
									OLIVE GRAY + DARK GREENISH GRAY CONTAINING ABUNDANT THIN LAYERS OF GENERALLY GENTLY UNDULATING, <10cm RELIEF. PROBABLY SAND + VERY SANDY CLAY, BETWEEN DARK GRAY + DARK OLIVE GRAY, TURBIDITES
12	Surface Millipore Sample # 247	2240		2717		43°55'S	56°44'W	271	
DEC									
68									
12	Vertical Plankton Sample # 376	2325	2333	2607		43°55'S	56°44'W	271	Good Sample
DEC									
68									
	Core Camera 1028	2334 2028	0131 HIT	2607 2607	2623	43°55'S	56°44'W		Bottom not within frame. Sediment lined in funnel
9	BCMC #200							269	#200: 20g
DEC									
68									

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PALISADES

Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG 12 From [illegible] To Mar del Plata

TIME ZONE

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
12	Bottom	2315	0125	2601	2623	43°55'	56°44'	271	muddy bottom
Dec	Camera	0011	4 [illegible]	2608		S	W		4 [illegible]
1968	193								
	Current								Direction: South and South of east
	Meter								Deflection: 1.8 and 3.0 mm.
	151								Velocity: 5.0 cm/sec. & 6.9 cm/sec.
									Bottles: 9
	[illegible]	2200	0134						[illegible] approx. 130
	190	0011							fms. thick at bottom
13	CORE	1328	1446	~1800	2044	43°28.8'S	57°39.5'W	272	PENETRATION: ≥550 cm TOTAL LENGTH: 595cm TRUE LENGTH: 536cm
DEC	241	1359	HIT	1883					SANDY FORAMINIFERAL CLAY, PALE TO MODERATE YELLOWISH BROWN AT TOP
68									BUT OTHERWISE BETWEEN LIGHT OLIVE GRAY + MEDIUM LIGHT GRAY (0-133cm);
									SANDY CLAY, SHADES OF OLIVE GRAY, CONTAINS SANDY LAMINATIONS (190-192, 206-208cm) (~~139-146~~)
									(133-516cm); SANDY CLAY CONTAINING ABUNDANT ROCK FRAGMENTS, BETWEEN
13	Surface	1300		2608		43°28'S	57°39.5'W	272	DARK GRAY + DARK OLIVE GRAY (516-536cm) A ROCK FRAGMENT 4X4X5cm
Dec	Millipore								WAS WEDGED IN THE CUTTING EDGE. IT IS APPARENTLY SILTSTONE
68	Sample #								+ IS BEING RETURNED TO LAMONT AT THE END OF RC12-12.
	248								
13	Vertical	1320	1328	2608		43°28'S	57°39.5'W	272	Good Sample
Dec	Plankton								
68	Sample #								
	377								
13	CORE	1522	1646	~2070	~1800	43°28'S	57°39.5'W	272	PENETRATION: ≥120 cm. CORE COULD NOT BE EXTRUDED.
DEC	242	1552	HIT	1957					SEDIMENT IN CUTTING EDGE IS EXTREMELY HARD GREENISH
68									GRAY CLAY. THIS CORE + CORE 241 WERE TAKEN FROM THE
									SIDES OF A 1000 fm DEEP VALLEY.

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Research Vessel ROBERT D. CONRAD
CRUISE Nº 12
CRUISE LEG 12 From Ava To Mar del Plata

TIME ZONE

Date	STATION and Nº	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
13 Dec 1968	Bottom Camera 194	1305 1352	1452 54 HITS	1780 1860	2070	43° 28' S	57° 34.5' W	272	very firmly packed bottom and muddy 1/2 nodules
↓	Current Meter 152	↓	↓	↓	↓	↓	↓	↓	direction: Northeast; deflection: 2 to 3.9 mm; Velocity: 5.3 to 8.1 cm/sec; nodules: 15
↓	Nephelometer 191	1253 1352	1505	↓	↓	↓	↓	↓	medium nepheloid layer 130 fms off bottom approx. 1390 fms thick
13 DEC 68	BOTTOM MILLIPORE SAMPLE 23	1305 1352	1452	1780				272	FILTERS 23A & 23B CORE HIT 241
15 Dec 68	Surface Millipore Sample # 249	0003		2500		40°51'S	54°29'W	273	
15 Dec 68	Vertical Plankton Sample # 378	0025	0033	2500		40°51'S	54°29'W	273	good sample
15 DEC 68	CORE 243	0040 0120	0227 HIT	2500 2503	2506	40°51'S	54°29'W	273	PENETRATION: 679 cm TO BASE of CORE HEAD. TOTAL LENGTH: 564 cm TRUE LENGTH: 564 cm SANDY CLAY GRADING WITH DEPTH TO CLAY (BELOW ~250 cm), SHADES OF YELLOWISH BROWN IN TOP 9 cm, OTHERWISE SHADES OF OLIVE GRAY. CONTAINS THIN SANDY LAYERS BETWEEN: 115+117, 185-190, 196-202, 426-428 + 468-470 cm. CONTAINS PYRITE + HYDROTROILITE IN LOWER 2/3 of CORE. VERY GENTLE SLOPE.

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Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG 12 From Sirva To Mar del Plata

TIME ZONE _____

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
15	Bottom	0014	0234	2498	2506	40°51'	54°29'	273	very soft smooth mud bottom
Dec.	Camera	0112	4 hits	2500		S	W		Excellent
1968	195								
	Current Meter								direction : West
									deflection : 5 to 5.6 mm.
	153								velocity : 9.5 to 10.3 cm. per sec.
									4 readings
	Nephelometer	0356	—						strong nepheloid layer at bottom 260 fms.
	192	0112							thick
	Core	0040	0227	2500	2506				Compass buried in mud
	Camera	0120	Hit	2503					bottom not within focus
	102C								
15	BOTTOM	0014	0234					273	24A & 24B FILTERS 1 Liter
DEC	MILLIPORE	0112	HIT						CORE HIT 243
68	FILTERS								
	24								
15	CORE	1642	1650	97	100	~~40°51'S~~	~~54°29'W~~	274	PENETRATION: ? cm. TOTAL LENGTH: 114 cm TRUE LENGTH: 114 cm
DEC	244	1644	HIT	98		39°25.6'S	55°50.7'W		SAND, DARK GRAY WITH VERY SLIGHT OLIVE GRAY TINT,
68									HIGHLY DISTURBED, TOP BY SOUPY CONSISTENCY & BOTTOM BY
									COMPRESSION PRODUCED BY DIFFICULT EXTRUSION, BUT APPEARS HOMO-
									GENEOUS; CONSISTS ALMOST EXCLUSIVELY of VERY WELL SORTED FINE SAND. EXTREMELY GENTLE SLOPE.
15	SONOBUOY	1123	1227	725		39°56S	55°21 W		RC. CHL. 1 SB CHL. 2 SPD 5 SB PHONE 60 FT.
DEC	149								PROF. 1650 F.T. FILTERS 40/100 N 5/25 N
68									ROUGH SEA WIND 20 K

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PALISADES

Research Vessel ROBERT D. CONRAD
CRUISE N° _____
CRUISE LEG—From _____ To _____

TIME ZONE _____

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
15 DEC. 68	CORE 245A	1952 1954	2000 HIT	46 46	46	39°04.7'S	56°08.3'W	275	PENETRATION: ? cm TOTAL LENGTH: 0cm. A COUPLE OF SHELL FRAGMENTS & PIECES OF CLAY WHICH LODGED BEHIND THE CORE CATCHER WERE PLACED IN A SMALL VIAL & ENCLOSED WITH THE BOTTOM SAMPLES FROM THIS LEG (RC12-12). ALSO NO TRIGGER WEIGHT CORE WAS TAKEN; BOTTOM NEARLY FLAT.

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PALISADES

Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG 13 From MAR-DEL PLATA To BUENOS AIRES

TIME ZONE +3

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
20	SONOBUOY	2023	2143	16					FEL TRIP. RC 1 SB CHL. 1 SPD 4.5 SB PHONE 60 FT
DEC	150	~~2116 0113~~							PROF 1652 FT. NO PDR J.K
21	SONOBUOY	0123	0305	46					RC 1; SB CHL. 4; SPD 5.0 SB PHONE 60 FT
DEC	151								PROF 1654 FT. NO PDR. J.K.
21	SONOBUOY	~~[illegible]~~ 0309	0528	46					RC. 1. SB CHL. 12; SPD 5. SB PHONE 60 FT
DEC	152								PROF. 1655 & 1656 SECOND PART OF SB 152 "3" DELAY J.K.
21	SONOBUOY	0538	0707	45					RC 1 SBCHL. 11; SPD. 5.5; SB PHONE 60 FT. PROF 1657
DEC	153								AIR GUN SLOW DOWN; SB DEAD AT 0707 J.K.
21	SONOBUOY	0735	0758	45					RC 1 SBCHL. 10; SPD. 5.4; SB PHONE 60 FT, PROF 1658
DEC	154 A								FAILED (AIR GUN OFF) J.K.
21	SONOBUOY	1005	1147	47					FEL TRIP RC. 1 SB CHL. 12 SPD 5
DEC	154	1150	1218						SB PHONE 60 FT. PROF 1659 & 1660
68									FILTERS. "A" 70/120 N "B" 5/25 N FROM 1150 - 1154
									SLOW TRAVERSE. J.K.
21	Core No.	0920	0923	44	44	37°16.8S	55°16'W	276A	Penetration: ? cm LENGTH CORE 0 cm
Dec	245B	0922	HIT						TRUE CORE 0 cm
68									A few shell fragments and some sand grains left
									Core was washed out of pipe before surfacing.
21	Surface Millipore Sample # 250	0840	44			37°16.8S	55°16'W	276A	
Dec									
68									
21	CORE	0920	0923	44	44	37°16.8S	55° 16'W	276[illegible]	Bottom not within focus [illegible]
DEC	CAMERA	0922	HIT						[illegible] orientation
68	102 A								[signature]
21	Core #	1253	1256	52	53	37°10.2S	54°56'W	276	Penetration ? Total length 156 cm + wash out
Dec	245	1255	Hit	52					(aprox 1/3 gal) TRUE core probably 156 cm & wash out as
68									shell frags. in core catcher when surfaced.
									Sand - Olive gray (5Y 3/2) - highly disturbed - Coarse fract 90-95%

[signature]
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PALISADES

Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG 13 From MAR DEL PLATA To BUENOS AIRES.

TIME ZONE +3

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
21	Surface	1245	1313	50		~~37°16.8~~	~~58°16'W~~	276	
Dec	plankton					$			
68	Sample #					37°10.28	54°56.2W		
	379								
21	SONOBUOY	1326	1440	56					RC1 SB 11; SPD 5.2 SB PHONE 60 FT.
DEC	155	1442	1521						PROF 1660 & 1661.
68									(PROF 1661 "B" 4 SEC DELAY.)
									J.K.
21	SONOBUOY	1525	1706	76					RC1 SB CHL. 9 SPD 5.0 SB PHONE 60 FT.
DEC	156	1707	1745						PROF. 1662 & 1663
68									
									J.K.
22	Core #	0827	0950	1858	1832	~~[illegible]~~	~~[illegible]~~	277	Penetration 656 cm Length Total 289 cm True 289 cm
Dec	246	0858	Hit	1846		S	W.		(Sandy) Clay (5Y 3/2) to olive gray to grayish olive (10Y 4/2)
68		↓	↓	↓	↓	38°54's	53°,59.1W		to olive gray (5Y 4/1). Hydrotroilite. Coarse fraction 5-7 or 8%
									mostly clear quartz grains, sponge spicules, forams, Radiolarians Mica
									Common. Soupy near top; Mod. compressed near Bottom
22	Core Camera	0827		1846				277	Bottom not within focus.
Dec 68	102B								Compass buried in mud
		↓	↓	↓	↓	↓	↓		
22	Core #	1131	1343	1900	1765	~~37°10.2~~	~~54°56.2~~	277	Penetration 1175 ±10 cm Length-total 936 cm true 936 cm
Dec	247	1253	HIT	1845		S	W.		(Sandy) Clay olive gray (5Y 3/2), with burrow fillings lighter -
68						38°05.5	53°39.2		grayish olive (10Y 4/2) - 100-320 cm Hydrotroilite below 320 cm
									gets darker to (5Y 3/2) at bottom.) Coarse fraction 5% (7-8% at
↓									to 1/3). Top Sand & Sponge Spicules, Pyrite in bottom ½ Common Rad. Foram. Mica
	Nephelometer	0901	1210	1925	1925				A medium nepheloid layer at bottom approx.
	1193	1055		1925					780 fms. Thick
↓						↓	↓	↓	[signature]

[signature]
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PALISADES

Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG 13 From Mar del Plata To Buenos Aires

TIME ZONE +3

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
22	Bottom	1014	1159	1925	1925	37°10.2	54°56.2	277	Sediment bottom with slight undulations. A few
Dec	Camera	1055	5 hits	1925	↓	S	W.	↓	stone pebbles visible.
1968	196	↓	↓	↓	↓	↓	↓	↓	26 usables
↓									[signature]
	Current								direction: east
	Meter								deflection: 6 to 8 mm.
	154								velocity: 10.7 to 13.90 cm./sec.
↓		↓	↓	↓	↓	↓	↓	↓	usables: 23 [signature]
22	Core #	2153	2350	1300	1580	37°54'S	53°59.1W	278	Penetration 600±cm total length 627 cm
Dec	248	2312	HIT						True length 627 cm (possibly 605 cm)
68									Sandy clay olive gray (5Y 3/2), olive black (5Y 2/1) Streaks &
									Bands - Black (N1) at 33cm and below. Coarse fraction 20%
									(Black bands 25%). Mostly clear quartz (fine), Rock frags common. Rad, Foraminifera Rare
23	Core	2146	2254	580	646			279	Penetration 165 cm total length 7 cm true length ? cm.
Dec	#249	2157	Hit						Core could not be extruded - left in core pipe - from core catcher & Tube
68									Extremely well compacted clay between (5GY 4/1) Dark
									greenish grey & Med dark grey (N4). Coarse fract very low < 2%
									Quartz grains. Bottom TWC ~20-25% coarse - Pellets (clay) & coarse & fine sand - May be old
22	Core Camera	2153	2330	1300	1580	37°54'S	53°59.1W.	278	Bottom not within focus
Dec.	102	2312	HIT						Orientation: west of South (? check)
1968									18 usables
									[signature]
23	Core Camera	2146	2254	580	646	38°24'S	54°33.8W.	279	Bottom not within focus
Dec	103	2157	HIT						Orientation: South
1968									usables: 11
									[signature]
24	Core #	2134	0000	2726	2730	40°09'S	53°08'W	280	Penetration: 1794cm total length 1083 cm true length 1083 cm
Dec	250	2233	Hit	2731					Mottled - Clay between olive gray (5Y 3/2) Shading to Medium
68									dark gray (N4) to dark gray (N3) patches, Hydrotroilite
									Staining Dark gray (N2) especially [illegible] Bottom, Coarse fract ≤5-10% (Quartz Sand Mostly)

[signature]
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Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG 3 From MAR-DEL-PLATA To BUENOS AIRES

TIME ZONE _____

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
22	SONOBUOY	0636	0724	516		38°48	54°44W		RC 1 SBCHL 10 SPD. 4.8 SBPHONE 60FT.
DEC	157A								PROF 1672
68									SONOBUOY TOO NOISY — PROBABLY TANGLED
									HYDROPHONE FAILED
									J.K.
22	SONOBUOY	0734	0913	560					RC1 SBCHL 11 SPD 5 SBPHONE 300 FT.
DEC	157	0916	0941						PROF 1673 & 1674 — "B" 1674 4SEC DELAY
68									
									J.K.
23	SONOBUOY	1657	1812	490					RC1 SBCHL 9 SPD 5 SBPHONE 300 FT.
DEC	158								PROF 1678 PROF "B" 5SEC REVOLUTION
68									"B" DELAY.
									J.K.

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Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG 2 From Mar del Plata To Buenos Aires

TIME ZONE +3

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
23	Camera	2227	2343	600	580	38°24'S	54° 33'W	279	Sediment bottom with sharp ripples in S.E.
Dec.	(Bottom)	2246	3425	593					direction.
1968	197								Cloudless
									Ditto
	Current Meter								Hole too different. Tripod did not have a chance
									to rest quietly long enough on bottom
	155A								
									Ditto
	Temperature	2031	2358						a strong negative layer 130 fm from surface at
	194	2246							bottom
									Ditto
24	T-GRAD	2134	0000	2726	2730	40°02.2	53°07.5	280	P_1 OUT ~~NOT~~ AT HIT P_1+P_2 600D
DEC	118	2233	HIT	2731		S	W		5 CONDUCTIVITY MEASUREMENTS
1968									
24	GRAB	2140	0030	2726	2730	40°02.2	53°07.5	280	FEW SMALL MUD PELLETS — 1 oz.
DEC	SAMPLER	SURF.	2345			S	W		100 LBS USED FOR SUBMERGENCE —
1968	201								(4 weights, 25 lbs each)
									RADIO FAILED
									OVER 2140 SURF. 2345 RECOV. 0030

THERMOMETERS

#	C	F
11656	2.12	0.53
7971	2.12	0.52
3325	2.13	0.55

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Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG 12 From MAR DEL PLATA To BUENOS AIRES

TIME ZONE +3

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
24	SONOBUOY	0554	0758	626					RC1 SBCHL 12 SPD 4.4 SBPHONE 300
DEC	159								PROF 1681
68									
									J.K.
24	SONOBUOY	1400	1512	2311	~~39°28'S~~	~~53°39'~~			RC1 SBCHL 10 SPD 4.5 SBPHONE 60
DEC	160					39°28S	53°39W		PROF 1685
68									
									J.K.
25	SONOBUOY	0056	0100	2720					RC1 SBCHL 9 SPD 5 SBPHONE 60
DEC	161 A								PROF 1688
68									SONOBUOY DEAD — FAILED
									J.K.
25	SONOBUOY	0102	0116	2720					NO GOOD RC1 SBCHL 11 SBPHONE 60
DEC	161 B								PROF 1688
68									
									J.K.
~~25~~									
25	SONOBUOY	0123	0241	2718					RC1 SBCHL 11 SPD 5.0 SBPHONE 300
DEC	162								PROF 1689
68									
									J.K
			0415						
25	SONOBUOY	0410	~~0419~~	2723					RC1 SBCHL 11 SPD 5.0 SB PHONE ~~300~~ 60FT
DEC	162 A								PROF 1691
68									SB NO GOOD — FAILED
									J.K.
			0425						
25	SONOBUOY	0421	~~0427~~	2740					RC1 SBCHL 10 SPD 5.0 SB PHONE 306FT.
DEC	162 B								PROF 1691
68									
									J.K.

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Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG 13 From MAR-DEL-PLATA To BUENOS AIRES

TIME ZONE 43

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
25	SONOBUOY	0434	0552	2734					RCI. SP CHL 9 SPD 5.0 SB PHONE 60 FT.
DEC	162	0552	0634						PROF 1691 & 1692 "B" DELAY.
68									1692 "B" DELAY "A" REGULAR RECORDING.
									2.1K
24	Bottom	2112	0014	2730	2731	40 09.2	53 07.5	280	very smooth sediment bottom, Compass
Dec	Camera	2252	4 HITS	2730		S	W.		1 14 weights
68	148								
	Current								direction: South Since Honolulu Arrow indicator
	Meter								deflection: 6.1 to 6.7 mm NOTE = modified to indicate direction
	155								velocity: 10.9 to 11.6 cm. sec. opposite to
									weights: 17 current
	Nephelometer	2049	0027						very strong nepheloid layer at bottom
	195	2252							approximately 269 fms thick
	Core	2134	0000	2726	2730				Bottom: mud
	Camera	2233	HIT	2731					Compass buried in mud
	104								8 feet
26	TGRAD	1010	1225	2944	2935	41° 12'	51° 03	281	BOTTOM PIPE BROKEN OFF P34P4
DEC	119	1053	HIT	2953		S	W		GOOD BUT LOST WHEN PIPE WAS LOST
1968									3 CONDUCTIVITY MEASUREMENTS
26	GRAB	FOR TIMES		2944	2935	41° 12'	51° 03	281	202 4-25 LB WEIGHTS | 203 4-25 LB WEIGHTS
DEC	SAMPLER	SEE						→	LAUNCH 1022 SURF? REC 1400 | LAUNCH 1028 SURF? REC ~1400
1968	202 & 203								NO MANGANESE SAMPLE IN EITHER ONE
									~40Z TOTAL INTERNAL CASTS OF CORAL – 1 RADIO – FAILED

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Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG 3 From MAR DEL PLATA To BUENOS AIRES

TIME ZONE +3

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
26	Core #	1010	1225	2947	2938	41°12'	51°03'	281	Penetration ~925 cm total core length 608* cm
Dec	251	1055	Hit	2953		S	W.		true core 530 cm (?) May be unsettled/disturbed/good core
68									Top of core - very light ~ 90-100% sand to 20-30% front of core
									color very variable, Olive tones to Pale yellowish Brown, Mostly Unbedded
									* Plus 1½" pipe core length which was lost when pipe broken
	Core Camera 105A								Compass not visible
									Not well formed bottom frames
									[signature]
	Bottom Camera 199	0924 1025	1148 Shot	2940 2947	2947				hard well packed bottom probably not composed of sediment. Mussels
									[signature]
	Current Meter 156								direction: South of west
									deflection: very large (cannot read exact measured).
									velocity: +25 cm. sec. [signature]
	Deep Tow 196	0859 1025	1159						position: 4
									extremely strong reflected layer 650 fms thick at bottom
									[signature]
27	Core #	1336	1542	2900	2897	42°08.5'	48°08.2'	282	Penetration 315 cm Total length cm
Dec	252A	1416	Hit	2900		S	W		true length cm
68									Pipe bent at 315 cm ~45° core a wash out
									Scrapings from core catcher with bottom fragments
	Core Camera 105B								Compass bent — No exposures
									[signature]

[signature]
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Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG 13 From Mar del Plata To Buenos Aires

TIME ZONE +3

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
27	Core #	1718	1933	2895	2892	42°04.8	48°05.8'	282	Penetration 1200 cm total length 1164 cm
Dec	252	1805	HIT	2893		S	W		true length 1164 cm
68									Moderately well compacted (sandy) clay at top, Dark
									yellowish brown (10YR 4/2). Grades to shades of olive
									gray (5Y 4/1) and Dark greenish gray 5GY 4/1. Lutite common to predom-
	Core Camera					42°08.5'	48°08.2'		inantly
	105					S	W		Orientation: North
									~~[illegible]~~ Bottom not in focus
									JMM
	Bottom	1255	1537	2905	2900				hard well-packed sediment with very
	Camera	1408	4 HITS	2900					moderate undulations ripple-like surface
	200								direction is hard to tell. A few rocks are
									visible
									JMM
	Current Meter								direction: West
	157								deflection: 5.3 to 6.5 mm.
									velocity: 11.3 to 9.9 cm./sec.
									nodules: 10
									JMM
	Nephelometer								strong nephelоid layer 650 fms. thick at
	197								bottom. Top of layer is of medium
									intensity with thickness of approx 300
									fathoms
									JMM
28	Core #	1400	1556	2736	2722	44°09.8	46°31.2W	283	Penetration 1506±5 cm total length 1735 cm
Dec	253	1438	Hit	2735					true length ~~[illegible]~~ 1566 cm
68									Clay, Dark yellowish Brown (5YR 5/2) near top grades
2									to olive gray (light & dark) (5Y 4/1). Lutite and some
									glauconite present, Pyrite
27	MILLIPORE	1255	1537	2905		42°04 S	48°05.8 W	282	FILTERS 1A & 1B 3/4 liter. A=TOP FILTER B=BOTTOM FILTER
DEC	BOTTOM	1407	HIT						CORE HIT # 252 A
68	FILTER								J.K.
	1								

[signature]

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Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG 3 From MAR DEL PLATA To BUENOS AIRES.

TIME ZONE +3.

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
27	T-GRAD	1336		2904	2900	42°09.5	48°08.2	282	BOTTOM PIPE BENT - NO CORE!
DEC	120 A	1416	HIT	2900		$	W		
1968									
27	GRABBER	1355	——	2904	2900	42°09.5	48°08.2	282	LOST SAMPLER - DID NOT
DEC	204A								SURFACE?
1968									4 25 LB WEIGHTS USED TO
									SUBMERGE
27	GRABBER	1402	1645	2904	2900	42°09.5	48°08.2	282	NO SAMPLE
DEC	~~205~~					$	W		LAUNCH 1402 SURF? REC 1645
1968	204								4-25 LB WEIGHTS USED TO
									SUBMERGE
									RADIO FAILED
28	TGRAD	1400	1555	2736	2722	44°09.8	46°31.2	283	NO TRACE FOR P_3 — $P_1 P_2 + P_4$ GOOD
DEC	120	1438	HIT	2735		$	W		REF TRACES JUMPY — WEAK BATTERIES
1968									7 CONDUCTIVITY MEASUREMENTS || THERMOMETERS
									11656 ± 1.93 TO 48-
									7971 ± 1.93 TO 46+
									3875 ± 1.94 TO 50
28	GRABBER	FOR	TIMES	2736	2722	44°09.8	46°31.2	283	2.4 LBS OF ORANGE SIZE NODULES
DEC	~~206~~	SEE	——	——	——	$	W	——	LAUNCH 1403 SURF 1610? REC 1640
1968	205								RADIO WORKED USING 1-9 VOLT RCA TRANSISTOR
									BATTERY & ~~2-1½~~ 2-1½V EVEREADY
									ALKALINE ENERGIZERS #E 94 (½ D CELL) || 4-25 LB WEIGHT
28	GRABBER	FOR	TIMES	2736	2722	44°09.8	46°31.2	283	9 LBS OF ORANGE SIZE NODULES
DEC	~~207~~	SEE	——	——	——	$	W	——	LAUNCH 1410 SURF 1610? REC 1650
1968	206								RADIO WORKED WITH SAME BATTERY
									CONFIGURATION AS ABOVE
									4-25 LB WEIGHTS
↓	Core Catcher							283	Bottom not in focus.
↓	106								Orientation N.W.
									nodules: 8

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CRUISE LEG 13 From Mar del Plata To Buenos Aires

TIME ZONE +3

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
28 Dec. 1968	Bottom Camera 201	1320	1525	2730	2732	44°09.8' S	46° 31.2' W.	283	Manganese nodules widely scattered on soft sediment where slight undulations are visible pointing in N.W. direction 15 usable. JMM
	Current Meter 158								direction: N.W. to WNW deflection: 1mm. to 3mm. velocity: 3.7 to 6.9 cm/sec. usable: 20 JMM
	Nephelometer 198	1244 1412	1538						Strong nepheloid layer at bottom approx. 200 fms. thick JMM
28 DEC 68	BOTTOM MILLIPORE SAMPLE 2	1320 1412	1525 HIT					283	FILTERS 2A & 2B 3/4 LITER CORE HIT 253 J.K.
29 Dec 68	Core # 254 Core Camera 107A	1542 1617	1732 Hit	2561 2557	2543	45°02' S	41°07' W	289	Penetration 978±10cm total length 1475 cm true length 700 cm Pipe bent (2nd) ~75° Moderately well consolidated clay. Dark yellowish brown (10YR 4/2) at top; Shades from light olive gray 5Y 5/2 to olive gray 5Y 4/1 and Medium dark gray (N4), Coarse fragments May be ice rafted. Core pipe Completely bent — No penetration at all Bottom not in shown JMM

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Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG B From Mar del Plata To Buenos Aires

TIME ZONE +3

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
29	Bottom	1459	1704	2562	2560	45° 02'	41° 07'	284	very firmly packed sediment bottom.
Dec.	Camera	1557	4 HITS	2557		S	W.		There are clay nodules.
'68	202	↓	↓	↓	↓	↓	↓	↓	28 usable
↓									
	Current								direction: SSE
	meter								deflection: 4.2 to 7 mm.
	159								velocity: 8.5 to 12 cm./sec.
									usable: 31
	Nephelometer	1239	1715						a strong nepheloid layer at bottom
	199	1557							approx. 130 m. thick
29	BOTTOM	1459	1704	2562				284	FILTERS 3A & 3B
DEC	MILLIPORE	1557	HIT						CORE HIT 254
68	SAMPLES								
	3								
29	T-GRAD	1542	1732	2561	2543	45° 02'	41° 07'	284	NO RECORD BATTERIES DIED
DEC	121 A	1617	HIT	2557		S	W		
1968									
29	GRABBER	FOR TIMES		2561	2543	45° 02'	41° 07'	284	SAME RADIOS AS YESTERDAY FAILED
DEC	207	SEE →				S	W →		→ LAUNCH 1543 SURF ? REC 1905
1968									10 OZ. ROCK FRAGMENTS
29	GRABBER	FOR TIMES		2561	2543	45° 02'	41° 07'	284	~~Last~~ RADIO FAILED
DEC	208	SEE →				S	W →	→	LAUNCH 1548 SURF ? REC 1910
1968									10 OZ. ROCK FRAGMENTS

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LAMONT GEOLOGICAL OBSERVATORY
PALISADES

Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG 13 From MAR DEL PLATA To BUENOS AIRES.

TIME ZONE +3

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
30	Core #	1548	1820	2843	2832	46°01.8	40°05.5	285	Penetration 650±10 cm total length 1134 cm
Dec	255	1651	Hit	2855		↓	↓		true core 650(?) cm.
68									Clay, loosely to moderately compacted yellowish brown (between
									10YR 4/2 + 2/2) at top. Greenish gray (5GY 6/1 - 4/1) to
									grayish olive green (5GY 3/2). Coarse fract. 8 to <5%, Pyrite, Radiolaria, sand [illegible]
30	T-GRAD	1548	1820	2848	2832			285	DC - DC CONVERTER OUT
DEC	121B	1651	HIT	2855					NO RECORD - CONVERTER TO
1968									BE CHANGED
30	GRABBER	FOR TIMES		2848	2832	46°01.8	40°05.5	285	LOST
DEC	209A	SEE —				S	W		LAUNCH 1545 SURF — REC —
1968									4 25 LB WEIGHTS
30	GRABBER	FOR TIMES		2848	2832	46°01.8	40°05.5	285	1 LB SMALL ROCKS + PEBBLES
DEC	~~210~~	SEE —				S	W		LAUNCH 1552 SURF ? REC 1930
1968	209								4 25 LB WEIGHTS
									RADIO FAILED
	Core Camera			2848		46°01.8	40°05.5'	285	Bottom not in focus.
	107			2855		S	W.		Orientation: North
									marbles: 20
	Bottom	1521	1906	2848	2855				Very firm sediment bottom — medium to
	Camera	1701		2855					small rocks partly buried in mud. Starfish
	203								visible as well as fern-like plants.
									11 marbles
	Current								Direction: SSW & SSE
	Meter								Deflection: 9 to 11mm.
	[illegible]								Velocity:
									marbles: 13

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DEPARTMENT OF GEOLOGY
LAMONT GEOLOGICAL OBSERVATORY
PALISADES

Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG 2 From Fort Lauderdale To Buenos Aires

TIME ZONE +3

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
30	Nephelometer	1451	1921	2848	2855	46°01.8'	40°05.5'	285	Medium to strong nepheloid layer at
Dec.	200	1701		2855		S	W		bottom approx. 1130 fms. thick
1968									
31	Core #	1504	1714	2983	2936	45°59'	36°24'	286	Penetration 1120 cm total length 1183 cm
Dec	255	1543	Hit	2905		S	W		true length 1178 cm. Coarse fraction low 45%
68									Clay Between Dark yellowish Brown (10YR 4/2) and Olive
									gray (5Y 3/2) at top. Shade of olive gray to 23 cm Dark greenish
									Gray (5GY 4/1) for rest of core, Well compressed layers all through. Pyrite etc.
	Core Camera								Bottom not in focus
	108								Orientation: West
									Mottles: 10
	Bottom	1436	1710	2893	2900				Upper well packed sediment with a few partly
	Camera	1550	Hit	2905					buried nodules and on it a slight fish-
	204								tracks
	Current								Direction: SSE
	Meter								Deflection: 10 to 11 mm
	161								Velocity: 25 cm/sec.
									Mottles: 29
	Nephelometer	1407	1921						Medium to strong nepheloid layer at bottom
	201	1550							approx. 3901 fms. thick
30	MILLIPORE	1451	1921	2848				285	4A & 4B FILTERS 1/2 liters
DEC	FILTERS	1701							255 CORE HIT
68	BOTTOM								
	4								

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LAMONT GEOLOGICAL OBSERVATORY
PALISADES

Research Vessel ROBERT D. CONRAD
CRUISE Nº 12
CRUISE LEG 13 From MAR DEL PLATA To BUENOS. AIRES.

TIME ZONE +3.

Date	STATION and Nº	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
4	Core #					44°23.2	26°15'	287	Penetration 1310 cm length (total) 1218 cm
JAN	257					S	W		true core 1218 cm
69									Clay between olive gray (5Y 4/1) at top to shades with
									dark greenish gray (5GY 4/1). Coarse fraction low <5%. Mostly
									Radiolaria, Forams abund in lighter areas. Some rare volcanic frags.
4	T-GRAD	1133	1355	2440	2429	44°23.2	26°15'	287	CORE HEAD BURIED ALL TRACES
JAN	121	1237	HIT	2429		S	W		GOOD DESPITE WEAK BATTERIES
1969									POOR DEVELOPING JOB - FORGOT
									TO RINSE DEVELOPER BEFORE
									I STARTED TO FIX - 5 CONDUCTIVITY READINGS
4	GRABBER	FOR TIMES				44°23.2	26°15	287	BOTH LOST
JAN	210A	SEE	→	→	→	S	W	→	LAUNCH 1145
1969	210 B	SEE	→	→	→	→	→	→	LAUNCH 1149
↓								↓	
	Bottom	1115	1415	2436	2429				very soft mud. A definite burrow or track
	Camera	1259	4 hrs	2436					is visible in North South direction.
	205								15 negatives
		↓	↓	↓	↓	↓	↓	↓	[signature]
	Current								direction: S.E.
	meter								deflection: .6 mm to 2 mm.
	162								velocity: 2.8 to 4 cm/sec.
									[illegible]: 16 [signature]
	Nephelometer	1032	1532						Medium nepheloid layer at bottom 260
	202	1259							fms. thick.
									[signature]
	Core	1133	1355	2440	24				Core head & compass were buried. Anyhow,
	Camera	1237	HIT	2429					camera film had been exposed due to film having
	104A								been pulled out in rough weather. Anyway [illegible]
↓						↓	↓	↓	[illegible] [signature]

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LAMONT GEOLOGICAL OBSERVATORY
PALISADES

Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG 2 From ~~MAR DEL PLATA~~ To BUENOS. AIRES.

TIME ZONE +3.

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
5	Cor. #	1852	2048	2370	2372	43°24'	28°52.5	288	Penetration 904 cm total length cm
JAN	258	~~1828~~	Hit	2370		S	W		true length cm
68									
	Core Camera								Bottom not within focus.
	109B								Orientation: WEST (notice: pipe totally bent)
									No cables: 4
	Bottom	1832	2055	2365	2370				Smooth mud bottom with partly buried
	Camera	1933	Stuck	2364					rock-pebbles.
	206								Pics difficult to make!
									No cables: 6
	Current								Direction: SE
	Meter								Deflection: 2.2 to 2.6 mm.
	163								Velocity: 5.6 to 6.3 cm. /sec.
									No cables: 7
	Stopkelometer	1809	2110						Medium nepheloid layer at bottom appr.
	203	1933							260 fms. thick
5	TGRAD	1852	2048	2370	2372	43'24	28°52'5	288	PIPE BENT AT 705 cm FROM
JAN	122	1928	HIT	2370		S	W		CUTTING EDGE. 3 PROBES GOOD
1969									4 CONDUCTIVITY MEASUREMENTS

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PALISADES

Research Vessel ROBERT D. CONRAD
CRUISE N° 12 - 13
CRUISE LEG—From MAR DEL PLATA To BUENOS AIRES

TIME ZONE +3

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
6	T GRAD	1507	1648	2504	2503	42°47.6	31°45.7	289	ALL 3 PROBES GOOD – HEAD BURIED
JAN	123	1540	HIT	2503		S	W		5 CONDUCTIVITY MEASUREMENTS
1969									
6	GRABBER	FOR TIME		2504	2503	42°47.6	31°45.7	289	~~No Sample~~ 2 OZ ROCK FRAGMENTS
JAN	210	SEE →				S	W	→	LAUNCH 1509 SURF? REC 1720
1969									4 - 25 LB WEIGHTS USED TO
									SUBMERGE
									RADIO FAILED
6	Core #	1507	1648	2503	2503			289	Penetration 1314 cm total length 1227 cm
Jan	259	1540	Hit	2503					true length 1227 cm
68									Marl at top, Dark yellowish brown (10YR 4/2) shade
									Clay for most of rest of core, shades of olive gray (5Y 4/1) and
									Dark greenish gray (5GY 4/1). Chalk layers (?) are greenish Med. light gray (N6)
	Core Camera								Strobe light did not flash
	109C								
									[signature]
	Bottom	1443	1648	2506	2503				Soft mud with partly buried stone pebbles.
	Camera	1535	5 HITS	2502					Animal tracks visible. A [illegible] circular
	207								body creature is visible
									28 usable [signature]
	Current Meter								direction: NNW
									deflection: 5mm to 3
	164								velocity: 9.6 cm/sec to 6.9
									usable: 23 [signature]
	Nephelometer	1406	1711						A medium to strong nephelid layer at
	204	1535							bottom approx. 390 fms. thick.
									[signature]

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LAMONT GEOLOGICAL OBSERVATORY
PALISADES

Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG 13 From MAR DEL PLATA To BUENOS AIRES.

TIME ZONE +3

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
7	Core #	1200	1357	2630	2630	42°07.5'	34°33.0'	290	Penetration 1820 cm total length 1563 cm
Jan	260	1240	Hit	2631		S	W		true length 1563 cm
1969									Clay. Mostly between shades of Olive gray (5Y 4/1)
									and dark greenish gray (5GY 4/1). Coarse fraction << 5%
									Mostly Radiolaria. Few Foram. Carbonate generally low 1~0; Some Moderate
	Core Camera								Very soft mud! bottom within [illegible]
	109								[illegible]; [illegible] compass was [illegible]
									usable: 7
	Bottom	1113	1337	2634	2630				Very soft mud. [illegible] in westerly
	Camera	1215	4 HITS	2630					direction. [illegible] visible
	208		(one hit 10 min long)						
	Current Meter								direction: ENE, NNW, SSW + ESE
									deflection: .5 to 1.5 mm.
	165								velocity: 2.5 to 4.6 cm. sec.
									usable: 18
	Nephelometer	1028	1351						Medium nepheloid layer at bottom approx.
	205	1215							260 fms. thick. ([illegible] strong)
7	TGLAD	1200	1357	2630	2630	42°07.5	34°33.0	290	ALL 4 PROBES GOOD 6 CONDUCTIVITY
JAN	124	1240	HIT	2631		S	W		MEASUREMENTS + 1 DO-OVER.
1969									IGNORE LAST TWO CYCLES OF WAIT IN
									SEDIMENT AS THE PULL-OUT WAS STARTED +
									STOPPED TO STRAIGHTEN WIRE FEEDING ON TO WINCH
7	GRABBERS	FOR	TIMES	2630	2630	42°07.5	34°33.0	290	NO SAMPLES
JAN	211	SEE				S	W		LAUNCH 1215 SURF REC 1500
1969	212								LAUNCH 1230 REC 1525
									RADIOS [illegible]

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Columbia University in the City of New York
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PALISADES

Research Vessel ROBERT D. CONRAD
CRUISE Nº 12-13
CRUISE LEG—From MAR DEL PLATA To BUENOS AIRES

TIME ZONE +3

Date	STATION and Nº	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
8	T GRAD	1155	1436	2788	2790	41° 59'	37° 18'	291	HIT NOT ACTUALLY SEEN — APPARENTLY
JAN	125	1249*	HIT	2791		S	W		CORING DEVICE TRIPPED DURING LOWERING —
1969									NO CORE BUT GOOD T-GRAD OPERATION
									3 OF 4 PROBES IN MUD
									PENETRATION ≃ 1135 cm BEND OF 40° AT ~ 1000 cm
	Core Camera								Bottom not within focus
	110A								Compass was buried or knocked down.
									[signature]
	Bottom	1121	1400	2788	2789				Very soft mud. No ripples. Elongated tracks
	Camera	1224	6 HITS	2790					are visible in all frames
	209								of nodules [illegible]
									[signature]
	Current Meter								direction: SE to SSE
									deflection: 5.9 to 5.2 mm
	166								velocity: 9.9 to 10.6 cm/sec.
									nodules: 9 [signature]
	Nephelometer	1150	1404						A medium to strong nepheloid layer at bottom
	1206	1224							approx. 325 fathoms thick.
									[signature]
9	Core #	0009	0211	2762	2783	42° 00'	38° 07.6'	292	Penetration 1135 cm total length 1007
Jan	761	0053	Hit	2775		S	W		true length 1007 cm Clay, brownish light
68									olive gray (5Y 5/2) at top, but dark greenish gray (5GY 4/1) and olive gray
									(5Y 4/1). Coarse fraction ≤ 1% Mostly radiolaria and quartz
									sand. plenty of burrowing — No carbonates
8	Core #	1155	1436	2788	2790	41° 59'	37° 18'	291	Penetration 0 cm total length 0 cm
Jan	761A	1250	Hit	2791		S	W		true length 0 cm. Core triggered before
68									reaching bottom. Core material was very soft and
									core washed out (penetration was 1135 cm - see T Grad # 125

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PALISADES

Research Vessel ROBERT D. CONRAD
CRUISE Nº 12
CRUISE LEG 3 From MAR DEL PLATA To BUENOS AIRES

TIME ZONE +3

Date	STATION and Nº	TIME		SOUNDING		POSITION		LOG	REMARKS
		Start	End	Start	End	Lat.	Long.		
10	Core #762	1424	1632	2683	2680	40°56'S	36°00'W	293	Penetration 1250±10 cm total length 1655 cm
Jan		1501	Hit	268					true length 1080 cm
68									Clay, disturbed at top, Mod-well compacted. Light olive
									grayish at top (5Y 7/2) goes yellowish then dark greenish gray (5GY 5/2) shells
									Pipe bent at ~30° and Twisted Core froze [illegible] ±1% [illegible]
	Core								Bottom; soft mud
	Camera								Orientation: Northeast
	111								nodules: 5
	Bottom	1342	1611	2695	2690				Very soft mud with quite a few
	Camera	1449	SHOTS	2680					manganese nodules (scattered not too
	210								widely.
									nodules: 17
	Current								Direction: SW to SSW
	Meter								deflection: 2.8 to 3.5 mm.
	167								velocity: 6.5 to 7.6 cm/sec.
									nodules: 24
	Nephelometer	1310	1622						Medium nepheloid layer at bottom
	207	1449							approx. 260 fathoms thick
10	MILLIPORE	1342	1611	2695				293	5A & 5B FILTERS 1½ liter
JAN	BOTTOM	1449	HIT						CORE HIT 262
69	SAMPLE								
	5								
10	TGRAD	1424	1632	2683	2680	40°56'	36°00'	293	3 OF 4 PROBES IN MUD & GOOD. PIPES BENT-EXTRUDED
JAN	126	1501	HIT	2685		S	W		0800 11 JAN 1969 ‖ THERMOMETERS 11656 2.51 0.60
1969									4 CONDUCTIVITY ‖ 7971 2.50 0.59
									3375 2.52 0.61

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PALISADES

Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG 3 From MAR DEL PLATA To BUENOS AIRES.

TIME ZONE +3

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
11 Jan 69	Core A 263	1307	1510 Hit	2655	2673	41°03.1' S	33°17.7' W	294	Penetration 12.18 cm total length 12.28 cm true length 12.18 cm Clay; light olive gray (5Y 6/1) mixed at top until grade to dark greenish gray (5GY 4/1) Shade near bottom. Coarse fraction low - less than 5%, mostly Radiolarians
11 JAN 69	MILLIPORE BOTTOM SAMPLE 6	1254	1519 HIT					294	6A & 6B FILTERS 1 1/2 LITER CORE HIT 263 J.K.
11 JAN 1969	TGRAD 127	1307 1348	1505 HIT	2640 2676	2673	41°03.1' S	33°17.7' W	294	HEAD BOXED HALF WAY - ALL 3 PROBES GOOD 5 CONDUCTIVITY MEASUREMENTS TRIPOD THERMOMETER #11656 t 2.36 T 0.58 7971 t 2.35 T 0.57 3375 t 2.36 T 0.60
10 JAN 1969	GRABBER 213	FOR TIME SEE		2683	2680	40°56' S	36°00 W	293	ABOUT 2 OZ SMALL Mn NODS & ROCK FRAGMENTS → LAUNCH 1430 SURF 1625 REC 1815 4 - 25 LB WEIGHTS RADIO WORKED WITH MERCURY CELL & ALL CONTACTS SOLDERED
10 JAN 1969	GRABBER 214	FOR TIME SEE		2683	2680	40°56' S	36°00' W	293	ABOUT 2 OZ SMALL Mn NODS & ROCK FRAGMENTS → LAUNCH 1437 SURF 1630 REC 1820 4 - 25 LB WEIGHTS RADIO WORKED WITH MERCURY CELL & ALL CONTACTS SOLDERED
9 Jan 1969	Core Camera 110	0009 0053	0211 Hit	2762 2775	2783	42°00' S	38°07.6 W	292	Orientation: South Bottom: soft mud Cables: 10
11 Jan 1969	Core Camera 112A	1307 1348	1510 Hit	2655 2676	2673			294	Core head was buried. No sign of bottom or compass

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Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG 13 From Mar del Plata To Buenos Aires
TIME ZONE +3

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
11	Bottom	1254	1519	2650	2667			294	Soft mud with slight undulations pointing
Jan	Camera	1355	54 PTS	2676					roughly in a southerly direction.
69	211								Usables: 10
	Current Meter								direction: SSW
									deflection: 5.5 to 6.4 mm.
	168								velocity: 10.2 to 11.2 cm/s.
									usables: 16
	Nephelometer	1130	1529						Medium nepheloid layer at bottom
	208	1355							390 fathoms thick
12	TGRAD	1831	2015	2545	2543	41°01	30°26.5	295	P3 OUT AT HIT P2 GOOD P1 DIDN'T PENETRATE
JAN	128	1909	HIT	2540		S	W		BEND AT 65 cm 4 CONDUCTIVITY MEASUREMENTS
1969									TRIPOD THERMOMETERS 11656 2.41 0.59
									7971 2.41 0.57
12									3375 2.43 0.60
JAN	GRABBER	FOR	TIME	2545		41°01	30°26.5	295	1 LB MN NODULES - GOLF BALL SIZE
1969	215	SEE				S	W		LAUNCH 1824 SURF 2010 REC 2105
									RADIO WORKED
									2 STEADY LIGHTS WORKED
									4-25 LB WEIGHTS
12	GRABBER	FOR	TIME	2545		41°01	30°26.5	295	3 LB MN NODULES - GOLF BALL SIZE
JAN	216	SEE				S	W		LAUNCH 1831 SURF 2015 REC 2115
1969									RADIO WORKED
									1 STROBE 1 STEADY LIGHT WORKED
									4-25 LB WEIGHTS

[signature]
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LAMONT GEOLOGICAL OBSERVATORY
PALISADES

Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG 13 From Mar del Plata To Buenos Aires

TIME ZONE +3

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
12	Core	1831	2023	2540	2543	41°01'	30°26.5	295	Penetration 650 cm total length 1022 cm
Jan.	#264	1909	Hit	2540		S	W		true core 650 cm (?) Core pipe bent ≈ 40° at 650 cm
1969									Dark yellowish brown (10YR 4/2) Marl ooze at top to Manganese
									clay ooze (Dusky yellow (5Y 6/4)) to greenish gray (5G 6/1)
									and (5GY 4/1) dark greenish gray clay at bottom. Carbonate present
	Core								
	Camera								
	112								
	Bottom	1813	2015	2558	2550				Very soft mud. No ripples or tracks
	Camera	1903	541 FTS	2540					Deep water fish visible in one frame.
	212								Mud appears to lean in a Southeasterly
									direction.
									15 usable
	Current								direction: West, SE, S, SW
	Meter								deflection: .7, 1mm, 1mm, 2mm.
	169								velocity: 3, 3.7, 3.7, 5.3 cm/sec
									usable 22
	Nephelometer	1843	2029						Medium nepheloid layer at bottom
	209	1903							390 fms thick
13	GRABBER	FOR	TIMES	2365	2353	40°54.3	26°51.0	296	4 LBS 2-3 INCH MN NODULES & VOLCANIC(?) FRAGMENTS
JAN	217	SEE				S	W		→ LAUNCH 1607 SURF 1750 REC 1950
1969									4-25 LB WEIGHTS
13	GRABBER	FOR	TIMES	2365	2353	40 54.3	23°51.0	296	4 LB 2-3 INCH MN NODULES
JAN	218	SEE				S	W		→ LAUNCH 1617 SURF 1755 REC 2010
1969									4 - 25 LB WEIGHTS

Chief Scientist

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PALISADES

Research Vessel ROBERT D. CONRAD
CRUISE Nº 12
CRUISE LEG 13 From Mar del Plata To Buenos Aires

TIME ZONE +3

Date	STATION and Nº	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
13	Core #	1621	1900	2350	2353	40°54.3	26°51.0'	296	Penetration 612 cm total length 884 cm
Jan	265	1752	Hit	2349		S	W		true core 610(?) cm Pipe bent ∡ 40°
'69									Marl at top to clay at bottom. Dark yellowish brown (10YR 4/2)
									at top to Pale yellowish brown (10YR 6/2) to dark greenish
									gray (5GY 4/1) at bottom. Consistent rad + forams & Manganese at top, ... bot.
	Core Camera								Bottom not within focus
	113A								Orientation: no consistent reading
									[signature]
	Bottom	1552	1826	2350	2354				Plenty of manganese nodules though not
	Camera	1646	5 HITS	2339					compactly together. Mud apparently clear
	213								in Northwesterly direction.
									10 usable [signature]
	Current Meter								direction: NE
	170								deflection: .7mm.
									velocity: 3cm/sec.
									usables: 5 or 6 [signature]
	Nephelometer	1448	1839						medium nepheloid layer at bottom
	210	1646							approx. 1260 fathoms thick
									[signature]
13	MILLIPORE	1552	1826	2350				296	FILTERS 7A & 7B 1 3/4 liter
JAN	BOTTOM	1646	HIT						CORE HIT 265
69	SAMPLE								
	7								J.K.
13	TGRAD	1621	1900	2365	2353	40°54.3	26°51.0	296	EVERY THING JUMPY - FOUND GROUND TO CASE UNDER
JAN	129	1752	HIT	2349		S	W		BRIDGE BOARD. P2 MAYBE GOOD P3 PASS THRU OUT
1969									NO CONDUCTIVITY MEASUREMENT
									1 THERMOMETER # 3375 T 2.54 T 0.85

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PALISADES

Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG 13 From MAR DEL PLATA To BUENOS AIRES.

TIME ZONE +3

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
14 Jan 68	Core # 266	1910 1949	2054 Hit	2112 2111	2121	39°49.2' S	24°47.5' W	297	Penetration 612 cm total length 1163 cm true core 610(?) cm pipe bent ~40° at ~612 cm. Top is Foraminiferal Marl Ooze pale yellowish brown (10YR 6/2) to grayish orange (10YR 7/4). Clay (ooze?) bands grade to grayish orange shades. Dark layers + patches clay. Coarse fraction 30-40% except clay (<5%)
14 JAN 69	MILLIPORE BOTTOM SAMPLE 8	1830 1936	2105 HIT	2115 2110	2110			297	FILTERS 8A & 8B 1 1/4 LITER CORE HIT 266
	Bottom Camera 214		5 HITS						Very soft mud. / 14 usables
	Current Meter 171								direction: NE deflection: 1 to 1.8 mm. velocity: 3.7 to 5 cm/sec usables: 16
	Nephelometer 211	1808 1936	2122						Medium nepheloid layer at bottom approx. 50 fms thick
	Core Camera 113	1910 1949	2054 Hit	2112 2111	2121				Bottom: not within focus Orientation: NE usables: 3

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PALISADES

Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG 13 From MAR DEL PLATA To BUENOS AIRES

TIME ZONE +3

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
15 JAN 69	SONOBUOY 164A	0633	0638	2170					CHL. 14, RECEIVING CHL. 1 SPD 4.6. PROF 1814 B DELAY. F.T. SB PHONE 60 FT. SONOBUOY TONOISY AT BEGINING AND AT 0638 DEAD. J.K.
15 JAN 69	SONOBUOY 164	0642 0812	0811 0901	2170 2212		38°57.5	25°05W		CHL. 13 R. CHL. 1. SPD 4.7 PHONE 300 B DELAY PROF. 1814 & 1815. FILTERS A 8/200 *B 40/250; !!! AIR GUN TROUBLE BETWEEN 0715 - 0756. SB NOISY. *WRONG SETTING OF FILTERS ON PROF B (USED DIFFERENT SET OF FILTERS NOT ACCORDING TO SONOBOUY'S ONE) J.K.
14 JAN 1969	TORAD 130	1910 1949	2054 #IT	2102 2112	2121	39°49.2 5	24°47.5 W	297	P1 OUT - BUT DID NOT PENETRATE - BAD CONNECTOR PENETRATION = 728 ± 10 cm LENGTH 1163 TOTAL TRUE? 35° BEND AT 728 cm — P2 & P3 SIDE BY SIDE - NO GRADIEM? 5 CONDUCTIVITY MEASUREMS THERMOMETERS - 11656 2.52 1.11 | 7971 2.51 1.08 | 3325 2.53 1.12
14 JAN 1969	GRABBER 219	FOR TIMES SEE		2102	2121	39°49.2 $	24°47.5 W	297	NO SAMPLE → LAUNCH 1907 SURF ? REC 2250 4-25 LB WEIGHTS RADIO FAILED
14 JAN 1969	GRABBER 220	FOR TIMES SEE		2102	2121	39°49.2 $	24°47.5 W	297	NO SAMPLE → LAUNCH 1915 SURF 2145 REC 2235 4-25 LB WEIGHTS
15 JAN 1969	GRABBER 221	FOR TIMES SEE		2218	2196	38°41' $	25°47' W	298	NO SAMPLE → LAUNCH 1420 SURF 1600 REC 1630 4-25 LB WEIGHTS
15 JAN 1969	GRABBER 222	FOR TIMES SEE		2218	2196	38°41' $	25°47' W	298	NO SAMPLE → LAUNCH 1425 SURF 1610 REC 1645 4-25 LB WEIGHTS

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CRUISE LEG 13 From MAR DEL PLATA To BUENOS AIRES

TIME ZONE +3

Date	STATION and Nº	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
15	Core	1432	1559	2218	2196			298	Penetration 660 cm total length 475 cm
Jan.	267	1506	Hit	2215		38°41'	35° 57'		true core 475 cm Core penetrated to head
69						S	W		Marl, (Foraminiferal) (10YR 6/2) Pale yellowish brown at
									top grades to light olive gray shale (5Y 5/2) to Chalk (almost
									light gray (N7)) also Foraminiferal & Clayish at bottom. Core fractures 5-10% at top lower near bottom
	Core								Compass buried in mud
	Camera								Bottom not within focus.
	11 NA								
									[signature]
	Bottom	1416	1611	2220	2220				Soft mud with ripples in SE direction.
	Camera	1504	4 hits	2220					[illegible] visible in 13 frames.
	215								Strong current as evidenced by dispersion
									of [illegible]
									16 usables [signature]
	Current								direction: SW
	Meter								deflection: 3.7 to 8.5 mm.
	172								Velocity: 7.9 cm/sec - 15.3 cm/sec
									usables: 7 [signature]
	Nephelometer	1327	1623						Medium nepheloid layer at bottom
	1212	1504							approx. 390 [illegible] thick
									[signature]
15	MILLIPORE	1416	1611	2220				298	FILTERS 9A & 9B 1 3/4 LITER
JAN	BOTTOM	1504	HIT						CORE HIT 267
69	SAMPLE								[initials]

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Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG 13 From MAR DEL PLATA To BUENOS AIRES

TIME ZONE +3

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
16	Core #	1216	1355	2102	2103	37°52.4	28°52.4	299	Penetration ≥885 cm total length 1189 cm
Jan	268	1246	Hit	2102		S	W.		True core 850 cm Pipe bent ∡ 40° at 800 cm
68									Foraminiferal Chalk ooze at Top (5/4) Pale yellowish
									brown (10YR 5/4) to very pale orange (10YR 8/2) with some dark patches. At 430 cm
									light olive gray (5Y 6/1) grading to almost white (N9). Carbonates very high. Coarse fraction: Rich, Mostly Foram
	Core								Soft bottom mud
	Camera								Orientation: North
	114								usable: 12 [signature]
	Bottom	1201	1343	2104	2105				Soft sediment; mounds & trails; evidence
	Camera	1241	5 HITS	2105					of strong current by quick dispersal of
	216								mud cloud.
									usables: 24 [signature]
	Current								direction: WNW
	Meter								deflection: 3.7 to 5 mm
	173								velocity: 7.9 to 9.6 cm/sec.
									usables: 28 [signature]
	Nephelometer	1141	1352						no nepheloid layer or if there is one
	213	1241							it is extremely weak. [signature]
16	TGRAD	1215	1350	2106	2103	37°52.0	28°50.4	299	P1 + P2 OUT & NEED REPLACEMENT
JAN	131	1245	HIT	2102		S	W		P3 GOOD 3 CONDUCTIVITY MEASUREMENTS
1969									
									THERMOMETERS FAILED
16	GRABBERS	FOR TIMES		2106	2103	37°52.0	28°50.4	299	NO SAMPLES - 4-25 LB WEIGHTS
JAN	223	SEE →				S	W	→	LAUNCH 1216 · SURF ? · REC 1415
1969	224								1223 · ? · 1440
	225								1230 · ? · 1442

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CRUISE LEG 13 From MAR DEL PLATA To BUENOS AIRES

TIME ZONE +3

Date	STATION and Nº	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
16 JAN 69	MILLIPORE FILTER 10	1201 1241	1343	2104				299	10A & 10B FILTERS 1 liter CORE HIT 268
									J.K.
17 Jan 69	Core 269	1025 1100	1202 Hit	2340 2327	2311	36° 58.6 S	32° 11.5 W	300	Penetration 1273 cm total length 1164 cm true core 1164 cm Overpenetrated to head Clay → Dark yellowish brown (10YR 4/2) → Mod yellowish brown (10YR 5/4) → Olive gray (5Y 4/1). Burrow filling dark gray (N 3). Grading to light olive gray (5Y 6/1) darker + lighter areas.
	Core Camera 115A								Strobe light was completely covered by mud. Hence no exposures [signature]
	Bottom Camera 217	1003 1049	1157 4 HITS 10 MIN = HIT	2335 2338	2340				Very soft mud, no ripple; only slight mounds. No trails. Mud cloud appears to clear in approx. a NE direction. 15 usable [signature]
	Current Meter 174								Direction: NNE, N. & E. Deflection: 2.5 to 3.7 mm. Velocity: 4.5 to 7.9 cm./sec. Usable: 22 [signature]
	Nephelometer 214	0939 1049	1229						Medium to weak nepheloid layer at bottom approx. 130 fms. thick [signature]
17 JAN 69	MILLIPORE BOTTOM SAMPLE 11	1003 1049	1157 HIT	2335				300	11A & 11B FILTER 1 3/4 CORE HIT 269

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CRUISE N° 12
CRUISE LEG 13 From MAR DEL PLATA To BUENOS AIRES

TIME ZONE +3

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
17 JAN 1969	T GRAD 132	1025	1200	2335	2311	36°58.5 S	32°11.5 W	300	HEAD BURIED ALL PROBES GOOD 4 CONDUCT IVITY MEASUREMENTS THERMOMETERS 11656 2.46 0.67 7971 2.46 0.66 3325 2.48 0.70
17 JAN 1969	GRABBERS 226	FOR TIMES SEE		2335	2311	36°58.5 S	32°11.5 W	300	NO SAMPLES 4-25 LB WEIGHTS → LAUNCH 1008 SURF 1145 REC 1320
	227								→ LAUNCH 1012 SURF 1150 REC 1250
	228								→ LAUNCH 1014 SURF 1152 REC 1305
18 Jan 1969	Core #270	0932	1130	2520	2529	35°36.4 S	35°30.2 W	301	Penetration ≥ 1104 cm total length 1191
		1017	Hit	2521		5	W		true core 1083 cm
									Clay, dark yellowish brown (10YR 3/2) Moderate yellowish brown (10YR 5/4) at top grading to Pale yellowish brown (10YR 6/2). 314 - 320 cm Manganese layer Brownish black (5YR 2½/1) Dark yellowish brown (5YR 4/2) Light olive brown Manganese nodules on soft sediment Southwest orientation 2 usable
	Core Camera 115								
	Bottom Camera 218	0915	1117	2528	2529				Very soft sediment with quite a few manganese nodules not too widely scattered. 2 usable
		1006	4 hits Hit > 10 MIN	2520					
	Current Meter 175								direction: NNE deflection: 8 to 9.2 mm velocity: 13.9 to 17.9 cm/sec usable: 27
	Nephelometer 1215	0853	1128						Medium to strong nepheloid layer at bottom approx. 760 ms. thick
		1006							

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CRUISE N° 12
CRUISE LEG 3 From MAR DEL PLATA To BUENOS AIRES

TIME ZONE +3

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
18 JAN 69	MILLIPORE FILTER 12				2311			301	12A & 12B FILTERS 1 ½-LITER CORE HIT 270
									JK
18 JAN 69	SONOBUOY 165	1922	2102		2465	35°37S	36°24W		PCHL 1 CHL. 10 SD PHONE 300 FT. SPD 4.8
		2104	2234						PROF 1836 & 1837 3.5 RECORDED ON 12 CHL PDR
									JK
18 JAN 1969	T6RAD 133	0932	1130	2527	2529	35°36.4	35°30.2	301	ALL 3 PROBES GOOD 5 CONDUCTIVITY
		1017	HIT	2520		$	W		MEASUREMENTS
									TRIPOD THERMOMETERS # 11656 2.65 0.60
									7971 2.65 0.59
									3325 2.66 0.62
18 JAN 1969	GRABBER 229	FOR TIMES SEE		2527	2529	35°36.4 $	35°30.2 W	301	0.7 LBS 2-3 IN MN NODULES → LAUNCH 0918 SURF 1106 REC 1230 4-25 LB WEIGHTS
18 JAN 1969	GRABBER 230	FOR TIMES SEE		2527	2529	35°36.4 $	35°30.2 W	301	1.5 LBS 1-3 IN MN NODULES → LAUNCH 0921 SURF 1110 REC 1220 4-25 LB WEIGHTS
18 JAN 1969	GRABBER 231	FOR TIMES SEE		2527	2529	35°36.4 $	35°30.2 W	301	0.8 LBS 2 IN MN NODULES → LAUNCH 0924 SURF 1115 REC 1200 4-25 LB WEIGHTS
19 JAN 1969	T6RAD 134	1340	1524	2590	2587	34°57'	38°59.5	302	P4 DESTROYED AT HIT P3 GOOD P1 & P2 DIDN'T PENTRATE 4 CONDUCTIVITY MEASUREMENTS
			1414	HIT	2587	$	W		THERMOMETERS # 11656 2.90 0.65
									7971 2.91 0.64
									3325 2.91 0.67

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CRUISE LEG From MAR DEL PLATA To BUENOS AIRES

TIME ZONE +3

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
19	Core	1341	1524	2587	2587	34°37	38°59.5	302	Penetration ~ 820 cm Total length
Jan	271	1414	Hit	2587		S	W		true leng 783 Core bent & 600 at about 700 cm
'69									Clay, light olive gray (5Y 6/2) to Dark yellowish Brown 10YR 4/2 at top, grading toward
									Moderate yellowish brown (10YR 5/4). Then greenish gray (dark) (5GY 4/1) to Olive
									gray. 390-402 sandy clay ooze (turbidite layer) Olive black (5Y 2/1) lighter below.
	Core Camera								Possibly nodules are visible
	116								Only 1st frame gives an orientation i.e.
									N.E
									usables: 6
	Bottom	1244	1445	2580	2580				Very soft smooth bottom with few very
	Camera	1334	1445	2578	?				small nodules. There are [illegible]
	219								25 usables
	Current								Direction: North
	Meter								deflection: 8 to 11.2 mm.
	176								velocity: 13.9 to 25 cm/sec. (one last reading ~ 20 cm/sec.)
									usables: 25
	Nephelometer	1220	1450						Medium nepheloid layer at bottom
	216	1334							approx. 260 fathoms thick
19	MILLIPORE	1244	1445					302	FILTERS 13A & 13B 1½ liter
JAN	FILTER	1334	HIT						CORE HIT 271
69	13								
									DK

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CRUISE LEG 3 From MAR DEL PLATA To BUENOS AIRES

TIME ZONE +3

Date	STATION and Nº	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
20	Core #	1130	1320	2461	2461	33°49'	41°23'N	303	Penetration 1140 cm total length 1048 cm
Jan	272	1211	Hit	2461		S			true core 1048 cm Clay: dark yellowish brown (10YR 4/2)
69									to Olive gray (5Y 4/1) grading to lighter brown & olive below. Dark greenish
									gray (5GY 4/1) to medium dark gray (N4) to Olive gray shale some
									hydrotroilite. 888-891 cm turbidite layer olive black (5Y 2/1) dark greenish gray 10-14 comp.
	Core Camera								Film in camera did not advance due to
	117A								motor defect. Camera is ready for SS304.
									[signature]
	Bottom	1106	1304	2461	2461				Very soft mud. Sizable ripples in NE
	Camera	1155	4 HITS	2461					direction.
	220								25 usables
									[signature]
	Current								direction: NNE
	meter								deflection: 8.2 to 10.2 mm.
	177								velocity: 14.4 cm/sec. to 44.25 cm/sec, However a
									good range would best be 15 to 20 cm/sec
									usables: 627 [signature]
	Nephelometer	1043	1317						medium to strong nepheloid layer at bottom approx
	217	1155							350 fathoms thick.
									[signature]
20	MILLIPORE	1106	1304					303	FILTERS 14 A & 14 B 1 LITER
JAN	FILTER	1155	HIT						CORE HIT 272
69	14								J.K.

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TIME ZONE +3

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
20 JAN 1969	T GRAD 123	1130	1318	2461	2461	33°49' S	41°23' W	303	ALL 8 GOOD + CONDUCTIVITY MEASUR THERMOMETERS # t T 11656 2.92 0.62 7971 2.92 0.61 3325 2.93 0.65
20 JAN 1969	GRAB'S 232 A 232 233	FOR TIMES SEE		2461	2461	33°49' S	41°23' W	303	NO SAMPLES LAUNCH 1112 → 205 T LAUNCH 1114 SURF 1310 REC 1340 LAUNCH 1117 SURF 1315 REC 1350 2-36 LB WEIGHTS ON EACH
21 JAN 1969	T GRAD 136	1212	1342	2290	2295	33°39' S	43°29.5' W	304	ALL GOOD BUT P2 + P3 MAY BE HIGH AS THEY WERE DISTURBED BY A TURBIDITE LAYER -5 CONDUCTIVITY MEASUREMENTS THERMOMETERS # 11656 t 2.95 T 0.60 7971 2.84 0.59 3325 2.95 0.62
21 JAN 69	MILLIPORE FILTERS 15	1154	1439	2240				304	15A & 15B 1½ LITER CORE HIT 273 O.K.
21 JAN 1969	GRAB'S 234 235	FOR TIMES SEE		2290	2295	33°39' S	43°29.5' W	304	NO SAMPLES → LAUNCH 1204 SURF 1354 REC 1420 LAUNCH 1208 SURF ? REC 1435 2-36 LB WEIGHTS

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CRUISE LEG 13 From MAR DEL PLATA To BUENOS AIRES

TIME ZONE +3

Date	STATION and Nº	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
21 Jan 1969	Core 273	1212 / 1243	1342 / H.T.	2292 / 2292	2295	33°39' S	43°29.5 W	304	Penetration 1129 cm total length 1104 cm true core 1070 cm Clay; moderate yellowish brown (10YR 5/4) to Olive gray (5Y 4/1) shade at top. Olive gray (5Y 4/1) - Dark greenish gray (5GY 4/1) with Hydrotroilite, Turbidite layer at 747-750 cm Olive (5Y 4/4) to Dark greenish gray - 90-95% coarse fraction Carbonate low to absent.
	Core Camera 117								Bottom: very flat well packed hard sediment. Compass was buried in sediment. Orientation: none-readable usables: 10 [signature]
	Bottom Camera 221	1151 / 1234	1439 / 4 hrs	2290 / 2293	2293				Very hard well packed sediment. no mud clouds. A few stone pebbles. No ondulations. Bottom completely flat. 24 usables [signature]
	Current meter 178								direction: WNW & NW deflection: 7 to 10 mm. velocity: 12 to 25 cm/sec. (average of 14) usables: 18 [signature]
	Nephelometer 218	1128 / 1234	1451						Medium nepheloid layer for 260 fms. thick and strong for 130 fms. strong one being at the very bottom and medium layer on top of strong one. [signature]
~~22 Jan 68~~	SONOBUOY								

[signature]
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CRUISE LEG 13 From MAR DEL PLATA To BUENOS AIRES

TIME ZONE +3

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
22	TGRAD	1359	1519	2030	2025	32°34.2	46°51.8	305	P3 OUT P1 + P2 GOOD 4 CONDUCTIVITY
JAN	137	1428	HIT	2027		S	W		MEASUREMENTS
1969									THERMOMETERS 11656 t 2.82 T 0.57
									7971 t 2.81 T 0.54
									3325 t 2.82 T 0.58
22	SONOBUOY	0644	0830	2140		32°51S	45°57W		RC. CHL. 1; SB CHL. 12. SPD 5.0; SB PHONE 300 FT.
JAN	166	0833	0930						B DELAY. PROF. 1858 & 1859.
1969									RECORDED ON 3.5 KHZ PDR (0649 ACTUALY START
									RECORDING AFTER CHANGE OF RECEIVING CHANEL)
									BETWEEN 0838 & 0848 GUN STOPPED. J.K.
22	MILLIPORE	1324	1416					305	FILTERS 16A & 16B 1 3/4 LITER
JAN	BOTTOM	1415	HIT						CORE HIT 274
69	SAMPLE								
	16								J.K.
	Core #	1359	1519	2030	2025	32°34.2	46°51.8	305	Penetration 1265 cm total length 1094 cm
	274	1428	Hit	2027		S			true core 1094 cm Clay dark yellowish brown (10YR 4/2
									to Olive gray (5Y 4/1) [illegible] some grayish shale. Dark greenish
									gray (5GY 4/1) to Olive gray shale (5Y 4/1) (a great deal of hydrotroilite
									300-200 cm) to bottom. Some fraction very [illegible], some [illegible]
	Core Camera								Corehead buried. No exposures. ~~[illegible]~~ Lens
	118A								window covered with mud.
									[signature]
	Bottom	1324	1416	2030	2029				Very soft undulated sediment (no ripples in
	Camera	1415	4 HITS	2029					my opinion). A few partly buried [illegible] stone
	222								pebbles.
									19 usable [signature]
	Current								direction: SSW to SW
	meter								deflection: .4 to 1.3 mm.
	179								velocity: 2.2 to 4.2 cm/sec [signature]
									usable: 18

[signature]
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Date	Station and N°	Time Start	Time End	Sounding Start	Sounding End	Position Lat.	Position Long.	LOG	REMARKS
22	Nephelometer	1304	1528	2030	2029	32° 34.2'	46° 51.8	305	Medium to strong nephelbid layer at bottom
Jan	219	1415		2029		S	W		approx. 390 fathoms thick
1969									
22	SONOBUOY	2206	0037	1940		33° 17S	47°07W		RC. 1 SBCHL, SPD5 SBPH ONE 300 B DELAY, RECORDED ON 35 KC POR
JAN 69	167								FILTERS 14/25, 6/200 PROF. 1869 & 1869 B PROF. TRAVERSE JAMMED NEAR END 1 SHEET.
23	MILLIPORE	1036	1232	2542				306	FILTERS 17A & 17B 1 3/4 Liter
JAN	SAMPLE	1121	HIT						CORE HIT 275
69	17								
23	T GRAD	1115	1257	2542	2543	34°57	47°09'	306	P_2 + P_3 ONLY ONES IN MUD 4600
JAN	138	1149	HIT	2543		S	W		5 CONDUCTIVITY MEASUREMENTS
1969									THERMOMETERS 11656 t 2.91 T 0.64
									7971 t 2.91 T 0.63
									3325 t 2.92 T 0.65
	Core #	1116	1257	2541	2539	34°57.5	47°09'W		Penetration 1190 cm total length 1178 cm
	275	1149	Hit	2543					true core 1178 Core very disturbed because of amount of
									overpiping. (Silty) clay to clay. Dark yellowish brown (10 YR 4/2) to olive
									gray (5 Y 4/1). Olive gray - dark greenish gray color. Seven turbidite layers
									throughout core (which are silt). Abundant to common Hydrotroilite
	Core Camera								Main gear of motor in camera became loose from axle and no
	118B								film therefore advanced (2nd time). Now it was truly fixed by John Diebold.
	Bottom	1036	1232	2542	2543				Very smooth sediment bottom with very slight undulations, no ripples.
	Camera	1121	4 HITS	2543					Bottom is well packed though mud clouds appear taking long to
	223								disperse. Cloud clears in NE or east direction. Nodules: 12
	Current								direction: Northeast
	Meter								deflection: 1 to 2 mm but best measure is 1.3 mm.
	180								velocity: 3.7 to 5.3 cm/sec. " " " 4.2 cm/sec.
									nodules: 25
	Nephelometer	1005	1245						strong nephelbid layer at bottom approx. 130 fathoms
	220	1121							thick.

Chief Scientist

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DEPARTMENT OF GEOLOGY
LAMONT GEOLOGICAL OBSERVATORY
PALISADES

Research Vessel ROBERT D. CONRAD
CRUISE Nº 12
CRUISE LEG 13 From MAR DEL PLATA To BUENOS AIRES

TIME ZONE +3

Date	STATION and Nº	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
23	SONOBUOY	2200	2345	2574		35°56S	47°23W		Re. CHL. 1; SBCHL; 9; SPD5; SB PHONE 300
JAN	168	2345	0015						B DELAY; F.T.; FILTERS 4/25; 40/140;
69									PROF. 1871 & 1873
									NOT RECORDED.
									J.K.
24	MILLIPORE							307	FILTERS 18A & 18B 1 3/4 LITER A= TOP FILTER B= BOTTOM FILTER
JAN	SAMPLE		HIT						CORE HIT 275
69	18								
									J.K.
	Core	1029	1202	2293	2291	35°41.7	49°38'		Penetration 1093 cm total length 909 cm
	276	1101	Hit	2294		S	W		true core 909 cm Olive grey (5Y4/1) - Dark yellowish brown (10YR4/2)
									at top Olive grey (5Y3/2) - Med dark grey (N4) grading darker toward
									grayish black. Silty clay mostly except for 2 layers of turbidite
									sediments (SILT) olive grey (5Y3/2) to grayish black (N2). Hydrotroilite.
	Core Camera								very well packed sediment
	118								Orientation: North
									usables: 17
	Bottom	1011	1155	2294	2294				very well packed sediment and completely
	Camera	1051	4 HITS	2294					smooth with no ripples or undulations.
	224								There is scarce rock granulation
									17 usables
	Current								Direction: East
	Meter								deflection: 3 to 4.5 mm (4 is best)
	181								velocity: 6.9 to 9 cm/sec (8.3 is best)
									usables: 19
	Nephelometer								Strong nepheloid layer at bottom
	221								approx. 130 fms thick.

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CRUISE Nº 12
CRUISE LEG 13 From MAR DEL PLATA To BUENOS AIRES

TIME ZONE +3

Date	STATION and Nº	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
24	SONOBUOY	1804	2056	1826		35°31.5	50°44.1W		RC1 SBCHL 4 SPP. 4.6; SBPHONE 300FT1
JAN	169								PROF 1877 + 1878
69									NOT ON PDR.
									JIK.
24	TGRAD	1029	1202	2293	2291	35°41.7	49°38'	307	ALL GOOD 3 CONDUCTIVITY MEASUREMENTS
JAN	139	2352	HIT	2294		S	W		
1969									THERMOMETERS 11656 t 3.12 T 0.52
									7971 t 3.10 T 0.51
									3325 t 3.11 T 1.30?
25	Core #	0908	0913	78	77	35°21.2	52°35.6	308	Penetration; 170 ± 10 cm total length 315 cm
Jan	277	0911	Hit	78	↓	S	W	↓	true core 173 cm. Pipe bent ± 30° at 170 cm
69		↓	↓	↓	↓	↓	↓	↓	Olive black (5Y 2/1) to grayish black (N2) Sand
↓		↓	↓	↓	↓	↓	↓	↓	to silt. Shell fragments are common, small and
↓		↓	↓	↓	↓	↓	↓	↓	large. Mostly fine to very fine quartz grains, Rock fragments, Foram. common
↓	Core Camera	↓	↓	↓	↓	↓	↓	↓	Magnet did not rotate because spring pulling it
↓	119A	↓	↓	↓	↓	↓	↓	↓	into on position jammed. Therefore no film
↓		↓	↓	↓	↓	↓	~~[illegible]~~	↓	advanced. Problem was ~~[illegible]~~ solved and camera
↓		↓	↓	↓	↓	↓	↓	↓	was ready for next station.
									AMM
25	Core #	0950	0954	78	78	35°21.4	52°33.6	309	Penetration 186 cm total core length 169 + cm (174 cm incl. W.D.)
Jan	278	0952	Hit	78		S	W		true core 169 cm Sandy to silt, Olive black
69									(5Y 2/1). Shells and shell fragments common near bottom. Core
									portion ≥ 90%. Mostly fine to very fine quartz and rock
									grains. Foraminifera are rare to very rare at bottom.
25	Core #	1023	1030	120	110	35°21.5	52°32'	310	Penetration ≥ 110 cm total length 467 cm
Jan	279	1026	Hit	116		S	W		true core 129 cm. Shelly to Silty-Sandy Marl
69									between olive gray (5Y 3/2) and grayish olive green (5GY 3/2) to 75 cm
									Sandy to silty clay, between dark greenish gray (5GY 4/1) and medium
									dark gray (N4) interrupted by a Sandy to Silty marl (turbidite) layer 70-110 cm

There were no core cameras for stations 309 and 310 because core head was a bit smashed right where core camera is inserted. Camera could not possibly enter core head. The core head was fixed after all stations had been finished. AMM

[signature]
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PALISADES

Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG—From BUENOS AIRES To CAPETOWN

STATION SUMMARY

TIME ZONE _____

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG				REMARKS	
1	2	3	4	5	6	7	9	10	11	12	15	18	19
STA	DATE-HR.	LAT	LON	CORE	CORE-CAM	T-GRAD	CAMERA	NEPH	DREDGE	SONOB.	CUR.-MTR	VERT. PLANK.	GRAB
311	03 13	40°41'	54°07'	280	119	~~140~~	—	—			—	380	236-0
				4m	0								236-0
312	04 13	43°48	54°27'	281	120	140	225A	222			182	381	—
				5	0	1	0	2			0		—
313	05 13	46°17'	53°36'	282	121	141	225	223			182	382	237-0
				5	0	0	28	7			5-2		238-0
314	06 11	46°16'	49°41'	283	122	141	226	224			183	383	—
				11	20	3	29	6			3-3		—
315	07 11	47°26'	44°55'	284	123	—	227A	225			184	384	—
				10	0		227B	4			—		—
316	09 09	43°57'	39°56'	285	123	142	—	—			—	—	—
				11	0	2							—
317	10 09	43°57'	35°17'	286	124	143	227C	226A			—	—	239-0
				15	0	1	0	—					240-0
318	11 11	44°26'	31°07'	287	125	—	227D	226B			—	—	241-1
				9	0		0	—					242-1
319	12 14	46°36'	26°48'	288	126	144	—	—			—	—	243-1
				12	0	2							244-1
320	1309	47°54'	23°42'	289	127	145	227E	226			—	—	245-1
				10	0	3	0	1					246-1
321	14 10	45°38'	20°33'	290	128	146	227	227			—	—	247-1
				11	21	3	17	0					248-2
322	15 13	42°36'	17°48'	291	129	147	228	228			—	—	249-0
				10	5	3	18	0					250-0
323	16 14	39°41'	15°28'	292	130A	148	229	229			—	—	251-0
				12	0	3	18	0					252-0 253-0
324	17 15	36°53'	13°09'	293	130	149	230	230			—	385	—
				7	0	1	9	0					
325	18 19	37°16'	10°06'	294	131	—	231	231					254-0 255-0
				11	0		3	0					256-0
326	19 10	37°25'	9°12'	295	132A	—	232	232					257-0 258A
				2	0		11	0					258-2

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Chief Scientist

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PALISADES

Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG—From BUENOS AIRES To CAPETOWN

STATION SUMMARY TIME ZONE _____

Date	STATION and N°	TIME		SOUNDING		POSITION		LOG				REMARKS	
		Start	End	Start	End	Lat.	Long.						
1	2	3	4	5	6	7	9	10	11	12	15	18	19
STA	DATE-HR	LAT	LON	CORE	CORE-CAM	T-GRAD	CAMERA	NEPH	DREDGE	SONOB.	CUR-MTR	VERT PLANK	GRAB
327	20 03	37°18'	7°56'	296A	132B	—	—	—	—	—	—	—	259-1 260-1
~~328~~				0	0								261-1
328	20 15	37°04'	7°12'	296	132	—	—	—	4	—	—	—	262-0
				1	0				13				263-0
329	21 12	36°10'	6°44'	297	133	~~233~~	233	233	—	—	—	—	264-0 ~~265-0~~
				4	0	~~16~~	16	0					266-0
330	22 15	34°57'	4°45'	298	134	—	234	234	—	—	—	—	267-0 268-0
				1	2		15	0					~~269A~~ 269-0
331	23 15	34°05	1°01'	299	135	150	235	235	—	—	—	386	270-0 271-0
				10	0	2	15	0					272-0
332	24 16	32°53'	2°50'	300	136	151	236	236	—	—	—	387	273-8 274-7
				12	11	2	14	1	—	—	—	~~388~~	275-8 276-6
333	25 12	32°09'	5°40'	301	137	152	237	237	—	—	—	388	277-0
				7	0	2	1	3					278-0
334	26 14	31°10'	8°46'	302	138	153	238	238	—	—	—	389	279-0 280-0
				9	18	0	19	2					281-7 282-0
335	27 10	30°29'	11°33'	303	139	—	239	239	—	—	—	390	283-0 284-0
				9	0		17	1					285-0 286-0

G H Bryan
Chief Scientist

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CRUISE Nº 12
CRUISE LEG—From BUENOS AIRES To CAPETOWN

TIME ZONE ________

Date	STATION and Nº	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
3 Feb 69	Vertical Plankton Sample # 380	1306	1314			40°25.8' S	54°01.1 W	311	
3 Feb 69	Core # 280	1242 / 1839	1950 / Hit	2529 / 2563	2566	40°41.3 S	54°07' W	311	Penetration 685 Cm total length 437 Cm true Core 437 Cm Sandy to Silty clay Olive gray (5Y 4/1) - Dark yellowish brown (10YR 2/2) at top grading to light olive gray (5Y 5/2) - Moderate yellowish Brn (10YR 5/4) to light olive gray (5Y 5/2) grading to shale with olive gray (5Y 3/1). Some turbidite & Hydrotroilite [illegible]
3 FEB 1969	GRABBER 236 A / 236	FOR TIME SEE →		2529	2566	40°41.3 S	54°07' W	311 →	NO SAMPLE 1 LOST / LAUNCH 1635 SURF ? REC LOST / LAUNCH 1639 SURF ? REC 2030 / 2-36 LB WEIGHTS ON EACH
↓	Core Camera 119	1242 / 1839	1950 / Hit	2529 / 2563	2566	↓	↓	311	Compass buried in mud & bottom not in focus. No usables. [initials]
4 Feb 1969	Core Camera 120					43° 48.6' S	54° 26.5' W	312	Compass was buried & bottom not in focus no usables [initials]
↓	Bottom Camera 225A	—	—	—	—	↓	↓	↓	I forgot to connect strobe light wire to bottom camera. No exposures [initials]
↓	Current Meter 182A	—	—	—	—	↓	↓	↓	Same as bottom Camera 225A [initials]
↓	Nephelometer 222	1229 / 1348	1458 / HIT	2952 / 2952	2952	↓	↓	↓	[illegible] to strong nepheloid layer at bottom approx. 180 m thick [illegible] at top [illegible] and strong at bottom half. [initials]

[signature]
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PALISADES

Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG—From BUENOS AIRES To CAPETOWN

TIME ZONE

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
4	TGRAD	1308	1524	2952	2954	43°48.5'	54°26.5'	312	P3 ONLY PROBE IN MUD + GOOD S CONDUCTIVITY
FEB	140	1351	HIT	2958		S	W		MEASUREMENTS
1969									THERMOMETERS 11656 ± 2.17 T 0.58
									7971 ± 2.17 T 0.58
									3325 ± 2.19 T 0.60
4	Core #	1308	1524	2952	2954	43°48.5	54°26.5	312	Penetration 250!? cm total length 501 cm
Feb	281	1351	Hit	2958	Hit	S	W		true core 501 cm (?) Sandy (Fine) to coarse silty
69									Clay almost dark yellowish brown (10YR 4/2) grading to shade with
									Moderate yellowish brown 10YR 5/4 then toward Pale yellowish Brn (10YR 6/2)
									silty sand - turbidite layer Olive Black (5Y 2/2) alternating with Medium gray (N5) Dark Greenish Gray (5GY 4/1)
4	Vertical	1346	1354	2952				312	
feb	Plankton								
69	Sample #								
	381								
5	Core #	1257	1513	3202	3195	46°17'	53°36'	313	Penetration 680 cm total length 527 cm
Feb	282	1337	Hit	3202		S	W		true core 527 cm Clay, olive gray (5Y 4/1) to
69									dark yellowish brown (10YR 4/2) → lighter yellowish brown shades,
									lighter clays dark gray yellow (5Y 6/4) to Moderate yellowish brown (10YR 5/2)
									Sandy - turbidite layers 126-210 N3 - DGG (5GY 4/1) + DGG clay Below
5	Vertical	1235	1244	3202		46°17'	53°36'	313	
Feb	Plankton					S	W		
69	Sample #								
	382								
4	MILLIPORE	1229	1458					312	FILTERS 19X4 & ~~19B~~ 19B / 3/4 ft.
FEB	FILTER	1348	HIT						CORE HIT 281 N. 222
69	19								
									2K.
5	MILLIPORE	1231	1509					313	FILTERS 20 A & 20B
FEB	FILTERS	1337	HIT						CORE HIT 282
69	20								2K.

G. M. Bryan
Chief Scientist

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PALISADES

Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG 4 From Buenos Aires To Capetown

TIME ZONE

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
5	Core Camera							313	Bottom not within years
Feb.	121								Compass not visible
1969									
	Bottom	1231	1509	3200	3214				A rather firmly packed bottom probably
	Camera	1337	1415	3214					composed of mixture of sand and sedi-
	225								ment.
									2 5 weights
	Precision								direction: SSE
	Meter								deflection: 2.3 to 2.8 mm
	182								velocity: 5.8 to 6.5 cm. /sec.
									depth: 33
	Nephelometer	1213	1528						Nepheloid layer at bottom, approx. 300 fms.
	223	1337							thick first 220 fms off bottom registering of which layer and remainder, 180
									adjacent to bottom a heavy layer.
FEB 5 1969	GRABBER #237	1310	1650	3214	—	46°17's	53°36'W	313	NOT HEARD WHEN SURFACED DUE TO XMTR BREAKDOWN. NO SAMPLE. USED TWO 36 L6 WEIGHTS
FEB 5 1969	GRABBER #238	1312	1645	3214	—	46°17's	53°36'W	313	SURFACED AT 1540 - NO SAMPLE. USED TWO 36 L6 WEIGHTS
5	TGRAD	1251	1513	3202	3195	46°17'	53°36'	313	PIPE BENT P3 DESTROYED P2 OUT
FEB	141A	1337	HIT	3202		S	W		REF TRACES JUMPY
1969									TRIPOD THERMOMETER FRAME
									DESTROYED AT BOTTOM LOST

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Chief Scientist

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Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG 14 From B. A. To Capetown

TIME ZONE

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
6	Core #	1114	1341	3183	3190	46°46.3	49°41.2	314	Penetration 1130 Cm total length 1132 cm
Feb.	283	1205	Hit		3189	S	W		free Core 1132 Cm Clay Top dark yellowish brown (10 YR 3/4)
1969									to light olive grey (5Y 5/2) grading to light olive grey (5Y 5/2). Then shades
									of dark greenish grey (5GY 4/1) with some lutite bands (Dusky yellowish green
									5GY 5/2) to light olive grey (5Y 5/2) which are Chalk, Silty lutite, Marly, Hydrotroilite [illegible]
	Core Camera								firmly packed sediment bottom. Compass
	122								was knocked down but in such awkward
									position it reads that arm is pointing West
									20 usable.
	Bottom	1054	1316	3184	3188				firmly packed sediment. Living organisms.
	Camera	1150	44 ITS	3188					29 usable
	226								
	Current Meter 183								direction: East
									deflection: 3 to 4.2 mm.
									velocity: 6.9 to 8.5 cm/sec.
									usable: 35
	Nephelometer	1034	1234						Layer at bottom 650 fms. thick, first 585
	224	1150							fms. being a wk. to med. layer & remaining
									65 fms. at bottom a strong one
6	Vertical	1235	1244	3184		46°46.3	49°41.2	314	
Feb	Plankton					S	W		
69	Sample #								
	383								
6	T. GRAD	1114	1341	3183	3190	46°46.3	49°41.2	314	ALL 3 GOOD BUT REF TRACES STILL
FEB	141	1205	HIT	3189		S	W		JUMPY. 9 CONDUCTIVITY MEASUREMENTS.
1969									TRIGGER WEIGHT WRAPPED AROUND
									PIPE & DAMAGED [illegible] AT PULLOUT

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Chief Scientist

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PALISADES

Research Vessel ROBERT D. CONRAD
CRUISE Nº 12
CRUISE LEG—From B.A. To Cape Town

TIME ZONE ______

Date	STATION and Nº	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
6 FEB 69	MILLIPORE SAMPLE 21	1054 / 1150	1316 / HIT	3183		46°46'S	49°11'W	314	FILTERS 21A & 21B 1 3/4 l. CORE HIT 283 — [initials]
7 Feb. 1969	Core # 284	1024 / 1210	1614 / Hit	3090 / 3085	3071	47°27.5 S	44°51.8 W	315	Penetration 635 cm. Total length 977 cm free core 635 cm. Outcrop of very old Sediment. Light olive gray (5Y 5/2) shade of Moderate yellowish brown (10YR 5/4) with ice rafted rock fragments at top, [illegible] nodules, some Manganese covered, and Manganese found. Moderate yellowish brown (10YR 5/4) shades of Dusky yellow and Dark yellowish orange [illegible] darker [illegible] shade. Pictures were taken in water. [signature]
	Core Camera 123A								
	Bottom Camera 227A	1107 / 1205	1325 / 4 HITS	3090 / 3088	3088				Piece of wood holding magnet in place was not removed nor fell off while lowering. [signature]
	Current Meter 184A								Same as K227A [signature]
	Nephelometer 225	1046 / 1205	1339						Medium nepheloid layer at bottom 390 fms. thick. [signature]
7 Feb 69	Vertical Plankton Sample # 384	1111	1120	[illegible] / 3090	[illegible]	47°27.5 S	44°51.8 W	315	

[signature]
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LAMONT GEOLOGICAL OBSERVATORY
PALISADES

Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG 4 From B.A. To Capetown

TIME ZONE ______

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG
7	Bottom	1359	——	3090	~~30~~	47°27.5'	44°51.8'	315
Feb.	Camera	1457	3 HITS	3090		S	W	
1969	227B		(2-10' min hits)					
	Current Meter 184B							

REMARKS

Since SS315 was a very long station intended to re-splice core winch wire, I was granted permission by chief scientist to lower tripod for obtaining a successful CM + K stations which gave no results on preceding lowering during same ship station. A second lowering would not have interfered with station time by prolonging station unduly. Nephelometer was not lowered for the second lowering because first lowering was good.

On the way down everything seemed normal. The hits were taken as usual and were good with no excess wire having been paid out. On the way up everything appeared normal when all of a sudden at wire out of 1300 fathoms wire tension read in accumulator from 2300 2400 to 300 or so. Hence at that point tripod was lost. I brought up wire slowly and at wire out of 800 fathoms, the point at which wire snapped reached the surface! In other words along with the tripod 800 fathoms of wire were lost.

According to Peter Ollender, acting bosun mate, the hydrowire was already fatigued. It was already one year old in constant use! It was rusty and it had no "life" in it to spring back when it kinked or looped, as ~~[illegible]~~ it would easily do due to its poor condition. Quite probably a loop or kink was formed during hits when wire was left loose right at the point where wire broke although hits were normal with no excess wire having been paid out. Pete Ollender perceived many flat spots around breaking point. These spots are indicative of excessive strain.

[signature]

[signature]
Chief Scientist

Columbia University in the City of New York

DEPARTMENT OF GEOLOGY
LAMONT GEOLOGICAL OBSERVATORY
PALISADES

Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG—From B.A. To Capetown

TIME ZONE +3

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
7	MILLIPORE	1107	1325	3090		47.2?S	44°51'W	315	FILTERS 22A & 22B 1¾ LITER.
FEB	SAMPLE	1205	HIT						CORE HIT 284
69	22								
									J.K.
9	Core #	0910	1114	2737	2738	43°58.8	39°57'	316	Penetration ≐1298 cm (buried head total length 1115 cm
Feb	285	0949	Hit	2727		S	W		true core 1115 cm Clay, Moderate brown (10 YR 5/4)
69									to light olive gray (5Y 5/2) shades at top to Olive gray (5Y 4/1) grading
									to Olive gray (5Y 4/1) - Dark gray (N3) Color to dark greenish
									gray shade (5GY 4/1) with olive gray then medium gray N5 color. Coarse fraction ∠5%
9	TGRAD	0910	1114	2737	2738	43°58.8	39°57'	316	TRACES JUMPED AGAIN P3 OFF SCALE
FEB	142	0949	HIT	2727		S	W		P1 + P2 GOOD 8 CONDUCTIVITY MEASUREMENTS
1969									FOUND BAD COPPER STRIP & BROKEN CONNECTION
									ON AMPLIFIER BOARD WHICH I BELIEVE
									HAS BEEN THE CAUSE OF THE
10	TGRAD	1003	1159	2780	2777	43°56.7	35°16.5	317	TRACES STILL JUMPY. WILL REPLACE
FEB	143	1042	HIT	2777		S	W		CONVERTER & AMPLIFIER
1969									HEAD BURIED P1 GOOD P2 & P3 OFF
									SCALE PH - OUT 10 CONDUCTIVITY
									MEASUREMENTS
10	GRABBER	1010	1246	2780	—	43°56.7'	35°16.5'	317	SURFACED @ 1222 USED TWO 36Lb WEIGHTS
FEB	#239					S	W		NO SAMPLE
1969									
10	GRABBER	1012	1236	2780	—	43°56.7	35°16.5	317	NOT HEARD WHEN SURFACED DUE TO XMTR FAIL-
FEB	#240					S	W		URE. USED TWO 36Lb WEIGHTS, NO SAMPLE
1969									
9	Core Camera	0910	1114	2737	2738	43°58.8	39°57'	316	Liquid covered front part of core head.
Feb	123	0949	HIT	2727		S	W		Lens [illegible] No bottom
1969									[illegible] pictures

G.M. Bryan
Chief Scientist

Columbia University in the City of New York

DEPARTMENT OF GEOLOGY
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PALISADES

Research Vessel ROBERT D. CONRAD
CRUISE Nº 12
CRUISE LEG From B.A. To Capetown

TIME ZONE +3

Date	STATION and Nº	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
10	Bottom	0923	1136	2780	2778	43°56.7	35°16.5	317	Although entire equipment works perfectly well,
Feb.	Camera	1028	20 Hits	2778		S	W		no pictures of the bottom were taken, but pictures
14	227C								seem to have been taken on deck. Perhaps trig-
									ger line got stuck on way down. Reason for
									failure is unknown? [signature]
	Nephelometer	0903	1149						Nephelometer camera was working well
	226A	1028							before lowering. It appears that just below
									surface or at any depth a wire, went loose
									from a motor connection, so film advanced.
									[signature]
	Core	1003	1159	2777	2777	43°56.7	35° 16.5		No pictures of bottom at all. Camera head was
	Camera	1042	Hit	2777		S	W		covered with mud
	124								[signature]
	Core	1003	1159	2777	2777	43°56.7	35°16.5	317	Penetration ≥1998 cm total length 1552 cm
	286	1042	Hit	2777		S	W		true core 1552 cm Clay, Dark yellowish brown
									(10YR 4/2) with moderate yellowish brown (10YR 5/4) to light olive gray (5Y 5/2)
									Color. Then olive gray (5Y 4/1) to dark greenish gray (5GY 4/1) shades
									with burrows Dark gray (N3)-(N4) grayish black, Coarse fraction ≤10%
11	GRABBER	1135	1420	2542	—	44°26.3	31°05.5'	318	SURFACED @ 1333 . USED TWO 36 Lb WEIGHTS
FEB	#241					S	W		WEIGHT HAULED 6 oz . ASSORTED Rock
1969									FRAGMENTS
11	GRABBER	1138	1400	2542	—	44°26.3	31°05.5'	318	SURFACED @ 1337 . USED TWO 36 Lb WEIGHTS
FEB	#242					S	W		WEIGHT HAULED 3 oz . ASSORTED ROCK
1969									FRAGMENTS.
11	Core #	1111	1246	2541	2541	44°26.3	31°05.5	318	Penetration 1200 cm total length 946 cm
Feb	287	1144	Hit	2541		S	W		true core 946 cm Clay; dark yellowish brown 10YR 4/2 to Moderate
69									yellowish brown (10YR 5/4) at top. Light olive gray (5Y 5/2). Then to Greenish
									gray (5GY 6/1) → Dark greenish gray 5GY 4/1 to olive gray (5Y 4/1) → grayish olive

then greenish gray (5GY 6/1) then Dark greenish gray - olive gray to Bot. (10Y 4/2)

[signature] Chief Scientist

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PALISADES

Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG—From BUENOS AIRES To CAPE TOWN

TIME ZONE +2

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	STA ~~LOG~~	REMARKS
12	GRABBER	1349	1655	2570	—	46°36.2	26°50.1'	319	SURFACED @ 1549. USED TWO 36 Lb WEIGHTS
FEB	#243					S	W		USED SAMPLER #96 WITH 27.095 MHz XMTR
1969									WEIGHT HAULED 1 OZ OF ROCK FRAGMENTS
12	GRABBER	1351	1710	2570	—	46°36.2	26°50.1'	319	NOT HEARD WHEN SURFACED, USED TWO 36
FEB	#244					S	W		Lb WEIGHTS, USED SAMPLER #97 WITH
1969									27.145 MHz XMTR. WEIGHT HAULED
									3 OZ OF ROCK FRAGMENTS
12	T-GRAD	1348	1535	2574	2570	46°36.2	26°48.5	319	REPLACED CONVERTER + AMPLIFIER
FEB	#144	1424	HIT	2560		S	W		REC TRACES BACK TO LINE
1969									HEAD BURIED P3 OFF SCALE
									P1 + P2 GOOD 8 CONDUCTIVITY
									MEASUREMENTS
12	Core #	1348	1340	2572	2570	46°36.2	26°50.1	319	(Penetration ≥ 1298 cm Buried head) Total length 1200 cm
Feb	7-88	1424	Hit	2560		S	W		fine core 1200 cm. Slightly dusky yellow (5Y 6/4) shade
1969									of light olive gray clay at top olive gray (5Y 4/1) to dark
									greenish gray (5GY 4/1) Diatom - Radiolarian clay grading toward
									grayish olive ~~[illegible]~~ (10Y 4/2) to light olive gray (5Y 6/1) lighter then dark again
13	GRABBER	0933	1203	2400	—	47°54.3	23°41.5'	320	NOT HEARD WHEN SURFACED. USED SAMPLER #96
FEB	#245					S	W		WITH 27095 XMTR. WEIGHT HAULED 3 OZ OF
1969									MANGANESE AND ROCK FRAGMENTS
13	GRABBER	0935	1155	2400	—	47°54.3	23°41.5'	320	NOT HEARD WHEN SURFACED. USED SAMPLER
FEB	#246					S	W		#97 WITH 27145 XMTR. WEIGHT HAULED 8 OZ
1969									OF MANGANESE AND ROCK FRAGMENTS.
13	T-GRAD	0954	1131	2400	2410	47°54.2	23°41.5	320	ALL 3 PROBES GOOD - 8 CONDUCTIVITY
FEB	#145	1026	HIT	2403		S	W		MEASUREMENTS. APPARENT RISE
1969									AT END OF WAIT IN MUD BUT
									NO APPARENT MOTION OF CORE IN MUD

G M Bryan
Chief Scientist

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PALISADES

Research Vessel ROBERT D. CONRAD
CRUISE Nº 12
CRUISE LEG 4 From BA. To Capetown

TIME ZONE

Date	STATION and Nº	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
11 Feb. 1969	Bottom Camera 227D	1054 1146	1248 20 hits	2540 2541	2541	44°36.3 S	31°05.5' W	318	No exposure of bottom, reason being unknown. On deck everything seems fine. Stopping test [illegible?]
	Nephelometer 226B	1022 1146	1258						Motor gears were jammed on way down
	Core Camera 125	1111 1144	1246 HIT	2541 2541	2541				Bottom not within focus. Compass was buried
12 Feb. 1969	Core Camera 126	1348 1424	1540 HIT	2572 2560	2570	46°36.2 S	26° 50.1 W	319	Core head was buried
13 Feb. 1969	Bottom Camera 227E	0938 1035	1142 20 HITS	2400 2403	2403	47° 56.2 S	23° 41.5' W	320	Same as above for K227D
	Nephelometer 226	0852 1035	1153 HIT						Medium layer at bottom approx. 115 fms thick
	Core Camera 127	0954 1026	1131 HIT	2401 2403	2410				Bottom not within focus. No orientation because compass was quite buried.

Chief Scientist

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Research Vessel ROBERT D. CONRAD
CRUISE Nº 12
CRUISE LEG—From B. A. To Capetown

TIME ZONE +2

Date	STATION and Nº	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
13	Core #	0954	1131	2401	2410	47°54.2	23°41.5	320	Penetration 1226 cm total length 1035
Feb	289	1026	Hit	2403		S	W		true core 960 cm Clay at top - light olive gray (5Y5/2)
69									to yellowish gray (5Y7/2) with shades of Pale yellowish Brown
									(10YR6/2), dark yellowish brown (10YR4/2) speckle. Grayish olive to Medium
									gray N5 diatom clay below, to darker and lighter shade
14	Core #	1043	1227	2300	2292	45°38.6	20°32.8 W	321	Penetration 995 cm total length 1047 cm
Feb	290	1114	Hit	2293		S	W		true core 926 cm Foraminiferal Marl to chalk, pale
69									yellowish brown 10YR6/2 - Dark yellowish brown (10YR4/2) to yellowish
									gray 5Y8/1 shades of grayish orange (10YR7/4) then to light olive gray 5Y5/2.
									Grayish olive (10Y4/2) shades some dusky yellow Clay to Radiolarian-Diatom ooze
14	GRABBER	1009	1243	2293	—	45°38.6	20°32.8'	321	NOT HEARD WHEN SURFACED, USED SAMPLER #96
FEB	#247					S	W		WITH 27095 MHz XMTR. WEIGHT HAULED 4oz.
1969									DESCRIPTION: ROCK FRAGMENTS
14	GRABBER	1013	1240	2293	—	45°38.6'	20°32.8'	321	SURFACED @ 1200, USED SAMPLER #97 WITH
FEB	#248					S	W		27145 MHz XMTR. WEIGHT HAULED 1 3/4 Lbs.
1969									DESCRIPTION: ROCK FRAGMENTS AND MANGA-
									NESE NODULES.
14	T-GRAD	1043	1227	2300	2292	45°38.6	20°32.8	321	REF TRACES JUMPY - COMPRESSED -
FEB	#146	1114	HIT	2293		S	W		SENSITIVITY OF AMPLIFIER DECREASED
1969									DEFLECTION OF PROBES NEGLIGIBLE
									AND LOW. 7 CONDUCTIVITY MEASUREMENTS
15	GRABBER	1343	1624	1932	—	42°35.3	17°48.1'	322	NOT HEARD WHEN SURFACED, USED SAMPLER #99 WITH
FEB	#249					S	W		27095 MHz XMTR. NO SAMPLE
1969									
15	GRABBER	1346	1615	1932	—	42°35.3'	17°48.1'	322	SURFACED @ 1516, USED SAMPLER #97 WITH
FEB	#250					S	W		27145 MHz XMTR. NO SAMPLE
1969									

G.W. Bryan
Chief Scientist

Columbia University in the City of New York

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Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG 14 From B.A. To Capetown

TIME ZONE +2

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
14	Bottom	1018	1216	2297	2294	45° 38.6	20° 37.8'	321	Soft sediment with partly buried nodules
Feb.	Camera	1113	3 hits	2294		S	W		presumably of manganese. Some animal
1969	227								tracks & burrows are visible.
									17 usables
	Pingelometer	0927	1238						No layer
	227	1113							
	Core Camera	1043	1227	2300	2292				Found bottom
	128.	1114	HIT	2293					N.W. orientation
									21 usables
15	T GRAD.	1415	1535	1936	1930	42°35.2	17°40'	322	ALL 3 PROBES GOOD
FEB	147	1445	HIT	1932		S	W		6 CONDUCTIVITY MEASUREMENTS
1969									
	Core Camera								Soft smooth bottom
	129								Compass was buried
									5 usables
	Bottom	1348	1542	1930	1930				Soft smooth bottom. No ripples or signs of strong
	Camera	1436	2041TS	1930					currents. A few stone pebbles visible
	228								18 usables
	Pingelometer	1310	1557						No nepheloid layer
	228	1436							

G.M. Bryan
Chief Scientist

Columbia University
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Research Vessel ROBERT D. CONRAD
CRUISE N° ~~14~~ 12
CRUISE LEG—From BUENOS AIRES To CAPE TOWN

TIME ZONE +2

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
15	Gr #	1415	1553	1865	1930	[redacted]		322	Penetration 1203 cm total length 1000 cm
Feb	251	1445	Hit	1883		42°35.2	17°48'		trace core 780 cm ?, Foraminiferal ooze, pale
69						S	W		yellowish brown (10YR 5/4) to yellowish gray (5Y 7/2) to pinkish
									gray (5YR 8/1). Light olive gray (5Y 6/1) Greenish gray (5GY 6/1) streaks also
									from ooze. Chalk ooze Foraminiferal, light olive gray (5Y 6/1) below chalk layer/sediment.
16	GRABBER	1427	1635	1897	—	39°40.6'	15°28.2'	323	SURFACED @ 1555. USED SAMPLER #97 WITH
FEB	#251					S	W		27095 X MTR. NO SAMPLE
1969									
16	GRABBER	1430	1645	1897	—	39°40.6'	15°28.2'	323	DID NOT CARRY XMTR. USED SAMPLER #98
FEB	#252					S	W		NO SAMPLE
1969									
16	GRABBER	1432	1640	1897	—	39°40.6'	15°28.2'	323	SURFACED @ 1558. USED SAMPLER #99 WITH
FEB	#253					S	W		27145 MH₂ XMTR. NO SAMPLE.
1969									
16	T-GRAD	1454	1611	1898	1896	39°40.6'	15°28.5'	323	TRACES JUMPED SLIGHTLY OUT
FEB	#148	1521	HIT	1897		S	W		ALL 3 GOOD. 8 CONDUCTIVITY
1969									MEASUREMENTS
17	TGRAD	1509	1628	1820	1804	36°53'	13°09	324	P_3 DESTROYED P_2 GOOD P_1 DIDN'T
FEB	149	1535	HIT	1818		S	W		PENETRATE — 5 CONDUCTIVITY
1969									MEASUREMENTS

J. M. Bryan
Chief Scientist

Columbia University in the City of New York

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Research Vessel ROBERT D. CONRAD
CRUISE Nº 12
CRUISE LEG 14 From B.A. To Capetown

TIME ZONE

Date	STATION and Nº	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
16	Core	1454	1611	1897	1896	39°06'	15°28.5'	323	Penetration 1170 cm 1169 cm total length
Feb	292	1521	Hit	1897		S	W		1169 cm true core Type is Foraminiferal ooze light
1969									olive gray (5Y 6/1) to pinkish gray (5YR 8/1). Light olive
									gray (5Y 6/1) to yellowish gray (5Y 7/2) to (N7) light gray Foraminiferal
									chalk ooze & then Chalk of about same color. Core penetration ...
	Core								Pin releasing magnet broke. Camera, therefore,
	Camera								did not function
	130A								
									[signature]
	Bottom	1435	1605	1900	1897				rough bottom a mixture of sand & sediment
	Camera	1516	on bott.	1897	—				as evidenced by core. Trails & burrows.
	229								18 usables
									[signature]
	Nephelometer	1341	1611						No layer
	229	1516							
									[signature]
17	Core Camera	1508	1628	1820	1823	36°53'	13°09'	324	bottom not within focus
Feb	130	1535	Hit	1824		S	W		Compass was somehow buried as pipe
1969									left
									[signature]
	Bottom	1438	1601						Loosely packed sediment with tracks &
	Camera	1521							trails. In some frames beside regular
	230								straight trails, a spiral trail [illegible] by a
									"small [illegible]" is visible [signature]
									9 usables
	Nephelometer	1419	1614						No nepheloid layer.
	230	1521							
									[signature]

G. M. Bryan
Chief Scientist

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PALISADES

Research Vessel ROBERT D. CONRAD
CRUISE Nº 12
CRUISE LEG—From B. A. To Capetown

TIME ZONE +1

Date	STATION and Nº	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
17	Core #	1508	1628	1818	1804	36°53	13°09'W	324	Penetration ~656 cm total length cm
Feb	293	1535	Hit	1818		S			true core cm Pipe bent ∢ 65° at 656
69									Pale yellowish brown (10YR 6/2) to med gray (N5) at top Foraminiferal
									chalk ooze, Grayish orange (10YR 7/4) Foraminiferal Chalk ooze layer.
									Ash layers at 295, 469, 480 cm Brownish black (5YR 2/1).
18	Core #	1954	2105	1771	1780	37°15.6	~~[illegible]~~	325	Penetration 805 cm total length 1112 cm
Feb	294	2022	Hit	1773		S	10°05.8		true core 780 cm Pale yellowish brown (10YR 6/2)
69							W		to grayish orange (10YR 7/4) at top, becoming very light
									gray (N8) grading to light gray N7. Foraminiferal chalk
									ooze to Foraminiferal chalk (Very high carb.) Ash layer 422, 476 cm olive gray (5Y 4/1)
17	Vertical					36°53	13°09'W	324	
Feb	Plankton					S			
69	Sample # 385								
18	Core					37°15.6	10°05.8'	325	Bottom not visible
Feb.	Camera					S	W		Orientation not reliable
1969	131					↓	↓	↓	[signature]
↓	Bottom	1919	2058	1770	1770	↓	↓	↓	firmly packed sediment; Rough terrain with
↓	Camera	2008	20 HITS	1770	↓	↓	↓	↓	granulations. Star fish and numerous
↓	231			↓	↓	↓	↓	↓	Animal trails are visible
↓				↓	↓	↓	↓	↓	3 useable [signature]
↓	Nephelometer	1827	2111	↓	↓	↓	↓	↓	No layer
↓	231	2008		↓	↓	↓	↓	↓	[signature]
18	GRABBER	1904	2155	1770	—	37°15.8	10°05.8'	325	NOT HEARD WHEN SURFACED. USED SAMPLER # 97
FEB	# 254					S	W		WITH STROBE AND STEADY LIGHTS AND 27015
1969									MHz XMTR. NO SAMPLE

G. M. Bryan
Chief Scientist

Columbia University in the City of New York

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PALISADES

Research Vessel ROBERT D. CONRAD
CRUISE Nº 12
CRUISE LEG—From BUENOS AIRES To CAPE TOWN

TIME ZONE +1

Date	STATION and Nº	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
18 FEB 1969	GRABBER #255	1908	2150	1770	—	37°15.8' S	10°05.8' W	325	DID NOT CARRY XMTR. USED SAMPLER #98 WITH STROBE AND STEADY LIGHTS, SIGHTED ON SURFACE @ ≃ 2030 hs, NO SAMPLE
18 FEB 1969	GRABBER #256	1912	2201	1770	—	37°15.8' S	10°05.8' W	325	SURFACED @ 2030 hs. USED SAMPLER #99 WITH 27145 MHz XMTR, AND STROBE AND STEADY LIGHTS. NO SAMPLE.
19 Feb 69	Core #7295	1133 / 1150	1209 / Hit	830 / 832	8~~7~~	37°27.5' S	09°10.9' W	32~~6~~	Penetration ≥ 90 cm total length 144 cm May be [illegible] true length 144 cm. Top 5 MM is a layer of manganese; another layer at 25 cm. Top (0-5? cm) [illegible] layer (very low carbonate), Light brown (5YR 5/6) to moderate brown (5YR 4/4), Rest is Foraminiferal ooze Pale yellowish brown (10YR 6/2) to grayish orange
19 FEB 1969	GRABBER #257	1014	1145	840	—	37°27.5' S	09°10.9' W	326	NOT HEARD WHEN SURFACED. USED GRABBER #97 WITH 26995 MHz XMTR, NO SAMPLE
19 FEB 1969	GRABBER #258-A	1016	—	835	—	37°27.5' S	09°10.9' W	326	SAMPLER DID NOT SURFACE. PROBABLY DID NOT BREAK AWAY LOOSE WHEN GRABBED SAMPLE ON HARD BOTTOM. SAMPLER LOST. USED SAMPLER #98
19 FEB 1969	GRABBER #258	1020	1215	830	—	37°27.5' S	09°10.9' W	326	SURFACED @ 1100 hs. USED GRABBER #99 WITH 27145 MHz XMTR. WEIGHT HAULED 1.5 Lb. DESCRIPTION: CORAL WITH MANGANESE LAYER AND ORGANIC LIFE.

G.M. Bryan
Chief Scientist

Columbia University in the City of New York

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Research Vessel ROBERT D. CONRAD
CRUISE Nº 12
CRUISE LEG 14 From B.A. To [illegible]

TIME ZONE +1

Date	STATION and Nº	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
19 Feb 1969	Core Camera 132A	1133 / 1130	1209 / Hit	830 / 832	872	37°27.5' S	09°10.9' W	326	failure of strobe light to go on. No exposures
									[signature]
	Bottom Camera 232	1027 / 1051	1129 / 15 HITS	800 / 845	872				Pure coral / " rubble
									[signature]
	Nephelometer 232	0936 / 1051	1147						No layer
									[signature]
20 Feb 69	Core # 296 A	0244 / 0303	0323 / Hit	811 / 822	833	37°17.8 S	07°35.5 W	327	Penetration 0 cm total length 0 cm / true core 0 cms A few chips of rock or manganese caught in core catcher of trigger weight core. Cutting edge ripped off - screws sheared.
20 FEB 1969	GRABBER #259	0247	0354	807	—	37°12.5' S	08°03.4 W	327	SURFACED @ 0324 WEIGHT HAULED 1Lb of PEBBLES
20 FEB 1969	GRABBER #260	0250	0404	810	—	37°12.5' S	08°03.4' W	327	SURFACED @ 0328. WEIGHT HAULED 1 OZ OF PEBBLES
20 FEB 1969	GRABBER #261	0253	0415	815	—	37°12.5' S	08°03.4' W	327	SURFACED @ 0330 WEIGHT HAULED 3 OZ OF PEBBELES

[signature]
Chief Scientist

Columbia University in the City of New York

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Research Vessel ROBERT D. CONRAD
CRUISE Nº 12
CRUISE LEG—From BUENOS AIRES To CAPE TOWN

TIME ZONE +1

Date	STATION and Nº	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
20	GRABBER	1435	1640	1410	—	37°03.5'	07°12.1'	328	SURFACED @ 1540 USED SAMPLER #97 WITH 27145
FEB	# 262					S	W		MH+ XMTR. NO SAMPLE
1969									
20	GRABBER	1438	1625	1410	—	37°03.5	07°12.1'	328	SURFACED @ 1544 USED SAMPLER # 99
FEB	# 263					S	W		NO SAMPLE
1969									
20	Core #	1444	1546	1410	1550	37°04'	07°12.2	328	Penetration ? cm total length 40 cm
Feb	296	1511	Hit	1440		S	W		true length 40 cm 0-10 cm Manganese layer
69									black (N1) to Brownish black (10 YR 2/2). 10-12 cm Foraminiferal
									ooze layer - very pale orange (10YR 8/2). 12-40 cm - Lutyte - shell
						[redacted]	7°11.3		marl - grayish orange 10YR 7/4 to medium light gray N6
20	Dredge	1703	2114			37°03.4 ↓	W to	328	Crown dredge with small rectangular dredge in tow.
Feb	(Rock) #	on bottom 1743	2026	on bottom 1620	1760	S to	7°11.9 W		Small and large (27 × 11 × 10 cm largest piece)
69	4					37°03.4			Chunks of Manganese with some lutyte layers and nodules
						S			within. Large pieces with bumpy surface. Some limonite
									staining on inside of break, also some cylindrical tunnels
	Core Camera	0244	0323	811	833	37°17.8'	07°55.5'	327	Strobe light did not flash for unknown reason.
	132B	0303	HIT	822		S	W		
									[signature]
	Core Camera	1444	1546	1410	1550	37°03.5'	07°12.1'	328	Compass was knocked down when core head
	132	1511	HIT	1440		S	W		hit. No orientation reading and no clear bottom
									pictures
									[signature]

[signature]
Chief Scientist

Columbia University
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PALISADES

Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG 14 From B.A. To Capetown

TIME ZONE +1

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
21 Feb. 1969	Core Camera 133	1137 1206	1305 MIT	~~1845~~ ~~1850~~ 1840	1966	36°09.4 S	06° 43.0 W	324	No bottom pictures Orientation not reliable
	Bottom Camera 233	~~1118~~ 1157	1630 30 HITS	1845 1858	1700				Large rock boulders in some frames; rock slabs in others; many areas; flower like feature; worm-like trails; very rough bottom; ripples in one frame; Unidentifiable
	Nephelometer 1233	0450 1157	1647 00						two nepheloid layers
21 Feb 1969	Core # 297	1137 1206	1305 Hit	1890	1966	36°09.4 S	06° 43.0 W	329	Penetration ≥ 145 cm total length 364 cm true Core 364 cm (??) Foraminiferal ooze, Very pale orange (10YR 8/2) to pale yellowish brown (10YR 6/2) becoming darker. Pale yellowish brown to grayish orange (10YR 7/4) with white patches - Foraminiferal chalk ooze. Layer of Foram ooze again, Chalk ooze to end.
21 FEB 1969	GRABBER # 264	1119	1740	1853	—	36°09.5 $	06°42.5' W	329	SURFACED @ 1243. USED SAMPLER #97 WITH 27145 MHz XMTR. NO SAMPLE. RECOVERY DELAYED DUE TO HYDRO WINCH WIRE BREAK DOWN
21 FEB 1969	GRABBER # 265	1122	1750	1858	—	36°09.5 $	06°42.5 W	329	SURFACED @ 1248. USED SAMPLER # 99 NO SAMPLE
21 FEB 1969	GRABBER # 266	1125	1757	1864	—	36°09.5 $	06°42.5' W	329	SURFACED @ 1251. USED SAMPLER #100 WITH 26995 MHz XMTR. NO SAMPLE

J. M. Bryan
Chief Scientist

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Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG—From BUENOS AIRES To CAPE TOWN

TIME ZONE +1

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
22	Core Camera	1502	1553	1160	1103	34°57.4'	04°45.2'	330	No bottom pictures
Feb.	134	1524	HIT	1190		S	W		Presumably 2 frames show N.E. orientation
1969									[signature]
	Bottom	1449	1553	1142	1166				Large rock boulders lying on porous presumably
	Camera	1517	20 HITS	1166					volcanic material. Bottom in general looks
	234								irregular and full of holes.
									~~No~~ 15 nodules [signature]
	Reflectometer								No reflected layer
	234								[signature]
22	Core #	1502	1553	1160	1103	34°57.4	04°45.2	330	Penetration 16(?) cm total length 55 cm
Feb	298	1524	Hit	1190		S	W		true length 55 cm(??) Mixed Foraminiferal ooze
69									and manganese fragments top 14cm. Layer of manganese—
									brownish black (5YR 2/1 to Black (N1)). Foraminiferal ooze layer
									light olive grey (5Y 5/2) to pale yellowish brown (10YR 6/2) speckled with Manganese,
22	GRABBER	1449	1617	1143	—	34°57.2'	04°45.3'	330	SURFACED @ 1546. USED SAMPLER #97 WITH
FEB	#267					S	W		27145 MHz XMTR, WEIGHT HAULED 1 OZ OF
1969									SEA SHELLS SOME APPARENTLY COVERED
									WITH MANGANESE
22	GRABBER	1451	1627	1144	—	34°57.2'	04°45.3'	330	SURFACED @ 1548 USED SAMPLER #99
FEB	#268					S	W		WEIGHT HAULED 1 OZ. OF SEA SHELLS
1969									WITH MANGANESE COVER
22	GRABBER	1453	—	1143	—	34°57.2'	04°45.3'	330	DID NOT SURFACE. LOST
FEB	#269-A					S	W		USED SAMPLER # 100 WITH 26995 MHz XMTR
1969									

[signature]
Chief Scientist

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CRUISE N° 12
CRUISE LEG—From BUENOS AIRES To CAPE TOWN

TIME ZONE 0

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
22 FEB 1969	GRABBER #269	1456	1625	1142	—	34°57.2' S	04°45.3' W	330	SURFACED @ 1552. USED SAMPLER # 102 WITH 27145 MHz XMTR. WEIGHT HAULED 1/4 OZ OF SEA SHELLS SOME WITH APPARENTLY A MANGANESE [redacted] LAYER ON THEM
23 Feb 69	Vertical Plankton Sample # 398	1354	1403	2283		34°04.8' S	1°00' W	331	
23 Feb 69	Core # 299	1420	1556	2263	2300	34°04.8' S	1°00'W	331	Penetration 1202cm total length 1047 cm true core 927 cm
		1452	Hit	2294					
23 FEB 1969	GRABBER #270	1347	1629	2236	—	34°04.7' S	01°00.8' W	331	SURFACED @ 1531 USED SAMPLER # 97 WITH 27145 MHz XMTR. WEIGHT HAULED 1/4 OZ OF PEBBLES.
23 FEB 1969	GRABBER #271	1350	1635	2235	—	34°04.7' S	01°00.8' W	331	USED SAMPLER # 99. WEIGHT HAULED [redacted] 1/4 OZ OF PEBBLES.
23 FEB 1969	GRABBER #272	1352	1639	2237	—	34°04.7' S	01°00.8' W	331	SURFACED @ 1537 USED SAMPLER # 102 WITH 27145 XMTR. NO SAMPLE
23 FEB 1969	TGRAD 150	1420	1556	2236	2300	34°04.8' S	01°00.8' W	331	P_1 & P_2 GOOD BUT A LOT OF MOVEMENT. 7 CONDUCTIVITY MEASUREMENTS [redacted] CORE # T (THERMOMETERS) 3740 24.4 1.47 2690 24.5 1.51
		1452	HIT	2294					

G M Bryan
Chief Scientist

Columbia University
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Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG 7 From B.A. To Capetown

TIME ZONE 0

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
23	Bottom Camera	1420	1556	2263	2300	34°04.7	01° 00.8'	331	Bottom not in focus
Feb.	135	1452	HIT	2294		S	W		Compass was buried.
1969									
	Bottom	1356	1547	2236	2275				Very smooth bottom surface made up probably
	Camera	1450	20 HITS	2275					of probably a mixture of sediment & [illegible]
	236								[illegible]. There are very slight undulations. [illegible]
									[illegible] spiral tracks and a straight line
									track with branches. 15 usable
	Nephelometer	1323	1454						No nepheloid layer.
	236	1450							
24	TGRAD	1530	1724	2488	2473	32°53'	2°50'	332	P1 & P3 GOOD P2 OUT 6 CONDUCTIVITY
FEB	151	1609	HIT	2475		S	E		MEASUREMENTS CORE THERMOMETERS
1969									3740 t 25.1 T 1.47
									2690 t 25.2 T 1.50
24	GRABBER	1455	1755	2488	—	32°53.0	02°50.0'	332	SURFACED @ 1656 USED SAMPLER # 97 WITH
FEB	# 273					S	E		27.145 MHz XMTR. WEIGHT HAULED 8 Lb OF
1969									MANGANESE NODULES.
24	GRABBER	1458	1755	2488	—	32°53.0	02°50.0	332	SURFACED @ 1659. USED SAMPLER # 99
FEB	# 274					S	E		WEIGHT HAULED 7 Lb OF MANGANESE
1969									NODULES
24	GRABBER	1459	1803	2488	—	32°53.0	02°50.0'	332	SURFACED @ 1703. USED SAMPLER # 102
FEB	#275					S	E		WITH 27.145 MHz XMTR WEIGHT HAULED
1969									8 Lb OF MANGANESE NODULES

G. W. Bryan
Chief Scientist

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Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG 14 From BUENOS AIRES To CAPE TOWN

TIME ZONE 0

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
24 FEB 1969	GRABBER # 276	1401	1752	2488	—	32°53.0' S	02°50.0' E	332	SURFACED @ 1704. USED SAMPLER # 121 WEIGHT HAULED 6.5 Lb OF MANGANESE NODULES.
↓	Core Camera 136	1531 / 1610	1724 / Hit	2487 / 2475	2470	32°53.0' S	02°50.0' E	332	Bottom not within frames. SE. 11 useables [signature]
↓	Bottom Camera 236	1508 / 1602	1655 / 1614 VIS	↓	↓	↓	↓	↓	Manganese nodules (film underexposed) 14 useables [signature]
↓	Nephelometer 236	↓	↓	↓	↓	↓	↓	↓	Nephelioid layer (medium) for last 5 minutes to bottom (15 minutes on way down) [signature]
24 Feb 69	Vertical Plankton Sample # 387					32°53 S	2°50' E	332	
24 Feb 69	Core # 300	1531 / 1610	1724 / Hit	2483 / 2475	2473	32°53 S	2°50' E	332	Penetration 890 cm (questionable) total length 1201 cm true core 686 cm Typical red clay core Moderate yellowish brown (10YR 5/4) to moderate brown (5YR 4/4) Marl, grading to clay below ~300 cm. Grades to moderate brown (5YR 4/4 - 3/4). Coarse fraction, 5%. fairly steeply sloping bottom.
25 Feb 69	Vertical Plankton Sample # 388	1103	1110					333	

[signature]
Chief Scientist

Columbia University in the City of New York

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CRUISE N° 12
CRUISE LEG 14 From B.A. To Capetown

TIME ZONE 0

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
25	Core Camera							333	Bottom not within focus.
Feb.	137								Compass was buried
1969									[illegible]
									[signature]
	Bottom	1113	1311	2702	2692				Very soft smooth sediment.
	Camera	1212	2014/135	2698					Off [illegible]. Only one because trigger
	237								mechanism reacted very sluggishly
									due to softness of sediment [signature]
	Nephelometer	1052	1323						Weak nepheloid layer with a duration
	237	1212							on way down of 10 minutes or approx.
									330 fathoms thick on bottom
									[signature]
	T GRAD	1155	1403	2700	2690	32°09.8	5°40'	333	BOTTOM PIPE BROKEN AT COUPLING P_3 & P_4 GOOD
25	152	1233	HIT	2696		S	E		P_2 LEAKED BUT WAS NOT IN MUD. P_1 IN
FEB									MUD WHEN CORE HEAD BENT OVER
1969									6 CONDUCTIVITY MEASUREMENTS
25	GRABBER	1103	1438	2700	—	32°09.8	05°39.7'	333	SURFACED @ 1313 USED SAMPLER #97 WITH 27145
FEB	#277					S	E		MHz XMTR. WEIGHT HAULED 2 OZ OF BLACK
1969									NODULES WITH LARGE QUANTITIES OF MUD
25	GRABBER	1107	1435	2701	—	32°09.8'	05°39.7'	333	SURFACED @ 1317 USED SAMPLER #99 WITH
FEB	#288					S	E		27095 MHz XMTR. WEIGHT HAULED 2 OZ OF
1969									BLACK NODULES WITH LARGE QUANTITIES
									OF MUD
25	Core #	1155	1403	2700	2690			333	Penetration 1048(??) cm total length 754 cm
Feb	301	1233	Hit	2696					true core 677 cm Core fell over - pipe bent ∠90°, broke pipe
69									Very hilly, hard bottom. Marl to clay (foraminiferal) grading to clay. Dark
									yellowish brown (10YR 4/2) to moderate brown (5YR 4/4) with some moderate yellowish brown.

G.W. Bryan
Chief Scientist

Columbia University
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CRUISE N° 12
CRUISE LEG 14 From BUENOS AIRES To CAPE TOWN

TIME ZONE —1

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
25 FEB 69	SONOBUOY 170	1500	1700	2698		32°08.S	5°47 E		RC. 1 SBCHL. 10 SPEED 5.0 SB PHONE 60 FT. FAST TRAV. "B" DELAY 4 SEC PROFILERS 2016 & 2017. NOT ON PDR (3.5Kc) J.K.
26 FEB 1969	GRABBER #279	1302	1635	2604	—	31°10.5' S	08°46.2' E	334	SURFACED @ 1501. USED SAMPLER # 97 WITH 27125 MHz XMTR. NO SAMPLE
26 FEB 1969	GRABBER #280	1305	1649	2604	—	31°10.5' S	08°46.2' E	334	NOT SEEN WHEN SURFACED. USED SAMPLER # 99, NO SAMPLE
26 FEB 1969	GRABBER #281	1307	1655	2604	—	31°10.5' S	08°46.2' E	334	SURFACED @ 1512. USED SAMPLER # 102 WITH 27145 MHz XMTR. WEIGHT HAULED 7Lbs OF MANGANESE NODULES WITH DIAMETERS VARYING FROM 3 to 1 inches
26 FEB 1969	GRABBER # 282	1309	1642	2604	—	31°10.5 S	08°46.2' E	334	SURFACED @ 1514. USED SAMPLER # 121 NO SAMPLE
↓	Bottom Camera 238	1317 1411	1508 20 HITS	2604 2604	2607	↓	↓	↓	Manganese nodules. Some rocks are visible. [illegible] [signature]
↓	Nephelometer 238	1258 1411	1518	↓	↓	↓	↓	↓	Medium nepheloid layer at bottom approx. 245 fms thick. [signature]

G M Bryan
Chief Scientist

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CRUISE N° 12
CRUISE LEG—From B.A. To Cape Town

TIME ZONE

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
26 Feb 69	Vertical Plankton tow # 389	[illegible]				31°10.5 S	8°46.2 E	334	
26 Feb 69	Core # 302	1339 / 1418	1533	2605 / 2607	2607 / ?	31°10.5 S	8°46.2 E	334	Penetration ~620 cm total length 904 cm true core 607 cm. Pipe badly bent at 620 cm & 65° Manganese layer on top brownish black (5YR 2/1) with some clay layers below, dark yellowish brown (10YR 4/2) moderate brown (5YR 4/4-3/4) and light olive gray 5YR 5/4 Shale Bottom gently sloping, 100 fm outcrops.
27 Feb 69	Vertical Plankton tow # 390	[illegible]	[illegible]	2270	[illegible]	30°28.7 S	11°32.8	335	
27 Feb 69	Core # 303	1150 / 1123	1228 / Hit	2270 / 2270	2271	30°28.7 S	11°32.8 E	335	Penetration 1145 cm total length 880 true core 880 cm Foraminiferal chalk to chalk, pale yellowish from 10YR 8/2 to grayish orange (10YR 7/4) darker to moderate yellowish brown (10YR 5/4), very pale orange (10YR 8/2) and lighter. Foraminiferal orange patch (426-431) cm. Coarse fraction fairly low. Bottom evenly sloping
26 FEB 1969	T GRAD 153	1339 / 1418	1533 / HIT	2605 / 2607	2607	31°10.5 S	8°46.2 E	334	P_3 DESTROYED AT HIT P_1 & P_2 GOOD BUT NEGLIGIBLE PENETRATION SO NO DEFLECTION. 5 CONDUCTIVITY MEASUREMENTS
	Core Camera 138								Bottom: manganese formations or nodules Hasselblad. J.N.W. 18 [illegible]

Chief Scientist

Columbia University in the City of New York

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Research Vessel ROBERT D. CONRAD
CRUISE Nº 12
CRUISE LEG 14 From BUENOS AIRES To CAPE TOWN

TIME ZONE -1

Date	STATION and Nº	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
27	Core Camera							235	Bottom not in focus:
Feb.	139								Compass not buried
1969									[signature]
	Bottom	1030	1207	2269	2272				Well packed sediment with no ripples. Starfish
	Camera	1116	2041TS	2269					tracks; worm tracks,
	239								[signature]
	Nephelometer	1209	1215						Medium layer at bottom 50 fms thick
	1239	1116							[signature]
27	GRABBER	1017	1256	2270	—	38°28.7	11°32.8'	335	SURFACED @ 1202, USED SAMPLER #97 WITH
FEB	#283					S	E		27145 MHz XMTR. NO SAMPLE
1969									
27	GRABBER	1020	1300	2270	—	38°28.7	11°32.8'	335	SURFACED @ 1205. USED SAMPLER #99
FEB	#284					S	E		NO SAMPLE
1969									
27	GRABBER	1023	1251	2270	—	38°28.7'	11°32.8'	335	SURFACED @ 1211 USED SAMPLER #102
FEB	#285					S	E		WITH 27145 MHz XMTR, NO SAMPLE
1969									
27	GRABBER	1025	1245	2270	—	38°28.7'	11°32.8'	335	SURFACED @ 1213, USED SAMPLER #121
FEB	#286					S	E		NO SAMPLE
1969									

G M Bryan
Chief Scientist

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CRUISE N° 12
CRUISE LEG 14 From BUENOS AIRES To CAPETOWN
TIME ZONE

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
28	SONOBUOY	0742	0902	800		29°38S	14.07E		RC. CHL. 1 SB CHL. 11 SPD 6.0 SB PHONE 300 FT.
FEB	171								0850 △ SPEED 5.1K F.T. PROF 2033
69									~~B PDR A~~ SE NOT ON PDR (3.5KC) J.K.
11	SONOBUOY	0909	0936	574		—	—		DUD RC.1 SB CHL. 9 PROF. 2034
	172 A								SB PHONE 60 FT. J.K.
11	SONOBUOY	1047	1214	448		29°34S	14°24E		RC. 1 SB CHL. 12 SPD 6. SB PHONE 60 FT.
	172								F.T. PROF. 2035 J.K.
11	SONOBUOY	1218	1336	252		29°31S	14°34E		RC.1 SB CHL 6 SPD 6 SB PHONE 60 FT.
	173								PROF 2036
									AIR GUN INTERMITTANT J.K.
11	SONOBUOY	1400	1523	169		29°29S	14°45E		RC. 1 SB CHL 7 SPD 6 SB PHONE 60 FT.
	174								PROF. 2037 J.K
11	SONOBUOY	1530	N 1700	120		29°26S	14°56E		RC. 1 SB CHL 5 SPD 6.1 SB PHONE 60 FT.
	175								PROF 2038 J.K
11	SONOBUOY	1703	1841	86		29°23S	15°06E		RC. 1. SB CHL 3 SPD 6.1 SB PHONE 60 FT.
	176								PROF 2039 J.K
11	SONOBUOY	1847	2015	105		29°19S	15°18E		RC. 1 SB CHL 6 SPD 6.4 SB PHONE 60 FT
	177								PROF 2040 J.K.
11	SONOBUOY	2022	2155	105		29°16S	15°28E		RC. 1. SB CHL 2 SPD 6.0 SB PHONE 60 FT.
	178								PROF. 2041 J.K.
11	SONOBUOY	2202	2331	98		29°24S	15°32E		RC. 1. SB CHL 10 SPD 6. SB PHONE 60 FT.
	179								PROF 2042 J.K.
~~28~~ 12	SONOBUOY	2337	0100	97		29°31S	15°36E		RC. 1 SB CHL 4 SPD. 5.7 SB PHONE 60 F.
1	180								PROF 2043
1 MAR.	SONOBUOY	0103	0240	96		29°38S	15°38E		RC1 SB CHL. 1 SPD 5.5 SB PHONE 60 F.
69	181 BUOY								PROF. 2044
FEB									
AT	SONOBUOY	0245	—	96		—	—		DUD RC.1 SB CHL. 12 SPD 6.0 SB PHONE 60 FT.
	182 A								PROF 2045
	SONOBUOY	0249	0349	76		29°46S	15°41E		RC 1 SB CHL 11 SPD. 6.0 SB PHONE 300 FT
	182								PROF 2045 NOISY, SHORT REFERENCE. J.K.

E.M. Bryan
Chief Scientist

Columbia University
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CRUISE N° 12
CRUISE LEG 14 From BUENOS AIRES To CAPETOWN

TIME ZONE _____

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
1	SONOBUOY	0353	0511	100		29°52S	15°43E		RC 1. SBCHL 9 SPD 6. SBPHONE 60
MAR	183								PROF. 2046 "A" PROF # 1 CHL. DIDNT START
69									TRAVERSE AT PROPER.
									D.K.
	SONOBUOY	0521	0535	108		—	—		DUD RC 1 SBCHL 2 SPD. 6.7 SBPHONE
	184 A								60 FEET. PROF. 2047
	SONOBUOY	0542	0635	105		30°02S	15°50E		RC 1 SBCHL 3 SPD 7 SB PHONE 60 F.T
	184								PROF 2048
	SONOBUOY	0658	0810	107		30°09S	15°55 E		RC1 SBCHL 7 SPD 6.8 SBPHONE 60FT.
	185								PROF. 2049
	SONOBUOY	0814	0922	108		30°16S	15°00E		RC1. SBCHL 9 SPD 7.0 SBPHONE 60FT.
	186								PROF. 2050
	SONOBUOY	2927	1005	125		30°23S	16°05E		RC1 SBCHL 11 SPD 6.8 SBPHONE 60FT.
	187								PROF 2051
									AT 1005 AIR GUN STOPPED — (DISCONT)
	SONOBUOY	1041	1053	125		30°30S	16°09E		RC1 SBCHL 8 SPD 6.8 SBPHONE 60FT.
	188								PROF 2052
									AT 1053 AIR GUN STOPPED (DISCONT)
	SONOBUOY	1127	—			—	—		RC1 SBCHL 12 SPD 6.8 SBPHONE 60FT.
	189A								DUD PROF 2053
	SONOBUOY	1133	1241	134		30°35S	16°14 E		RC1 SBCHL 6 SPD 6.8 SBPHONE 60 FT.
	189								PROF. 2053
	SONOBUOY	1245	1407	136		30°41S	16°18 E		RC1 SB CHL 11 SPD 6.8 SBPHONE 60F.
	190								PROF. 2054
									BUOY INTERMITTANT
	SONOBUOY	1410	1527	142		30°48S	16°23 E		RC1 SB CHL 5 SPD 6.0 SBPHONE 60F.
	191								PROF. 2055
	SONOBUOY	1530	1634	147		30°54S	16°27E		RC1 SB CHL 7 SPD 6.0 SBPHONE 60 F.
	192								PROF. 2056 AT 1634 BUOY DEAD. D.K.

J. M. Bryan
Chief Scientist

Columbia University
in the City of New York
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Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG 4 From BUENOS AIRES To CAPETOWN

TIME ZONE _____

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
1	SONOBUOY	1644	1745	142		31°00$	16°30E		RC1 SBCHL 8 SPD 6.0 SBPHONE 60FT.
MAR	193								PROF 2057 AT 1745 BUOY DEAD J.K.
69	SONOBUOY	1758	1908	148		31°05$	16°33E		RC1. SBCHL 6 SPD 6.0 SBPHONE 60FT.
	194								PROF 2058
	SONOBUOY	1914	2054			31°08$	16°36E		RC1 SBCHL 5 SPD 6.0 SBPHONE 60FT.
	195								PROF. 2059 J.K
	SONOBUOY	2130	—	143		—	—		RC1 SBCHL 12 SPD 6. SBPHONE 60FT.
	196A								PROF. 2061 DUD J.K.
1	SONOBUOY	2137	2357	143		31°20$	16°44E		RC1 SBCHL 10 SPD 6. SBPHONE 60FT.
MAR.	196								PROF 2061 & 2062
69									
2	SONOBUOY	0003	~~0100~~	151		—	—		DUD; NO INFORMATION GIVEN J.K
MAR	197A								
69	SONOBUOY	0013	0100	151		31°28S	16°50E		RC 1 SBCHL 11 SPD 6 SBPHONE 60FT.
	197								PROF 2063
									LOST CARRIER PREMATURY
									J.K
2	SONOBUOY	0104	0222	153		31°33S	16°51E		RC. 1. SBCHL 12 SPD 6. SBPHONE 60FT.
MAR	198								PROF. 2064
69									J.K
	SONOBUOY	0225	0338	149		31°37$	16°55E		RC 1. SBCHL 10 SPD. 6. SBPHONE 60FT.
	199								PROF 2065 J.K.
	SONOBUOY	0341	0522	145		31°46$	16°58E		RC. 1. SBCHL 9. SPD. 6. SBPHONE 60FT.
	200								PROF. 2066 FROM 0430 TO 0434 AIR GUN
									INTERMITANT
	SONOBUOY	0528	0643	126		31°55$	17°03E		RC. 1. SBCHL. 1 SPD 6.6 SBPHONE 60FT.
	201								PROF 2067
	SONOBUOY	0648	0814	120		32°03$	17°07E		RC. 1. SBCHL 10 SPD. 6.6 SBPHONE 60FT.
	202								PROF. 2068
	SONOBUOY	0819	0943	120		32°13$	17°12E		RC. 1. SBCHL 16 SPD. 6.6 SBPHONE 60FT.
	203								PROF. 2069 J.K.

G. L. Bryan
Chief Scientist

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PALISADES

Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG 14 From BUENOS AIRES To CAPETOWN

TIME ZONE _____

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
2	SONOBUOY	0950	1034	130		32°22$	17°17E		RC 1. SBCHL 1 SPD 6.6 SBPHONE 60FT.
MAR	204								PROF. 2070 (SB NOISY) J/K.
69									
	SONOBUOY	1120	1247	134		32°31$	17°22E		RC. 1. SBCHL. 3 SPD 5.0 SB PHONE 60FT
	205								PROF. 2071
	SONOBUOY	1251	1408	134		32°27$	17°26E		RC. 1. SBCHL 4 SPD 5.0 SB PHONE 60 FT
	206								PROF. 2072. SB INTERMITTENT
	SONOBUOY	1411	1500	128		32°42$	17°30E		RC. 1. SBCHL 2 SPD. 5.0 SBPHONE 60FT.
	207								PROF. 2073. (SB - NOISY)
	SONOBUOY	1504	1551	162		32°49$	17°34E		RC 1. SBCHL 8 SPD. 5.0 SB PHONE 60FT.
	208								
	SONOBUOY	1554	1619	148		32°49$	17°34E		RC1. SBCHL 5 SPD. 5.0 SBPHONE 60FT.
	209A								PROF. 2075 DUD J/K.
	SONOBUOY	1623	1803	148		32°51S	17°35E		RC 1. SBCHL 7 SPD. 5.0 SBPHONE 60FT.
	209								PROF. 2076
	SONOBUOY	1934	2114	157		33°03$	17°43E		RC 1. SBCHL 6 SPD 5.0 SB PHON 60FT.
	210								PROF 2078 J.K
	SONOBUOY	2117	2220	82		33°11$	17°47E		RC. 1. SBCHL 3 SPD. 6.8 SB PHONE 60FT.
	211								PROF. 2079
	SONOBUOY	2220	2313	80		33°16$	17°50E		RC. 1 SBCHL 9 SPD. 6.8 SBPHONE 60FT.
	212								PROF. 2080 (CUT OUT FOR A WHILE) J/K.
2/3	SONOBUOY	2317	0034	79		33°21$	17°53E		RC. 1 SBCHL 11 SPD. 6.8 SBPHONE 60FT.
MAR	213								PROF. 2081
69	SONOBUOY	0037	0130	69		33°30$	17°57E		RC. 1. SBCHL 2 SPD 6.5 SB PHONE 60
	214								PROF 2082
	SONOBUOY	0135	—			—	—		DUD, NO MODULATION SBCHL 12
	2154								SPD 5 SB PHONE 60 PROF 2083 J.K.
	SONOBUOY	0140	0317	68		33°35$	17°59E		RC 1. SBCHL 4 SPD 5.0 SBPHONE 60FT.
	215								PROF. 2083
									BOTTOM IRREGULARITIES N 10 FTM, SHIP
									to STERN - BUOY NOISY. J.K.

Chief Scientist

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Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG 4 From BUENOS AIRES To CAPETOWN

TIME ZONE _____

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
3	SONOBUOY	0326	0500	72		33°43S	18°04E		RCI. SBCHL. 10 SPD. 5.0 SB PHONE 60
MAR	216								PROF. 2084 O.K.
69									
	SONOBUOY	0505	0600	60		33°52S	18°09E		RCI. SBCHL. 9 SPD. 5.0 SB. PHONE 60
	217								PROF. 2085 O.K.

G M Bryan
Chief Scientist

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Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG 15 From CAPETOWN To COLOMBO

TIME ZONE _____

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS						
1	2	3	4	5	6	7	9	10	11	12	14	15	17	19	20
STA	DATE / HR.	LAT	LONG	CORE	CORE CAMERA	T-GRAD	CAMERA	N	DREDGE	SONOBUOYS	VERTICAL PLANKTON	CURRENT METER	SATELITE	FREEFALL GRABBER	FREEFALL CAMERA
	3/31/69									218					
	4/1/69									219 to 223					
	4/2/69									224 to 230					
	4/3/69									231 to 234					
336	4/4/69 10:15	3315	2914	304	140	154-2	240-(19)	240A				185 (34) E		-	01
337	4/6/ 10:30	3018	3402	305	141-1	155-1				235, 236				287-0	02-02
	4/7/									237 to 241					
	4/8/									242 to 245					
	4/9/									246A (R.C) to 246					
338	4/9/ 1642	2656	3700	306-307	142-19	156-1									
339	4/9/ 2312	2657	3730				241-(16)	240-00			391	186 (12) N.E 4m/s		288-1 289A	03-02-02
340	4/11/ 1400	2224	4029	308	143-0					247,	392			289 290	04-02-02
341	4/11/ 2344	2140	4128	309	144-0	157-1	242-(4)	241 (260)				187 (21)		291 292	05-2-2
342	4/12/ 1818	1945	4155	310	145-14	158-2	243-(17)	242 (260)		248,		188 (7)		293 294	06-2-2
343	4/13/ 0806	1753	4143	311-312A	146-3	159-A								295 297-1 296 298	07-2-2
344	4/14/ 1810	1313	4154	312	147-19	159-1				249, 250	393			299, 301A 300	08-2-2
345	4/16/ 0700	1044	4054	313	148-5	160-A				251A, 251					
346	4/16/ 1000	1035	4103	314	149-10	160-2	244-(10)	243			394	189 (9)		301 302	09-2-2
347	4/16/ 2000	1020	4134	315, 316 317, 318	150-5	161-2 162-1	245-(18)	244				190 E		303 304	10-2-2
348	4/18/ 0800	0810	4500	319	151-A	163-3	246-(20)	245		252, 253 254A 254	395	191 (27)		305 306	11-2-2
349	4/19/ 0830	0636	4755	320	151-0	164A	247-(25)	246			396	192 (30)			
350	4/20/ 0600	0444	5003	321	152-1	164-3	248-(30)	247		255, 256A 256	397	193 (24)		307 308	12-2-2
351	4/21/ 1800	0016	5024	322	153-A	165-3	249-(9)	248		257	398	194 (20)		309 310	13-2-2
352	4/23/ 0700	0429	5111	323-324	153-7	166-1	250-(27)	249			399	195 (28)		311 312	14-2-2
353	4/24/ 0000	0337	5211	325	154-12	167-2	251-(17)	250			400	196 (13)		313	15-2-2
354	4/25/ 0345	0037	5502	326	155-A	168-3	252-(25)	251			401	197 (24)		314 315	16-2-2
355	4/26/ 0400	0144	5751	327	155-17	169	253-(27)	252			402	198 (23)		316 317	17-2-2
356	4/27/ 0500	0357	6030	328	156 A	170-3	254-(19)	253			403	199		318 319	18-2-2
357	4/28 0900	0259	6512	329	156 10	171-1	255-(10)	254			404	200		320 321	19-2-2
358	4/29 0247	0250	6743	330	157 A	172-2					405	[redacted]		322 324 323 325	20-2-2
359	4/29 1900	0230	6952	331	157-22	173-1	256-(14)	255			406	201	4751	326 327	21-2-2
360	5/1 1048	0000	7302						5, 6A				4772	328, 330 329	—

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PALISADES

Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG 15 From CAPETOWN To COLOMBO ~~SINGAPORE~~

TIME ZONE _____

Date	STATION and N°	TIME		SOUNDING		POSITION		LOG	REMARKS							
		Start	End	Start	End	Lat.	Long.									
1	2	3	4	5	6	7	9	10	11	12	14	15	17	19	20	
STA	DATE/ HR	LAT	LONG	CORE	CORE CAMERA	T-GRAD	CAMERA	N	DREDGE	SONOBUOY	VERTICAL PLANKTON	CURRENT METER	SATELLITE	FREEFALL GRABER	FREEFALL CAMERA	
361	5/2/69 0824	0047	7436	332	158-10	174-A	257-21	256				202 (10)	4779	331 332	22-2-2	
362	5/2/ 2200	0048	76 10	333	159-7	174	258 A	257				203 A	4784	333 334	23-2-2	
363	5/3/ 1522			334	160-21	175-3	258-26	258				203 (21)	4790			
	5/4/									258, 259, 260,						

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Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG 15 From CAPETOWN To COLOMBO
TIME ZONE

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
31	SONOBUOY	2207	2330	93		34°40$	18°36'E		RC. 1 SBCHANNEL 1 SPEED 6.8 PHONE 300
MAR.	218								RECORDED ON "A" PROFILER ONLY; PROF 2087
69									
1	SONOBUOY	0324	0452	100		35°19$	19°24'E		RC. 1 SBCHANNEL 3 SPD 6.0 PHONE 300
APR. 69	219								"A" PROF. # 2089;
1	SONOBUOY	0700	0837	95		35°35$	19°48'E		RC. 1. SBCHANNEL 8 SPD. 6.0, PHONE 60
APR.	220								"A" PROF # 2091.
69	SONOBUOY	1036	1207	96		35°58$	20°10'E		RC. 1. SBCHANNEL 8 SPD 6.6; PHONE 60
	221								"A" PROF. # 2093;
	SONOBUOY	1549	1600	88		36°29$	20°46'E		AIR GUN STOPPED; RC. 1. SBCHL 16 SPD 6.3
	222 A								PHONE 60 PROF 2095
	SONOBUOY	1842	1955	82					RC 1. SB CHANNEL 15; SPD 7.2; PHONE 60;
	222								PROF. 2096
	SONOBUOY	2009	2148	77		36°19$	20°52 E		RC1. SB CHANNEL 5; SPD 5; PHONE 60;
	223								"A" & "B" PROF. # 2097;
2	SONOBUOY	0007	0149	70		35°50$	21°10 E		RC. 1. SB CHANNEL 4; SPD 5.6; PHONE 60;
APR.	224								PROF. # 2099;
69									
	SONOBUOY	0341	0520	64		35°28$	21°23 E		RC 1. SBCH L 6. SPD. 5.2 PHONE 60
	225								PROF; # 2101;
	SONOBUOY	0811	0935	64		35°11$	21°54 E		RC 1. SBCHL 13; SPD. 5.7 PHONE 60
	226								PROF # 2103;
	SONOBUOY	1132	1313	62		34°57$	22°25 E		RC 1 SBCHL 2; SPD 5.1 PHONE 60
	227								PROF # 2105; OK.
	SONOBUOY	1530	1712	67		34°52$	22°54 E		RC 1 SBCHL. 7; SPD. 4.9 PHONE 60
	228								PROF # 2107
	SONOBUOY	1936	2116	69		34°46$	23°21 E		RC 1. SBCHL 5; SPD 4.6; PHONE 60
	229								PROF # 2109
									OK.

Chief Scientist

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PALISADES

Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG 15 From CAPE TOWN To COLOMBO

TIME ZONE _____

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
2/3	SONOBUOY	~~0055~~	0047	67	34°39S	23°51E			RC1 SBCHL 7, SPD 5.3 PHONE 60
APR.	230	2307							PROF # 2111
69									O.K.
	SONOBUOY	0826	0859	68		34°21S	25°28E		RC1 SBCHL 15, SPD 5.2 PHONE 60 PROF 2114
	231					18			BUOY IN WATER AT 0754 - AIRGUN STOPPED - START AGAIN AT 0826
3	SONOBUOY	1149	1330	62		34°13S	26°00E		RC1, SBCHL 5, SPD 5, PHONE 60
APR.	232								PROF. # 2116 (AT 1230 SHIP INTERFERE) O.K.
69									
	SONOBUOY	1523	1630	62		34°04S	26°32E		RC 1. SBCHL. 14 SPD 6.2 PHONE 60
	233								PROF # 2118
	SONOBUOY	1820	2000	52		33°50S	27°02E		RC 1. SBCHL. 13 SPD 5, PHONE 60
	234								PROF# 2120

R. Lyde
Chief Scientist

Columbia University in the City of New York

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Research Vessel ROBERT D. CONRAD
CRUISE Nº 12
CRUISE LEG 5 From Capetown To Colombo

TIME ZONE

Date	STATION and Nº	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
4/4/69	Bottom	1023	1214	1755	1755	33°13.5	29° 11.0	336	Soft sediment with a few half rittered
	Camera	1103	x hits	1755		S	E		stone or manganese pebbles.
	240								19 usables
	Current meter								Direction: East
									deflection: .1 to 1.5 mm.
									velocity: 2.2 to 2.7 to 3.4 cm/sec
	185								usables: 34
	Pepelonelo	—	~~10~~						Magnet mechanism failed to advance
	1240A	—							film.
	Core Camera	1106	1204	1768	1755				Soft sediment
	140	1356	Hit	1762					Orientation: North
									usables: 21
4/4/69	Core 304	1106	1204 hit	1768	1755 hit	33 13.5 S	29 11.0 E	336	Core penetration: 963 cm Tot. length 1000 cm Est. Good core 880 cm
		13 56		1762					Description: 0-52 cm Brown grey foram chalky marl. 52-58 cm, glauconitic foram/nannofossil ooze. 58-Bot light grey foram chalky marl
									with scarce interspersed foram sandy layers, hydrotroilite-glauconite laminae. Bottom contacts of units sharp.
									Coarse fraction 30% in chalky marls, 70% in sandy units,
									consisting of planktonic forams, sponge spicules and
									disseminated glauconite.
									Tripod became entangled in core wire
									during surfacing. Zandu
4	TGRAD	1106	1356	1768	1762	33 13	29° 11	336	P2 OUT P1 & P3 GOOD
APR	154	1204	HIT	1755		S	E		7 CONDUCTIVITY MEASUREMENTS
1969									

R. Leyden
Chief Scientist

Columbia University
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Research Vessel ROBERT D. CONRAD
CRUISE N° _____
CRUISE LEG—From _____ To _____
TIME ZONE _____

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
6	SONOBUOY	0836	1015	1525		30°32$	33°58E		RC. 1. SBCHL. 6 SPD 4.5 SBPHONE 300FT.
APR	235								PROF 2137
69									J.K.
4	FREE	FOR	TIMES	1768	1762	33°13	29°11	336	1 - 50LB LEAD WEIGHT
APR	FALL	SEE	"	"	"	$	E	"	LAUNCH 1155 SURF 1305 REC 1500
1969	CAMERA								SUCCESSFUL DROP - SINGLE
	01								SHOT CAMERA TOOK PHOTO OF BOTTOM
6	TGRAD	1057	1200	1493	1492	30°18'	34°02	337	P1 DIDN'T PENETRATE P2 OUT AGAIN
APR	155	1125	HIT	1495		$	E		P3 GOOD BUT LOST ON PULL OUT
1969									5 CONDUCTIVITY MEASUREMENTS
6	FREE	FOR	TIMES	1493	1492	30°18	34°02'	337	1 - 50 LB LEAD WEIGHT
APR	FALL	SEE	"	"	"	$	E	"	LAUNCH 1135 SURF 1235 REC 1305
1969	CAMERA								NO PHOTO - CASE LEAK
	02								
6	FREE	FOR	TIMES	1493	1492	30°18	34°02'	337	1 - 50 LB LEAD WEIGH
APR	FALL	SEE	"	"	"	$	E	"	LAUNCH 1140 SURF 1235 REC 1310
1969	CAMERA								GOOD PHOTO OF BOTTOM
	02								
6	GRADER	FOR	TIME	1493	1492	30°18	34°02	337	2 - 40 LB CEMENT WEIGHT
APR	287	SEE	"	"	"	$	E	"	LAUNCH 1130 SURF 1245 REC 1300
1969									NO SAMPLE
6	Core 305	1030	1125 hit	1493	1495 hit	30°18 S	34°02 E	337	Penetration ≈ 500 cm Pipes bent at join. Total length 1125 cm.
APR		1200		1492					Flow 505 cm. Tp 264 cm. Foram ooze. 264-337 - Chalky Terrigenous sand.
1969									Below, alternating chalky sand with foram chalk ooze.
	Core Camera								
	141								Bottom not in focus; true usable
↓		↓	↓	↓	↓	↓	↓	↓	Orientation: South of West

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CRUISE N° _____
CRUISE LEG—From _____ To _____
TIME ZONE _____

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
6	SONOBUOY	2036	2207	1230		30°12$	32°27E		RC1. SBCHL 16 SPD 5.2 SBPHONE 300
APR.	236								PROF. 2140
69									J.K.
7	SONOBUOY	1219	1324	37		29°34$	31°25E		RC.1. SBCHL 5 SPD 5.1 SBPHONE 60
APR.	237								PROF. 2144 J.K.
69									
	SONOBUOY	1346	1528	36		29°29$	31°32E		RC. 1. SBCHL 8, SPD 5.3 SBPHONE 60
	238								PROF. 2145
	SONOBUOY	1653	1802	30		29°17$	31°47E		RC.1. SBCHL 14; SPD 4.8. SBPHONE 60
	239								PROF. 2147
	SONOBUOY	1915	2000	24		29°07$	32°00E		RC 1. SBCHL. 7 SPD. 4.8 SBPHONE 60
	240								PROF. 2149
	SONOBUOY	2137	2256	37		29°00$	32°08E		RC 1. SBCHL. 14 SPD 4.8 SBPHONE 60
	241								PROF 2151.
8	SONOBUOY	0014	0151	345		28°44$	32°29E		RC. 1. SBCHL 15 SPD 4.9 SBPHONE 60
APR.	242								PROF. 2153.
69									
	SONOBUOY	0331	0506	621		28°30$	32°45E		RC. 1. SBCHL 16 SPD 5.2 SBPHONE 300
	243								PROF. 2155. ! (ACCORDING TO WRONG SIGN FOR
									SET UP ON SB PHONE DEPTH)! BOTTOM AT BEGINING
									CHANGED RAPIDLY FROM 564 - 621 FMS. J.K.
	SONOBUOY	0608	0742	769		28°20$	32°55E		RC. 1. SBCHL 13 SPD 5.2; PHONE 60
	244								PROF. 2157
	SONOBUOY	1432		695		27°25$	33°32E		RC. 1. SBCHL 4 SPD 5.1; PHONE 60
	245								PROF. 2160
9	SONOBUOY	0112	0158	886		26°53$	35°08E		RC1. SBCHL 1 SPD 5.1 PHONE 300
APR	246A								PROF. 2164 RECORDED ON 3.5 KC PDR. DUD J.K.
69	246B	0200	0222	890		26°53$	35°11E		RC1. SBCHL 3 SPD 5.1 PHONE 60
									PROF. 2165 (ON 3.5 PDR) AIR GUN STOPPED DUD J.K.
	246	0224	0346	892		26°52$	35°15E		RC1. SBCHL 2 SPD. 5. PHONE 300
									PROF 2165 (ON 3.5 KC PDR) J.K.

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Research Vessel ROBERT D. CONRAD
CRUISE N° _____
CRUISE LEG—From _____ To _____
TIME ZONE _____

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
9 April	Core 306	1645	1709 hit	1450	1335 hit	26°56' S	37°00 E	338	Penetration 300 cm. Total length 613. Good core 266 cm. Light greyish olive green, very compact foram marly chalk, which has scattered dextral Globorotalia menardii near bottom. Coarse fr. 10%, consisting of planktonic forams and rare clastics. Manganese is disseminated in layers from 85 cm to bottom.
		1747		1300					
	Core 307	1904	1932 hit	1550	1500 hit	26°56 S	37°00' E	338	no mud on piston. Total length 366, all good.
		2008		1430					Olive grey at top 110 cm, foram chalky marl ooze. 110–bot Med grey (N4, N5) foram chalky marl, Coarse fr 60% in 0–110 cm, consisting of planktonic forams same in 110–bot, but 30%.
	Core Camera 142	1645	1709	1450	1335	26°56'	37°00'		Bottom not within focus
		1747	HIT	1300	HIT	S	E		noddles: 19
									Orientation: South.
9-10 April 1969	Bottom Camera 241	1159	0322 after midnight about one hour	2390	2375 Shot	26°51' S	37°28' E	339	Sandy bottom full of noticeable ripples pointing in a northerly direction a bit to the east. 16 noddles.
	Current Meter 186								noddles: 12 direction: East of South (mostly NE) deflection: 1.0 to 1.9 mm. velocity: 2.7 to 3.9 cm./sec.
	Reflectometer 240	1058	0329						Two nepheloid layer (two lowerings: one for 500 bottom with opal glass attenuator; the other a full station with silicon glass attenuator.
		0229							
9 APR 1969	T-GRAD 156	1645	1747	1450	1300	26°56' S	37°00' E	338	P3 ONLY PROBE IN MUD & GOOD 3 CONDUCTIVITY MEASUREMENTS
		1709	HIT	1335					

R. Ewing
Chief Scientist

Columbia University
in the City of New York
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Research Vessel ROBERT D. CONRAD
CRUISE N° 12-15
CRUISE LEG—From CAPETOWN To TRINCOMALEE

TIME ZONE ZD-3

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
10	GRABBERS	FOR TIMES		2390	2380	2657	3728	339	2-40 LB CEMENT WEIGHTS ON EACH
APR	288	SEE				S	E	→	LAUNCH 0115 SURF 0320 REC #1 SEDIMENT ONLY
1969	289A							→	LAUNCH LOST
									LOSS DUE TO 1 LOST WEIGHT ON
									LAUNCHING
10	FREE FALL	FOR TIMES		2390	2380			339	1-50 LB LEAD WEIGHT ON EACH
APR	CAMERA	SEE				S	E		
1969	STA #3							→	LAUNCH 0130 SURF 0300 REC 0345 1 PICTURE
								→	LAUNCH 0135 SURF 0305 REC 0345 1 PICTURE
10 Apr.	VERTICAL	0030	0050					339	ROUTINE LAUNCH OFF AFT-BT WINCH.
1969	PLANKTON TOW 391								TDR ON. 202 N NET. NOMINAL CATCH.
	SURFACE								
11	GRAB 289 290					2227	4027	340	2-36 LB. CAST IRON WEIGHTS LAUNCH 1415 SURF. 1530 REC. 1600 CORAL BITS " 1420 " 1530 REC. 1630
11	FREE FALL CAMERA #04 #04	#25 #26							LAUNCH 1430 SURF. 1575 REC 1540 " 1432 " 1515 " 1545
11 APR. 69	SONOBUOY 247	0031	0233	1790		24°02$	39°23E.		RCI. SBCHL 15 SPD 5; PHONE 300 FT PROF: 2175 & 2176 "B" DELAY 4 SECS. RECORDED ON 3.5 KC O.K.
11 APR 1969	VERTICAL TOW 392 & SURFACE	1400	1412					340	Routine Vertical Tow of Stern BT winch H.C. Vertical S.C.
12	T GRAD	0230	0350	1895	1860	20°05	41°30'	341	P2 + P3 GOOD P1 NOT IN MUD
APR	157	1300	HIT	1894		S	E		5 CONDUCTIVITY MEASUREMENTS
1969									

Chief Scientist

Columbia University
in the City of New York
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Research Vessel ROBERT D. CONRAD
CRUISE N° 17
CRUISE LEG From Capetown To Trincomalee

TIME ZONE

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
11-[illegible] April 1969	Ore Camera 143	1320 1452	1450 HIT	1330 1160	1260	21° 26 S	40° 29' E	340	camera took exposures before reaching bottom. Hence readings of compass are not reliable in my opinion.
11-12 April 1969	Bottom Camera 242	2346 0031	0143 3 HITS	1432 1932	1932	21 41 S	41° 21 E	341	Plain soft sediment. No ripples or outstanding features. Small stone pebbles 3 to 5 inches (mechanism of camera jammed up.
	Current Meter 187								Readings: 21 direction: S.W. deflection: 8.7 to 9.3 mm. velocity:
	Nephelometer 241	2336 0031	0150						Strong nepheloid layer at bottom approx 258 fms. thick. Another layer of medium strength from 1050 to 1500 fms. Thick. Hence total layer is 710 fms.
	Ore Camera 144	0230 0351	0300 HIT	1900 1460	1884				Ore lead was buried in mud. No orientation.
12	GRAB 292 291								TWO CAST IRON #36 WEIGHTS
	FREE FALL CAMERAS 05 05								LAUNCHED 0150 SURF. 0330 REC - 0445 - SEDIMENT. " 0154 SURF. 0330 REC - 0460 MUD. 50 LBS LEAD WEIGHT ON EACH LAUNCH. 0156 SUR 0315 REC - 0430 " 0158 SUR 0315 REC - 0435

R. Lee
Chief Scientist

Columbia University in the City of New York

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Research Vessel ROBERT D. CONRAD

CRUISE N° ______

CRUISE LEG—From ______ To ______

TIME ZONE ______

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
11 April	Core 308	1320	1420 H	1330	1260 H	22.24 ~~22.26~~	40.29 ~~40.29~~ E	340	Penetration uncertain. Length 200 cm. Flow 0. Unoriented.
		1452		1100					foram - millepora ~~shell~~ hash w/ basaltic rock
									fragments at bottom. No TW core
12	Core 309	0230	0300 H	1900	1884 H	21.41 ~~22.20~~	41.21 ~~41.30~~ E	341	Penetration 600 cm. Total length 1035. Flow 395. Alternating
April		0351		1860					units of marly succaceous-foram sand, with inter-
									spersed gravel units. Bottom contacts sharp.
									Plant debris occurs below 180 cm. J.Z.
12	SONOBUOY 248	1423	1535	1438		22°15'S	42°00'E		RCI SBCHL 16 SPD 5.7 PHONE 300 FT.
APR.									PROF 2185 SLOW TRAVERSE
69									RECORDED ON 3.5 KC. J.K.
12	Bottom Camera 243	1827	2033	1550	1545	19°45'S	41°55'E	342	Soft sediment with no outstanding features.
April 1969		1909		1545	4 HITS				Bottom surface is slightly undulated.
									? usables
									[illegible]
	Current Meter 188								usables: 7
									direction: S to S.W. HITS WERE DIFFICULT
									deflection: .6 to 1.3 mm.
									velocity: 2 to 3 cm/sec.
									[illegible]
	Nephelometer 242	1822	2042						Weak nepheloid layer at bottom approx.
		1909							260 fms.
									[illegible]
	Core Camera 145	1900	1926	1547	1545				Bottom not within focus
		2009	HIT	1547					1 usables.
									Orientation: N.A.
APR.	VERTICAL	2015	2055						2 LOWERINGS TO 160 fa. of VERTICAL
12.	EEL-1								EEL OFF BT WINCH. 40 MIN.
	~~2015-2050~~								2015-2050. RAHLIN-COLE.

[signature]
Chief Scientist

Columbia University
in the City of New York
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PALISADES

Research Vessel ROBERT D. CONRAD
CRUISE N° _____
CRUISE LEG—From _____ To _____
TIME ZONE _____

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
14	SONOBUOY	0736	0902	1483		14°21$	41°11E		PG 1 SRCHL 12 SPD 6K. PHONE 300
APR.	249								PROF. 2195; ON 3.5KC. JK.
69									
12	Core 310	1900	1926 H	1547	1545 H	19'45$	41°55'E	342	634m Penetration. 7H 1000 m Cord. 895m. Foram chalky mud ooze and foram ooze. Carbonate content high. Coarse fraction 60%-80% consisting of planktonic foraams. J.Z.
Apr.		2009		1547					
13	Core 311	0805	0814 H	207	207 H	17.54$	41°45E	343	No penetration. A few pieces of coral were removed from core catcher placed in glass vial. Cutting edge mutilated. Pipe warped.
Apr.		0829		207					
	Core 312A	0928	0935 H	240	380 H	17.54$	41°45'E	343	No penetration, nor sediment. Cutting edge shorn off. Pipe bent & damaged inepairably.
		0948		380					
4/11	GRAB							342	45 LB CONCRETE WEIGHTS
	293								LAUNCHED 1715 SURF 2030 REC 2040
	294								" " " " " "
	FREE FALL CAMERA								50 LB. LEAD WEIGHT
	#06								LAUNCHED 1919 SURF. 2015 REC. 2045
4/13	GRAB							343	
	295								45 LB CONCRETE WEIGHTS
	296								LAUNCHED 0804 SURF 914 REC 1015
	297								" " " " " " # SEDIM.
	298								" " " " " "
	FREE FALL CAMERA								
	#07								
4/14	GRAB							344	45 LB CONCRETE WEIGHTS
	299							"	LAUNCHED 1905 SURF 2030 REC 2100
	300							"	" " " " " " "
	301A								" " LOST
	FREE FALL CAMERA								50 LBS LEAD WEIGHT.
	08								LAUNCH 1913 SURF 2015 PICK UP 2035

R. Leyden
Chief Scientist

Columbia University
in the City of New York
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Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG 1b From CAPETOWN To TRINCOMALEE.

TIME ZONE _____

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
14	Core 312	1906	1931 H	1600	1643 H	~~13°10'~~	~~41°47'~~ E	344	280cm Penetration. Total 449 cm. Good 235. Foram-clastic chalky
A'P		2009		1670		13°13'	41 54		marl. Carbonate content high. Coarse fraction 30% - 60%,
N.I									consisting of planktonic foraminifera & subangular quartz w/alkaline feldspars.
									may be Upper Pliocene. J. Ings
13	Core Camera	0805	0814	207	207	~~13°16'~~	~~41°47'~~ E	343	Bottom not within deep focus
April	146	0824	HIT	207		17 54	N1 45		13 usable
1969									Orientation : ~~N.E.~~ N.W.
14	Core Camera	1906	1931	1600	1643	~~13°19'~~	~~41°54'~~ E	344	Bottom not within focus
April	147	2009	HIT	1670		13°13'	41°54'		19 usable
1969									Orientation : ~~N.E.~~ N.E. by east
14	VERTICAL TOW	1945	1955					~~343~~ 393	Tow - 202N Nets. 100fa on Hydrowire attached to Vertical Eel wire. # 393 HC
APR.	PLANKTON TOW	2030	2040 ~~2055~~						Surface Tow off Storm. H.C.
	VERTICAL EEL	915	2005					3	Lowered Vertical Eel at 20fa/min to 400fa. to record @ 1.75, 3.5, 7, 14, 28 KC and returned. HYDROWIRE. H.C. GR
14									
APR.	XBT	1400							XBT @ 10 Kts. H.C.
12	TGRAD	1900	2009	1550	1547	19°45	41°55	342	P_2 & P_3 ONLY PROBES IN MUD + GOOD
APR.	158	1926	HIT	1545		$	E		7 CONDUCTIVITY MEASUREMENTS
1969									
13	TGRAD	0810	0829	207	207	17°54'	41°45'	343	ALL 3 PROBES DESTROYED
APR	159A	0814	HIT	207		$	E		
14	TGRAD	1906	2009	1548	1670	13°13	41°54	344	NOTHING RECOVERABLE - BATTERIES
APR	159	1930	HIT	1643		$	E		WEAK - ONLY 1 PROBE IN MUD

R. Lacy Chief Scientist

Columbia University
in the City of New York
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Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG 15 From CAPETOWN To TRINCOMALEE

TIME ZONE _____

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
14 APR. 69	SONOBUOY 250	2150	2321	1530		13°10 S	41°47 E		RC 1 SBCHL 9 SPD 6 PHONE 300 PROF 2199 ON 3.5KC PDR. JK
15 APR. 69	SONOBUOY 251 A	0651	0700	1275		12°28 S	41°01 E		RC1. SBCHL 11 SPD. 8.2 PHONE 300 PROF 2202 PUD J.K.
15 APR. 69	SONOBUOY 251	0803	0943	1300		12°22 S	41°04 E		RC.1. SBCHL 13 SPD 8.1 PHONE 60 PROF 2203 J.K.
16 APR 69	Core 313	0708 0740	0724 H	750 600	650 H	~~10°25 S~~ 11°26'	~~40°50 E~~ 41°13'	345	528cm penetration. Tot length 650. Good 440. Foram nannofossil chalky marl, medium light grey with coarse bivalve ooze bet 275-280 cm. High Carbonate Content Coarse fraction 30% - 80%, composing of planktonic forams - sub rounded quartz (scarce).
	Core 314	0954 1040	1013 H	990 990	990 H	~~10°45 S~~ 10°36	~~40°50 E~~ 41°03'	346	533 penetration, Tot L. 605cm. Good 400 cm. dusky - foram sand alternating w/ foram chalk ooze. Carb. content high. Coarse fr. 90%, consisting of planktonic forams, + sub rounded quartz.
	Core 315	1939 2037	2004 H	1250 1500	1430 H	~~10°38 41°37 E~~ 10°21	41°34	347	650cm penetration. Tot 500 cm. Good 475. Foram marl. Carb content high - moderate. Coarse fr. 30%; consisting of forams.
	Core 316	2130 2226	2154 H	1250 1340	1270 H				560 cm penetration. tot l 403 cm Good 383 cm. Foram chalk, light ol. grey Carb content high. Coarse fraction 50%, planktonic foramsg
	Core 317	2304 2342	2323 H	1012 1065	1030 H				260 cm Penetration, tot l 277 cm. Good 260 cm. Chalk, u. Miocene. High carb content. Coarse fr. 10%; forams
Apr. 17	Core 318	0038 0133	0100 H	1412 1478	1473 +1				527cm Penetr. Tot l 454 Good 430. Foram nannofossil chalky marl.

R. Lamont-Doherty
Chief Scientist

Columbia University in the City of New York

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Research Vessel ROBERT D. CONRAD
CRUISE Nº 12
CRUISE LEG 13 From Capetown To Trincomalee

TIME ZONE ____

Date	STATION and Nº	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
April	Core	0708	0724	750	650	~~[illegible]~~	~~[illegible]~~	345	Soft sediment bottom
16	Camera	0740	HIT	600		S	E		5 nodules
1969	148					11°26′	41°13′		Orientation: East by North
									[signature]
April	Core Camera	0954	1013	990	990	~~[illegible]~~	~~[illegible]~~	346	Soft loosely packed sediment
16	149	1040	HIT	990		10°36′	41°03′		10 nodules!!
1969									Orientation: West by South
									[signature]
	Bottom	1124	1250	1000	1100				Soft loosely packed sediment with
	Camera	1158	3 HITS	980					undulations (no ripples) whose direction
	244								is indeterminate. No other outstanding
									features. [signature]
									10 nodules.
	Current								direction: East
	Meter								deflection: .7 mm
	189								velocity: 1.1 cm/sec
									no. of ?: 9 or 6 [signature]
	Nephelometer	1119	1255						No nepheloid layer (need closer look)
	1243	1158							
									[signature]
16	GRABS							346	46 LBS CONCRETE WEIGHTS
	302								LAUNCH 1140 SURF 1330 PICK-UP
	301								
	FREE FALL CAMERA								50 LBS LEAD WEIGHTS.
	09								LAUNCH 1200 SURF. 1230 PICK-UP 1330
17	GRABS					10 21	41 34	347	46 LBS CONCRETE WEIGHTS
	304								LAUNCH 0210 SURF 330 PICK-UP 4:00
	303								" " " " " "
	FREE FALL CAMERA #10								LAUNCH 0219 " 0300 " 0330

R. Leyden
Chief Scientist

Columbia University
in the City of New York
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PALISADES

Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG—From CAPETOWN To COLOMBO

TIME ZONE _____

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
16	TGRAD	0708	074	771	600	11°26	41°13	345	GALS KNOCKED OUT. TOO SHORT
APR	160A	0724	HIT	672		S	E		A WAIT IN MUD NOTHING READABLE
1969									NO CONDUCTIVITY
16	TGRAD	0254	1040	1002	990	~~11°~~		346	BOTH GOOD 4 CONDUCTIVITY
APR	160	1013	HIT	990		10°36	41°03		MEASURE MENTS
1969						S	E		
16	TGRAD	2130	2226	1250	1430	10°21	41°34	347	BOTH GOOD 4 CONDUCTIVITY
APR	161	2253	HIT	1270		S	E		MEASUREMENTS
1969									
17	TGRAD	0038	0133	1250	1482	10°21	41°34	347	P1 & P2 GOOD BUT P2 LOST AT
APR	162	0100	HIT	1473		S	E		PULLOUT 4 CONDUCTIVITY MEASUREMENTS
1969									
	~~0215~~	0215	0245						Vertical Sel hauering H.C.

Chief Scientist

Columbia University
in the City of New York
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LAMONT GEOLOGICAL OBSERVATORY
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Research Vessel ROBERT D. CONRAD
CRUISE N° 12/15
CRUISE LEG From CAPETOWN To TRINCOMALEE

TIME ZONE _____

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
17 APR. 69	SONOBUOY 252	1415	1539	—		09°34S	42°56E		RC.1. SBCHL 16; SPD 7.0 KT. PHONE 300.- PROF. 2214 ON 3.5 KC PDR.
	253	2241	2338	2068		08°57S	43°55E		RC.1. SBCHL 14. SPD 8.0 PHONE 300.- PROF. 2217
18 APR. 69	254A	1438	1505	2278		07°58S	45°18E		RC 1. SBCHL 15 SPD 8.0 PHONE SET TO 300 - READS 60!!! FL. "B" DELAY "B" FAST TRAVERSE STUCKED AT START ON AT 1443. ON 3.5 KC PDR. DUD!! PROF # 2221
18 APRI 69	SONOBUOY 254	1516	1629	2282		07°51S	45°26E		RC1. SBCHL 3. SPD 8.0 PHONE 300 "B" DELAY PROF. 2222 ON 3.5 KC PDR.
	348	0815	0905						Vertical Tow
		0815	0900						Vertical Sel H.C.
11 April 1969	Bottom Camera 245	0137	0321	1482	1482	10° 20' S	41° 34' E	347	Soft sediment bottom with corrugated surface probably intertwined by worm tubes. 1 Burrowed
	Current Meter 190	0218	0415	1482					Orientation: east Deflection: 3.3 to 5 cm. Velocity: 5.4 to 7 cm/sec. Marbles: 25
	Nephelometer 244	0122	0329						Two layer
		0218							
	Core Camera 150 (with Core 345)	1939	2004	1250	1430				5 Burrowed : West
		2037	HIT	1580					

R. Ley Chan
Chief Scientist

Columbia University in the City of New York

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Research Vessel ROBERT D. CONRAD
CRUISE Nº 12
CRUISE LEG 15 From Capetown To Ceylon

TIME ZONE

Date	STATION and Nº	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
18 April 1969	Bottom Camera 246	0823 0926	1113 3 HITS	2224 2193	2189	08° 10' S	44 58 E	348	Soft loosely packed sediment 30 nodules
↓	Current Meter 191	↓	↓	↓	↓	↓	↓	↓	direction: east by south deflection: 2.6 mm. velocity: 4.7 cm/sec. nodules: 27
↓	Nephelometer 245	0817 0926	1119	↓	↓	↓	↓	↓	No layer
↓	Core Camera 151A	0914 1110	0958 HIT	2224 2224	2220	↓	↓	↓	Camera did not work
18 APR	Core 319	0914 1110	0958 H	2224 2224	2220 H	↓	↓	↓	penetration 1100 cm. total length 1056, Good 1036. Foraminiferal chalky marl becoming foraminiferal-radiolarian silty marl towards bottom, Carbonate content high-moderate. Coarse fraction 30% consisting of forams and radiolaria. J.Z. (Core 319)
18 APR 1969	T GRAD 163	0914 0958	1110 HIT	2224 2220	2224	08° 10 S	44° 58' E	348	ALL 3 GOOD BUT P3 RIPPED OFF AND DANGLING WHEN CORE SURFACED 8 CONDUCTIVITY MEASUREMENTS

R. [signature]
Chief Scientist

Columbia University in the City of New York

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Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG From Capetown To Colombo

TIME ZONE _____

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
19 April 1969	Bottom Camera 247	0857	1121	2486	2486	06°36'	10°48'	349	Soft loosely packed sediment with tracks 25 noddies
		1003	2 HITS of 10 min. load	2486		S	E		
	Current Meter 192								direction: N.E deflection: 3.8 to 7 mm velocity: 5.9 to 9 cm/sec. noddies: 32
	Nephelometer 246	0848 1003	1128						weak nephelod layer at bottom approx. 30 fm thick
	Ore Camera 151	0937 1014	HIT	2485 2485	2485				Orehead was buried; no exposures
	~~1100-1115~~ #396	1110	1115						VERTICAL TOW H.C.
APR 19	Core 320	0937 1130	1014 HIT	2487 2550	2540 H				280 cm. Pen, TOT L, 1020 cm Good 1020. Chalky marl w/ diatom rich layer at 280 cm. Carb Content high. Coarse fr. 5% planktonic forams, 40% - diatom rich layer. YZ
APR 19	GRAB 306							348	46 LBS CONCRETE WEIGHTS LAUNCH 0922 SURF 1115 PICKUP 1150 " " " " " "
	305								
	FREE FALL CAMERA #11								50 LBS LEAD WEIGHT LAUNCH 0929 SURF 1040 PICKUP 1120
20 APR	GRAB 308							350	46 LBS CONCRETE WEIGHTS LAUNCH 0722 SURF 0920 PICKUP 1040
	307								" " " " " "

R. Heezen
Chief Scientist

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

Research Vessel ROBERT D. CONRAD
CRUISE N°
CRUISE LEG—From To
TIME ZONE

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
Ap20	FREE FALL CAMERA					04°42'	50°02'	350	50 LB. LEAD WEIGHT.
	#12					S	E		LAUNCH 0725 SURF 0850 PICKUP - 930
Apr 20	Core 321	0713	0756H	2690	2690 H				R80cm Pen. tot L 1058cm. Good 1058cm. Chalk w/ interspersed clay. Carb. content high in chalks, low in clays. Coarse fr. 10-5%, consisting of Radiolaria + planktonic forams. JZ
		0920		2650					
	Core Camera 152								Soft sediment bottom (1 usable) No reliable orientation
	Bottom Camera 248	0618	0833	2690	2690				Very soft loosely packed sediment bottom. No outstanding features. 30 usable!
		0714	24 HRS of 10 minutes each	2690					
	Current meter 193								direction: S. by W., S.W., + West. deflection: .3° to 1.0 mm. velocity: 1.3 to 2.7 cm. sec. months: 24
	Nephelometer 247	0859	0854						either a questionable or an extremely weak nepheloid layer at bottom approx. 260 fathoms thick.
		0714							
	#397	0645	0700						VERTICAL TOW H.C SURFACE
4/21	GRABS								45 LBS CONCRETE WEIGHTS
	309								LAUNCH 1904 SURF 2120 PICK-UP 2220
	310								" 1908 " 2140 " "
	FREE FALL CAMERA								
	#13 2-2								LAUNCH 1910 SURF 2045 PICK-UP 2240

Reserve

R. Leyden
Chief Scientist

Columbia University
in the City of New York

DEPARTMENT OF GEOLOGY
LAMONT GEOLOGICAL OBSERVATORY
PALISADES

Research Vessel ROBERT D. CONRAD
CRUISE N° _____
CRUISE LEG—From _____ To _____

TIME ZONE _____

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
19	TCRAD	0937	1130	2485	2550	6°36'	47°48'	349	ONLY PRESSURE TRACE - GAL
APR	164A	1014	HIT	2485		$	E		EITHER KNOCKED OUT OR BAD
1969									
20	TCRAD	0712	0914	2682	2650	4°42'	50°02	350	ALL GOOD - REPLACED GAL & REALIGNED IMAGES
APR	164	0755	HIT	2691		$	E		STARTED TO FIX BEFORE RINSING DEVELOPER
1969									BUT NO REAL DAMAGE
									8 CONDUCTIVITY MEASUREMENTS
21	TCRAD	1847	2210	2693	2690	6°18'	50°25'	351	ALL GOOD - P1 BEGINNING TO LEAK
APR	165	1940	HIT	2693		$	E		9 CONDUCTIVITY MEASUREMENTS
1969									
20	SONOBUOY	1939	2216	2685	~~3047~~	3°04$	50°08E		RC.1. SBCHL 4. SPD 6 PHONE 300 FT.
APR,	255								PROF. 2236, ON 3.5KC PDR.
69									"B" ON FAST TRAV. ACROSS CHANELS #1 & #2
									"A" ON SLOW TRAV.
									J.K.
20	SONOBUOY	2311	2337	2688		03°00$	50°09E		RC1. SBCHL 9 SPD. 6.8 PHONE 300FT.
APR.	256A								PROF 2237 DUD
69									
20-21	256	2344	0241	2690		02°38$	50°15E		RC1. SBCHL 1 SPD. 5.8. PHONE 300
APR.									PROF. 2238 SAME AS BUOY # 255 J.K.
21	SONOBUOY	1655	1743	2694		00°18N	50°25E		RC1. SBCHL 11. SPD. 6.5 PHONE 300.-
APR.	257								PROF. 2243 "B" DELAY.
69									J.K.

R. Heyden
Chief Scientist

Columbia University in the City of New York

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PALISADES

Research Vessel ROBERT D. CONRAD
CRUISE Nº
CRUISE LEG—From ______ To ______

TIME ZONE ______

Date	STATION and Nº	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
April	Core	1847	1940H	2692	2690 H	00°18'	50°25'	351	c 1280cm penetr. total 1050cm. Good 1050cm. Foraminiferal-
~~20~~		2200		2691					o radiolarian chalk with interspersed radiolarian clays.
21	3								r Carbonate content high in chalks low in clays. Coarse fr. 20
	22								e 80%, consisting of planktonic forams + radiolaria. JZ
April	Bottom	1817	2035	2690	2690	00° 18'	50° 25'	351	Very soft loosely packed sediment
1/21	Camera	1914	2H175	2690		N	E		[illegible] 9 [illegible]
1964	249								[signature]
	Current Meter								Direction: N.E.
									Deflection: 2 mm
	194								Velocity: 4 cm/sec
									[illegible]: 30 [signature]
	Nephelometer	1812	2125						No [illegible]
	248	1914							[signature]
	Core Camera	1847	1940	2692	2690				No [illegible]; [illegible] in mud.
	153A	2200	HIT	2691					[signature]
	#398	1830–1845							VERTICAL, SURFACE TOW H.C.
AM									
23	Core 323	0657	0733H	2523	2560 H	~~4[illegible]~~			Penetr. 233 cm. Core too difficult to extrude. Cutting edge showed
1964		0900		2570		04°29'N	51°13E	352	chalk rich in Discoaster, + nearly devoid of forams. Discoasters
									may be of middle-upper Tertiary.
	Core 324	1030	1112 H	2690	2627 H				penetr. 300 cm. Core too difficult to extrude. Similar
		1200		2698					to Core 323 JZ

R. Leyden
Chief Scientist

Columbia University in the City of New York

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Research Vessel ROBERT D. CONRAD
CRUISE Nº 12
CRUISE LEG 5 From Capetown To [illegible]

TIME ZONE

Date	STATION and Nº	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
April	Bottom	0853	1103	2552	2553	04°29'	52° 13'	352	Lots of manganese nodules of non-uniform
23	Camera	0946	24 HITS	2553		N	E		shape & size. Some sediment with nodules
1969	250								[illegible]
	Current meter								direction: East to N.E
									deflection: .6 to 1.9 mm.
	195								Velocity: 2 to 4 cm. per
									usable: 28
									No layer
	Nephelometer	0837	1114						
	249	0946							
	Core Camera	0657	0733	2523	2560				Orientation: East
	153 Core	0700	HIT	2570					usables: 7
	Core Stn #								Bottom not in focus
	323								
1	GRABS			2553					45 LB CONCRETE WEIGHTS
	311			"					LAUNCHED 1030 SURF 1240 PICKUP 1315- 4 LBS NODS
	312			"					" 1030 " 1240 " 1320 1 LB. NOD.
	FREE FALL CAMERA			"					50 LBS LEAD WEIGHT.
	#14								LAUNCH 1035 SURF 12.20 PICKUP 12.45.
23	T GRAD	0657	0844	2528	2560	4°29	51°12	352	P3 ONLY PROBE IN MUD & GOOD
APR	166	0732	HIT	2544		N	E		CORE COULD NOT BE EXTRUDED -
1969									NO CONDUCTIVITY MEASUREMENTS
	~~Core 323~~								
	#399	0730	0745						Vertical Surface Tow H.C.
									see preceding pages.
	~~Core 324~~								

R. Leyden
Chief Scientist

Columbia University
in the City of New York

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Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG 12 From Capetown To Ceylon

TIME ZONE

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
24 APR 1969	T GRAD 167	0100	0300	2716	2716	23° 37' N	52° 11' E	353	P2 OUT - P1 + P3 GOOD
		0132	HIT	2716					8 CONDUCTIVITY MEASUREMENTS
	Core Camera 154								loosely packed sediment No profile orientation reading 12 usables
	Bottom Camera 251	0015	0227						loosely packed sediment. No nodules 17 usable.
		0121	1411						direction: East to East of South deflection: 1.9 mm. velocity: 2.5 cm./sec. no usable: 13
	Current Meter 196								
	Tripletometer 250	0010	0335						No layer
		0124							
	400 GRABS 314	0015	0030			0047 N	55 00 E	354	Vertical + Surface Tow H.C. 45 LB CONCRETE WEIGHTS
	315							"	LAUNCH 4:39 SURF 6.50 PICK-UP 7:30 LOAD - NIL
	16							"	LAUNCH 4:40 SURF 6.50 " " 7:35 NIL
								"	LAUNCH 4:45 SURF 6.35 PICK UP 7:10
	Core 325	0100	0137 H	2711	2720 H	0337	5211	355	125 Bm Penetr. Tot L 1080. Good 1080 Chalky mud
		0300		2720					grading down to chalk. Carbonate content high, Coarse fr. 5%, 60% at 620 m. Counting of Radiolaria with a concentrate of planktonic foraminifera at 620 cms.

R. Heezen
Chief Scientist

Columbia University in the City of New York

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Research Vessel ROBERT D. CONRAD
CRUISE N° ______
CRUISE LEG—From ______ To ______

TIME ZONE ______

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
25	Core 326	0446	0522H	2555	2545H	00 47'	55° 00'	354	1280cm penetration. TAC 1050cm. Good 1050cm. Radiolarian -
A		0648				N	E		foraminiferal chalky marl. Carbonate content high moderate
P									Coarse fraction 20%, consisting of Radiolaria and
r									planktonic forams JZ
l									
	Core Camera								No exposures; core head was buried
	155A								
	Bottom	0406	0624	2570	2555				Very loosely packed sediment with a
	Camera	0504	24/125	2555					partly buried animal track.
	252								25 usables
	Current								direction: N.E to N
	meter								deflection: 3 mm.
	197								velocity: 1.3 cm/sec.
									usables: 24
	Nephelometer	0357	0628						No lag
	251	0504							
25	TGRAD	0446	0648	2571	2555	00 47	55° 00'	354	ALL 3 GOOD - 8 CONDUCTIVITY
APR	168	0522	HIT	2550		N	E		MEASUREMENTS
1969	40 ϕ	0415	0430						Vertical & Surface Tows H.C.
									Vertical Sol. H.C.

Chief Scientist

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Research Vessel ROBERT D. CONRAD
CRUISE N° 12-15
CRUISE LEG—From CAPETOWN To COLOMBO

TIME ZONE _____

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
26	TCRAD	0509	0719	2389	2380	01° 44'	57° 50'	355	BATTERIES WEAK - CANNOT REALLY
APR	169	0543	HIT	2365		S	E		DETERMINE TRACES IN CONDUCTIVITY
1969									MEASUREMENTS
	Cor Camera 155								loosely packed sediment Southeast orientation 17 usables
	Bottom Camera 253	0420	0631	2389	2380				extremely loosely packed sediment.
		0517	2HITS	2360					27 usables
	Current Meter 198								direction: East to North deflection: .3 to 1.0 mm velocity: 1.3 to 2.7 cm./sec. usables: 25
	Nephelometer 252	0714	0635						No layer
		0517							
	102 Core 327	0415	0435						Vertical + Surface Tows - Vert. Sel H.L.
		0509	0543H	2380	2365H	0144	57 50	355	1608 cm Penetration Total Length 1640 cm. Recovered 1640 cm.
		0718		2365		S	E		Foraminiferal-Radiolarian ooze, with interspersed foram ooze layers 5 cm thick from 1486 cm to bottom. Carbonate content high. Coarse fraction 20% to 1620 cm Cutting edge (1620-1640) contains negligible coarse fraction; consisting throughout core of planktonic forams + radiolaria. Bottom of core from 1486 cm may be upper pliocene, or derived from slumping or mixing of upper pliocene strata.

Chief Scientist

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PALISADES

Research Vessel ROBERT D. CONRAD
CRUISE N° ____
CRUISE LEG—From CAPETOWN To CEYLON

TIME ZONE ____

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
4/26	GRABS 316	2390							45 LBS CONCRETE WEIGHTS
	317								LAUNCH 0505 SURF 0710 PICK-UP 0740
	FREE FALL CAMERA 17								" " " " " "
									50 LBS LEAD WEIGHTS
									LAUNCH 0517 SURF 0700 PICK-UP 0730
4/27	Core	0554	0619H	1600	1650H	03°57'	60°36'	356	See next page for remarks.
'69	328	0702		1660		S	E		
	One Camera 45 A								Loss of power; bad contact (electrical)
	Bottom Camera 254	0519 0610	0700 24 hits	1585 1615	1620				Very soft bottom sediment 19 usables
	Current Meter ~~55~~ 199								direction: S.W. deflection: 5.5 to 6.3 mm. velocity: 7.4 to 8.2 cm. per sec. usables: 23
	Fathometer ~~77~~ 253	0446 0610	0717						Too long
	GRABS 318+319								45 LBS CONCRETE WEIGHTS
	FREE FALL CAMERA #18								LAUNCH 0535 SURF 715 REC. 0718
	403	0500-0520							" 0600 " 0700 " 0730
									Vertical + Surface Tow HC

R. Leyden
Chief Scientist

Columbia University
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Research Vessel ROBERT D. CONRAD
CRUISE N° 12 / 15 CRUISE LEG From Capetown To Colombo

TIME ZONE -X

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
A-	Core 328	0554	0619 H	1600	1650 H	0357	6036	356	1318cm penetration. Tot L. 1147cm. Good 1147 cm.
P		0702		1660					Foraminiferal chalk ooze with gradational ooze
r									intervals, (N9) white. Carbonate content very high.
27									Coarse fraction from 60% - 80% consisting of Planktonic
									forams. From 1040 cm. ooze is probably L. Pleistocene -
	~~Core 329~~							~~357~~	upper Pliocene. JZ
		See	Next page						
27	TGRAD	0554	0702	1600	1660	03°57	60°36	356	ALL 3 PROBES GOOD
APR	170	0619	1717	1650		S	E		9 CONDUCTIVITY MEASUREMENTS
1969									
28 April 1969	Bot Camera 156	0936 0955	1106 HIT	2080 2060	1930	02°59' S	65°12' E	357	Orientation: South no ables: 9 bottom not in frame.
	Bottom Camera 255	0909 0959	1113	2120 2070	2060				Very compact sediment or perhaps clay no ripples.
	Current Meter 200								direction: East (S.E. & N.E. deflection: .5 & .2 mm. velocity: 1.9 & 1.2 cm/sec. no ables: 6
	Nephelometer 254	0846 0959	1122						Pro layer.

R. Lee Chief Scientist

Columbia University in the City of New York

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Research Vessel ROBERT D. CONRAD

CRUISE N°

CRUISE LEG—From CAPETOWN To CEYLON

TIME ZONE

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
4/28	GRABS							357	45 LBS CONCRETE WEIGHTS
	320 & 321								LAUNCH-0938 SURF 1130 REC. 1145
	FREE FALL CAMERA								" 0948 " 1100 " 1125
	#19								
	404	1110	1130						Vertical + Surface Tows HC
4/28	Core 329	0936	1005H	2080	2060H	02°59	65°12	357	Penetr. 105 cm. Tot length 1015 cm. Good 450 (stretched).
		1106		1930		S	E		Foram chalk ooze. Carb content high. Coarse fr. 80-40%, consisting of planktonic forams, scattered stringers (due to flow) of mn-pyritic micro nodules, scarce palagonite + shark teeth. J Z
28 APR 1969	T-GRAD 171	0936	1106	2080	1930	02°59	65°12	357	P3 ONLY PROBE IN MUD BUT APPARENTLY
		1005	HIT	2060		S	E		AT MUD-WATER INTERFACE AS PIPE WAS BENT AND TRACE OF P3 MOVED RADICALLY. 4 CONDUCTIVITY MEASUREMENTS
29 April 1969	Core 330	0255	0324H	2080	2040H	02 50	67 43	358	Penetr. 550 Tot l 445 cm. Good 445 cm. Foram chalk ooze to 60 cm. Diatom ooze to bottom. Carbonate content high in chalk ooze, nil in diatom ooze. Coarse fraction 40% in chalk ooze, consisting of planktonic forams, 100% in diatom ooze, consisting of Diatoms J Z
↓	Core Camera 157A	0420 ↓	↓	2040 ↓	↓	S ↓	E ↓	↓	No exposures at all; one lead was dumped
29 APR 1969	T GRAD 172	0255	0420	2070	2040	02°50	67°43'	358	BOTH PROBES GOOD
		0324	HIT	2040		S	E		4 CONDUCTIVITY MEASUREMENTS
	GRABS								45 LBS CONCRETE WEIGHTS
	322-323								LAUNCH 0253 SURF 0440 REC 0500
	324-325								" " " " " "
	FREE FALL CAMERA								50 LBS LEAD WEIGHTS
	#20								LAUNCH 0303 SURF 0415 REC 0445

[signature]

Chief Scientist

Columbia University in the City of New York

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PALISADES

Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG 15 From Capetown To Colombo

TIME ZONE -4

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
29 April 1969	Core 331	1938 2100	2008H	2080 2105	2100H	02°30' S	69°52' E	359	Penetr 900cm. total length 940cm. Good 860, Foram chalk ooze. Carb content high. Coarse fr. 60%, to 30% at bottom, consisting of planktonic foraminifera. JH
	Core Camera 157			2102 2080	2080				Soft sediment bottom Orientation: South 22 usable
	Bottom Camera 256	1908 1959	2114 2H15						Soft corrugated sediment bottom 14 usable
	Current Meter 201								direction: S.E. deflection: 2mm. velocity: 4cm/sec usable: 17
	Nephelometer 255	1813 1959	2121						no bkg
	405	0330	0350						Vertical & Surface Tow H.C.
	GRABS 326-327							359	45 LBS CONCRETE WEIGHTS LAUNCHED 1937 SURF 2130 REC 2150
	FREE FALL CAMERA # 21								50 LBS LEAD WEIGHTS LAUNCH 1945 SURF 2100 REC 2140
1 May	Dredge 5	1104 at Bot 1243 off Bot	1132 at Bot 1310 surface		925 fms.	0000	7302 E	360	Foram chalk, white (n9), with thin Mn crust, 35-40 lbs in fist sized chunks, compact, cemented, + friable; with sludge in burlap bag. Carbonate content high; Coarse fraction 60-90%; Recent - Middle Pliocene planktonic forams, shallow water benthonic forams; alveolinids, orbitoids, + rare bryzoa, + Millepora JH

R. Leyden
Chief Scientist

Columbia University in the City of New York

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PALISADES

Research Vessel ROBERT D. CONRAD
CRUISE N° _____
CRUISE LEG—From _____ To _____

TIME ZONE _____

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
1	Dredge 6A	1537	1607 HIT		11200 HIT	0°00	73°02 E	360	Lost crown dredge and 50' of leader chain.
May		1858 Off Bot	2100 end						water depth 600 fm, wire out approximately
									12000 fm when dredge hung up. Accumulator
									reading 24, moved the ship astern decreasing
									the wire angle. Speed temporarily set ship
									on wire. Wire cleared using engines. When
									wire cleared hauling continued. At this time
									violent, both down and up, action occured on accumulator.
									dredge may have parted at time time of the
									ship movement and the accumulator action was the
									result of the weights bouncing on the shallow bottom
									and steep scarp (700 - 1200 fm). Schackle ~~and~~ pin sheared.
									also lost safety wire 3/16" diam. Schackle rated stronger
									than leader chain.
2	Core 332	1120	1155 H	1660	1665 H	00°47'N	74°36E	361	Penetration uncertain; no mud on pipes. Cutting edge shorn.
May		1300		1690					Lower pipe bent at 300-400 cm. No sediment in core pipes.
									foram chalk ooze in trigger core. Core cutting
									edge and core catcher contained several pebbles
									of manganese crusted palagonitized basalt with
									fractured anhedral olivine, shattered subhedral
									clear alkaline feldspar, and crystalline ~~calcite~~ granuloid
									textured calcite blebs (remobilised sediment?).
5/1	GRABS							360	45 LBS CONCRETE WEIGHTS
	328								LAUNCHED 1048 SURF 1200 REC 1330
	329								" 1112 " 1220 " 1325
	330	CLOSED GRAB WITH LEAD WEIGHTS							" 1136 " 1230 " 1316
5/2	GRABS							361	45 LBS CONCRETE WEIGHTS
	331								LAUNCHED 1115 SURF. 1250 REC 1326
	332								
	FREE FALL CAMERA								50 LBS LEAD WEIGHTS
	422								LAUNCH 1125 SURF 1215 REC 1815
	1100							406	Vertical Tow. H.L.

R. Ley Cox
Chief Scientist

Columbia University
in the City of New York
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PALISADES

Research Vessel ROBERT D. CONRAD
CRUISE N° ____
CRUISE LEG—From ____ To ____

TIME ZONE ____

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
29	TGRAD	1938	2100	2107	2105	2°30	69°52	359	P2 DESTROYED P3 GOOD P1 NOT IN
APR	173	2008	HIT	2100		S	E		MUD 6 CONDUCTIVITY MEASUREMENTS
1969									
2	TGRAD	1120	1300	1642	1665	0°47'	74°36'	361	NO PENETRATION - NO CORE
MAY	174A	1154	HIT	1653		N	E		BATTERIES WEAK
1969									
2	TGRAD	2305	0200	2256	2250	0°48'	76°10	362	CORE IN AND OUT OF MUD DUE TO
MAY	174	2352	HIT	2254		N	E		SHIP'S DRIFT - NO AT NO CONDUCTIVITY
1969									
2	Core Camera	1120	1155	1660	1665	00°41'	74° 36'	361	Manganese nodules
MAY	~~257~~	1300	HIT	1690		N	E		Orientation not reliable
1969	158								10 nodules
	Bottom Camera	0847	1027	1639	1600				Sediment. Apparent Mn nodules
	257	0921	2HITS	1600					21 nodules
	Current Meter								direction: S.E
									deflection: 3mm.
	202								velocity: 5cm/sec
									nodules: 10
	Nephelometer	0833	1033						Two layers
	256	0921							

R. Heyden
Chief Scientist

Columbia University
in the City of New York
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Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG 15 From Capetown To Colombo

-5½
TIME ZONE

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
3 MAY 1969	Core Camera 159	2305 0200	2352 HIT	2256 2254	2254	00°48' N	76°10' E	362	loosely packed sediment Orientation: N.E. usable: 7
	Bottom Camera 258A	NO		HIT					Wire angle was excessive. It was unsafe to take hit as it would have been risky to pile wire on bottom
	Current Meter 203A	NO		HIT					
	Nephelometer 257	2210	0106	2250 2250	2250				Reached depth of 2170 according to Nephelometer profiler line. To nepheloid layer.
3 MAY 1969	TGRAD 175	1458 1533	1603 HIT	2246 2248	2246	2°24' N	77°16' E	363	ALL GOOD & CONDUCTIVITY MEASUREMENTS
	Core 333	2305 0210	2352 HIT	2256 2254	2254 HIT	00°48' N	76°10'	362	penetr. 1100 cm. Tot Rec 1070 cm. Good core 1070 cm. Foram chalky marl grading to chalk. Carb content high to moderate to high. Coarse fraction 30% to 10% consisting of planktonic foram and scarce Radiolaria
	Core 334	1459 1640	1534 HIT	2246 2246	2246 HIT	02°24' N	77°16' E	363	penetr. 1100. Tot Rec 1050 cm. Good core 1050 cm. Foram chalky marl. Carb. content high moderate. Coarse fraction 40%, consisting of Planktonic forams and scarce Radiolaria

Chief Scientist

Columbia University in the City of New York

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Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG 12 From Capetown To Colombo

TIME ZONE 5/2

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
3	Core Camera	1459	1534	2246	2246	02°24'	77°16'	363	Sediment
MAY	160	1640	HIT	2246		N	E		orientation: SE
69									nodules: 21
3	Bottom	1424	1625	2250	2246				Soft loosely packed sediment bottom.
MAY	Camera	1511	2HITS	2246					No nodules
69	258								
	Current								direction: NE
	meter								deflection: .5 to 1.2 mm
	203								velocity: 1.8 to 3 cm/sec
									nodules: 21
	Nephelometer	1410	1630						No layer
	258	1511							
5/2	GRABS							362	45 LBS CONCRETE WEIGHTS
	333-334								LAUNCHED 2315 SURF 0100 REC 0330
	FREE FALL CAMERAS								50 LBS LEAD WEIGHTS
	# 23								LAUNCHE 2320 SURF 0030 REC 0320
4	SONOBUOY	1242	1421	2515					RC1. 12 SBCHL. SPD 61 PHONE 300
MAY	258								PROF. 2313 ON 3.5KC "B" DELAY J.K
69									
	259	1753	1909	1620					RC.1. SBCHL. 2 PHONE 60. SPD. 6
									PROF. 2315 "B" DELAY J.K
	260	2248	0000	1350					RC.1. SBCHL. 4 PHONE 300 SPD. 6
									PROF. 2317 ON 3.5KC J.K.

Robert [illegible]
Chief Scientist

Columbia University
in the City of New York

DEPARTMENT OF GEOLOGY
LAMONT GEOLOGICAL OBSERVATORY
PALISADES

Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG 16 From COLOMBO To SINGAPORE

TIME ZONE _____

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS							
1	2	3	4	5	6	7	9	10	11	12	14	15	17	19	20	
STA	DATE/HR.	LAT	LONG	CORE	CORE CAMERA	T-GRAD	CAMERA	N	DREDGE	SONOBUOY	VERTICAL PLANKTON	CURRENT METER	SATELITE	FREEFALL GRABER	FREEFALL CAMERA	
364	5/8/69 2300	0614	7900	335	161-2		259-27	259				204 (24)		335 336 A	24-2-0	
365	5/9/ 2320	0605	8157	336	162-4		260-17	260			407	205 (18)				
366	5/10/ 1319	0630	8322	337	163-3		261-16	261		261		206 (20)				
367	5/11/ 1517	0744	8627	338	164 A	176 A	262-12	262		262, 263 264	408	207 (14)		336 337	25-1-1	
368	5/12/ 2119	0908	9002	339	164	176-2	263-18	263		265		208 (25)		338 339		
369	5/14/ 1613	1242	9001	340	165 A	177A	264-13	264		266	409	209 (27)		340 341	26-1-1	
370	5/15/ 0000	1303	8935	341	165		265-31	265		267, 268A 268, 269, 269		210 (14)				
371	5/16/ 0000	1503	8838	342	166		266-1	266		270	410	211 (3)		342 343	27-1-1	
372	5/16/ 1747	1510	9034	343	167-2		267-24	267				212 (18)		344 345	28-1-1	
	5/17/									271, 272						
	5/18/									273, 274, 275, 276, 277						
	5/19									278, 279 A 279						
373	5/19 1000	1246	9604	344	168 A	177B	268-15	268				213 (13)		346 347	29-1-1	
374	5/20/ 0200	1112	9508	345	168-2	177-1	269-16	269			411	214		348 349	30-1-1	
375	5/20/ 1320	1041	9355	346	169-21	178-1	270-19	270			412	215 (24)		350 351	31-1-1	
376	5/21/ 1000	0920	9320	347	170		271-21	271			413	216 (20)		352 353	32-1-1	
377	5/21/ 1854	0844	9412	348	171-1	179-1	272 A	272			414	217 A		354 355	33-1-1	
378	5/22/ 1054	0749	9600	349	172		272-11	273A				217 (9)		356 357	34-1-1	
	5/23									280, 281, 282						
	5/24									283 A, 283 284, 285 A						
	5/25									285 B, 285 C 285, 286, 287, 288 A 288						

Chief Scientist

Columbia University in the City of New York

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LAMONT GEOLOGICAL OBSERVATORY
PALISADES

Research Vessel ROBERT D. CONRAD
CRUISE N° ______
CRUISE LEG—From COLOMBO To SINGAPORE

TIME ZONE ______

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
8-9	C10 335	2344	0011 H	1760	1767 H	6° 14'	79° 00'	364	peneti. 210 cm. Tot l. 513 cm. Good bet 340-358 cm, +
"		0057		1767		N	E		470-513 cm. Marl with indurated chalk,
"									340-358 cm and indurated marl 470-513 cm.
"									Carb content moderate, high in chalk. Coarse fr.
									20-30% consisting of benthonic forams, planktonic
									forams, scattered Radiolaria, and clastic debris.
									Sulphide smell evident. Core Cutting edge
									penetrated reflector, which is represented by
									pieces of very indurated chalk.
	GRABS								65 LBS CAST IRON WEIGHTS
	335								LAUNCHED 0120 SURF 0315 REC 330
	336A								50 LBS LEAD WEIGHTS CLOSED GRAB.
	FREE FALL CAMERA								LAUNCHED 0125 – LOST
	#247								50 LBS LEAD WEIGHTS.
									LAUNCHED 0140 – LOST
	Core Camera	2344	0011	1760	1767				Orientation: N.E
	161	0057	HIT	1767					bottom not in focus
									2 useables
									[signature]
	Bottom	0118	0305	1805	1808				fairly hard bottom of sediment. Surface is
	Camera	0203	2 HITS	1808					corrugated without ripples. Ophiuroid, starfish
	259								and elongated narrow stem-like creatures are
									visible.
									[signature]
	Current								Direction: N & N.W.
	Meter								Deflection: .1 to .7 mm
	204								velocity: .8 cm. sec. to 1.6 cm. sec.
									useables: 24
	Nephelometer	0108	0311						Medium layer approx. 390 feet thick
	259	0203							
									[signature]
	VERT. TOW	0030	0060						Vertical & Surface Tow #407 H.C.

Robert Leyden
Chief Scientist

Columbia University
in the City of New York

DEPARTMENT OF GEOLOGY
LAMONT GEOLOGICAL OBSERVATORY
PALISADES

Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG 4 From Colombo To Singapore
TIME ZONE -6

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
MAY 10	Core 336	0232 / 0407	0306H	2167 / 2167	2167H	6° 05.0' N	81° 57.0' E	365	Peneth. 430 cm, Tot. l. 1180, Good 630. Silty calcareous clay alternating with Biolastic ooze. Carb content high in oozes, low in clays. Coarse fraction 10-20% in clays, consisting of fine angular clastics & planktonic forams; 80% in oozes, consisting of planktonic + benthonic forams, pteropods, bryozoa, and pelecypods, with minor clastic accessories. J Z
MAY 10	Core Camera 162								Bottom not in focus. Orientation: South. Usables: 18
	Bottom Camera 260	2344 / 0121	0219 / 7 H.T.	2167 / 2167	2167				Very soft bottom; sediment. 17 usables.
	Current Meter 205								Direction: South of west. Deflection: 4.5 mm. Velocity: 6.5 cm/sec. Usables: 18
	Nephelometer 260	2131 / 0121	0226						Medium to strong nepheloid layer at bottom approx. 670 fms. thick.
MAY 10	Core 337	1414 / 1530	1444H	2114 / 2114	2114H	6° 30' N	83° 22' E	366	Peneth. uncertain - no mud on pipes. Tot. l. 210 Good 210 cm. Calcareous clays. Carbonate content low. Coarse fraction 10-20% consisting of benthonic + planktonic forams, and angular clastics.
	Core Camera 163								Orientation: west. Bottom not in focus. Usables: 3

Robert Leyden
Chief Scientist

Columbia University
in the City of New York

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PALISADES

Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG From Manila To Singapore

TIME ZONE 6

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
MAY 69	Bottom	1324	1506	2113	2113	6° 30.0	83° 22'	366	Smooth undulated (no ripples) sediment bottom.
10'	Camera	1416	2HITS	2113		N	E		Apex stone pebbles.
69	261								16 mm cable
	Current Meter 206								direction: South
									deflection: .5 to .6 mm
									velocity: 1.86 2.0 cm per sec.
									no alias: 20
	Rectilinometer	1310	1511						200 layer
	261	1416							
	VERTICAL								
	EEL	0320	0400						Vert. Eel lowering to 400 fa. O.K. H.C.
10 MAY 69	SONOBUOY 261	1711	1851	2105		6°35N	83°37E		RCI. SRCHL 2 SPD 6 KTS. 300 FT. PROF. 2329 NEW EEL BIG GUN 7" DELAY O.K.
11 MAY 69	SONOBUOY 262	0600	0629	2036		7°15N	85°17E		RCI. SBCHL 1. SPD 6 PHONE 300 PROF. 2333 "B" DELAY. O.K.
11 MAY 69	SONOBUOY 263	0638	0818	2043		7°17N	85°24E		RCI SBCHL 10; SPD 6. PHONE 60 PROF. 2334 O.K.
11/12 MAY 69	SONOBUOY 264	2238	0046	1970		7°58N	87°08E		RCI. SBCHL. 15 SPD 8.3 PHONE 60 PROF 2338 "A" PROF. SLOW TRAVERSE. "B" 4 SEC DELAY O.K.

Robert Ryan
Chief Scientist

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

Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG 14 From COLOMBO To SINGAPORE

TIME ZONE _____

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
12	SONOBUOY	0932	1115	1910		8°32N	88°31E		RC. 1, SBCHL 14, SPD83, PO HNE 300
MAY	265								PROF. 2341. A "SLOW TAV.
69									B DELAY.
									J.C.K.
5/11/69	VERT. TOW #468								TOW 1530-1550 off ST Winch Stern H.C.
11	CORE	1615	1653H	2042	2042H	7°44.5	86°27.0	367	penetr 1250 Total 1205. Good core 1205cm. Calcareous
MAY	33B	1755		2042		N	E		Clay, becoming silty clay, compact by 800cm. Carbonate
1969									content ~~high~~ low. Coarse fraction 20% at top, consisting
									of planktonic forams; 20% from 800cm, consisting of micas
									and benthonic forams. JK
11	TGRAD	1615		2042	2042	7°44.5	86°27.0	367	NICAD BATTERY DEAD NOT
MAY	MGA	1652	HIT	2042		N	E		LAST
1969									
	Core Camera 16XA								No exposures. Strobe light failed to flash.
	Bottom Camera 262	1521 1608	1716. 2HITS						Plain sediment. 12 usables
	Nephelometer 262	1516 1608	1724						Medium layer 150 fms. thick at bottom
	Current Meter 207	1521 1608	1716 2HITS						direction: South of West by 10° deflection: 1.8mm. velocity: 3.8cm/sec. usables: 1+

Robert Hayden
Chief Scientist

Columbia University in the City of New York

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PALISADES

Research Vessel ROBERT D. CONRAD
CRUISE N° 12-16
CRUISE LEG—From COLOMBO To SINGAPORE

TIME ZONE ________

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
12	CORE	2223	2246 H	1605	1606 H	09°08'	90° 02'	368	peneti 820 cm. Ptl 1465. Goodcore 860 cm. Foram marl,
MAY	339	2340		1606		N	E		with ash layer (acidic) at 585 cm. Carb content
1969									moderate, Warm fr. 20-30% consisting of
									planktonic & benthonic forams. JZ
12	TGRAD	2223	2340	1605	1606	09°08'	90° 02'	368	ONLY TWO PROBES IN MUD & GOOD
MAY	176	2246	HIT	1606		N	E		7 CONDUCTIVITY MEASUREMENTS
1969									
	Core Camera								No reliably readable orientation.
	164								Bottom not in focus.
	Bottom	2130	2306						loosely packed sediment, animal
	Camera	2207	2 HITS						tracks.
	263								18 usables.
	Current meter								direction: S.W.
	208								deflection: 2.5 to 3.5 mm.
									velocity: 4.6 to 5.6 cm/sec
									usables: 25
	Nephelometer	2114	2309						No layer
	263	2207							
MAY 11	GRABS					07°44N	86°27 E	367	36 LBS CONCRETE WEIGHT
	336-337							"	LAUNCHED 1620 SURF 1800 REC 1810
	FREE FALL CAMERA					"	"	"	50 LBS LEAD WEIGHTS
	#25								LAUNCHED - 1620 SURF 1740 - REC 1830
MAY 12	GRABS					09°08N	90° 02E	368	36 LBS CONCRETE WEIGHTS
	338					"	"	"	LAUNCHED 2230 SURF 2345 REC. 0015 - NIL RECY
	339	CLOSED GRAB				"	"	"	2-50LB LEAD WEIGHTS 4 SPHERES GRAB SEDI. RECY

Robert Leyden
Chief Scientist

Columbia University in the City of New York

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LAMONT GEOLOGICAL OBSERVATORY
PALISADES

Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG 11 From Colombo To Singapore

TIME ZONE ______

Date	Station and N°	Time Start	Time End	Sounding Start	Sounding End	Position Lat.	Position Long.	Log	Remarks
14	SONOBUOY	1014	1124	1655					RC1. SBCHL 13; SPD 8 PHONE 300
MAY	266								PROF. 2354 B DELAY J.K.
69									
14	Core 340	1725	1748H	1607	1607H	12°42N	90°01E	369	penetration 935 cm. Tot l. 710 cm. Good core 710 cm.
MAY		1827		1607					Calcareous clay with interspersed foram marls (JB)
69									and silt near base. Carbonate content low in clays &
									silts, moderate in marls. Coarse fr. 40% in marls,
									negligible in clays, consisting of planktonic forams. 30% in silt,
	T-Grad								consisting of chlorite, & biotite, w/ clear angular clastics
	177A								
	Core Camera								Strobe light was taken out; one bolt sheared off.
	165A								
	Bottom	1633	1809	1608	1608				Sediment bottom full of winding animal
	Camera	1710	2 HITS	1608					tracks.
	264								[illegible]
	~~[illegible]~~								direction: N.E.
	Current								deflection: 1.8 to 2.3 mm
	Meter								velocity: 3.8 to 4.4 cm/sec
	209								readings: 27
	Nephelometer	1614	1816						Medium bottom layer 30 fms thick.
	264	1710							
	VERT. TOW	1630	1645						Vertical + Surface Tows H.C. #409

R. [signature]
Chief Scientist

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

Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG 16 From Colombo To Singapore
TIME ZONE -6

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
15 MAY 1969	Core 341	0046 0203	0124	1593 1593	1593A	13°03 N	80°35 E	870	Pen to 1140. Bt @ 1160m. Good 1120cm. Calc. clay with interspersed foram marl, an ash layer at 395-405 cm, + silt near bottom. Carbonate content moderate in marl, low in clays + silts, + ash. Coarse fr. 40% in marls, nil in clays, 40% in ash, consisting of planktonic forams in marls + clays, clear angular clastics + micas in silt, and acidic gl. shards in ash. JJ
	Core Camera 165								Water pictures. No reliable compass reading JJ
	Bottom Camera 265	0015 0056	0148 2HITS						Soft bottom of sediment full of winding critter tracks 31 usables.
	Current Meter 210								Direction: North & South Deflection: 0 to .5mm. velocity: 0 to .7 to 1.8 cm/sec. usables: 14
	Nephelometer 265	0011 0056	0153						medium layer at bottom approx. 30 fms. thick.
	VERT. TOW	0200	0230						Vertical + Surface Tows. H.C.
15 MAY 69	SONOBUOY 267	0519	0814	1580		13°27N	89°16E		RC.1. SBCHL 4, SPD. 7.9, PHONE 60 PROF. 2358 B DELAY 3 sec. 0630 DOUBLE REVOLUTION J.K.
	268A								DUD RC1. CHL. 3 SP. 8.2
15 MAY 69	SONOBUOY 268	1521	1730	1553		14°30N	88°25		RC 1. SBCHL 16 SPD 8.3 PHONE 60 PROF. 2361 (3.5 KC PDR) J.K.

Robert Leyden
Chief Scientist

Columbia University in the City of New York

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PALISADES

Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG 16 From Colombo To Singapore

TIME ZONE -6

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
15 MAY 69	SONOBUOY 269 A					—	—		PUD J.K.
	269	2109	2253	1519		15°03N	88°25E		RCI, SBCHL 2, SPD 8 PHONE 60 PROF. 2363; JK
16 MAY 69	SONOBUOY 270	1007	1212	1440		15°09N	89°45E		RCI, SBCHL 4, SPD 7.8, PHONE 60 PROF. 2367, 7 ONLY?! DELAY 3 SEC. J.K.
16 MAY 69	Core 347	0100 0200	0127H	1515 1515	1515H	15°03' N	88°38' E	371	penetr 170cm. Total 50cm Good core 50cm. Foram marl ooze. Carbonate content moderate. Coarse fraction 40%, consisting of planktonic + scarce benthonic forams.
	Core Camera 166	↓	↓	↓	↓	↓	↓	↓	Water shots Unusable
	Bottom	0035	0201	1517	1517				Sediment.
	Camera 266	0118	1H11	1517	↓				Usable
	Current meter 211	↓	↓	↓	↓				direction: N. by W. deflection: 3.5 mm velocity: 5.6 cm/sec usable: 3
	Nephelometer 260	0016 0118	—						No layer

Robert Leyden
Chief Scientist

Columbia University in the City of New York

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PALISADES

Research Vessel ROBERT D. CONRAD
CRUISE Nº 12
CRUISE LEG 4 From Colombo To Singapore

TIME ZONE -6

Date	Station and Nº	Time Start	Time End	Sounding Start	Sounding End	Position Lat.	Position Long.	Log	Remarks
16	Core 343	1844	1904H	1423	1423H	15° 10'	90° 34'	372	Penetr. 1110. Total 1205 cm Cored 1110 cm. Foram marl and
May		1945		1423		N	E		at top. Clay, calcareous with ash layer at 410-422 cm, + silt
69									bet. 825-840 cm. Carb content med in marl, low in ash, clays & silts.
									Coarse fr. 30% in marl, neglig in clays, 30% in ash + silts,
									consisting of planktonic forams, in marl + clays, ash, and micas respectively
	Core Camera								Pelleted bottom BD
	167								Orientation: Southeast
									Nodules: 2
	Bottom	1812	1936	1423	1423				Soft fluffy bottom of sediment.
	Camera	1846	24 HITS	1423					24 nodules
	267								
	Current								direction: East
	Meter								deflection: 4 mm.
	212								velocity: 1.6 cm/sec.
									nodules: 18
	Nephelometer	1801	1941						medium bottom nepheloid layer approx. 30
	267	1846							to 40 fms. thick
	VERT. TOW	0030	0050						Vert. Tow only. #410 H.C.
	VERT. EEL	2000	2040						Eel lowered to 200 fa. only 10 fa/min: H.C.
17	SONOBUOY	1008	1248	1454		15 N	92°50 E		RC 1, SBCHL 6 SPD. 9 PHONE 60
May	271								PROF. 2173 'B' ONLY; DELAY JK
69									
May 14	GRABS					12°42 N	90.01	369	45 CONCRETE WT.
	#340								LAUNCHED 1730 SURF 1840 REC.
	341 CLOSED								50 LEAD WT. 8 LBS SEDIMENT
	FREE FALL CAMERA								50 LBS LEAD WEIGHT
	#26								LAUNCHED 1735 SURF 1830 REC.

R. Leyden
Chief Scientist

Columbia University
in the City of New York
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PALISADES

Research Vessel ROBERT D. CONRAD
CRUISE N° _____
CRUISE LEG—From _____ To _____

TIME ZONE _____

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
MAY 16	GRABS							371	45 LBS CONCRETE WT.
	#243							"	LAUNCHED 0105 SURF. 0200 REC. 0240
	#242	CLOSED						"	50 LBS LEAD WT. 15 LBS SEDIMENT
	FREE FALL CAMERA							"	50 LBS LEAD WT.
	#27							"	LAUNCHED 0205 SURF 0150 REC. 0240
	GRABS							372	45 LBS CONCRETE WT.
	345							"	LAUNCHED 1850 SURF. 1955 REC. 2030
	344 CLOSED								50 LBS LEAD WT. 16 LBS SED.
	FREE FALL CAMERA								50 LBS LEAD WT.
									LAUNCHED 1850 SURF. 1945. REC. 2030
17	SONOBUOY	2010	2148	35		15N	94° 11E		RC. 1. SBCHL 6 SPD 6 PHONE 60
MAY	272								PROF. 2376 J.K.
69									
17/									
18	SONOBUOY	2341	0122	28		15 N	94°34E		RC. 1. SBCHL 7 SPD 6 PHONE 60
MAY	273								PROF. 2378 J.K
69									
	SONOBUOY	0318	0458	28		14°59N	95°06E		RC. 1. SBCHL 6, SPD 6 PHONE 60
	274								PROF. 2380 J.K.
	SONOBUOY	0653	0830	42		15°N	95°36E		RC. 1. SBCHL. 5 SPD 6 PHONE 60
	275								PROF. 2382 J.K.
	SONOBUOY	1055	1345	43		15°01N	96°09E		RC. 1. SBCHL 7 SPD 6 PHONE 60
	276								PROF. 2384 NO DELAY. AT 1100 SB STARTS ON CHANNEL 8!! J.K.
	SONOBUOY	1606	1923	46		14°37N	96°30E		RC. 1. SBCHL 5, SPD 6 PHONE 60
	277								PROF. 2386
18/19	SONOBUOY	2238	~0125	56		13°50N	96°52E		RC. 1 SBCHL 8 SPD 8 PHONE 60
MAY	278								PROF. 2388 J.K.
69									

Robert Ryden
Chief Scientist

Columbia University in the City of New York

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PALISADES

Research Vessel ROBERT D. CONRAD
CRUISE Nº 12
CRUISE LEG 16 From Colombo To Singapore.

TIME ZONE −6

Date	STATION and Nº	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
19	SONOBUOY	0245	0249		—	—	—		PUD ~~[illegible]~~ RC 1. SBCHL. 2
MAY	279 A								J.K.
69									
19	SONOBUOY	0251	0455	56		13°22N	96°45E		RC 1. SBCHL 3, SPD8 PHONE 60
MAY	279								PROF. 2390 "B" PROF ONLY! F.T.
69									Double revolution after 0410
									J.K.
	Core 344	1134	1150 H	1139	1139 H	12° 46.9	96° 03.5'	373	penetr. 1290 cm. Total length 1290. Good core 1290. Calcareous
		1230		1139		N	E		clay with sandy silt bet 1100-1110 cm. Carbonate content low.
									Coarse fr. negl. in clay, 30% in sandy silt, consisting
									of clean angular clastics, rare Radiolaria & planktonic forams.
	T-Grad								J.Z.
	Core Camera								No exposure
	168 A								
	Bottom	1024	1135	1140	1140				Very soft sediment
	Camera	1052	2 HITS	1140					10 usables
	268								
	Current								direction: South
	Meter								deflection: 2.5 mm
	213								velocity: 4.5 cm/sec
									usables: 13
	Nephelometer								Strong spotty layer approx. 900 fms
	268								thick

Robert Leyden
Chief Scientist

Columbia University in the City of New York

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PALISADES

Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG 12 From Colombo To Singapore

TIME ZONE −6

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
MAY 20	Core 345	0225	0248 H	1380	1434 H	11° 12'	96° 03.5'	374	penetr 80cm. Tot pl 43cm. Good 43 cm. Sandy clay.
1969		0326		1435	1'	N	E		Carbonate content low. Coarse fraction 20–30%, consisting of clear angular clastics.
	T-Bond 177								P2 ONLY PROBE IN MUD & GOOD
									WATER PROBE ABSENT
									2 CONDUCTIVITY MEASUREMENTS
	Core Camera 168								readables: 1
									orientation: S.E
	Bottom Camera 269	0150	0310	1385	1385				very hard bottom
		0231	1 HIT	1385					7 readables.
	Current Meter 214								direction: South
									deflection: 6.5 mm
									velocity: 8.5 cm/sec
									readable: 7
	Nephelometer 269	0137	0322						No layer
		0231							
	GRABS 348								45 LBS CONCRETE WEIGHTS
									LAUNCHED 0225 SURF 0330 REC 0345
	349A	CLOSED							LAUNCHED 0285 LOST
	FREE FALL CAMERA #30							374 ii	50 LBS LEAD
									LAUNCHED 0225 SURF 0320 REC 0340
	VERT. TOW (2)	411, 412							2 hammerings 0030–0045, 1330–1400
	VERT. REEL (2)								2 Tests of V.E. Array 4 fa of depth H.C.

R. D. Conrad
Chief Scientist

Columbia University in the City of New York

DEPARTMENT OF GEOLOGY
LAMONT GEOLOGICAL OBSERVATORY
PALISADES

Research Vessel ROBERT D. CONRAD
CRUISE N° _____
CRUISE LEG—From _____ To _____

TIME ZONE _____

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
19	GRABS					12°46N	96°04E	373	45 LBS CONCRETE WEIGHT
	346	CLOSED							LAUN. 1145 SURF 1230 REC. 1250 - 14 LBS
	347	CLOSED							" " " " " " 12 LBS
	FREE FALL	CAMERA							50 LBS LEAD WEIGHT
	#29								LAUN. 1145 SURF 1230 REC. 1250
MAY	Core 346	1418	1441H	1630	1630H	10°41'	93°55'	375	penetr 266 tot l 208cm. Bad core 208cm. 90cm. Clay covering
20		1528		1630		N	E		coarsely vesicular pumice. Carbonate content nil. Coarse
1969									fraction negligible in clay consisting of radiolaria, 90%
									in pumice layer. (90-208cm), consisting of pumice and
									feldspar phenocrysts.
	Core Catcher 169								Orientation: N.W
									first two frames Camera was buried
									Bottom shot in future
									readable: 21
	Bottom Camera 270	1338 1420	1510 1HIT	1620 1620	1620				Well packed poorly volcanic material 19 frames
	Current Meter 215								direction: S.E
									deflection: 3.6 mm
									velocity: 5.7 cm/sec
									readable: 24
	Nephelometer 270	1329 1420	1515						medium to weak layer 1240 fms. thick
									up to bottom. On ascent nearer to the
									surface there was a portion of the layer very
									thin but very noticeably strong
20	TGRAD	1418	1528	1620	1620	10°41	93°55'	375	P3 ONLY PROBE IN MUD + CORE
MAY	178	1441	HIT	1620		N	E		PASS THRU #1 DEAD
(969)									WATER PROBE NOT ON FILM
									CONDUCTIVITY MEASUREMENTS

R. Lee Ann
Chief Scientist

Columbia University
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Research Vessel ROBERT D. CONRAD
CRUISE Nº 12
CRUISE LEG 6 From Colombo To Singapore

TIME ZONE -6

Date	STATION and Nº	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
21	Core 347	1008	1022 H	815	815 H	09°20'	93°20'	376	Penetr 430 cm. Totl 592 cm. Corecore 320 cm. Foraminiferal
MAY		1039		820		N	E		marl, becoming marly from 23 cm. Carbonate content moderate.
1969									Coarse fraction 20% consisting of planktonic + benthonic forams.
									Dextral Globorotalia menardii occur from 175 cm. Core may
									be lower Pleistocene. JZ
	Core Camera								Water shot only.
	170								
	Bottom	1033	1124	815	815				Very hard extremely well packed sediment
	Camera	1053	1HIT	815					with very few widely scattered stone
	271								pebbles.
									21 usable
	Current								direction: North
	Meter								deflection: 3.7 mm
	216								velocity 5.8 cm/sec
									usable: 20
	Nephelometer	1026	1129						No layer
	271	1053							
	VERT. TOW	1030-	1050						Vert. & Surface Tow. H.C.
	#413								
21	TGRAD	1734	2100	2007	2000	08°44	94°12	377	P_2 ONLY PROBE IN MUD & GOOD
MAY	179	2003	HIT	2018		N	E		WATER PROBE STILL ABSENT
1969									3 CONDUCTIVITY MEASUREMENTS
	GRABS								45 LBS CONCRETE WEIGHTS
	353	CLOSED							LAUNCHED 1930 SURF 2110 REC 2120 15 LBS SED.
	354								" " " " " " NIL
	FREE FALL CAMERA								50 LBS LEAD WT.
	#33								LAUNCHED 1933 SURF 2055 REC 2120
	VERT. EEL	2030	2230						Shallow Vertical Eel Test. H.C.

R. [illegible]
Chief Scientist

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Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG 6 From Colombo To Singapore
TIME ZONE -6

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
MAY 21 1969	Core 348	1934 2100	2003H	2012 2000	2020H	08°44' N	94°12' E	377	penetr. 380cm. Total 450cm. Good core 380cm. Clay to bottom. Carb. Content nil Coarse fr. 15%. Radiolaria, micas + angular clear clastics. In Cutting Edge Black vesicular basalt with brownish Ignimbrite xenolith + layer. JB
	T-Grad 179								
	Core Camera 171								Bottom not in focus Orientation: N.W. usables: 1 [signature]
	Bottom Camera 272A	1903 1949	2050 1H11	2007 2007	2007				No exposures. Strobe did not flash though film advanced. Test after station showed everything to be in perfect order. Perhaps a connection went loose. Wire supporting current meter broke. Maybe when wire broke a strain was produced on wires leading to strobe light. However, strobe flashed when tripod was landed. [signature]
	Current Meter 217A								
	Nephelometer 272	1858 1949	2102						No layer. [signature]
MAY 20	GRABS 349 & 350							375	45 LBS CONCRETE WT. LAUNCHED 1413 SURF. 1535 REC. 1545 - 20 LBS SEDI.
	FREE FALL CAMERA # 31								50 LBS LEAD WT. LAUNCHED 1416 SURF. 1515 REC. 1545

[signature] Chief Scientist

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Research Vessel ROBERT D. CONRAD
CRUISE N° ______
CRUISE LEG—From ______ To ______

TIME ZONE ______

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
MAY	GRABS					09°20	93°20	376	45 LBS CONCRETE WT.
21	351-352					N	E		LAUNCH. 1030 SURF 1130 REC 1145 2LBS SEDI.
	FREE FALL CAMERA								50 LBS LEAD WT.
	# 32								LAUNCH. 1030 SURF 1055 REC. 1145
22	GRABS					07°49'	96°00"	378	45 LBS CONCRETE WT.
	355-356					N	E		LAUNCH 1155 SUR 1215 REC 1310 1LBS SEDI.
	FREE FALL CAMERA					↓	↓		50 LBS LEAD WT.
	# 34								LAUNCH. 1155 SURF 1210 REC 1310 –
	VERT. TOW	1030	-1115						Vertical + Surface Tow. H.C.
	# 414								
MAY	Core 349	1133	1145H	310	315			378	penetr. 160 cm Totl 632 cm Good 200 cm. Rock chips in chalky
22		[illegible]		310				↓	matrix. Rocks are limestone, metaquartzite, sandstone. An
1969		↓	↓	↓	↓				ostracean fossil occurs at top of core in white limestone.
↓									JJ
	Core Camera 172								Water slot. Compass was knocked down.
									[signature]
	Bottom Camera 272	1213 / 1222	1308 / One hit						Very hard rocky bottom. No mud clouds. 11 usables.
		↓	↓						[signature]
	Current Meter 217								direction: West deflection: 7.9 mm. velocity: 10 cm/sec [illegible]: 9 [signature]
↓	Nephelometer 273A	— / —	—	↓	↓	↓	↓	↓	Filter ran out. [signature]

Robert Leyden
Chief Scientist

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Research Vessel ROBERT D. CONRAD
CRUISE N° ____
CRUISE LEG—From ____ To ____

TIME ZONE ____

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
23 MAY 69	SONOBUOY 280	1606	1727	60		6°09N	98°00E		RC. 1. SBCHL 15 SPD. 8 PHONE 60 PROF. 2418 AIRGUN ERRATIC J.K.
	SONOBUOY 281	1916	2031	54		6°N	98°27E		RC 1. SBCHL 10 SPD 6. PHONE 60 PROF. 2420 J.K.
23/24 MAY 69	SONOBUOY 282	2309	0148	50		5°35N	98°45E		RC. 1. SBCHL 14 SPD 8.1 PHONE 60 PROF. 2423 J.K.
	SONOBUOY 283A								RC 1. SBCHL 2 DUD J.K.
	SONOBUOY 283	0529	0705	50		4°51N	98°41E		RC 1. SBCHL 11 SPD 6.4 PHONE 60 PROF. 2425 J.K.
24 MAY 69	SONOBUOY 284	1006	1137	50		4°27N	98°53E		RC. 1. SBCHL. 1 SPD. 7.5 PHONE 60 PROF. 2427
	SONOBUOY 285A	1506	1534	40		4°24N	99°24E		RC 1. SBCHL 4 SPD. 7.5 PHON 60 PROF. 2429 RECEIVER OUT J.K.

Chief Scientist

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PALISADES

Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG 12 From Colombo To Singapore

TIME ZONE _____

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
24 MAY 69	SONOBUOY 285 B	1716	1822	40		4°13N	99°37E		RL.1. SBCHL 12 DUD PROF. 2436 J.K.
	SONOBUOY 285 C	1839	—	40		4°04N	99°46		RL.1. SBCHL. 9 PROF. 2431 AIR GUN OUT J.K.
24 MAY 69	SONOBUOY 285	2206	2342	37		3°45N	99°58E		RL.1. SBCHL. 13 SPD 7 PHONE 60 PROF. 2433 J.K.
25 MAY 69	SONOBUOY 286	0315	0430	25		3°18N	100°22E		RL.1. SBCHL 15 SPD 7 PHONE 60 PROF. 2435 J.K.
	SONOBUOY 287	0806	0945	53		3°N	100°51E		RL.1. SBCHL 3 SPD 7.5 PHONE 60 PROF 2437 J.K.
	SONOBUOY 288 A	1646	1714	26		2°29N	101°39E		RL.1. SBCHL 16 SPD 7.5 PHONE 60 PROF. 2440 BUOY TOO NOISY J.K.
25 MAY 69	SONOBUOY 288	1945	2030	22		2°13N	101°57E		RL.1. SBCHL 7 SPD 7.6 PHONE 60 PROF 2441 J.K.

R. Langseth
Chief Scientist

Columbia University in the City of New York

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Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG 17 From SINGAPORE To SASEBO

TIME ZONE _____

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG			REMARKS				
1	2	3	4	5	6	7	9	10	11	12	14	15	17	19	20
STA	DATE / HOUR	LAT	LONG	CORE [redacted]	CORE CAMERA	T-GRAD	CAMERA	N	PAEDGE	SONOBUOY	VERTICAL PLANKTON	CURRENT METER	SATELITE	FREEFALL GRAPER	FREEFALL CAMERA
	5/29									289, 290,					
	5/30									291, 292, 293, 294					
	5/31									295A, 295					
379	6/1 2331	06°32	111°13	350	—	180-2	273-19	273		296, 297		218 (18)		357 358	
380	6/2 1935	05°02	113°35	351	173	181-2	274-27	274		298 299 300, 361		219 (28)		359	35-1-1
381	6/3 1224	0600	114°01	352	174	182-3	275-16	275		302, 303		220 (16)		360	36-1-1
382	6/4 1600	07°27	114°33	353	175	183-3	276-15	276		304, 305	416	221 (8)	5054	361	
383	6/4 2100	07°30	114°30	354, 356 355,	176 A					306, 307			5057	362	
	6/6									308 309 310, 311					
384	6/7 1215	08°58	120°14	357	176B	184-2	277-26	277			417	222 (26)	5086	363	37-1-1
385	6/8 1400	09°10	123°58	358	176C	185-2	278-19	278			418	223 (18)		364	38-1-1
386	6/9 1731	10°46	127°03	359	176	186-1	279-24	279		312		224 (32)		365 366 A	
387	6/10 1948	13°12	126°24	360	177A	187-1	280-15	280				225 (17)	5120	366	39-1-1
388	6/11-12 2224	15°06	124°08	361	177	188-1	281-29	281			419	226 (28)	5130	367	40-1-1
389	6/12 1312	15°23	122°46	362	178A	189-1	282-18	282			420	227 (16)	5139	368	41-1-1
390	6/13 1930	19°20	124°43	363	178B	190-2	283-17	283			421	228 (17)	5154	369	42-1-1
391	6/14 1516	21°45	125°35	364	178C	191-1	284-25	284			422	229A	5162	370	43-1-1
392	6/15 1118	23°57	126°11	365	178	192-2	285-9	285				229 (21)	5171	371	
393	6/16 0510	26°35	126°19	366	179	193-2	286-19	286		313, 314, 315, 316		230 (9)	5176	372	44-1-1
	6/17									317, 318A, 318, 319, 320, 321,					
	6/18									322, 323.					

Chief Scientist

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Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG 17 From SINGAPORE To SASEBO

TIME ZONE _____

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
29	SONOBUOY	0901	1037	36		2°14N	106°52E		RC.1. SBCHL 13 SPD 6.4 PHONE 60
MAY	289								PROF. 2449 F.T. O.K.
69									
	290	1827	2007	47		3°34N	107°4E		RC. 1. SBCHL 5, SPD 7.1 PHONE 60
									PROF. 2452 F.T. O.K.
30	SONOBUOY	2342	0159	50		4°10N	107°08E		RC. 1. SBCHL 16, SPD 6.7 PHONE 60
MAY	291								PROF. 2454 TRIP PHONE O.K.
69									
31	292	0531	0712	53		4°41 N	107°16E		RC.1. SBCHL 6, SPD. 6.3 PHONE 60
MAY									PROF. 2456 O.K.
69	293	1040	1140	37		5°18N	107°19E		RC.1. SBCHL 5, SPD. 6.2 PHONE 60
									PROF. 2458 (PHONE DEAD AT 1130) O.K.
	294	1712	1852	52		7°13N	110°38		RC 1. SBCHL 7, SPD 6.3 PHONE 60
									PROF. 2461 (LOCATION BY STARS) T.K. OF BUOY
31	295 A	0547	0554	66		—	—		RC.1 SBCHL 15, DUD
MAY									PROF. 2465
69	295	0558	0727	70		06°08N	109°08E		RC.1 SBCHL 8 SPD. 6.5 PHONE 60
									PROF. 2465 O.K.

R. Leyden
Chief Scientist

Columbia University in the City of New York

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Research Vessel ROBERT D. CONRAD
CRUISE Nº 12
CRUISE LEG 7 From SINGAPORE To SASEBO

TIME ZONE -8

Date	STATION and Nº	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
1	T GRAD	0126	0220	1047	1047	6°32.5'	111°13'	379	P1 OUT P2+P3 GOOD
JUNE	180	0145	HIT	1047		N	E		
1969									8 CONDUCTIVITY MEASUREMENTS
	NO CORE CAMERA = Pressure testing new strobe housing								
1	Bottom	2325	0101	1047	1047	6° 32.5'	111° 13'	379	loosely packed sediment. No outstanding
June	Camera	0028	2 HITS	1047		N	E		ripples.
1969	273								Had swivel trouble, mainly the controls.
	Current Meter 218								direction: S.E.
									deflection: 2.2mm.
									velocity: 4.3 cm/sec.
									[illegible]: 16
	Nephelometer 273	2311	0100						No nepheloid layer.
		0028							
	VERT TOW	#415							Regular Vertical & Surface Tow & Millipore H.C.
	Core 350	0126	0146 H	1047	1047 H				penetration to head: 1280 cm. Rec.: 1130 cm. Good
		0230		1047					1130 cm. Calcareous clay with micaceous sand from 560 cm, alternating with clay to bottom. Carbonate content low. Coarse fraction negligible in clays, consisting of planktonic forams, with sponges and Radiolaria at top; 60-80% in sands, consisting of clear angular clastics, chlorite, plant debris, pelecypods, planktonic and benthonic forams.

Robert Leyden
Chief Scientist

Columbia University
in the City of New York
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Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG 17 From Singapore To Seychelles

TIME ZONE _____

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
1	SOMOBUOY	1505	1637	76		6°56A	110°16E		RC/1. SBCHL 16, SPD. 6.1 PHONE 60
JUN.	296								PROF. 2474 J.K.
69									
	297	1849	2000	76		7°17N	110°48E		RC. 1. SBCHL 14, SPD 6.3 PHONE 60
									PROF. 2476 J.K.
2	298	0026	0346	57		4°49N	112°24E		RC1.1. SBCHL. 13, SPD. 5.9 PHONE 60
JUNE									PROF 2478
69	299	0912	1053	29		4°11N	113°07E		RC.1. SBCHL 14, SPD 5, PHONE 60
									PROF 2482 J.K.
2	300	1100		33		4°28N	113°13E		RC1 SBCHL 9 SPD 8 PHONE 60
JUNE									PROF 2483 J.K.
69									
	301	1410	1624	50		4°49N	113°25		RC.1. SBCHL 2 SPD 6 PHONE 60
									PROF. 2483 (Ship in Channel) J.K.
JUNE	GRABS					06°32	113°35	379	45 LBS CONCRETE WTS
1	357-358					N	E		LAUNCH-0122 SURF 0215 REC. 0240 - 24 LBS SED.
									# 357 CLOSED
2	GRABS					05°02"	113°35"	380	45 LBS CONCRETE WTS
	359 CLOSED					N	E		LAUNCH-1948 SURF. 2020 REC. 2130 20 LBS SED.
	FREE FALL CAMERA								+ 50 LBS LEAD WT.
	# 35								LAUNCH. 1949 SURF. 2010 REC 2130

Chief Scientist

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PALISADES

Research Vessel ROBERT D. CONRAD
CRUISE N° _____
CRUISE LEG—From SINGAPORE To SASEBO

TIME ZONE _____

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
2	TGRAD	1941	2017	633	633	05°02	113°35'	380	BOTH PROBES GOOD - WATER TOO WARM
JUNE	181	1956	HIT	657		N	E		FOR WATER PROBE TO BE ON FILM
1969									5 CONDUCTIVITY MEASUREMENTS
2	Core 351	1941	1956 HIT	633	658 HIT	05°02	113°35'		penetr 627cm, tot rec 505cm. Good rec 505cm. Foram-nannofossil
JUNE	Core	2067		633		N	E		calcareous clay, mottled, with laminae bet 330-430cm,
1969									inclined bet 376-390cm. Calcarenite fragment at
									225cm. Wood at 242-246 cm. Coarse fr. 20%, consisting
									of plant debris, clear angular clasts, juvenile
	Core Camera								pelecypods, + benthonic forams. J.Z.
	Bottom Camera 224	2016 2023	2116 2415	672 675	686				Very soft fluffy sediment billows (27 exposures)
	Current Meter 219								direction: S.W. to W.
									deflection: 4.7 mm to 7.3 mm.
									velocity: 6.4 to 9.3 cm/sec
									scale: 28
	Explosives 224	2009 2033	2120						Too large
3	SONOBUOY	0004	0146	920		5°28N	113°44		RC.1 SRCHL 12 SPD. 6 PHONE 60
JUNE	302								PROF. 2485
69									

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Research Vessel ROBERT D. CONRAD
CRUISE Nº 12
CRUISE LEG 17 From SINGAPORE To Sasebo

TIME ZONE ______

Date	STATION and Nº	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
3	TGRAD	1311	1407	1235	1235	6°00.2	114°01'	381	ALL 3 PROBES GOOD
JUNE	182	1330	H IT	1235		N	E		8 CONDUCTIVITY MEASUREMENTS
1969	GRABS							381	45 LBS CONCRETE WTS
	#360	CLOSED							LAUNCH 1340 SURF 1440 REC. 1515 - 20 LBS
	FREE FALL CAMERA							381	50 LBS LEAD WT.
	#36								LAUNCH 1340 SURF 1430 REC. 1510 -
	Core					06°00.2	114° 01'	381	penetr 1080 cm. total 1068 cm. Good 1068 cm. Calc. Clay Uniform.
	#352					N	E		Coarse fraction 10% at top, consisting of Radiolaria + planktonic
									forams, 10% below, consisting of planktonic forams
									and pyrite. J. Z.
	~~Core Camera~~								~~Orientation N~~
	Camera								Bottom: Soft sediment
	174								usable 22 JVS
	Bottom	1359	1506	1235	1235				Very soft sediment. No outstanding
	Camera	1430	1 hit	1235					features.
	275								usable 15 JVS
	Current								Direction: North
	meter								Deflection: 1.1 mm
	#220								Velocity: 2.8 cm./sec.
									Useable: 16 JVS
	Nephelometer	1345	—						No layer. JVS
	meter	1430	1 hit						
	275								
3	SONOBUOY	2116	2253	924		06°42N	113° 32		RC 11 SBCHL 7 SPD 6.5 PHONE 60
JUNE	303								PROF. 2491 J.K.
69									

[signature]
Chief Scientist

Columbia University in the City of New York

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LAMONT GEOLOGICAL OBSERVATORY
PALISADES

Research Vessel ROBERT D. CONRAD
CRUISE Nº 12
CRUISE LEG 17 From Singapore To Sasebo

TIME ZONE

Date	STATION and Nº	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
4	SONOBUOY	0740	0918	1067		6°35'N	114°47'E		RC.1. SBCHL 8 SPD 6.2 PHONE 60
JUNE	304								PROF. 2495
69									J.K.
4	Core 353	1628	1642H	755	795H	07°27'N	114°23'	382	peneti. to head of 2 pipes. totl 1130cm Good 1130cm. Foram ooze at top,
June		1715		803		N	E		and bet 820-870 cm, separated by marl. Carb content high in ooze, moderate
1969									in marl. Coarse fr. 70% in ooze, consisting of planktonic forams, benthonic
									forams + echinoid spines; 10% in marl, consisting of planktonic forams
									and pyrite micronodules. JZ
	Core								[illegible] within [illegible] (i.e. bottom)
	Camera								Orientation: none [illegible].
	175								usable: 0
	Bottom	1716	1827	820	880				Well packed sediment with a few widely
	Camera	1743	24 ITS	835					scattered granules. Surface is flat.
	276								usable: 15
	Current								direction: South
	Meter								deflection: 3 mm.
	221								velocity: 5 cm/sec
									usable: 8
	Nephelometer	1656	1830						[illegible]
	276	1743							
	VERTICAL TOW #416								REGULAR VERT. TOW — BT WINCH. SURFACE TOW CONTAMINATED. H.C.
4	TGRAD	1628	1715	755	803	7°27'	114°33	382	ALL 3 GOOD - 9 CONDUCTIVITY MEASUREMENTS
JUNE	183	1642	HIT	791		N	E		
1969	GRABS	CLOSED						11	45 LBS CONCRETE WTS
	#361								LAUNCH- 1712 SURF 1800, REC. 1830- 10 LBS STEEL

Robert Leyden
Chief Scientist

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

Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG 17 From SINGAPORE To SASEBO

TIME ZONE ______

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
4	Core	2050	2104H	655	622H	07°30	114°30	383	peneth. 370 cm. Totl 300 cm. Good ~~240~~ 220 cm. Foram chalk ooze at
J	354	2120		620					top 40 cm, carbonate content high. Coarse fraction 40%,
									consisting of planktonic forams + scarce arenaceous forams.
U									Bottom contact a gradational color change + coarse fraction
									decrease. 40-180 cm. Foram marl, carb content
N									moderate. Coarse fr. 30% consisting of planktonic forams.
E									Globoquadrina altispira, Globigerinoides fistulosus,
									and dextral Globorotalia menardii occur at 130 cm.
									Bottom contact a sharp lithologic change. 180-205 cm.
									Foram chalk ooze. Carb content high. Coarse fr. 40%
	~~Core~~							~~38~~	consisting of forams similar to those at 130 cm. Bottom
	~~176A~~								contact a lithologic change. 205-220 cm. Chalk,
									with limestone chips. Carbonate content high. Coarse
									fraction 60%, consisting of limestone, angular pebbles,
									and a contaminant matrix derived from flow in the
									core pipe of overlying material. Limestone chips
									contain scattered orbitoidids (or Discocyclinids).
									Soft sediment seems to be upper Lower Pliocene. JZ
	Core	2215	2235H	768	720H	0730	114 30	383	peneth. 700 cm. Tot l. 536 cm. Good Core 536 cm.
	355	2248		660					Foram marl. Carbonate content moderate.
									Coarse fraction 30% consisting of planktonic
									forams, of mixed stratigraphy. JZ
	Core 356	2342	2357H	690	745H	07°30	114° 30	383	peneth. l to head of 1 pipe. Tot l. 530 cm. Good Core 530 cm.
		0012		802					Foram marl, similar to core 355. JZ
~~4~~									
5	GRABS	CLOSED						393	45 CONCRETE WTS
June	362								LAUNCH-2100 SURF. 2130 REC. 2308. 10 LBS SEDI.
5	SONOBUOY	1041	1151	489		7°36'N	116°22'E		RC. 1 SBCHL 8 SPD. 6.2 PHONE. 60
JUNE	305								PROF. 2501 F.T.
69									J.K.

R. Leyden
Chief Scientist

Columbia University
in the City of New York
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Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG 12 From Singapore To Suez

TIME ZONE _____

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
5 JUNE 69	Sonobuoy 306	1820	1954	56		7°43'N	117°42		RC. 1. SBCHL. 4 SPD. 6.1 PHONE 60 PROF. 2504 J.K.
5/6 JUNE 69	SONOBUOY 307	2325	0114	47		7°34'N	118°07E		Receiving Channel 1; Sonobuoy's channel #10 SPEED 6.3 PROFILER # 2506 SONOBUOYS PHONE 60 FEET. J.K.
6 JUNE 69	SONOBUOY 308	0306	0447	40		6°46N	118°21E		RC. 1 SBCHL 12 SPD. 6.1 PHONE 60 PROF. 2508 J.K.
6 JUNE 69	SONOBUOY 309	0846	1012	322		6°26N	118°35E		RC. 1, SBCHL 10; SPD 6; PHONE 60 PROF. 2510 O.K.
6/6 69	SONOBUOY 310	1406	1537	520		6°06N	119°18E		RC. 1. SBCHL. 6; SPD. 6.5 PHONE 60 PROF. 2512 J.K.
6/6 69	SONOBUOY 311	1905	2051	1375		6°39N	119°05E		RC. 1 SBCHL 9; SPD. 8.3 PHONE 60 PROF. 2514 J.K.
June 14 1969	Re Camera 176A	2050 2120	2104 H	655 (620)	622 H	0730	114°30	383	Camera motor Jammed up.

Chief Scientist

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PALISADES

Research Vessel ROBERT D. CONRAD
CRUISE Nº 12
CRUISE LEG 17 From Singapore To Sasebo

TIME ZONE ____________

Date	Station and Nº	Time Start	Time End	Sounding Start	Sounding End	Position Lat.	Position Long.	Log	Remarks
7	Core 357	1300	1318H	1081	1085H	~~08°58'N~~	120°14'E	384	peneth. 1013 cm. Ttl 1040 cm. Good 900 cm. Foram chalky marl, with
June		1350		1085		08 58N	120 14		bioclastic ooze at 20-150 cm, clastic sand at 150-164 cm, and bioclastic
69							EAST		ooze at 297-350 cm. Carbonate content high throughout. Coarse fraction
									30% in marls, 40% in bioclastic oozes consisting of planktonic forams,
									pteropods + pelecypods; 60% in sand, consisting of angular clastics with planktonic forams.
	Core								Speed light did not fire. Bz.
	Camera								
	176								0 usable JVS
	Bottom	1229	1344	1070	1070				Soft loosely packed sediment
	Camera								Flat granular surface
	277								Several medium to small sized
									gastropod traces. JVS
	Current								Direction: North East / North East by East / East by North
	meter								Deflection: 1.5 mm / 1.6 mm / 1.7 mm
	222								Velocity: 3.4 cm/s / 3.5 cm/s / 3.7 cm/s
									Usables: 3 / 8 / 15
	N(?)ekhels meter	1223	1346						No layer
	277								
7	GRABS #363	CLOSED							45 LBS CONCRETE WTS
									LAUNCH 1310 SURF 1400 REC 1410 5 LBS SED
	FREE FALL CAMERA #37								50 LBS LEAD WT.
									LAUNCH 1310 SURF 1345 REC-1412—
	VERT. TOW	#417 1230-1300							SUCCESSFUL VERTICAL & SURFACE TOW. H.C.
7	TGRAD	1300	1350	1060	1085	08°58'	120° 14	384	P1 + P3 REF TRACES JUMPY
JUNE	184	1317	HIT	1085		N	E		7 CONDUCTIVITY MEASUREMENTS
1969									

A. P. Leyden (?)
Chief Scientist

Columbia University in the City of New York

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Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG 12 From Singapore To Sorido

TIME ZONE _____

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
8	TCRAD	1434	1520	800	860	9°10'	~~125°58~~	385	R4 & R3 ONLY PROBES IN MUD
JUNE	185	1446	HIT	817 Hit		N	124°12.2		REF TRACES JUMPED & RECORD
69							E		COMPRESSED. WATER PROBE MISSENT
									8 CONDUCTIVITY MEASUREMENTS
	Core 358					~~9°10'~~	~~125°58~~		penetr 960cm, Total 1030 Good core 1010cm. Marl, grading to sandy marl. Carbonate content moderate. Coarse fr.: 30% at top, consisting of planktonic & benthonic foraminifera, pteropods & dolomite chips, to 50% in sandy marls, consisting of similar foraminifera with clear angular clastics, tuffs, & tuffaceous stones fragments. JVS
						9 10'	125° 58'		
						N	E		
	Core Camera 176								Camera Malfunction Cables Splice broke against core upon lowering JVS
	Bottom Camera 278	1407	1509	800	800				Soft Sediment No outstanding features JVS
	Current Meter 223								
									Direction: South West / Sou' South West / South West
									Diffraction: 1:1 mm / 1.5 mm / 2.0 mm
									Velocity: 2.8 CM/S / 5.4 CM/S / 4.7 CM/S
									Nodules: 3 / 7 / 8 JVS
	Nephelometer 278	1405	1512						No Layer JVS
	VERT. TOW	1400	1420						SUCCESSFUL VERTICAL & SURFACE TOW H.E.
9/ JUNE 69	SONOBUOY 312	0628	0809	28		10°36 N	125°43 E		RECEIVING CHANNEL 1, SONOBUOY CHANNEL 11 SPEED 6.7 KNOTS SONOBUOY PHONE 60 BEAT PROFILER 2531

R. Snyder
Chief Scientist

Columbia University in the City of New York
DEPARTMENT OF GEOLOGY
LAMONT GEOLOGICAL OBSERVATORY
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Research Vessel ROBERT D. CONRAD
CRUISE Nº 12
CRUISE LEG 17 From Singapore To Sasebo

TIME ZONE

Date	STATION and Nº	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. E	LOG	REMARKS
9	Core	1837	1925H	3185	3098H	10°45.05'	127°03' ~~00"~~	386	penet. 520 cm, totl 676 cm Good 520 cm. Brown compact clay, with
June	359	2127		3122					Diatom ooze at 20-45 cm. Carb. content nil. Coarse fr. negligible
1969									in clay consisting of angular fine clasts + rare planktonic forams;
									30% in Diatom ooze consisting of Diatoms. From 460 cm to bot core has
									inclined laminae. JJ
	Core								Orientation: North ½ point East
	Camera								
	176								Usable: 24
									JVS
	Bottom	1733	2023	3180	3180				Character of Bottom: Firm - well packed sediment.
	Camera								Mostly flat - some granular structures.
	279								Excellent gastropod trace on first hit.
									Hits: 2 JVS
	Current								Direction: North West / West ¼ point North
	Meter								Deflection: 2.5 mm / 2.5 mm
	224								Velocity: 4.6 cm/s / 4.6 cm/s
									Usables: 21 / 11
									JVS
	Nephelo	1731	2031						No Layer - No depth trace
	Meter								
	279								(watch became loose and covered pin hole)
									JVS
	GRABS								45 LBS CONCRETE WT. LAUNCHED AIR ~~AIR~~ 8 NPH
	365								LAUNCH-1449 SURF 1800 REC-0300 6/10
	366 A	NO RETURN							
9	TGRAD	1837	2127	3179	3122	10°46'	127°03'	386	P3 ONLY PROBE IN MUD + GOOD
JUNE	186	1927	HIT	3138		N	E		5 CONDUCTIVITY MEASUREMENTS
1969									

R. Leyden
Chief Scientist

Columbia University
in the City of New York
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PALISADES

Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG 17 From SINGAPORE To SASEBO

TIME ZONE _____

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
10	JGRAD	2039	2229	2625	2590	13°12'	126°24'	387	P3 OUT P2 GOOD P1 DIDN'T PENETRATE
JUNE	187	2120	HIT	2590		N	E		TCONDUCTIVITY MEASUREMENTS
1969									
	GRABS	CLOSED							45-LBS CONCRETE WTS
	366								LAUNCH 2040 SURF 2300 REF-2330 -5 LBS
	FREE FALL CAMERA								50 LBS LEAD SHOT
	#39								LAUNCH 2042 - SURF: 2225 REF-2245 -
	Core 360	2039	2114H	~~2175~~	~~2580~~	13°12'	126°24'		penetr. 825cm. tot l. 1133. Bowl 900. Brown Compact clay
		2235		2600	2590H	N	E		Carb content negligible. Coarse fraction negligible
				2590					consisting of Radiolaria + clear angular fine Glasses.
									One mottled near bottom JJ.
	Core Camera 177 A								Camera obscured
									0 usable
									JVS
	Bottom Camera 280	1954	2211						Character of bottom: Well packed fine granular sediment - even surface
									Note: one JVS
	Current Meter 225								Direction: North / North by West
									Deflection: 1.0 mm / 1.1 mm
									Velocity: 2.7 cm/s / 2.8 cm/s
									Doublet: 4 / 13
									JVS
	Neph-Lab meter 280	1951	2215						No Layer
									JVS

R. Heezen
Chief Scientist

Columbia University in the City of New York

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Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG 17 From Singapore To Sasebo

TIME ZONE -9

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
11	T-Grad	2306	0025	1884	1886	15 06	124 08	388	P3 ONLY PROBE IN MUD 4 GOOD
June	188	2331	HIT	1886		N	E		4 CONDUCTIVITY MEASUREMENTS
1969									
	Core	2306	2330	1882	1886	15°06N	124°08E		penetr 490cm. total 1047cm Good 480cm. Mottled compact clay with acidic ash component 155-160cm, 260-263 cm, 470-475 cm. Coarse fr. in clay negligible, consisting of planktonic forams + pteropods. In ash layers 20%, consisting of ash. Core is intricately mottled. JB
	361	0025		1886					
	Core Camera 177								Bottom: Not visible Orientation: North by West usables: 10
	Bottom Camera 281	2232	0020						Bottom: Well packed Sediment usables: 29
	Current Meter 226								Direction: from N.E. Deflection: from 4.1mm to 5.5mm velocity: from 6.2cm/s to 7.4 cm/s usables: 28
	Nephelometer 281	2424	0024						No Layer
	GRABS #367	CLOSED							45 CONCRETE WTS. LAUNCH 2305 SURF 0040 REC 0100
	FREE FALL CAMERA #40							388	50 LBS LEAD WT. LAUNCH 2310 SURF 0030 REC 0040
	VERTICAL TOW	#419 0030-0100 (JUNE 12)							SUCCESSFUL VERTICAL + SURFACE TOWS H.C.

Chief Scientist

Columbia University
in the City of New York
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PALISADES

Research Vessel ROBERT D. CONRAD
CRUISE N° 12-17
CRUISE LEG—From SINGAPORE To SASEBO

TIME ZONE -9

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
12	TGRAD	1348	1540	2490	2474	15°23'	122°46'	389	P2 ONLY PROBE IN MUD & GOOD
JUNE	189	1422	HIT	2485		N	E		3 CONDUCTIVITY MEASUREMENTS
1969									
	Core	1349	1422H	~~2520~~	~~2600~~	15°23'	122°46'		penet. 581cm. Total 470cm Good core 330cm Brown clay at top 90cm,
	362	1540		2490	2485H	N	E		thinn clay to bottom. Carbonate content nil. Coarse fraction 10%
				2495					consisting of Radiolaria at top, arenaceous foram &
									pumaceous glass shards to bottom, JZ
	Core								
	Camera								
	178A								
	Bottom	1311	1525						Bottom: Well packed sediment
	Camera								
	282								
									Useable: 18 JNS
	Current								Direction: Northerly East (one hit)
	Meter								Deflection 0.1 mA
	227								Velocity: 0.8 cm/s
									Useable: 16 JNS
	Nekton	1300	1526						No Logs JNS
	meter								
	282								
	BARBS	CLOSED							45 CONCRETE WT
	#368								LAUNCH - 1350 SURF - 1600 REC 1620-2285
	FREE FALL	CAMERA							50 LBS LEAD WT.
	#41								LAUNCH 1352 SURF 1540 REC 1575
	VERT. TOW	#420							SUCCESSFUL VERTICAL + SURFACE TOW H.C.

R. Langdon
Chief Scientist

Columbia University in the City of New York

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PALISADES

Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG 17 From Singapore To Pasedo

TIME ZONE -9

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
13	TGRAD	2015	2225	2800	2860	19°20'	124° 43'	390	P2 & P3 ONLY PROBES IN MUD & GOOD
JUNE	190	2054	HIT	2880		N	E		P3 DESTROYED & LOST
1969									8 CONDUCTIVITY MEASUREMENTS
	VERTICAL								
	TOW #421	2030–2100							SUCCESSFUL VERTICAL & SURFACE TOWS H.C.
13	GRABS	CLOSED						390	36 LBS CAST IRON WTS
	#369								LAUNCHED 2005 SURF 2215 20 LBS SEAL
	FREE FALL CAMERA								50 LBS LEAD WT
	#42								LAUNCH 2007 SURF 2200.
	Bottom	1932	2203	2820	2872	19° 20'	124° 43'	390	Well packed sediment
	Camera	2048	HIT	2872		N	E		flat even surface
	283								17 usables
	Current Meter								Direction: South
									deflection: 1.1 to 2.1 mm.
	228								velocity: 2.8 to 4.2 cm/sec.
									usables: 17
	Nephelometer	1916	2210						No layer
	283	2048							
	Core	2015	2055H	2830	2880H				penetr. 1015. Total 990 Good core 990. Brown clay with burrows
	363	2225		2860					and ash laminae bet. 645–973 cm. Carb content in course fract. 10% in clay consisting of colorless glass shards & arenaceous forams; 40% in ash laminae consisting of acidic glass shards JZ
	Core Camera								Camera malfunction: De-magnetization
	179A								of magnet. Put on new magnet & release. RL

R. Leyden
Chief Scientist

Columbia University in the City of New York

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Research Vessel ROBERT D. CONRAD
CRUISE Nº 12
CRUISE LEG 17 From Singapore To Sasebo

TIME ZONE ______

Date	STATION and Nº	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
JUNE	T GRAD	1612	1820	2875	2623	21°45'	125°35'	391	P3 ONLY PROBE IN MUD & GOOD
14	391	1653	HIT	2722		N	E		5 CONDUCTIVITY MEASUREMENTS
1969									
14	GRABS	CLOSED						391	36 LBS CAST IRON WTS
	#370								LAUNCH 1610 SURF 1840 REC 1920 15 LBS
	FREE FALL CAMERA								50 LBS LEAD WT.
	#42								LAUNCH-1614 SURF 1810 REC 1930
	VERTICAL	TOW # 422		1605–1635					SUCCESSFUL VERTICAL + SURFACE TOW H.C.
14	Core	1612	1654H	2660	2620H	21°45	125°35	391	pinch 527. TW 1610 Good 610. Brown Clay carb content
June	364	1820		2623		N	E		nil. Coarse fraction 10%, consisting of alkaline
1969									feldspars and volcanic glass shards [signature]
	Core Camera								Strobe did not flash. Rapid connecting splice
	178C								Between Camera & Strobe. Checked all fittings OK
									[signature]
	Bottom	1532	1804	2900	2880				Very hard bottom of sediment forming
	Camera	1645	HIT	2880					elongated surface.
	284								24 nodules
									[signature]
	Nephelometer								No layer
	284								[signature]
	Current Meter	1532	1804						Bad electrical connection; no film
	229A	1645	HIT						advanced
									[signature]

[signature]
Chief Scientist

Columbia University
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PALISADES

Research Vessel ROBERT D. CONRAD
CRUISE Nº 12
CRUISE LEG 7 From Singapore To Pusan

TIME ZONE -9

Date	STATION and Nº	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
15 June 1969	Core 365	1149 / 1245	1211H	1480 / 1530	1495H	23°57 N	126°11 E	392	pen. 485. Tl. 630. Secd 4/8m. Foram marl chalky ooze. Carb content high moderate. Coarse fraction 60-40%, consisting of planktonic forams, colorless glass shards, and alkaline feldspar JZ
↓	Core Camera 178	↓	↓	↓	↓	↓	↓	↓	hard bottom sediment. Orientation: West. usables: 24
↓	Bottom Camera 285	1117 / 1158	1246 / 1HIT	1450 / 1460	1460	↓	↓	↓	hard bottom of sediment with isolated stone pebbles few in number. There are ripples in an east-west direction. 9 usables
↓	Current Meter 229	↓	↓	↓	↓	↓	↓	↓	direction: S.W. deflection: 5.8 mm velocity: 7.7 cm./sec usables: 21
↓	Nephelometer 285	1115 / 1158	1249	↓	↓	↓	↓	↓	no layer ???
15 JUNE	VERTICAL EEL E	1250-1330							Vertical Lowered Hydrowire to 400fa @ 20fa/min. 7KC PING. Unsuccessful: Tape fed improperly. H.C.
15 JUNE 1969	TGRAD 192 GRABS 371	1149 / 1211 / CLOSED	1245 / HIT	1450 / 1495	1530	23°57' N	126°11' E	392	BOTH GOOD 4 CONDUCTIVITY MEASUREMENTS. 45 LBS CONCRETE @ TS. LAUNCH 1146 SURF 1245 REC 1330 LBS

R. Leyden
Chief Scientist

Columbia University
in the City of New York
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PALISADES

Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG 7 From SINGAPORE To SASEBO

TIME ZONE _____

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
16 JUNE	VERTICAL EEL	0600	-0640						Lowering of Vertical Eel @ 20 fa/min. Malfunction-switching H.C.
16 JUNE 69	SONOBUOY 313	1022	1051	967		27°05N	126°34E		RC. 1, SBCHL 5, SPD. 6 KTS, PHONE — PROF. 2571 SSQ 23 TYPE OF SONOBUOY OFF FOR PROFILER AT 1025 CONTINUING ON RECEIVING CHANEL #2 FOR 3.5 Kc PDR J.K.
16 JUNE 69	SONOBUOY 314	1028	1200	967		27°11N	126°37E		SSQ 41 TYPE OF SONOBUOY ON RC. 1, PROFILER 2571 (SSQ 23 ON R.C. 2 FOR 3.5 Kc. PDR RECORDING) J.K.
	SONOBUOY 315	1903	2042	562		28°38N	127°19E		RC. 1, SBCHL. 9, SPD 6. KTS. PHONE 60 PROFILER 2574
	SONOBUOY 316	2105	2122			28°46N	127°23		RC. 1, SBCHL 15 SPD 10 PHONE 60 SSQ 23 TYPE ON 3.5 Kc PDR NOT ON REGULAR PROFILING SHEET J.K.
17 JUNE 69	SONOBUOY 317	0117	0240	380		29°17N	127°43		RC. 1, SBCHL 11, SPD 6.5 PHONE 60 PROF. 2576 NO ADVANCE UNTIL 0119 (PITLOG 3996.48) J.K.

R. Leyden
Chief Scientist

Columbia University
in the City of New York
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PALISADES

Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG 11 From SINGAPORE To SASEBO

TIME ZONE

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
16	Cre 366	0542	0558H	882	882H	26°35	126°19.5	393	Penetr. 1194 cm. Total 1053. Good 1053. Marl
May		0632		883		N	E		with ash layers at 540 cm, 730 cm, 980 cm.
June									Carb content moderate. Coarse fr. in marl
									10%, consisting of planktonic foramns, sponge spicules
									and glass shards. PUMICE LAYER AT 140-160 cm,
									consists of pumice chunks. ash layers consist
									40% of clear acicht glass shards. JB.
16	TGRAD	0542	0623	881	883	26°35.3	126°19.5	393	P1 + P2 GOOD BUT P1 DESTROYED
JUNE	193	0557	HIT	882		N	E		8 CONDUCTIVITY MEASUREMENTS
1969	GRABS	CLOSED							36 LBS CAST IRON WTS
	372								LAUNCHED 0535 SURF. 610 REC 6.30 - 15 LBS.
	FREE FALL CAMERA								50 LBS LEAD WTS
	#45								LAUNCH 0536 - SURF. 600 REC. 635

Robert Heyden
Chief Scientist

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

Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG 17 From Singapore To Sasebo

TIME ZONE

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
16 June 69	Core Camera 179	0547	0558			N 26°35'3	E 126°19'5"	393	Compass buried 0 usable JVS
	Bottom Camera 286	0515	0610	881	881				Soft loosely packed sediment Usable : 19 JVS
	Current meter 230								Direction : North West Deflection : 0.3 mm Velocity : 1.3 cm/s Usable : 9 JVS
	Nephelometer 286	0511	0613						Strength : Weak Thickness : 580 fathoms at the Bottom JVS
17 June 69	SONOBUOY 318A	0616	0621	223		30°17N	128° E		RC. 1. SBCHL 5; SPD 6.0 PHONE 60 PROF. 2578 DUD JK.
	SONOBUOY 318	0625	0755	212		30°24N	128°02E		RC.1. SBCHL 12; SPD 5-8 PHONE 300 FT. PROF 2578 JK
	SONOBUOY 319	1130	1312			31°03N	128°21E		R.C. 1; SBCHL 10; SPD 6 PHONE 60 FT PROF. 2580 JK

R. Leyden
Chief Scientist

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

Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG 7 From SINGAPORE To SASEBO

TIME ZONE _____

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
17 JUNE 69	SONOBUOY 320	1655	1834	313		31°37N	128°41		RL. 1, SBCHL 1 SPD 6.0 PHONE 60 PROF. 2582 J.K.
17 JUNE 69	SONOBUOY 321	2206	2345	233		32°13N	129°07		RL. 1, SBCHL 2; SPD 6.4 PHONE 60 PROF 2584 J.K.
18 JUNE 69	SONOBUOY 322	0100	0240	150		32°30N	129-19		RL. 1, SBCHL 5; SPD 6.1 PHONE 60 PROF. 2586 SHIPS INTERFERENCE J.K.
18 JUNE 69	SONOBUOY 323	0252	0411	70		32°38N	129°23		RL. 1 SBCHL 1 SPD 6.2 PHONE 60 PROF 2587 J.K.

R. Heyden
Chief Scientist

R. V. "~~ERIKA~~" CONRAD - 12

CHIEF SCIENTISTS STATION INDEX LOG

CRUISE 12

CRUISE LEG 18 SASEBO – HAKODATE

Station Number	Day, HR (local)	Latitude	Longitude	Core Length m.	Core Head Camera	T-Grad No. of Probes in Sediment	Water Barrel or Niskin Bottle for Suspended matter	Camera	Nedhelo-meter	Dredge	Sonobuoy	Millidore	Isaac or Jet Net	Current Meter	Tripod T-Grad	Satnav and 3.5 kc Sounder	a. Core multiple plankton b. Vertical plankton	Buoy	Geochemistry Water Barrel	FREE FALL GRAB SAMPLE	FREE FALL CAMERA
	JUNE 23 2250	33°44.5'N	129° 11.0'E	–	–	–	–	–	–	–	R-324										
	24 0311	34° 04.8'	129° 03.2'	–	–	–	–	–	–	–	R-325										
	24 0501	34° 10.0'	128° 50.5'	–	–	–	–	–	–	–	R-326										
394	24 0902	34° 21.6'	129° 05.4'	C-367	KC-180	T-194-1	–	K-287A	N-287	–	–	–	–	CM-231A						–	KF-45A
395	24 1019	34° 22.2'	129° 04.4'	C-368	–	–	–	–	–	–	–	–	–	–	–					–	KF-45
	24 1239	34° 28.1'	129° 07.7'								R-327										
396	24 1641	34° 45.8'	129° 19'	C-369	KC-181	–	–	K-287B	N-288	–	–			CM-231B						–	–
397	24 1828	34° 45.7'	129° 09'	C-370 C-371	–	–	–	–	–		–			–						–	–
398	~~24~~ 2000 24 2000	34° 47.7'	129° 16.1'	C-372	KC-182	–	–	–	–		–			–						–	–
	24 2224	34° 51.5'	129° 42.7'	–	–	–	–	–	–		R-328										
	25 0013	34° 52'	129° 59.7'	–	–	–	–	–	–		R-329										
399	25 0610	34° 57'	130° 52'	C-373	–	–	–	–	–		–			–							KF-46 KF-47A
	25 1029	35° 30'	130° 53'	–	–	–	–	–	–	–	R-330										
	25 1220	35° 44'	130° 53.5'								R-331										
	25 1455	35° 58'	130° 35'								R-332										
400	25 1953	36° 39'	130° 58'	C-374	–	–	–	–	–	–	–			–							
401	26 0641	37° 50'	131° 39'	C-375 C-376	–	–	–	–	–	–	–			–							KF-47B
	26 1039	37° 43'	131° 56'	–	–	–	–	–	–	–	R-333A										
	26 1109	37° 42'	131° 58'	–	–	–	–	–	–	–	R-333			–							
402	26 1405	37° 35'	132° 15'	C-377	KC-183			K-287	N-289	–	–			C.M.-231						–	–
	26 2004	37° 15.5'	132° 51.5'	–	–			–	–	–	R-334			–							
403	27 0624	36° 57'	134° 32.5'	C-378	–	–	–	–	–	–	–			–							KF-47C
404	27 0747	36° 53.5'	134° 33'	C-379	KC-184	–	–	–	–	–	–			–							–
8	27 1239	36° 53'	135° 14.5'	–	–		–	–	–	–	R-335			–							
405	27 1812	37° 15'	135° 42.5' E	C-380	KC-185	T-195-1	–	–	–	–	–			–							–
	27 2237	37° 41'	135° 15'	–	–	–	–	–	–	–	R-336			–							–
	28 1101	38° 55'	133° 48	C-381	KC-186	–	–	–	–	–	–			–							KF-47D

R. V. "~~VEGA~~" CONRAD 12

CHIEF SCIENTISTS STATION INDEX LOG

CRUISE 12

CRUISE LEG 18 SASEBO → HAKODATE

Station Number	Day, Hr (local)	Latitude	Longitude	Core Length m.	Core Head Camera	T-Grad No. of Probes in Sediment	Water Barrel or Niskin Bottle for Suspended matter	Camera	Nephelometer	Dredge	Sonobuoy	Millidore	Isaac or, Jet Net	Current Meter	Tripod T-Grad	Satnav and 3.5 kc Sounder	a. Core multiple plankton b. Vertical plankton	Buoy	Geochemistry Water Barrel	FREEFALL GRAB SAMPLER	FREEFALL CAMERA
	JUNE 28 1439	39°16'N	133°25'E	–	–	–		–	–		R-337			–						–	–
	28 1545	39° 21'	133°18'	–	–	–		–	–		R-338			–						–	–
407	28 2217	39°55.1	132°40'	C-382	KC-187A	T-196-3		K-288	N-290		–			C.M.-232							
	28 2329	39°57.5'	132°40.5								R-339A										
	28 2332	39°58'	132° 41'								R-339										
408	29 0918	39°42.7'	133°07	C-383	–	–		–	–		–			–							
409	29 1050	39° 59.5'	133°16.8	C-384	–	–		–	–		–			–							
	29 1745	39°36'	133°46'	–	–	–		–	–		R-340			–							
	29 1955	39°46.5'	133°57'	–	–	–		–	–		R-341			–							
	29 2135	39°54'	134°07'	–	–	–		–	–		R-342			–							
410	30 0740	40° 50'	134° 26'	C-385	KC-187B	T-197-3		K-289	–		–			C.M.-233						G.F-373	K.F-47
	30 1015	46°59.5	134°26'	–	–	–		–	–		R-343			–							
411	30 1130	40° 48'	134°36'	C-386	–	–		–	–		–			–							
	30 1259	40° 49'	134° 37'								R-344										
	30 1515	–	–								R-345A										
	30 1523	40°55.2'	134°52'								R-345										
412	JULY 01 0024	40°05.7	135° 12'	C-387	KC-187	T-198 A		–	–		–			–						G.F-374A	KF-48
413	01 1110	39° 07'	136° 08'	C-388	KC-188	T-198-2		K-290A	N-291A		–			C.M.-234A							
	01 1344	39°045'	136° 12'								R-346										
	01 1525	39° 10'	136° 23'								R-347										
414	01 1954	38° 54.5'	136° 30'	C-389	KC-189	T-199-2		–	–		–			–							
	01 2132	38° 54.5	136° 33'								R-348										
415	02 0730	39°42'	136°045'	C-390	KC-190	–		–	–		–			–							
	02 0951	39° 51'	135° 48'								R-349										
	02 1146	39° 43'	135° 43.5'								R-350										
	2 1448	39° 57.3'	135° 43.1'	C-391	C-392	KC-191A		K-290	N-291		–			C.M.-234						G.F-374	K.F-49
	03 0006	40° 37'	134° 56'	–	–			–	–		R-351			→							

R. V. "~~VEMA~~" CONRAD 12

CHIEF SCIENTISTS STATION INDEX LOG

CRUISE 12

CRUISE LEG 18 SASEBO → HAKODATE

Station Number	Day, HR (local)	Latitude	Longitude	Core Length m.	Core Head Camera	T-Grad No. of Probes in Sediment	Water Barrel or Niskin Bottle for Suspended matter	Camera	Nephelometer	Dredge	Sonobuoy	Millidore	Isaac or Jet Net	Current Meter	Tripod T-Grad	Satnav and 35 kc Sounder	a. Core multiple plankton b. Vertical plankton	Buoy	Geochemistry Water Barrel	FREEFALL GRAB SAMPLER	FREEFALL CAMERA
	03 0233	–	–	–	–	–		/	–		R-352A			–							
	03 0237	40°33.5'	134°37'	–	–	–		–	–		R-352			–							
417	03 1330	40°46.2'	135°38.6'	C-393	KC-191						–			–							
418	03 1913	40°19'	136°13.5'	C-394	KC-192						–			–							
419	04 0915	39°38'	137°29'	C-395	KC-193			–	–		–			–						LOST GF-375A	KF-50
	04 1518	38°38.9'	137°32.5'	C-396																	
420	04 1725	39°46.5'	137°36'	C-397	KC-194	–	–	–	–		–			–							
	04 2208	40°12.2'	137°02.5'						–		R-353										
	04 2351	40°06'	136°53'						–		R-354										
421	05 0618	40°33.5'	137°21'	C-398	–	–	–		–		–			–							
422	05 0954	40°30.5'	137°31.2'	C-399	–	–	–		–		–			–							

ENTER HAKODATE

Maxwell Lamb

Columbia University in the City of New York

DEPARTMENT OF GEOLOGY
LAMONT GEOLOGICAL OBSERVATORY
PALISADES

INDEX

Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG 18 From Sasebo To Hakodate

C366 KC179 T193 K286 N286 Dredge R323 VP422 CM230 Sat 5176 GF 392 KF 44 TIME ZONE

1 STA	2 Date Time (June 1969)	3 Lat	4 Long	5 C	6 KC	7 T RAD	9 K Gunny	10 N. neph	11 Dredge	12 R Sonobuoy	14 Vert. Stuvls	15 Current meter	17 Satellite	19 GF Freefall	20 KF Free Kas.	21 SF Free Sed.
~~S394~~	~~24 0902~~			—	—	—	—	—	—	~~R324~~		—		—	—	—
—	23 2250	33-44.5N	129-11.0E	—	—	—	—	—	—	R324		—		—	—	—
—	24 0311	34-04.8	129-03.2	—	—	—	—	—	—	R325		—		—	—	—
—	24 0501	34-10.0	128-50.5	—	—	—	—	—	—	R326		—		—	—	—
S394	24 0902	34-21.6	129-05.9	C367	KC180 EAST 11	T194-1	K287A TEST NEW CASE	N287 LAYER	—	—		CM231A TEST NEW CASE		—	KF45A	—
S395	24 1019	34-22.2	129-04.4	C368	—	T—	—	—	—	—		—		—	KF45B	—
—	24 1239	34-28.1	129-07.7	—	—	—	—	—	—	R327		—		—	—	—
S396	24 1641	34-45.8	129-19.0	C369	KC181 NORTH W.	—	K287B TOO SHALLOW	N288 LAYER	—	—		CM231B TOO SHALLOW		—	—	—
S397	24 1828	34-45.7	129-09.0	C370 C371	—	—	—	—	—	—		—		—	—	—
~~S398~~	24 2000	34-47.7	129-16.7	C372	KC182	—	—	—	—	—		—		—	—	—
—	24 2224	34-51.5	129-42.7	—	—	—	—	—	—	R328		—		—	—	—
—	25 0013	34-52.0	129-59.7	—	—	—	—	—	—	R329		—		—	—	—
S399	25 0610	34-57.0	130-52.0	C373	[illegible] 183	—	—	—	—	—		—		—	KF46A	—
—	25 1029	35-30.0	130-53.0	—	—	—	—	—	—	R330		—		—	—	—
—	25 1220	35-44.0	130-53.5	—	—	—	—	—	—	R331		—		—	—	—
—	25 1455	35-58	130-35	—	—	—	—	—	—	R332		—		—	—	—
S400	25 1953	36-39	130-58	C374	—	—	—	—	—	—		—		—	KF47B	—
S401	26 0641	37-50	131-39	C375 C376	—	—	—	—	—	~~R333A~~		—		—	KF48A	—
—	26 1039	37-43	131-56	—	—	—	—	—	—	R333A		—		—	—	—
—	26 1109	37-42	131-58	—	—	—	—	—	—	R333		—		—	—	—
S402	26 1405	37-35	132-15	C377	KC183	—	K289	N289	—	—	—	CM232		—	—	—
—	26 2004	37-15.5	132-51.5	—	—	—	—	—	—	R334	—	—		—	—	—
~~[illegible]~~	~~[illegible]~~															
S403	27 0624	36-57N	134-32.5	C378	—	—	—	—	—	—		—		—	KF49C	—
S404	27 0747	36-53.5	134-33.0	C379	KC184	—	—	—	—	—		—		—	—	—
—	27 1239	36-53	135-14.5	—	—	—	—	—	—	R335		—		—	—	—
S405	27 1812	37-15	135-42.5	C380	KC185	T-1951	—	—	—	—		—		—	—	—
—	27 2230	37-41	135-15	—	—	—	—	—	—	R336		—		—	—	—
S406	28 1101	38-55N	133-48E	C381	KC-186	T—	—	—	—	—		—		—	KF50D	—
—	28 1439	39-16.0	133-25.0	—	—	—	—	—	—	R337		—		—	—	—
—	28 1545	39-21.0	133-18.0	—	—	—	—	—	—	R338		—		—	—	—
S407	28 2217	39-55.1N	132-40.0E	C382	KC 187A	T-1963	K288	N 290	—	—	—	CM 232		—	—	—
—	28 2329	39-57.5	132-40.5	—	—	—	—	—	—	R339A		—		—	—	—
—	28 2339	39-58	132-41	—	—	—	—	—	—	R339		—		—	—	—

[signature]
Chief Scientist

Columbia University in the City of New York

DEPARTMENT OF GEOLOGY
LAMONT GEOLOGICAL OBSERVATORY
PALISADES

Research Vessel ROBERT D. CONRAD
CRUISE N° _____
CRUISE LEG—From _____ To _____

TIME ZONE _____

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG				REMARKS		GF	KF
1	2	3	4.	5	6	7	9	10	11	12	14	15	17	19	20
STA	DATE / HOUR	LAT	LONG	CORE [redacted]	CORE CAMERA	T-GRAD	CAMERA	N	DREDGE	SONOBUOY 289, 290,	VERTICAL PROFILATION	CURRENT METER	SATELITE	FREEFALL GRABER	FREE FALL CAMERA
	5/29														
	5/30									291, 292, 293, 294					
	5/31									295A, 295					
379	6/1 2331	06°32	111°13	350	—	180-2	273-19	273		296, 297		218 (18)		357, 358	
380	6/2 1935	05°02	113°35	351	173	181-2	274-27	274		298, 299, 300, 361		219 (28)		359	35-1-1
381	6/3 1224	06°00	114°01	352	174	182-3	275-16	275		302, 303		220 (16)		360	36-1-1
382	6/4 1600	07°27	114°33	353	175	183-3	276-15	276		304, 305	416	221 (8)	5054	361	
383	6/4 2100	07°30	114°30	354, 356, 355,	176 A					306, 307			5057	362	
	6/6									308, 309, 310, 311					
384	6/7 1215	08°58	120°14	357	176 B	184-2	277-26	277			417	222 (26)	5086	363	37-1-1
385	6/8 1400	09°10	123°58	358	176 C	185-2	278-19	278			418	223 (18)		364	38-1-1
386	6/9 1731	10°46	127°03	359	176	186-1	279-24	279		312		224 (32)		365, 366 A	
387	6/10 1948	13°12	126°24	360	177 A	187-1	280-15	280				225 (17)	5120	366	39-1-1
388	6/11-12 2224	15°06	124°08	361	177	188-1	281-29	281			419	226 (28)	5130	367	40-1-1
389	6/12 1312	15°23	122°46	362	178 A	189-1	282-18	282			420	227 (16)	5139	368	41-1-1
390	6/13 1930	19°20	124°43	363	178 B	190-2	283-17	283			421	228 (17)	5154	369	42-1-1
391	6/14 1516	21°45	125°35	364	178 C	191-1	284-25	284			422	229 A	5162	370	43-1-1
392	6/15 1118	23°57	126°11	365	178	192-2	285-9	285				229 (21)	5171	371	
393	6/16 0510	26°35	126°19	366	179	193-2	286-19	286		313, 314, 315, 316, 317, 318 A, 318, 319, 320, 321, 322, 323.		230	5176	372	44-1-1
	6/17														
	6/18														

Chief Scientist

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

PLEASE FILL-IN AFTER EACH STATION

Research Vessel ROBERT D. CONRAD
CRUISE N° _____
CRUISE LEG—From Tokyo To Tokyo

TIME ZONE _____

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS							
2	1	3	4	5	6	7	9	10	11	12	13	14	15	16	17	18
Date	Station	Lat.	Long.	CORE, *PIPE; BENT? LENGTH	Cl's	T-GRAD No. PROBES	CAMERA No. PHOTOS	NEPH THICKNESS LAYER	DREDGE	Sno-b. No. miles	SR DIRECTION VELOCITY	JN	CM	DTG	No. of SAT. FIX	VERT. PLANK
18	149	31-03	132-50	150	X	76	124B	No Layer		X		X	98B		1670	133
June	2000-0124			1 3.43m	X	2		118		X		X	planed			
19	150	30-44	134-07	151	X	X	X	X		X			X		1680	134
JUNE	0530-1042			2 9.09m	X	X	X	X		X			X			
19	151	3044	135-23	152	X	77	124	119		X			98		1686	135
JUNE	1736 2024			2 9.11 m	X	2	41 photos	0		X			N~240cm/sec			
20	152	30-10	137-04	153	X	78	125	120		X			79		1692	136
JUNE	0624-0918			2 ~9.40m	X	3	35 photos	0		X			S 1.8cm/sec			
21	153	3152	13743	154	X	79	126	121		X		66	100		1701	137
JUNE	0036-0600			2 BENT 3.80 m	X	1	36 photos	0		X			N 3.4cm/sec			
21	154	31-44	137-08	155	X	80	X	X		X			X		1706	138
JUNE	1130-1336			2 BENT 3.40m	X	1	X	X		X			X			
21	155	32-28	136-05	156		81	127	122		X			101A		1711	139
June	2036-2336			1 3.92m		2	3 photos	0		X			Didn't deploy			
22	156	32-32	135-16	157		82	X	X		X			X		1721	140
JUNE	1354-1630			1 3.05m		2				X						
22-23	157	31-55	135-06	158		83	128	123		X			101		1724	141
JUNE	2348-0248			2 ~9.93m		2	20 photos	0		X			NS ~8.8cm/sec			
23	158	31-37	137-07	159		84	X	X		X		67	X		1729	142
JUN68	1154-1418			3 ~8.59m		3	X	X		X			X			
23	159	31-31	137-47	160		85	129	124		X		68	102		1733	X
JUN68	1818-2106			2 9.45m		2	22 photos	~810 Layer		X			SE ~7.6cm/sec			
24	160	32-15	138-17	161		86	130	125		X			103		1748	143
JUNE68	0515-1012			2 ~8.5m		3	22 photos	0		X			6.8cm NW			
24	161	33-00	138-02	162		87	X	X		X			X		1746	144
JUNE	1818-2048			2 ~8.85m		3	X	X		X			X			
25	162	3330.2	137-52	163		88	131	126		X			104		1748	145
JUNE	0336-0536			1 ~3.5m		2	22 photos	0		X			NW ~6.8cm/sec			
25						87										
JUNE						2										

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PROBES IN MUD AND ON FILM

Please fill-in after each station

Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG—From TOKYO To TOKYO

TIME ZONE ______

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG			REMARKS							
2	1	3	4	5	6	7	9	10	11	12	13	14	15	16	17	18	19	20
Date	Station	Lat.	Long.	CORE PIPE/TRUE	CK	T-GRAD	CAMERA	NEPH.	DREDGE	Sonob.	SR	JN	CM	ATG	No. of SAT. FIX	VERT. PLANK		
4 June	134			136 2 pipe BENT		71B	118 3 photos	112				64				124		
				5.25m		0 Probes	— exposure	—		58/inches					3.5Kc			
6 JUNE	135	33-16	133-35	1 BENT 137			119 8 photos			59/3.4	1		95		1509			
	1524-0130			.58 m						60/7.6			20 cps					
7 June	136	33-00	134-09	1 138							2R				1519	125		
	0730-1718			>2.6m							3							
8 JUNE	137	32-18	134-09	1 139							4R				1529			
	2342-0836			~3.8							5							
8 June	138	31-50	134-12	2 140		71	120A	113			6R		96A		1536	126		
	1442-2336			~9m		2		0			7		weak light					
9 JUNE	139	30-36	134-13	2 BENT 141		72A	120	114				65	96B		1553	127		
	1836-0030			~5.5m		0	2 photos	0					weak light					
10 JUN	140	29-41	134-47	2 BENT 142		72B					8				1566	128		
	1400-2024			3.38m		0												
11 June	141	29-46	133-17	1 143		72	121	115			9R		96		1578	129		
	0700-1430			3.24m		1	8 photos	0					SW ~32cps					
11-12	142	29-07	132-42	2 144		73	122	116			10R		97A		1584			
June	2342-0724			8.49m		2	6 photos	0					weak light					
12	143	29-20	131-58	145		74					11R				1594			
JUNE	1600-2018			2 BENT ~4.8 m		1												
13	144	29-33	131-25	1 146		75	123	117			12R		97 NE		1605	130		
JUNE	1024-1700			.47m		2	11 photos	0					40 cps					
14	145	29-35	130-10	147			124A				13R		98A		1614	131		
JUNE	0242-0800			1 ~.05m			TRY good outside						Didn't Have Enough					
14	146	30-34	129°12	148							14R				1624	132		
JUNE	1848-2254			1 3.0m														
15	147	30°20'	127°02'	149							15				1634			
	1136-1554																	
15	148	29°57'	126°53'								15R							
	1942-0036																	
16										61, 62, 63 64, 65, 66 67, 68, 69 70, 71, 72								
										72								

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LAMONT GEOLOGICAL OBSERVATORY
PALISADES

Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG 10 From Sasebo To Hakodate

TIME ZONE

1969 Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION N Lat.	POSITION E Long.	STN LOG	REMARKS
23 June	R324 SONOBUOY	2250 70.26	0032 86.68	65fm —		33-44.5	129-11.0		
24 June	R325 SONOBUOY	0311 113.59	0453 124.10	71fm —		34-04.8	129-03.2		
24 June	R326 SONOBUOY	0501 154.95	0612 132-53	63fm —		34-10.0	128-54.5		
24 June	S394 C367 CORE	0902 0905 0914	0908 HIT	97 95	96 HIT	34-21.6	129-05.9	394	penetr. 321. total 450. Good 450. Bioclastic sand, greenish black. Carbonate content high. Coarse fraction near 100%, consisting of benthonic forams, pelecypods, brachiopods, and gastropods, with scattered glauconite & cobalt
	S394 KC180 CoreCamera							394	
	S394 T194-1 T'GRAD	0905 0908	0914 HIT	97 95	95	34°21.6	129°05.9	394	P2 ONLY PROBE IN BOTTOM - SHORT WAIT IN BOTTOM DUE TO NECESSITY TO PULL CORE OUT 5 CONDUCTIVITY MEASUREMENTS
	S394 K287A CAMERA							394	

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Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG 18 From Saseho To Hakodate
TIME ZONE

1969 Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. E	STN LOG	REMARKS
24 June	S394 N287 Nephelometer					34°21.6	129°05.9	394	
24 June	S394 CM231A Current Meter					34°21.6'	129°05.9	394	
	S394 KF45A Free Fall Camera							394	No picture - probably because aligator clip did not have good enough a grip on the rubber band.
24 June	S395 C368 Core	1025 1037	1030 Hit	79 80	494 c.f	34-22.2	129-04.4	395	penetr. 128cm. tot 420. Good pecan. Graded green black sand and shell hash. Carbonate content moderate. Coarse fraction 80%-99% consisting of clear angular clastics, shells + rare planktonic forams.
"	S395 KF45 Free Fall Camera					34°22.2'	129°04.4	395	the picture was underexposed but did show a mud bottom disturbed only by a few animal workings
24 June	R327 Sonobuoy	1239	1421			34-28.1	129-07.7	—	

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Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG—From SASEBO To HAKODATA

TIME ZONE ______

1969 Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. E	STN LOG	REMARKS
24	S396	1641		95	95Hit	34-45.8	129-19.0		penet. 300cm. total. 420. Good 420cm. greenish grey sand with
June	C369	~~1837~~		95				396	coarse shell fragments. Carbonate content low. Coarse
		1643	1647 Hit						fraction 80% consisting of clear angular clastics, shell
		1654							fragments, glauconite, and scarce planktonic forams.
24	S396					34°45.8'	129° 19.0'		
	KC181							396	
	S396					34°45.8'	129° 19.0'		No layer
	K287B							396	
	S396					34°45.8'	129° 19.0'		No layer
	N288B							396	
	S396					34°45.8'	129° 19.0'		Too shallow.
	CM231B							396	
24	S397	1828		?		34-45.7	129-09.0		peneth. 530. total 618 Good 618cm.
June	C370	1831	1833Hit	72	73Hit			397	
		1838		74					

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PALISADES

Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG—From Sasebo To Hakodate

TIME ZONE ______

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	STN LOG	REMARKS
24 June	S397 C371 CORE	1909 1912	1911 Hit	64 64	64 Hit	34.57N	129°09E	397	penetr 135. totl. 300 Bood 300. grey clay grading to coarse sand at bottom. Coarse fraction 80% consisting of clear angular clastics, shell fragments & sandstone at bottom.
24 June	S398 C372 CORE	2000 2005 2014	2007 Hit	12 113 115	113 Hit	34-47.7	129-16.7	398	Penetr 380mm Totl. 612 Bood 480cm. Grey clay. Carbonate content ~~[illegible]~~ low Sulphide moderate. Coarse fraction 20% consisting of angular clastics, planktonic forams, shell fragments and troilite
	S398 KC182 CoreCamera							398	
24 June	R 328 Sonobuoy	2224	0007			34-51.5	129-42.7	—	
25 June	R 329 Sonobuoy	0013	0154			34-52.0	129-59.7	—	
25 June	S399 C373 CORE	0610 0617 0621	0619 Hit	71 71	71 Hit	34-57.0	130-52.0	399	penetr 100cm. total length 300. Bored 300. Greenish black clay with tuffite at bottom, c shells at top. Carbonate content low. Coarse fraction 80% - pelecypods, angular qtz & feldspar, abundant glauconite.

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PALISADES

Research Vessel ROBERT D. CONRAD
CRUISE N° IK
CRUISE LEG—From Sasebo To Hakodate

TIME ZONE

1969 Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. E	STN LOG	REMARKS
	S399					34°57.0	130°52.0		Very good picture - mud disturbed by what appears
	KF46							399	to be animal working (bottom rough)
	FREE FALL								
	CAMERA								
	S399					34°57.0'	130°52.0		No picture - electronics malfunction
	KF49A							399	
	FREE FALL								
	CAMERA								
25 June	R330 SONOBUOY	1029	1210			35-30.0	130-53.0	—	
25 June	R331 SONOBUOY	1220	1403			35-44.0	130-53.5	—	
25 June	R332 SONOBUOY	1455	1640			35-58	130-35	—	

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PALISADES

Research Vessel ROBERT D. CONRAD
CRUISE Nº 12
CRUISE LEG—From Sasebo To Hakodate

TIME ZONE

Date	STATION and Nº	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	STN LOG	REMARKS
25 June	S400 C374 CORE	1953 2006 2050	2024 HT	1133 1133	1133	36-39 ↓	130-58 ↓	400	penetr. 40'10". totl. 1220 cm. Good 1220 cm. Brown clay to 10 cm, followed sharply by olive grey clay, and sand units in alternation. Carbonate content nil. Coarse fraction to 80% consisting of pyroclastics, pumice, Radiolaria and scarce planktonic forams.
26 June	S401 C375 CORE	0641 0651 0720	0703 HT	810 815	810 HT	37-50	131-39	401	penetr. 600 cm totl. 490. Good 490 cm. Olive grey clay with interspersed pumice layers. Carbonate content nil. Coarse fraction 5% consisting of Radiolaria to 100% consisting of pumice.
26 June	S401 KF47B FREE FALL CAMERA							401	No picture – camera electronics not turned on.
26 June	S401 KF48A FREE FALL CAMERA							401	No picture, malfunction in flash circuitry.
	S401 C376 CORE	0829 0900	0844 HT	773 761	769 HT	↓	↓	401	penetr. 1840. totl 1780 Good 1780. Olive grey clay with interspersed pumice layers. Carbonate content nil. Coarse fraction generally 5% consisting of Radiolaria and pyroclastics, to 90% consisting of ash and pumice
26 June	R333A SONOBUOY	1039	1101			37-43	131-56	—	

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CRUISE N° 12
CRUISE LEG 13 From SASEBO To HAKODATE

TIME ZONE

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. E	STN LOG	REMARKS
26	R333	1109	1251			37-42	131-58	—	
June	SONOBUOY								
26	S402	1405				37-35	132-15		penetr. 1900 cm. tot. 1840. Good 1840 cm. Layered olive gray
June	C377	1415	1433 HIT	1200	1197 HIT	1	1	402	clay. Carbonate content mil. Coarse fraction 10%-50%,
	CORE	1500		1197					consisting of diatoms, radiolaria, and pyroclastics
	S402								
	KC183-3					37°35'	132°15'	402	
	CORE CAMERA								
	S402					37°35'	132°15'		
	K 287							402	
	CAMERA								
	S402					37°35'	132°15'		
	N289							402	
	NEPHELOMETER								
	S402					37°35'	132°15'		
	CM 231							402	
	CURRENT								
	METER								

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Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG—From Sasebo To Hakodate

TIME ZONE

1969 Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	STN LOG	REMARKS
26 June	R334	2004	2145			39-15.5	132-57.5	—	
	SONOBUOY								
27 June	S403	0642				36-57	134-32.5		penetr. 1100cm. Total 1130cm. Good 1130 cm. Layered green to olive clay.
	C378	0611	0642 HIT	735	752 HIT	"	"	403	Carbonate content nil. Course fraction 15% consisting
	CORE	0640		787					of diatoms, radiolaria, scarce planktonic foraminifera,
									and pyroclastics.
	S403					36° 57'	134° 32.5'		
	KF HYC							403	No picture - film light struck.
	FREE FALL								
	CAMERA								
27 June	S404	0747				36-53.5	134-33.0		penetr. 1220cm. Total 1590 cm. Good 1240 cm. dark greenish clay,
	C379	0757	0801 HIT	552	541 HIT	"	"	404	laminated & burrowed. Carbonate content nil.
	CORE	0815		530					Coarse fraction 10%, consisting of diatoms, radiolaria,
									scarce planktonic forams and colabes glass shards.
27 June	S404					36° 53.5'	134° 33.0'		
	KC 184							404	
	CORE CAMERA								

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CRUISE N° 12
CRUISE LEG—From SASEBO To HAKODATA

TIME ZONE

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. E	STN LOG	REMARKS
27 June	R335 SONOBUOY	1239	1421			36-53	135-14.5	—	
27 June	S405 C380 CORE	1812				37-15	135-42.5		
		1823	1835 HIT	862	872 HIT	↓	↓	405	penetr. 470 cm Total 510cm. Good 240cm. Brown clay to 15 cm. Greenish gray clay laminated with olive gray and an ash layer at bottom. Carbonate content nil. Coarse fraction 30% consisting of glau conite, radiolaria + diatoms.
		1855		913					
	S405 KC185 CORE CAMERA							405	
	S405 T195-1 TG RAD	1822	1865	862	913	37°15' N	135°42.5 E	405	PB ONLY PROBE IN MUD +2000 DESTROYED ON PULL OUT 3 CONDUCTIVITY MEASUREMENTS
		1835	HIT	886					
27 June	R336 SONOBUOY	2239	0014			37-41	135-15	—	

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PALISADES

Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG—From Sasebo To Hakodate

TIME ZONE

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. E	STN LOG	REMARKS
26	S406	1101				38-55	133-48		penetr 810cm. tot l. 1010cm. Boodcore 1010cm. Olive black alternating
June	C381	1048	1101 HIT	710	775 HIT	↓	↓	406	with brown and green clays. Carbonate content very low %
	CORE	1124		810					nil. Shell fragments at top. Coarse fraction 20% consisting of glass comite,
									and angular clear clastics. Rare planktonic forams near top.
	S406					38°55'	133°48'		
	KC 186							406	
	CORE CAMERA								
	S406					38°55'	133°48'		No picture - camera triggered, but ... mystery
	KF KTD							406	
	FREEFALL								
	CAMERA								
28 June	R337 SONOBUOY	1439	1535			39-16.0	133-25.0	—	
28 June	R338 SONOBUOY	1545	1728			39-21.0	133-18.0	—	

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Research Vessel ROBERT D. CONRAD
CRUISE Nº 12
CRUISE LEG—From Sasebo To Hakodate

TIME ZONE ________

Date	STATION and Nº	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. E	STN LOG	REMARKS
28	S407	2217				39-55.1	132-40.0		penetr 1350cm total 1240 Cord 1240. Brown clay 30cm. Laminated
June	C382	2155	2217 HIT	1622	1625 HIT	↓	↓	407	greenish + greyish clay, with disturbed layering interspersed
	CORE	2215		1622					silty + ash layers. Carbonate content nil. Coarse
									fraction generally 5%, consisting of Radiolaria & Diatoms, 80% in
									sandy-silty laminae, consisting of glauconite, acidic ash, [illegible] quartz +
	S407					39° 55.1'	132° 40.0'		feldspars.
	KC187A							407	
	CoreCamera								
	S 407	2155	2257	1622	1623	39°55.1	132°40.0 [?]		ALL 3 G000 [?] 13 CONDUCTIVITY MEASUREMENTS
	T196-3	2217	HIT	1623		N	E	407	
	T'GRAD								
	S 407					39° 55.1'	132° 40.0'		
	K 288							407	
	CAMERA								
	S 407					39°55.1'	132° 40.0'		
	N290							407	
	NEPHELOMETER								
	S 407					39°55.1'	132° 40.0'		
	CM 232							407	
	CURRENT								
	METER								

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LAMONT GEOLOGICAL OBSERVATORY
PALISADES

Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG 2 From SASEBO To HAKODATA

TIME ZONE _____

1969 Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. E	STN LOG	REMARKS
28 June	R339A SONOBUOY	2329				39-57.5	132-40.5	—	
28 June	R339 SONOBUOY	2332	0106			39-58	132-41	—	
29 June	S408	0918				39-42.7	133-07		depth 920m tot l 1170 good 990 cm. Brown clay 0-10 cm. Below brown alternating with greenish clay. Carbonate content little. Coarse fraction 5% to 60% diatoms + Radiolaria
	C383	0700	0718 HIT	1177	1138 HIT			408	
	CORE	0730		1130					
29	S409	1050				39-58.5	133-16.8		water 470 tot 514. Good 514. Brown clay top 35cm. greenish clay to bottom. Carbonate content nil. Coarse fr. 5% generally Radiolaria, diatoms to 60% in silty laminae, consisting of angular clastics, diatoms + colorless glass shards.
	C384	1020	1050 HIT	1430	1440 HIT	↓	↓	409	
	CORE	1119		1445					

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Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG—From Sasebo To Hakodate

TIME ZONE _____

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. E	STN LOG	REMARKS
29 June	R340 SONOBUOY	1745	1922			39-36	133-46	—	
29 June	R341 SONOBUOY	1955	2125			39-46	133-57	—	
29 June	R342 SONOBUOY	2135	2255			39-54.0	134-09	—	
30 June	S410 C385 CORE	0740 K1878 0702 0917	0737 HIT	1895 1896	1896 HIT	40-50.0	134-26.0	410	pnetr 12.84 tot l 1060. Good 1060 cm. Brown clay 0-12 cm. Below intricately laminated greenish clay with dia Foram ooze + ash laminae throughout. Carbonate content mit. Coarse fraction generally 5% consisting of Radiolaria + Dia Tests; to 90% in ash layers, 40% in silty laminae, marking off planktonic forams + glauconite.
	S410 KC187B CORECAMERA					40° 50.0'	134° 26.0'	410	
	S 410 T 197-3 TGRAD	0702 0737	0917 HIT	1895 1896	1896	40° 50.0'	134° 26.0'	410	ALL 3 GOOD 9 CONDUCTIVITY MEASUREMENTS

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Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG—From Sasebo To Hakodate

TIME ZONE _____

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. E	STN LOG	REMARKS
30	S 410					40°50.0'	134°26.0'		
June	K 289-3							410	
	CAMERA								
	S 410					40°50.0'	134°26.0'		
	CM 233							410	
	CURRENT								
	METER								
	S410					40°50.0'	134°26.0'		grabber empty - no solids in sediment
	GF373-0							410	
	GRABBER								
	S 410					40°50.0'	134°26.0'		Picture shows featureless bottom.
	KF 47							410	photo underexposed
	FREE FALL								
	CAMERA								
30 June	R343	1015	1217			40-59.5	134-26.0	—	3.5 kc run included.
	SONOBUOY								

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Research Vessel ROBERT D. CONRAD
CRUISE Nº 12
CRUISE LEG—From Sasebo To Hakodate

TIME ZONE ________

Date	STATION and Nº	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. E	STN LOG	REMARKS
30	S411	1130				40-48.0	134-36.0		penetr. 1812 totl. 1560 Good 1560. Brown clay 0-17 cm. Laminated
June	C386	1133	1159 HT	1876	1877	↓	↓	411	greenish clay with many silty + ash laminae throughout.
	CORE	1243		1881					Carbonate content nil. Coarse fraction generally 5%, consisting
									of Radiolaria + Diatoms; to 90% in ash layers, consisting of ash
									+ acidic, and 40% in silty laminae, composed of abundant
									micas, angular quartz, feldspars + pyrite-troilite micronodules.
30	R344	1259	1512			40-49.0	134-37.0	—	
June	SONOBUOY								
30	R345A	1515				—	—	—	DUD BUOY.
June	SONOBUOY								
30	R345	1523	1701			40-55.2	134-52.0	—	
June	SONOBUOY								
01	S412	0024				40-05.7	135-12.0		
July	C387	0033	0043 HT	464	453 HT	↓	↓	412	penetr. 505. totl. 715 cm. Good 715 cm. laminated sandy ~~yellow~~ brown clay
		0100		439					overlying coarse gravel composed of sorted basalt pebbles.

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LAMONT GEOLOGICAL OBSERVATORY
PALISADES

Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG 18 From SASEBO To HAKODATA
TIME ZONE

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. E	STN LOG	REMARKS
01	S412	0024				40°05.7	135°12.0'		
July	KC 187							412	
	CORE CAMERA								
	S412	0033	0100	479	439	40°05.7'	135°12.0'		P3 ONLY PROBE IN BOTTOM & DESTROYED
	T 198-A	0042	HIT	452				412	
	T'GRAD								
	S412					40°05.7'	135°12.0'		+ + + lost
	GF374A							412	
	GRABBER								
	S412					40°05.7'	135°12.0'		picture shows undisturbed sed. except
	KF48							412	for a few animal workings
	FREE FALL								
	CAMERA								
01	S413	1110				39-07.0	136-08.0		
July	C388	1049	1110 HIT	1339	1344 Hit	↓	↓	413	penetr 1250 total ~~1340~~ 920 good ~~1375~~ 920 brown clay to 40 cm. Laminated of brown clay to bottom, with ash layer & mud'd beds. Carbonate content nil to low in foraminiferal layers. Coarse fraction negligible in clay, to 30% in various laminae consisting of glass shards, forams planktonic, Radiolaria & diatoms
	CORE	1148		1355					
	S413					39°07.0'	136°08.0'		
	KC 188							413	
	CORE CAMERA								

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PALISADES

Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG 13 From SASEBO To HAKODATA

TIME ZONE

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. E	STN LOG	REMARKS
01	S 413	1049	1145	1339	1355	39-07.0	136-08.0	-	P1 & P2 OFF SCALE P3 DEFLECTED TO
July	T198-2	1110	HIT	1344				413	COLD SIDE OF FILM
	T'GRAD								8 CONDUCTIVITY MEASUREMENTS
	S 413					39°07.0'	136°08.0'		
	N291A							413	
	NEPHOLOMETER								
	S413					39°07.0'	136°08.0'		
	CM 234A							413	
	CURRENT METER								
01	R 346	1344	1516			39-04.5	136-12.0	—	
July	SONOBUOY	—							
01	R347	1525	1708			39-10.0	136-23.0	—	
July	SONOBUOY								
01	S414	1954				38-54.5	136-30.0		Penetr 1348 Total 510 cm Good 1275 cm. Brown clay + diatom ooze top 21 cm
July	C389	2000	2023 HIT	1427	1426 HIT	↓	↓	414	of brown clay w/ interspersed sand + ash near bottom. Carb content nil.
	CORE	2104			1426				15-30% radiolaria, planktonic forams, scarce plant debris, + diatoms.

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PALISADES

Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG—From Sasebo To Hakodate

TIME ZONE _____

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. E	STN LOG	REMARKS
	S414					38°54.5'	136°30.0'		
	KC189							414	
	CORE CAMERA								
	S414	2002	2104	1426	1426	38°54.5'	136°30.0'		PH DESTROYED P3+P2 GOOD P1 DIDN'T PENETRATE
	T199-2	2023	HIT	1426				414	11 CONDUCTIVITY MEASUREMENTS
	TIGRAD								
01 July	R348	2132	2314			38-54.5	136-33.0	—	090°
	SONOBUOY	-							
02	S415	0730±				39-42.0	136-01.5		
	C390:	0733	0743 HIT	555	555 HIT	↓	↓	415	Penetr 840cm total 860cm. Good 860 cm. Intensely mottled light olive grey clay with sharp contacts with interspersed dark sands. Carbonate content nil - very fewin clays. Course fraction 30% in clays consisting of glass shards, planktonic foams, + radiolaria. 80% in sands, consisting of fossil tests and pyroclastics
	CORE	0800		555					
	S415					39°42.0'	136°01.5'		
	KC-190							415	
	CORE CAMERA								

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Research Vessel ROBERT D. CONRAD
CRUISE N° 17
CRUISE LEG 18 From SASEBO To HAKODATA

TIME ZONE

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. E	STN LOG	REMARKS
02 July	R349 SONOBUOY	0951	1133			39-51.0	135-48.0	–	210°
02 July	R350 SONOBUOY	1146	1328			39-43.0	135-43.5	–	030°
02 July	S416	1448				39-59.3	135-43.1		
	G391 AND	1544	1554HIT	495	487HIT			416	penetr 20cm. tot l. 140. good 140. light olive clay. Carbonate content nil. Coarse fraction 20% consisting of radiolaria + diatoms.
		1615		480					penetr 630cm tot l. 500cm. good. 500cm. Mottled olive clay
	C-392	1733	1742HIT	547	545HIT			416	with ash layers. Carbonate nil. Coarse fraction 20%, Radiolaria,
	CORE	1755		546					and diatoms.
	S416					39° 51.0	135° 48.0		
	KC 191A							416	
	CORECAMERA								
	S416					39°51.0	135° 48.0		
	K290							416	
	CAMERA								
	S416					39°51.0	135°48.0		
	N291							416	
	CAMERA								
	S416					39°51.0	135°48.0		
	CM 234							416	
	CURRENT METER								

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PALISADES

Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG 18 From SASEBO To HAKODATA

TIME ZONE

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. E	STN LOG	REMARKS
02 July	S416 GF3944 GRABBER	1448				39-59.3	135-43.1	416	4 lb. of greenish gray mud. full of foram's. No Mn-nodules.
	S416. KF-49 FREEFALL CAMERA					39°59.3	135°43.1'	416	picture mud bottom - no Mn-Nodules ~~some~~ some animal workings.
03 July	R351 SONOBUOY	0006	0221			40-37.0	134-56.0	—	260°
03 July	R352A SONOBUOY	0235						—	DUD BOMB.
03 July	R352 SONOBUOY	0237	0500			40-33.6	134-37	—	080°

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Research Vessel ROBERT D. CONRAD
CRUISE Nº 12
CRUISE LEG 13 From SASEBO To HAKODATA
TIME ZONE ____

Date	STATION and Nº	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	STN LOG	REMARKS
03	S417	1330	1426	1650	1646 hit	40°46.2	135-38.6		penetr. 1250 cm. tot l 980. Good 980. Brown clay to 40 cm, followed
July	C393	1353 hit		1645				417	by complexly alternating green + brown + grey clays. Carbonate
	CORE								content nil. Coarse fraction 10%, consisting of Radiolaria &
									diatoms.
	S417					40°46.2'	135°38.6'		
	KC 191							417	
	CORE CAMERA								
03	S418	1913				40-19.0	136-13.5		penetr. 420 cm. tot l 800 cm. Good 560. yellow clay to 235 cm, followed
July	C394	1915	1933 HIT	1255	1262 Hit			418	by grey clay with mudstone laminae and mudstone
	CORE	1953		1270					chips throughout. Carbonate nil. Coarse fraction 10%, consisting
									of weathered pyroclastics and diatoms.
03	S418					40°19.0'	136°13.5'		
July	KC192							418	
	CORE CAMERA								
04	S419	0915				39-38	137-29		penetr. 930 cm. tot l ~~800 cm Good 560 cm~~ Messenger failed to
July	C 395	0909	0929 Hit	1489	1479 Hit			419	trip release mechanism. no sediment recovered
	CORE	1000		1473					
04	S419	0915				39°38'	137°29'		
July	KC 193							419	LOST
	S419 GF	3775 A						419	} picture evidently taken down steep
	S419 KF	50						419	hill. mud cloud from wt can just be seen, but
									no bottom
04	S419	1518				39-38.9	137-32.5		The long drift between two hits at this station resulted from
July	C 396	1322	1342 Hit	1525	1518 hit			419	faulty operation of equipment.
	CORE	1420		1440		Trip failed			penetr. 100 cm. 5 cm of unoriented sediment recovered.
									Grey clay.

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Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG 18 From SASEBO To HAKODATA

TIME ZONE _____

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat. N	POSITION Long. E	S/N LOG	REMARKS
04 July	S420	1725				39-46.5	137-36.0		penetr 140. totl. 460. Good 140cm. soupy top, followed by gray sandy clay. Carbonate content rel. Coarse fraction 40%-50% consisting of angular quartz + feldspar, plant debris, and scattered planktonic foams.
July	C397	1701	1722	1550	1530			420	
	CORE	1756		1510					
04 July	S420	1725				39°46.5	137°36.0		
	KC 194							420	
	CORE								
04 July	R353	2208	2339			40-12.2	137-02.5	—	
	SONOBUOY								
	R354								
04 July	R354	2351	0127			40-16.0	136-53.0	—	
	SONOBUOY								
05 July	S421	0618				40-33.5	137-21.0		penetr 730cm. totl. 965cm. Good 700cm. orange clay to 65cm, followed by grey + brown clays that sharply overly uniform green clay near bottom. Carbonate content rel. Coarse fraction 20-60% consisting of radiolaria, diatoms, volcanic ash + chitinous forams.
	C398	0627	0648 HT	1484	1437 last	↓	↓	421	
	CORE	0715		1400					
05 July	S422	0954				40-30.5	137-31.2		
	C399							422	no penetration a sediment recovery
	CORE								

Last Before Hakodate.

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CRUISE N° 12
CRUISE LEG—From 19 HAKODATE To ADAK

TIME ZONE ~~X~~ 9

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	~~STA LOG~~ #	REMARKS
13JUL	~~CORE~~ #400	1657	1813	2051	3000	40°54'	144°51'	423	penet 180cm. Total 150 cm. Good 150 cm. Greenish
		1728	HIT	2091					grey clay with compact ash layer at 120cm.
									Carb content nil. Coarse fr. 60%. Diatom Radiolaria.
									J Z
13JUL	CORE CAMERA #195A	1657	1813	2051	3000				No Exp.
13JUL	CAMERA #29	1632	1908	2053	2110				approx. 32 usable frames; 34 hits
									Sediment with animal trails
13JUL	CURRENT METER #235	1632	1908	2053	2110				approx. 28 usable frames; 35 hits
									Current direction is 10°; 3.6 c/s
13JUL	BEAR CREEK SAMPLER #375B								lost - at night, no light. Found w/ RDF unit. One
									pass made but it was missed. Chief scientist
									decided time too short - thus it was left.
13JUL	BEAR CREEK CAMERA #51								good picture - shows what appears to be animals
									on mud + some animal workings in the sed.
									No ~~B~~ nodules
13JUL	JONO BUOY #355								

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Research Vessel VEMA
CRUISE N° 12
CRUISE LEG—From HAKODATE To ADAK

TIME ZONE -9 ~~-10~~

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
14 JUL 1969	CORE 401	1509 1746	1600 HIT	2875 2880	2879 HIT	40°49.8 N	148°08' E	424	pen to 650cm. tot pl 965 good ~~965~~ 825. Brown clay top 10cm. Green clay with ash at 718-730 cm which probably stopped penetration. Carbonate nil. Coarse fraction 60% diatoms and radiolaria
	Bottom Cam. 292	1430	1835	2875	2870			424	43 Hits; 43 usable frames Sediment
	Current Meter 236	1430	1835	2875	2870			424	Current Direction - 50° Vel - 2.5 c/s
	Core Cam. 195B	1509 1740	1600 Hit	2875 2880	2879 Hit			424	No Exp. Strobe didn't fire
	Kennecott Sampler #375							427	small sample - one table spoon worth of assorted pumice, vlcn glass, sea worms, and a shell no mn coating
	Kennecott camera #52							424	good picture. shows ~~shows~~ same animal workings + perhaps a crab like animal

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PALISADES

Research Vessel VEMA
CRUISE N° 12
CRUISE LEG—From HAKODATE To ADAK

TIME ZONE ~~+~~ 9

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
15	TGRAD	1300	1500	2833	2840	40°11'	150°44	425	P_1 + WP GOOD P_2 + P_3 DESTROYED
NL	200	1335	HIT	2835		N	E		POSSIBLE P_2 TRACE AT EXTREME UPPER
1969									LIMIT OF FILM. PRESSURE TRACE
									REVERSED - 7 CONDUCTIVITY MEASUREMENTS
	Core 402	1300	1335 H.T	2833	2840				penetr 1240cm. Total 895 Good 895 Brown clay
		1500		2835 H.T					top 34cm, Asbat 350cm, 414cm, m green clay.
									Carbonate content nil. Coarse fr. 40% Diatoms,
									Radiolaria, colorless glass shards. JZ.

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Research Vessel VEMA
CRUISE N° 12
CRUISE LEG—From HAKODATE To ADAK

TIME ZONE +10

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
16	TGRAD	1453	1712	3143	3149	36°52'	152°33'	426	P_1 & P_3 GOOD — P_2 & P_3 DESTROYED
JULY	201	1535	HIT	3146		N	E		W.P. GOOD — PRESSURE TRACE STILL OFF SCALE
1969									8 CONDUCTIVITY MEASUREMENTS
	Bottom							426	Gear wheel for take-up spool popped out,
	Cam 293A	1400	1746	3140	3153				No film advance. No Exp.
	Current							426	No Exp.
	Meter 237A	1400	1746	3140	3153				
	Neph.							426	Light source failure No Exp.
	292 A	1400	1746	3140	3153				Motor Gear drive was overhauled before lowering
									but still binds somewhat.
	Core Cam.	1453	1535 HIT	3143	3146 HIT			426	Connection broken, Case leaked. No Exp.
	195D	1712		3149					
	Kennecott							426	about 2 tablespoons of pumice
	sampler # 376 & 377								
	~~Kennecott~~								
	~~sampler # 378~~								
	Core 4/03	1453	1535 HIT	3143	3146 HIT			426	pumice 1035 mm. tot. P 1034. Good 1034. Greenish clay
		1712		3149					with hard acidic ash interspersed throughout. Carb content nil, Coarse fr. 50%,
									consisting of Diatoms & Radiolaria,
									with disseminated acidic glass.
									JZ

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Research Vessel VEMA
CRUISE N° 12
CRUISE LEG—From HAKODATE To ADAK

TIME ZONE +10

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
18	TGRAD	1332	1520	2692	2694	31°16'	155°30'	427	ALL 3 GOOD + WATER PROBE - HEAD PARTIALLY
JUL	202	1409	H M	2694		N	E		BURIED. PRESSURE TRACE SLIGHTLY OFF SCALE
1969									REF TRACES ERRATIC - 9 CONDUCTIVITY MEASUREMENTS
	Core 404	1332	1409 H	2692	2694 H			427	Penetr. 1240. Totl. 1033. Good 1033 cm.
		1520		2694					Brown + yellowish brown clay, with pumice
									pebbles at top, A laminated interval of black
									and grey sorted sand occurs at 377-379
									cm. Carb content nil. Coarse fr. 5%, consisting
									of Radiolaria and colorless glass shards;
									40% in sands, consisting of glass shards.
									JZ
	Bottom	1226	15.14	2692	2696			427	Sediment 53 exp.
	Cam. 293								
	Current	1226	1514	2692	2696			427	Current Direction - 180° Vel. - 3 c/s
	Meter 237								
	Kennecott							427	about 1/8 lb of pumice
	samplers								
	# 378 + 379								
	Kennecott							427	54 A flooded - due to loose end plate - low
	camera #	53 + 54 A							pressure leak
									53 good picture - animal worked sed.
									no - Mn - nods

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Research Vessel VEMA
CRUISE N° 12
CRUISE LEG—From HAKODATE To ADAK

TIME ZONE -10

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
19	TGRAD	1346	1625	3277	3277	28°19'	156°53	428	P_2 SHORTED OUT - P_3 + WP GOOD. P_1 DIDN'T
JULY	203	1432	HIT	3272		N	E		PENTRATE T CONDUCTIVITY MEASUREMENTS
1969									
	Core Cam.	1346	1625	3277	3277			428	No Exp. Film didn't advance
	195 E	1432	HIT	3272					
	Bottom	1256	1625	3264	3278			428	Film light-fogged in Dark Room 47 exp.
	Cam. 294								Sediment - animal tracks
	Current	1256	1625	3264	3278			428	Direction of Current — 190° Vel. — 2.5 c/s
	Meter 238								
	Kennecott	1310	1540	3277				428	Mn nodules - oblate + slab. 1 lb total
	Grabbers	1330	1600						of combined samplers
	380-381								2 - 40 lb. weights used. 3 rubbers
		recovered 1615							
	Core 405	1346	1432H	3277	3272H			428	penetr 400cm. Totl 93cm. Good core 93cm. Brown clay
		1625		3277					with scattered mottled patches. Carb content
									nil. Coarse fraction 5% 10'b, consisting of
									radiolaria, manganese burrow fillings, and
									rare fish teeth. JG

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Research Vessel VEMA
CRUISE N° 12
CRUISE LEG—From HAKODATE To ADAK

TIME ZONE +10

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
	CORE	1331	1337H	3072	3070H	25°35'	154°57	[redacted]	penetr 1220 cm. Total 989 cm. Good core 989 cm. Brown
	406	1415		3070		N	E	429	clay with scattered burrows. Carbonate content
									nil. Coarse fraction 5% consisting of
									manganese micronodules, radiolaria
									and diatoms. J Z
July	Kennecott	1330	1600	3072				429	2-40 lb cement weights used
20	Grabbers	1335	1600						combined samples 1 lb. of brown mud
	382-383								and small bits of pumice w/ Mn-coating
	Kennecott	1340	1600	3072				429	54 - badly scratched neg - shows animal
	Camera								worked sed.
	#54								

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Research Vessel VEMA
CRUISE N° 12
CRUISE LEG—From HAKODATE To ADAK

TIME ZONE —10

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
21	J GRAD	1923	2140	3053	3054	25°44.5	154°58	430	P_2 P_3 & WP GOOD — P_1 DIDN'T PENETRATE
JUL	204	2010	HIT	3054		N	E		P_2 LEAKY & CONDUCTIVITY MEASUREMENTS
1969									
	Core 407	1923	2010H	3053	3054H			430	penetr. 919cm TTL 829. Good 829cm. Brown clay.
		2145		3054					Carbonate content nil. Coarse fraction
									10% consisting of manganese micron. diatoms
									radiolaria, and colorless glass shards.
									JZ
	Core Cam.	1923	2010H	3053	3054H			430	Trigger pin line snapped. No Exp.
	195 F	2145		3054					
	Bottom	1845	2211	3063	3058			430	36 exp; Sediment
	Cam. 295								
	CurrenT	1845	2211	3063	3058			430	
	Meter 239								240° current Dir. — 3.4 c/s Vel.

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Research Vessel VEMA
CRUISE Nº 12
CRUISE LEG—From HAKODATE To ADAK

TIME ZONE —10

Date	STATION and Nº	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
22	TCRAD	1424	1645	3235	3238	27°30.'6	156°36'	431	ALL 3 GOOD 9 WP.
JUL	205	1511	H IT	3236		N	E		8 CONDUCTIVITY MEASUREMENTS
1969									
	Core 408	1424	1511 Ht	3235	3236 H			431	penetr 1100 Totl. 1045. Good 1045. Brown clay.
		1645		3238					Carb content nil. Coarse fraction 10%, consisting
									of manganese micronodules radiolarians and
									colorless glass shards. JZ
	Core Cam.	1424	1511 H	3235	3236H			431	NO Exp.
	1956	1645		3238					
	Bottom	1349	1605	3240	3240			431	47 exp; Sediment
	Cam. 296								
	Current	1349	1605	3240	3240			431	Dir. 200° — Vel. 2.6 c/s
	Meter 240								
	Kennecott	1410	1650	3230				431	2-40 lb cement wts.
	Grabbers	1415	1700						combined sample - 2 lbs. of red-brown mud
	384-385								w/ small pieces of pumice
	Kennecott	1425	1645	3230				431	Camera flooded — low pressure
	Camera								leak

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Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG—From HAKODATE To ADAK

TIME ZONE —11

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
23	TGRAD	1927	2145	2978	3044	30°18	159° 15'	432	WP P2 + P3 GOOD P1 DIDN'T PENETRATE
JUL	206	2011	HIT	3041		N	E		8 CONDUCTIVITY MEASUREMENTS
1969									
	Core 409	1927	2011 Hit	2978	3041 H			432	pench 844, To ll 1010 Bood 1010 m. Brown clay. Carb content nil. Coarse fraction 10%, consisting of manganese micronodules, pelagic lavas and colorless glass shards. Jy.
		2145		3044					
	Core Cam	1927	2011 H	2978	3041 H			432	NO Exp
	195 H	2145		3044					
	Bottom	1849	2145	2996	3040			432	Manganese Nodules; 48 exp. Neg's thin.
	Cam. 297								
	Current	1849	2145	2996	3040			432	No Exp. Rewind Motor didn't function.
	Meter 241A								

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PALISADES

Research Vessel ROBERT D. CONRAD
CRUISE N° 12
CRUISE LEG—From HAKODATE To ADAK

TIME ZONE -11

Date	STATION and N°	TIME		SOUNDING		POSITION		LOG	REMARKS
		Start	End	Start	End	Lat.	Long.		
24	TGRAD	1615	1815	3014	3014	32°23'	161°19	433	ALL GOOD + WP - B CONDUCTIVITY MEASUREMENTS
JULY	207	1656	HIT	3014		N	E		
1969									
	Core 410	1615	1656 H	3014	3014 H	32°23'	161°19	433	penetr. 1280. total 994. Good 994 cm. Yellowish
		1815		3014		N	E		brown clay with burrowed dark patches.
									Carbonate content nil Coarse fraction
									10%, Consisting of manganese, radiolaria
									and colorless glass shards. JZ

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Research Vessel VEMA
CRUISE N°
CRUISE LEG—From To

TIME ZONE

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
2	Core 411	1854	1937H	2958	2954 H	35°48'	163°43'	434	p-rate 1200. Tot l 1004 Good 1004. Brown clay with
5	-	2049		2951		N	E		gradational patches of greyish orange. Carbonate
J									content nil. Coarse fraction 20% consisting
U									of colorless glass shards, manganese micronodules,
L									and diatoms. JJ
Y	TGRAD	1854	2049	2960	2951			434	ALL 3 GOOD + WP 8 CONDUCTIVITY MEASUREMENTS
	208	1937	HIT	2954					
	Bottom	1822	2123	2958	2950			434	37 frames; sediment with animal tracks.
	Cam. 298								
	Current	1822	2123	2958	2950			434	Direction 180°; Vel. 1.8 c/s
	Meter 241								
	Kennecott	1830	2030	2958				434	2 cement wts - 40lbs - used
	grabbers	1835	2030						total sample of both samplers - 1 lb brown clay
	386+387								1½ lbs. Mn-nodules and volc. rocks
		recovered 2115							

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Research Vessel VEMA
CRUISE N° _____
CRUISE LEG—From _____ To _____

TIME ZONE _____

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
2	Core 412	1002	1044 H	3006	3005H	40°40.8	166°59'	435	penetr 1197cm. Fold 900 cm. Good 900 cm. Brown clay grading to yellowish brown and greyish brown intervals. Carbonate content vrl. Coarse fraction 20%, consisting of manganese, diatoms + volcanic glass shards
7		1215		2873		N	E		
3									
V									
1	T GRAD	1002	1215	3006	2873			435	P_2, P_3, 4 WP 6000 PRESSURE SHORT IN SPLICE
Y	209	1044	HIT	3005					ON P_1. 7 CONDUCTIVITY MEASUREMENTS
	Core Cam	1002	1215	3006	2873			435	No Exp. Strobe didn't flash.
	195 I	1044	Hit	3005					
	Bottom	0926	1228	3006	3006			435	41 frames; Sediment with animal trails
	Cam. 299								
	Curron T	0926	1228	3006	3006			435	Div. 280° - Vel. 4 c/s
	Meter 242								
	Kennecott	0930	1215	3005				435	2 - 40 lbs wts used
	samples	0935	1215						total sample 1 lb. brown clay
	388+389								1/8 " mn - coated volc. rock + what appears to
		recovered	1320						be chert

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Research Vessel VEMA
CRUISE N° _____
CRUISE LEG—From _____ To _____

TIME ZONE _____

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
2	Core 413	1320	1400 ± 1	2683	2676 ± 4	43°17'	166°54	436	Penetr 1300 cm, Total 1054, Good 1054. Brown clay overlying greyish orange diatom ooze. Carbonate 1 ml. Coarse fraction 30% - 50% in ooze, consisting of Diatoms. 9Z
8		1500		2670		N	E		
J									
U									
L									
Y									

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Research Vessel ~~VEMA~~ CONRAD
CRUISE Nº 12-19
CRUISE LEG—From HAKODATE To ADAK

TIME ZONE ______

Date	STATION and Nº	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
30	Core 4/8/5	1516	1550 H	2612	2598 H	41°17'	164°09	438	penetr 1050 bH 1000 Sed 1000 Mod yel brown clay with scattered
July		1645		2580		N	E		dark yel brown layers. Carbonate content nil. Coarse
									fr. 10% from 0-780 cm, consisting of mn-radiolaria, 60%
									below 780 consisting of diatoms. Pz
1969									
	Cam 301	1444	1740	2610	2571			438	38 frames; Sediment & Nodules
	Current							438	
	Meter 243	1444	1740	2610	2571				Dir. 85° — Velocity 3.4 c/s
	Kennecott	1455	1705	2612				438	2 lbs brown clay — total of 3 lbs of
	Samplers	1505	1705	2612					mn-nodules - multiform
	390 + 391								
		recover 1815							

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Research Vessel ~~VEMA~~ CONRAD
CRUISE N° 12
CRUISE LEG—From HAKODATE To ADAK

* CROSSED DATELINE
TIME ZONE _____

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
32 JULY 1969	TGRAD 210	1418	1615	2833	2838	36°24' N	166°44' E	439	P, P₂ + WP good - 8 CONDUCTIVITY MEASUREMENTS
		~~1456~~	HIT	2835					
	Core416	1419	1457 H	2833	2832 H			439	penetr 1160. Tot l 1040 Good core 1043 Brown clay with an interval of diatom clay bet 3.0-5.2 cm Carb content ml. Coarse ppt negligible, consisting of radiolaria + microspherules, 20% in diatom clay consisting of diatoms. JJ
		1615		2835					
	Bottom Camera K-302	1349	1653	2832	2839			439	46 exp; Sediment with animal life, fish in exp. # 14 & 36.
	Current Meter 244	1349	1653	2832	2839			439	Current Dir. 345° - Vel. 2 ½
	Neph. 292	1349	1653	2832	2839			439	No Neph. layer — neg too dense?
	Kennecott samplers 392-393	1355	1630	2830				439	~~1 lb light brown (tan) clay 1-2 lb total mn coated basalt + pumice, five worm burrows, and one sea worm (elliptic, exploded) caught between the blades.~~ two lbs brown sed. me lt. assorted mn coated pumice + worm burrows
		1400	1630						
		recovered 1715							
32 JULY 1969	DSL RECORDING #49	0722	0725	2920		39°09' N	164°36' E		COUNTER START- 0032 END - 0094 NO VISICORDER RECORDING
	DSL RECORDING #50	0830	0836	2927		38°58' N	164°38' E		COUNTER START- 120 END-222 15 SEC VISICORDER RECORDING AT 100 MM/SEC

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CRUISE N° 12
CRUISE LEG—From HAKODATE To ADAK

TIME ZONE +12

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
1	Core 417	1555	1624H	2100	2064H	38°06'	170°01'	440	penetr 600 cm Tot 600 Good 600. foram ooze grading to foram chalk, and chalk with radiolaria, a piece of basalt occurs in cutting edge, Carbonate content high. Coarse fr. 80% to 10%, consisting of coldwater planktonic forams in ooze, + radiolaria in chalk.
AUG		1720		2066		N	E		
1969									
	Core 418	1903	1932H	2066	2060H			440	penetr 690 cm. Tot Length 1600 cm. Good core 645 cm. white radiolarian chalk with forams. Carbonate content high. Coarse portion 40% - 10%, consisting predominately of radiolaria, with coldwater planktonic foraminifera.
		2020		2050					
	Kennecott samplers 394+395	1555	1755	2100				440	1 lb light brown (tan) sed. one lb. total mn-coated basalt + pumice, 5 worm burrows, one sea worm slightly exploded caught between to blades.
		1600	1810						
		recovered							
			1815						
	DSL RECORDING #51	0745	0750			36°16' N	165°47' E		COUNTER START 231 END 327 15 SEC VISICORDER RECORDING AT 100 MM/SEC

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Research Vessel ~~VEMA~~ CONRAD
CRUISE N° 12
CRUISE LEG—From HAWAII DATE To ADAK

TIME ZONE +12

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
2	T GRAD	1405	1614	3247	3265	40°06'	171°38'	441	P_2 P_3 + WP GOOD P_4 OUT P_1 DION'T PENETRATE - NO CORE
Aug	211	1450	HIT	3260		N	E		ON FIRST TRY - NO TRIP - BUT CORE LOWERED AGAIN WITHOUT
3									T. GRAD - WEAK BATTERIES - 11 CONDUCTIVITY MEASUREMENTS FROM SECOND CORE
6	Cor 419A	1406	1450 H	3247	3260 H			441	peneth 1400. However, no core was obtained, because
12		1614		3265					the safety catch failed to release the core-
5									head.
7	C419	1636	1722 H	3250	3270 H			441	penetr 1400m Total 1530 am. Good core 1530. Yellowish
		1912		3260					brown and greyish orange clay with grey diatom
9									clay from 500cm to bot, Carb content Inl.
8									Coarse fraction 10% in clay, consisting of mn
9									+ radiolaria, 20% in grey clay, consisting of
									diatoms -
									J Z
	Bottom Cam. 303	1322	1703	3245	3266			441	Sediment, fish in exp # 10, 18, 19; 25 frame
	Current Meter 245	1322	1703	3245	3266			441	Dir. Variable - Vel approx. 2.6 c/s
	Neph 293	1322	1703	3245	3266			441	Neph layer?, sensitometer didn't calibrate
	Kennecott samplers 396-397	1328	1610					441	1/8 ft of brown mud - 2 pea size nodules?
		1330	1620						
		recovered							
			1420						
3 AUG 1967	DSL RECORD. # 52	1918	1923	2940		43°18' N	173°17' E		COUNTER START 342 END 439
									ESSA VISICORDER RECORDING AT 100 mm/SEC

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Research Vessel VEMA
CRUISE N° ______
CRUISE LEG—From ______ To ______

TIME ZONE ______

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
31 Aug 1957	Core 437	2258	2333 H	2925	2940 H	N 28° 12.5	158° 07	458	pen. 900 cm total 1630 Good 1630 cm. Light brown
		0045		2967			W		clay grading to dark brown clay. Carb content
									nil. Coarse fraction 10% consisting of
									manganese + fish teeth Jz

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Research Vessel ~~VEMA~~ CONRAD
CRUISE N° 12-20
CRUISE LEG—From ADAK To HONOLULU

TIME ZONE +10

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
11						54°27.9	179°54.5	442	
AUG						N	W		
1969	Core	0931	0957HT	1795	1838H				penetr 800cm Tot? Good core 378cm. Bottom pipe unextruded.
	420	1032		1891					60cm brown clay over greenish grey clay. Carb content nil. Coarse
									fraction 60% consisting of scoria, radiolaria + diatoms
	Camera	0931	0957H	1795	1838H				Trigger pin pulled out and ground wire
	195 J	1032		1891					separated while cove going over side.

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CRUISE N° 12-20
CRUISE LEG—From ADAK To HONOLULU

TIME ZONE +10

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
11	Core	1341	1359 H	958	1005 H	54°26'3	179°50.5	443	penetr 110cm. Tot l 160cm. Good core 160cm. Dark gravely
AUG	421	~~1420~~		1015		N	W		paved from pipe into bucket. Carb content nil. Coarse
1969									fraction 100%, consisting of round basalt pebbles,
									cold water planktonic forams, and shallow water benthonic
									forams. JZ
	Core	1652	1655 H	0130	0138 H	54°238	179°37	444	penetr 620cm. Tot l. 600cm. Good Core 600cm. Dark green
	422	1708		0190		N	E		foraminferal micaceous sand Carb content low.
									Coarse fraction 80%, consisting of angular quartz, albite
									feldspar, basalt grains (round), and cold water planktonic
									forams. JZ
	Core	1341	1359H	958	1005H				
	Cam. 195 K	1420		1015					Film didn't advance.

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CRUISE N° 12-26
CRUISE LEG—From ADAK To HONOLULU

TIME ZONE +10

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
11						54°23.8	179°37.0	444	
AUG						N	E		
1969									
	Bottom	1557	1645	82	122				Ship Drifting causing camera to drag along
	Cam. 304								bottom. Film light fogged. 20 Exp.
	Current	1557	1645	82	122				Film light fogged.
	Meter 246								Dir. 225° Vel. 6.8 k/s

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Research Vessel ~~VEMA~~ CONRAD
CRUISE N° 12-20
CRUISE LEG—From ADAK To HONOLULU

TIME ZONE +10

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
12	Core 423	1830	1851 H	1224	1225 H	54°36'	175°46'	445	penetr 600cm Tot L 1000cm Good core 365cm Sand at top clastics
AUG		1914		1221		N	E		grading to grey clay which sharply overlies dusky brown
1969									manganese ~~iron~~ crust, Carb content nil. Coarse fraction 80% at top,
									consisting of acidic clastics, to 40% in grey clay, consisting
									of diatoms and radiolaria, to 100% in manganese crust
									at base, consisting of flaky manganese. Am
	Bottom Cam 305	1919	2107	1230	1230				Clay with rocks, some sea life. 43 exp.
	Neph 294 A	1919	2107	1230	1230				Film ran through due to magnet being in wrong position.
	CM 247	1919	2107	1230	1230				250° - Dir. 6 c/s - Vel.

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Research Vessel ~~VEMA~~ CONRAD
CRUISE Nº 12-20
CRUISE LEG—From ADAK To HONOLULU

TIME ZONE +10

Date	STATION and Nº	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
13	TGRAD	1855		2857	2057	56° 00.8	172° 56.7	446	UNREADABLE RECORD - BATTERIES DEAD
AUG	212 A	1931	HIT	2057		N	E		
1969									
	Core 124	1855	1931 H	2057	2057 H				Penetr. 1002 cm. Total 930 Good 930. Olive gray clay,
		2008		2057					with medium sand at bottom. Carb content low.
									Coarse fr. negligible at top, consisting of coldwater planktonic
									forams, radiolaria and diatoms, to 100% at bottom,
									consisting of sorted acidic clastics and scarce forams
									(coldwater planktonic) JZ
	Bottom	1834	2056	2057	2056				Clay & rock bottom; fish in exp # 13, 14, 15
	Cam. 306								First 25" of film unexposed.
	Neph. 294	1834	2056	2057	2056				None
	CM 248	1834	2056	2057	2056				000° - Dir. 2.3 c/s - Vel.
									First 40" of film unexposed.

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Research Vessel [redacted] CONRAD
CRUISE Nº 12-20
CRUISE LEG—From ADAK To HONOLULU

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PALISADES

TIME ZONE +10

Date	STATION and Nº	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
14	Gc 425	1142	1157H	0833	0833H	56°27'	170°27.5	447	penetr. 1280 Tot. l 938 Good 938 Brown + grey clay with
AUG		1215		0833		N	E		interspersed sand entowals, Carbonate content moderate
1969									Coarse fraction 60%, consisting of acidic clastics with basalt
									grains, cold water planktonic forams. Jy
	Bottom	1235	1350	833	830				Mud & stones ; 42 exp.
	Cam. 307								
	Neph.	1235	1350	833	830				After calibrating, Neph continued to
	295								advance film after magnet removed. 150 fr.
	CM 249	1235	1350	833	830				Div. 225° ; 2.7 c/s Vel.

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Research Vessel [redacted] CONRAD
CRUISE N° 12-20
CRUISE LEG—From ADAK To HONOLULU

TIME ZONE +10

Date	STATION and N°	TIME		SOUNDING		POSITION		LOG	REMARKS
		Start	End	Start	End	Lat.	Long.		
16	T GRAD	0212	0330	1703	1705	51°36'	163°59'	448	REF. TRACES ERRATIC P,
AUG	212	0237	HIT	1704		N	E		ONLY TRACE ON FILM AFTER HIT
1969									OTHERS OFF SCALE (?) 8 CONDUCTIVITY
	Core 12 B	0212	0236 H	1730	1704 H				MEASUREMENTS
		0330		1705					Penet 1139 Tot l 990 m Good 990 m Greenish clay with
									a sorted sand layer. Carb content nil. Coarse fraction
									5% in clays, consisting of plant debris, diatoms, radiolaria,
									80% in Sand consisting of basalt grains & andesite
									glass. JJ
	Bottom	0142	0358	1702	1705				Mud with animal life; 37 exp.
	Cam. 308								Exp# 8-16, 27-30, 32, 34, 41-45, 47-49 - Fish
	Neph 296	0142	0358	1702	1705				75 fm.
	CM 250	0142	0358	1702	1705				Dir. 160° Vel. 3.4 c/s

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Research Vessel ~~VEMA~~ CONRAD
CRUISE N° 12-20
CRUISE LEG—From ADAK To HONOLULU

TIME ZONE +10

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
16	Core 427	1802	1804 #	026	026 #	55°33'	165°28'	449	penetr 020cm. Tot ∅ 40mm. Good core 40mm. Seaweed (red), mytilus, + Cold water brachiopods Terebratulina,
AUG		1804		026		N	E		brittle starfish, echinoids, and benthonic foram sand.
1969									JZ
	Bottom Cam 309A	1815	1838	29	29				Film light fogged
	CM 251A	1815	1838	29	29				Film light fogged – Tripod couldn't be left on bottom long enough to obtain reading.

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Research Vessel ~~VEMA~~ CONRAD
CRUISE N° 12-20
CRUISE LEG—From ADAK To HONOLULU

TIME ZONE +10

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
16 AUG 1969	Core 428	2035 —	2100 H —	1241 —	1432 H —	55°26.5' N	169°59' E	450	The lit was routine and sharp. The core could not be budged, the winch wire pulled apart at the 1300 fm splice. JZ
									Strobe for core camera lost.

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Research Vessel ~~VEMA~~ CONRAD
CRUISE N° 12-20
CRUISE LEG—From ADAK To HONOLULU

TIME ZONE +10

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
21	Core 29	0019	0044 H	975	985 H	53°37'	179°42'	457	penetr 520 cm. TRL 640 Good 640 Brown clay.
AUG		0101		980		N	E		Carb content negligible. Coarse fraction 4%, consisting
1969									of Diatoms, Radiolaria, and cold water planktonic
									forams with rare benthonic forams. JZ

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Research Vessel ~~VEMA~~ CONRAD
CRUISE Nº 12-20
CRUISE LEG—From ADAK To HONOLULU

TIME ZONE +10

Date	STATION and Nº	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
24						47°23.5'	171°30.3'	452	
AUG						N	W		
1969									
	Bottom	0918	1257	3032	2973				Brown Clay - animal tracks.
	Cam. 309								Fish in exp. # 25-27, 30, 31
	Neph	0918	1257	3032	2973				None
	297								
	CM 251	0918	1257	3032	2973				Div. 140°; Vel 6 c/s
	Gc 430	0920	1005H	3028	3028H				penetr 1220. Good core 1060. Total length 1060.
		1149		2978					Brown clay overlying diatom ooze overlying
									brown clay. Carb content nil. Coarse fr <40% [illegible]
									clays, consisting of mn, radiolaria, 61 μm ooze,
									consisting of diatoms JJ

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Research Vessel ~~[illegible]~~ CONRAD
CRUISE N° 12-20
CRUISE LEG—From ADAK To HONOLULU

TIME ZONE +10

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
25	Core	1829	1912 H	3020	3052 H	43°38'	167°49'	453	penetr 1400 Tot l 1576 Jpod 1576. Brown clay
AUG	45	2030		3041		N	W		with medial diatom ooze. Carb content
1969	431								nil. Core is 40% m clays, consisting of mn
									+ radiolaria, 60% in ooze, consisting of diatoms
									JG

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PALISADES

Research Vessel ~~VEMA~~ CONRAD
CRUISE Nº 12-20
CRUISE LEG—From ADAK To HONOLULU

TIME ZONE +10

Date	STATION and Nº	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
27	TGRAD	1233	1430	2717	2711	38°51'	164°02'	454	P_2 P_3 & WP GOOD P_1 DIDN'T PENETRATE
AUG	213	1311		2713		N	W		8 CONDUCTIVITY MEASUREMENTS
1969									
	Camera	0859	1222	2848	2720				Assortment of large & small rocks with
	310								sediment. 53 exp.
	Neph.	0859	1222	2848	2720				None. No time trace.
	298								
	CM	0859	1222	2848	2720				Dir. 225° Vel - 1.8 c/s
	252								
	Core 432	1234	1311H	2717	2713H				penetr 745 Tot l 1030 Good, 1030. Brown clay.
		1430		2745					Carb content nil. Coarse fraction 10%,
									consisting of manganese, fish teeth, and rare
									micro-tektites. J.G.

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CRUISE N° 12-20
CRUISE LEG—From AOAK To HONOLULU

TIME ZONE +10

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
28 AUG 1969	TGRAD	1803	2008	3140	3130	36°12'7	162°39.2	455	P_2 P_3 P_4 & WP GOOD P_1 DIDN'T PENETRATE
	214	1844	HIT	3133		N	W		9 CONDUCTIVITY MEASUREMENTS
	Bottom Core 311	1257	1629	3140	3139				sediment and small rocks or nodules
	Neph. 299	1257	1629	3140	3139				None
	CM 253	1257	1629	3140	3139				Div. 150° Vel. - 1.8 c/s
	Core 433	1328 1533	1410H	3140 3146	3139H				punch 1220 Tot 1350 Sounding 1352c Brown clay light at top, dark at bottom. Carb content nil. Coarse fr. 10%, consisting of mn & fish teeth

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CRUISE N° 12-20
CRUISE LEG—From ADAK To HONOLULU

TIME ZONE +10

Date	STATION and N°	TIME		SOUNDING		POSITION		LOG	REMARKS
		Start	End	Start	End	Lat.	Long.		
	Cam. 312	0030	0351	3081	3058			456	Sediment with small rocks or nodules. 30 exp.
	Neph. 300	0030	0351	3081	3058				None.
	CM 254	0030	0351	3081	3058				235° Dir.; 3c/s Vel.
	Core 434	1803 2008	1844H	3135 3119	3139H				penetr 1320 Totl 1180 Goodcore 180. Orange brown clay over dark brown clay. Carbcontent nil. Coarse fraction 10% consisting of Ice-rafted at top, with mn, & fish teeth throughout. JZ

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CRUISE N° 12-20
CRUISE LEG—From ADAK To HONOLULU
TIME ZONE +10

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
30	GRABBER	FOR TIMES		3011	3010			457	2-36 LB CAST IRON WEIGHTS ON EACH
AUG	398	SEE						→	LAUNCH 1559 SURF 1825 REC 1915
1969	399								LAUNCH 1604 SURF 1825 REC 1920
									ABOUT 1 LB 1 IN. DIAM NODULES
									IN EACH
	Bottom Cam. 313	1522	1840	3006	3010				Sediment and small rocks.
	Neph 301	1522	1840	3006	3010				None
	CM 255	1522	1840	3006	3010				080° Dir. 3.1 c/s Vel.
	Core 435	0107 0240	0157H	3060 3060	3060H			456	penetr. 1100 Total 1170 Good 1170. Light brown clay grading to dark brown clay. Ca CO3 content mod. Coarse fr. negligible, consisting of mn, Radiolaria and fish tooth fg
	Core 436	1555 1800	1634H	3009 3006	3115H			457	penetr. 400 cm Total 340 Good core 285. Grayish brown clay. Carb content mod. Coarse fraction negligible, consisting of displaced benthonic forams, manganese, and rare microfossils. fg

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PALISADES

Research Vessel VEMA

CRUISE N° ______

CRUISE LEG—From ____________ To ____________

TIME ZONE ________

Date	STATION and N°	TIME Start	TIME End	SOUNDING Start	SOUNDING End	POSITION Lat.	POSITION Long.	LOG	REMARKS
31	Core 437	2358	2339 ft	2915	2940 ft	N 28° 06'	15° 07'	458	Penetr. 1000 cm. Total 1630 cm. Good 1630 cm. Light brown
[illegible]		2045		2927			W		clay grading to dark brown clay [illegible]
[illegible]									[illegible] Coarse fraction 10% consisting of
[illegible]									manganese + foram tests
[illegible]									[illegible]

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