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Appendix Table 1(1) Results of FDC survey

Sea-mount	Track Line No.	Item	Date & Time (UTC)	FDC Position		Depth (m)	General Location	Observation Time	Observation Length	No. of Photos
				Latitude (N)	Longitude (W)					
MS01	96SMS01FDC01	IS	Jul 7 19:34							
		SP	20:02	14° 26.87′	161° 03.04′	1,203	Northeastern edge of flat summit	4h 48m	5.3 nm	310
		EP	Jul 10 0:05	14° 28.43′	161° 06.81′	3,183	Lower part of northeastern flank			
		OD	1:51							
MS02	96SMS02FDC01	IS	Jul 11 20:03							
		SP	20:36	14° 01.83′	163° 09.75′	1,573	Eastern center of flat summit	2h 28m	3.4	175
		EP	23:04	14° 03.50′	163° 12.73′	1,489	Eastern edge of flat summit			
		OD	23:38							
MS03	96SMS03FDC01	IS	Jul 18 19:59							
		SP	20:41	13° 54.88′	164° 03.99′	2,006	Eastern edge of flat summit	4h 50m	5.3 nm	340
		EP	Jul 19 1:31	13° 52.85′	164° 09.02′	3,995	Middle part of eastern flank			
		OD	2:50							
MS04	96SMS04FDC01	IS	Jul 25 19:59							
		SP	20:24	14° 23.13′	165° 55.23′	1,055	Eastern edge of flat summit	6h 54m	7.9 nm	469
		EP	Jul 26 3:18	14° 22.73′	166° 03.29′	3,120	Lower part of eastern flank			
		OD	4:24							
MS04	96SMS04FDC02	IS	Jul 26 19:43							
		SP	20:12	14° 27.75′	165° 47.62′	1,292	Northwestern edge of flat summit	4h 18m	6.3 nm	287
		EP	Jul 27 0:30	14° 28.08′	165° 54.07′	1,270	Northeastern edge of flat summit			
		OD	1:03							
MS05	96SMS05FDC01	IS	Aug 5 19:57							
		SP	20:31	11° 17.65′	171° 04.06′	1,446	Upper part of southern flank	3h 11m	4.3 nm	55
		EP	23:42	11° 21.60′	171° 05.77′	1,574	Upper part of northern flank			
		OD	Aug 6 0:16							

Legend IS: FDC into the sea, SP: Start point of observation, EP: End point of observation, OD: FDC on the deck

Appendix Table 1(2) Results of FDC survey

Sea-mount	Track Line No.	Item	Date & Time (UTC)	FDC Position Latitude (N)	FDC Position Longitude (W)	Depth (m)	General Location	Observation Time	Observation Length	No. of Photos
MS05	96SMS05FDC02	IS	Aug 6 0:55							
		SP	1:25	11° 19.04′	171° 06.10′	1,269	Upper part of eastern flank	3h 21m	3.8 nm	0
		EP	4:46	11° 15.95′	171° 08.40′	3,206	Lower part of southeast flank			
		OD	5:52							
MS06	96SMS06FDC01	IS	Aug 11 19:58							
		SP	20:41	13° 10.31′	169° 27.87′	2,133	Northern edge of flat summit	6h 32m	6.9 nm	435
		EP	Aug 12 3:13	13° 06.91′	169° 34.02′	3,328	Middle part of eastern flank			
		OD	4:21							
MS06	96SMS06FDC02	IS	Aug 15 19:55							
		SP	20:36	13° 07.56′	169° 23.80′	1,914	Northwestern edge of flat summit	3h 49m	5.0 nm	158
		EP	Aug 16 0:25	13° 09.42′	169° 28.58′	1,720	Northern edge of flat summit			
		OD	1:04							
MS08	96SMS08FDC01	IS	Aug 24 19:54							
		SP	20:26	13° 59.67′	167° 31.26′	1,488	Upper part of northeastern flank	7h 06m	8.6 nm	469
		EP	Aug 25 3:32	14° 05.56′	167° 37.72′	3,376	Lower part of northeastern flank			
		OD	4:43							
MS08	96SMS08FDC02	IS	Aug 25 21:18							
		SP	21:51	14° 07.09′	167° 21.81′	1,583	Northern center of flat summit	2h 58m	4.2 nm	220
		EP	Aug 26 0:49	14° 07.89′	167° 26.08′	1,725	Northern center of flat summit			
		OD	1:30							
MS09	96SMS09FDC01	IS	Aug 28 19:54							
		SP	20:22	16° 27.62′	167° 12.15′	1,173	Southern center of flat summit	6h 21m	5.5 nm	435
		EP	Aug 29 2:43	16° 27.62′	167° 17.87′	2,712	Middle part of northeastern flank			
		OD	3:42							

Legend IS: FDC into the sea, SP: Start point of observation, EP: End point of observation, OD: FDC on the deck

Note FDC Position is calculated by GPS ship position, CTD depth and wire length.

Appendix Table 2(1) Results of AD survey

Seamount	Sampling No.	Date (UTC)	Bottom				Bottom release				Location	Weight (kg)
			Time	Latitude (N)	Longitude (W)	Depth (m)	Time	Latitude (N)	Longitude (E)	Depth (m)		
MS01	96SMS01AD07	7/7	20:23	14°16.82'	161°00.33'	2,218	21:04	14°17.12'	161°00.82'	2,014	Southern middle part of slope	1.40
	96SMS01AD08	7/7	22:46	14°17.88'	161°02.07'	1,815	23:21	14°18.16'	161°02.59'	1,625	Southern upper part of slope	2.49
	96SMS01AD09	7/8	01:51	14°15.43'	161°03.84'	3,284	02:31	14°15.86'	161°04.47'	3,227	Southern lower part of slope	28.40
	96SMS01AD10	7/8	04:57	14°17.02'	161°05.92'	2,825	05:34	14°17.39'	161°06.47'	2,762	Southern lower part of slope	30.90
	96SMS01AD11	7/8	20:05	14°26.01'	161°04.36'	1,242	20:36	14°25.62'	161°04.82'	1,269	Northeastern marginal part of top	25.00
	96SMS01AD12	7/8	22:40	14°18.98'	161°04.89'	1,408	23:21	14°19.21'	161°05.36'	1,265	Southern marginal part of top	220.00
	96SMS01AD13	7/9	02:17	14°21.21'	160°53.23'	2,398	03:01	14°21.19'	160°53.68'	2,089	Western middle part of slope	0.64
MS02	96SMS02AD07	7/13	01:18	14°03.76'	163°04.74'	2,099	01:51	14°03.80'	163°04.97'	2,258	Northern upper part of slope	30.60
	96SMS02AD08	7/13	03:54	14°04.53'	163°05.80'	2,877	04:35	14°04.62'	163°06.38'	–	Northern middle part of slope	1.35
	96SMS02AD09	7/13	20:06	14°01.99'	163°03.48'	1,613	20:40	14°02.09'	163°04.03'	1,531	Northern marginal part of top	–
	96SMS02AD10	7/13	22:37	14°04.00'	163°08.22'	1,830	23:18	14°04.32'	163°08.64'	1,726	Northern marginal part of top	0.05
	96SMS02AD11	7/14	01:14	14°02.98'	163°11.81'	1,569	01:57	14°03.39'	163°12.30'	1,525	Northeastern marginal part of top	0.12
	96SMS02AD12	7/14	03:50	14°06.50'	163°11.58'	1,631	04:33	14°06.43'	163°11.96'	1,618	Northeastern marginal part of top	0.45
	96SMS02AD13	7/14	20:13	13°55.73'	163°04.94'	2,251	21:02	13°55.92'	163°05.65'	2,271	Southern upper part of slope	3.30
	96SMS02AD14	7/14	23:25	13°56.54'	163°09.21'	3,219	00:07	13°56.96'	163°09.57'	3,091	Southeastern upper part of slope	10.27
	96SMS02AD15	7/15	02:25	13°58.89'	163°08.48'	1,724	03:22	13°59.10'	163°09.36'	1,719	Southeastern marginal part of top	0.03
	96SMS02AD16	7/15	20:21	13°58.29'	162°57.29'	2,357	21:20	13°58.75'	162°57.67'	2,103	Western upper part of slope	21.50
	96SMS02AD17	7/15	23:46	13°59.80'	163°04.78'	1,769	00:28	13°59.79'	163°05.05'	1,667	Central marginal part of top	0.01
	96SMS02AD18	7/16	02:09	14°01.71'	163°06.78'	1,605	03:02	14°01.77'	163°07.56'	1,569	Central marginal part of top	20.93
MS03	96SMS03AD07	7/19	20:20	13°54.60'	163°37.25'	2,666	21:09	13°54.33'	164°37.42'	2,483	Western upper part of slope	0.55
	96SMS03AD08	7/19	00:47	13°58.16'	163°44.07'	2,765	00:47	13°58.06'	163°44.62'	2,586	North upper part of slope	0.84
	96SMS03AD09	7/20	03:00	13°58.56'	163°48.91'	2,220	03:42	13°58.22'	163°49.49'	2,198	Northeastern marginal part of top	11.27
	96SMS03AD10	7/20	20:30	13°48.87'	164°02.20'	3,056	21:19	13°44.08'	164°02.76'	2,877	Southeastern middle part of slope	19.00
	96SMS03AD11	7/21	00:35	13°52.56'	164°06.07'	2,916	01:42	13°52.36'	164°06.23'	2,919	Eastern middle part of slope	0.54
	96SMS03AD12	7/21	04:02	13°53.77'	164°06.76'	2,665	05:10	13°54.17'	164°06.89'	2,483	Eastern upper part of slope	0.03
MS04	96SMS04AD04	7/23	20:15	14°25.79'	165°44.77'	2,305	20:15	14°25.93'	165°45.31'	2,158	Northwestern middle part of slope	55.70
	96SMS04AD05	7/23	22:59	14°22.72'	165°46.79'	1,832	23:43	14°22.42'	165°47.16'	1,698	Western middle part of slope	0.20
	96SMS04AD06	7/24	01:25	14°20.50'	165°47.66'	1,324	02:11	14°20.49'	165°48.14'	1,141	Southwestern marginal part of top	112.00

Appendix Table 2(2) Results of AD survey

Seamount	Sampling No.	Date (UTC)	Bottom				Bottom release				Location	Weight (kg)
			Time	Latitude (N)	Longitude (W)	Depth (m)	Time	Latitude (N)	Longitude (E)	Depth (m)		
MS04	96SMS04AD07	7/24	03:59	14°17.79'	165°50.43'	1,395	04:28	14°18.11'	165°50.72'	1,255	Southern upper part of slope	4.20
	96SMS04AD08	7/24	20:25	14°17.59'	165°58.78'	2,822	21:18	14°17.89'	165°59.65'	2,648	Southeastern lower part of slope	0.35
	96SMS04AD09	7/24	23:50	14°19.08'	166°03.97'	3,140	00:46	14°19.90'	166°04.59'	3,023	Eastern lower part of slope	298.00
	96SMS04AD11	7/27	02:32	14°22.99'	165°56.92'	1,438	03:08	14°23.25'	165°56.87'	1,257	Eastern upper part of slope	139.45
	96SMS04AD12	7/27	20:06	14°30.81'	165°48.91'	1,532	20:44	14°30.47'	165°49.55'	1,373	Northern upper part of slope	121.27
	96SMS04AD13	7/27	22:21	14°28.16'	165°52.75'	1,064	23:05	14°27.76'	165°53.59'	1,039	Northeastern marginal part of top	0.05
	96SMS04AD14	7/28	01:43	14°17.79'	165°48.17'	2,036	02:22	14°18.13'	165°48.40'	1,714	Southwestern middle part of slope	5.60
	96SMS04AD15	7/28	04:20	14°18.89'	165°46.96'	1,878	04:55	14°19.15'	165°47.20'	1,640	Southwestern middle part of slope	26.40
MS05	96SMS05AD05	8/6	20:13	11°22.80'	171°05.71'	2,241	20:57	11°22.10'	171°06.02'	2,139	Northern middle part of slope	20.32
	96SMS05AD06	8/6	22:44	11°21.24'	171°05.04'	1,443	23:28	11°20.77'	171°05.49'	1,219	Northern upper part of slope	300.00
	96SMS05AD07	8/7	01:21	11°20.31'	171°06.23'	1,723	01:58	11°19.81'	171°06.66'	1,568	Eastern upper part of slope	20.20
	96SMS05AD08	8/7	03:45	11°19.18'	171°04.40'	1,359	03:45	11°18.85'	171°04.74'	1,004	Southwestern upper part of slope	7.52
	96SMS05AD09	8/7	20:49	11°15.22'	171°05.19'	2,818	21:35	11°15.93'	171°05.52'	2,521	Southern lower part of slope	1.42
	96SMS05AD10	8/7	23:28	11°16.99'	171°04.49'	1,906	00:15	11°17.69'	171°05.06'	1,625	Southern middle part of slope	0.15
	96SMS05AD11	8/8	02:09	11°17.69'	171°07.60'	2,279	02:57	11°18.43'	171°07.00'	2,086	Southeastern middle part of slope	102.30
	96SMS05AD12	8/8	20:34	11°19.60'	171°03.68'	1,792	21:17	11°20.02'	171°04.12'	1,574	Western middle part of slope	0.04
	96SMS05AD13	8/8	23:24	11°23.05'	171°03.79'	2,763	00:08	11°22.94'	171°04.52'	2,616	Northern lower part of slope	0.31
MS06	96SMS06AD01	8/9	20:33	13°07.17'	169°22.05'	2,883	21:37	13°07.38'	169°22.37'	2,679	Northwestern middle part of slope	3.40
	96SMS06AD02	8/10	00:04	13°04.24'	169°21.50'	2,199	00:39	13°04.16'	169°22.09'	2,097	Western upper part of slope	16.17
	96SMS06AD07	8/12	20:11	13°05.97'	169°23.40'	1,770	20:49	13°05.58'	169°23.77'	1,661	Western part of top	136.50
	96SMS06AD08	8/12	23:07	13°00.97'	169°24.32'	2,431	23:43	13°01.24'	169°24.80'	2,248	Southern upper part of slope	0.01
	96SMS06AD09	8/13	01:51	13°01.60'	169°27.95'	2,766	02:46	13°01.98'	169°28.59'	2,649	Southeastern middle part of slope	7.00
	96SMS06AD10	8/12	20:25	13°10.55'	169°29.37'	2,822	21:13	13°10.18'	169°29.98'	2,557	Northern middle part of slope	5.70
	96SMS06AD11	8/12	23:20	13°08.09'	169°32.52'	2,332	23:56	13°07.52'	169°32.47'	2,309	Eastern upper part of slope	0.04
	96SMS06AD12	8/13	02:08	13°05.64'	169°32.23'	3,370	03:00	13°05.87'	169°32.98'	3,017	Eastern middle part of slope	15.40
	96SMS06AD13	8/16	02:42	13°03.23'	169°25.29'	1,663	03:17	13°03.31'	169°25.90'	1,532	Southern marginal part of top	77.20
MS07	96SMS07AD01	8/16	20:20	12°35.27'	169°26.11'	2,391	21:03	12°34.96'	169°26.58'	2,315	Northern middle part of slope (southern peaked seamount)	56.00
	96SMS07AD02	8/16	23:21	12°39.12'	169°28.24'	2,231	00:00	12°38.73'	169°28.64'	2,169	Northwestern upper part of slope (central peaked seamount)	2.80

Appendix Table 2(3) Results of AD survey

Seamount	Sampling No.	Date (UTC)	Bottom				Bottom release				Location	Weight (kg)
			Time	Latitude (N)	Longitude (W)	Depth (m)	Time	Latitude (N)	Longitude (E)	Depth (m)		
MS07	96SMS07AD03	8/17	02:10	12° 41.38'	169° 30.07'	2,546	02:53	12° 41.33'	169° 30.53'	2,277	Northern middle part of slope (northern peaked seamount)	5.50
MS08	96SMS08AD04	8/19	20:10	13° 55.61'	167° 19.22'	1,721	20:50	13° 55.63'	167° 19.64'	1,557	Western upper part of slope	25.80
	96SMS08AD05	8/19	22:46	13° 54.37'	167° 16.97'	1,918	23:33	13° 54.25'	167° 17.60'	1,677	Western upper part of slope (pinnacle)	15.00
	96SMS08AD06	8/20	01:37	13° 50.87'	167° 18.45'	2,318	02:13	13° 50.67'	167° 18.98'	2,238	Western upper part of slope	0.10
	96SMS08AD07	8/20	04:05	13° 48.44'	167° 20.22'	1,840	04:35	13° 48.09'	167° 20.34'	1,723	Western upper part of slope	1.84
	96SMS08AD08	8/20	20:52	13° 51.94'	167° 13.73'	3,122	21:24	13° 51.73'	167° 14.19'	3,080	Western middle part of slope	0.01
	96SMS08AD09	8/21	00:17	13° 57.21'	167° 11.77'	2,813	00:47	13° 57.16'	167° 11.78'	2,793	Western middle part of slope	1.00
	96SMS08AD10	8/21	03:17	14° 02.79'	167° 13.08'	2,084	03:56	14° 02.80'	167° 13.74'	2,048	Western upper part of slope	0.10
	96SMS08AD12	8/22	20:08	14° 16.42'	167° 16.75'	1,826	20:57	14° 16.00'	167° 17.22'	1,595	Northwestern upper part of slope	601.40
	96SMS08AD13	8/22	22:54	14° 10.45'	167° 18.96'	1,646	23:32	14° 10.27'	167° 19.61'	1,555	Northwestern upper part of slope	90.00
	96SMS08AD14	8/23	01:26	14° 11.76'	167° 24.39'	1,617	02:02	14° 11.23'	167° 24.65'	1,562	Northern upper part of slope	87.20
	96SMS08AD15	8/23	04:00	14° 08.61'	167° 28.94'	2,040	04:33	14° 08.27'	167° 28.16'	1,996	Northern upper part of slope	16.20
	96SMS08AD16	8/23	20:09	14° 00.86'	167° 32.62'	1,891	20:43	14° 00.54'	167° 33.11'	1,855	Northern upper part of slope	30.95
	96SMS08AD17	8/23	23:48	14° 11.07'	167° 35.50'	3,675	00:25	14° 10.56'	167° 35.89'	3,619	Northeastern lower part of slope	0.54
	96SMS08AD18	8/24	04:00	14° 16.82'	167° 26.76'	2,770	04:42	14° 16.51'	167° 27.20'	2,717	Northern middle part of slope	1.22
MS09	96SMS09AD07	8/29	20:10	16° 31.43'	167° 05.49'	1,787	20:51	16° 31.42'	167° 05.99'	1,584	Northern upper part of slope	87.40
	96SMS09AD08	8/29	22:50	16° 27.91'	167° 06.36'	2,279	23:36	16° 28.18'	167° 06.87'	2,113	Southwestern middle part of slope	9.07
	96SMS09AD09	8/30	01:32	16° 27.80'	167° 08.40'	1,868	02:10	16° 27.74'	167° 08.97'	1,749	Southwestern middle part of slope	8.30
	96SMS09AD10	8/30	03:40	16° 28.65'	167° 09.94'	1,207	04:15	16° 28.80'	167° 10.44'	1,170	Southwestern part of top	0.16
	96SMS09AD11	8/30	20:25	16° 25.95'	167° 14.41'	1,196	21:00	16° 26.47'	167° 14.25'	1,197	Southeastern marginal part of top	84.15
	96SMS09AD12	8/30	22:42	16° 29.50'	167° 15.43'	1,981	23:17	16° 30.19'	167° 15.58'	1,928	Eastern middle part of slope	23.20
	96SMS09AD13	8/31	01:45	16° 31.20'	167° 16.51'	2,197	02:45	16° 31.66'	167° 16.69'	1,944	Eastern middle part of slope (pinnacle)	1.28

Notice 1) Latitude and Longitude were indicated by the vessel positions of GPS.
2) Depth were calculated from the data of temperature and depth sensor.

Appendix Table 3(1) Results of LC survey

Seamount	Sampling No.	Sampling date (UTC)	Latitude (N)	Longitude (W)	Depth (m)	Location	Length (cm) 1)	Weight (kg) 1)	Crust type <Substrate> 2)	Bottom materials/Rock	Remarks
MS01	96SMS01LC01	7/4	14°23.92'	160°50.11'	4,267	Western lower part of slope	*230.0*	*33.50*		Mud, Foraminiferal sand, Basaltic pyroclastic rock	Below10cm:Basaltic pyroclastic rock
	96SMS01LC02	7/6	14°27.89'	160°56.62'	1,195	Northeastern marginal part of top	*95.0*	*13.20*		Foraminiferal sand, Ooze	
	96SMS01LC03	7/6	14°21.99'	160°57.40'	1,226	Western marginal part of top	8.0	0.9	Crust<unknown>		
	96SMS01LC04	7/7	14°18.90'	161°01.41'	1,218	Southern marginal part of top	8.0	0.5	Crust<unknown>		
	96SMS01LC05	7/7	14°21.99'	161°09.09'	1,317	Eastern marginal part of top	3.0	0.8	Crust<unknown>		
	96SMS01LC06	7/7	14°26.00'	161°04.37'	1,234	Northeastern marginal part of top	—	—			void
	96SMS01LC14	7/9	14°28.29'	160°56.41'	1,633	Northwestern marginal part of top	4.0	0.2	Crust<unknown>		
MS02	96SMS02LC01	7/11	13°56.68'	163°01.31'	1,869	Southeastern marginal part of top	4.0	0.2	Crust<unknown>		
	96SMS02LC02	7/11	14°00.71'	163°00.44'	1,724	Western marginal part of top	5.0	0.7	Pebble<Breccia>		Crust thickness : about 3cm
	96SMS02LC03	7/12	14°07.50'	163°12.84'	1,771	Northeastern marginal part of top	—	—			void
	96SMS02LC04	7/12	14°02.61'	163°10.91'	1,591	Eastern marginal part of top	10.0	0.9	Crust<unknown>		
	96SMS02LC05	7/12	14°02.04'	163°03.73'	1,560	Northern peaked seamount	—	—			void
	96SMS02LC06	7/12	14°01.82'	163°05.70'	1,647	Northern marginal part of top	4.0	0.2	Crust<unknown>		
MS03	96SMS03LC01	7/17	13°56.24'	163°37.26'	2,233	Western marginal part of top	7.5	0.8	Crust<unknown>		
	96SMS03LC02	7/17	13°56.76'	163°44.81'	2,115	Northwestern marginal part of top	*105.0*	*13.44*		Foraminiferal sand	
	96SMS03LC03	7/17	13°48.72'	163°58.01'	2,217	Southeastern middle part of slope	*310.0*	*50.60*		Foraminiferal sand	
	96SMS03LC04	7/17	13°48.80'	164°03.42'	2,377	Southeastern lower part of slope	—	—			void
	96SMS03LC05	7/18	13°54.70'	164°04.77'	2,095	Eastern middle part of slope	2.0	0.1	Crust<unknown>		
	96SMS03LC06	7/18	13°01.48'	164°04.53'	2,267	Northwestern marginal part of top	—	—			void
MS04	96SMS04LC01	7/22	14°24.31'	165°55.27'	1,064	Eastern marginal part of top	—	—			void
	96SMS04LC02	7/22	14°23.31'	166°00.33'	2,529	Eastern middle part of slope	8.0	0.7	Crust<Sandstone>		Crust thickness : about 7cm
	96SMS04LC03	7/23	14°28.19'	165°53.21'	1,087	Northeastern marginal part of top	—	0.0	Crust fragment <unknown>		
	96SMS04LC10	7/25	14°21.67'	165°55.27'	1,059	Eastern marginal part of top	*220.0*	*36.00*		Foraminiferal sand	

Appendix Table 3(2) Results of LC survey

Seamount	Sampling No.	Sampling date (UTC)	Latitude (N)	Longitude (W)	Depth (m)	Location	Length (cm) 1)	Weight (kg) 1)	Crust type <Substrate> 2)	Bottom materials/Rock	Remarks
MS05	96SMS05LC01	8/4	11°10.66'	171°01.06'	4,620	Southwestern lower part of slope	—	—			void
	96SMS05LC02	8/5	11°18.42'	171°05.00'	1,406	Southern upper part of slope	*100.0*	*15.24*		Foraminiferal sand	
	96SMS05LC03	8/5	11°19.55'	171°04.97'	934	Southern part of summit	—	—			void
	96SMS05LC04	8/5	11°20.47'	171°04.76'	960	Northern part of summit	—	—			void
MS06	96SMS06LC03	8/10	13°03.40'	169°25.49'	1,657	Southern marginal part of top	—	—			void
	96SMS06LC04	8/10	13°06.50'	169°29.23'	1,713	Eastern marginal part of top	—	—			void
	96SMS06LC05	8/11	13°07.99'	169°25.64'	1,767	Northern marginal part of top	*75.0*	*8.68*		Foraminiferal sand, Sandy mudstone	
	96SMS06LC06	8/11	13°10.21'	169°28.32'	1,879	Northern marginal part of top	—	0.0	Crust fragment <unknown>		
MS08	96SMS08LC01	8/18	13°50.37'	167°38.12'	1,444	Eastern marginal part of top	3.5	0.3	Crust<unknown>		
	96SMS08LC02	8/19	13°44.39'	167°33.10'	1,526	Southern marginal part of top	8.0	0.5	Crust<unknown>		
	96SMS08LC03	8/19	13°45.41'	167°23.31'	1,558	Southwestern marginal part of top	5.0	0.2	Crust<unknown>		
	96SMS08LC11	8/22	14°07.58'	167°24.06'	1,548	Northern marginal part of top	8.0	0.5	Crust<unknown>		
MS09	96SMS09LC01	8/27	16°13.29'	167°18.01'	4,265	Southern lower part of slope	*40.0*	*6.55*		Mud, Lapilli tuff	
	96SMS09LC02	8/27	16°25.97'	167°14.01'	1,220	Southeastern marginal part of top	—	0.0	Crust fragment <unknown>		
	96SMS09LC03	8/27	16°29.73'	167°13.76'	1,245	Eastern marginal part of top	—	—			void
	96SMS09LC04	8/27	16°33.70'	167°11.91'	1,297	Northern marginal part of top	5.0	0.3	Crust<unknown>		
	96SMS09LC05	8/28	16°32.17'	167°09.03'	1,200	Northern part of summit	*60.0*	*3.48*		Foraminiferal sand, Crust	Crust 10cm, 0.11kg
	96SMS09LC06	8/28	16°33.62'	167°07.19'	1,245	Northwestern marginal part of top	6.5	0.59	Crust<unknown>		

Legend 1) In 「Length」 and 「Weight」 column, italics indicates data of bottom materials/rock.
2) In 「Crust type」 column, <unknown> means the substrate not sampled.

Notice 1) Latitude and Longitude were indicated by the vessel positions of GPS.
2) Depth were calculated from the data of temperature and depth sensor.

Appendix Table 4(1) Results of chemical analysis for manganese crusts

Sampling point No.	Code No.	Crust type	Layer	Co (%)	Ni (%)	Cu (%)	Mn (%)	Fe (%)	Si (%)	Al (%)	Ti (%)	Ca (%)	P (%)	As (ppm)	Ba (ppm)	Pb (ppm)	Zn (ppm)	Mo (ppm)	V (ppm)	Pt (ppb)	La (ppm)	Ce (ppm)	Pr (ppm)	Nd (ppm)	Sm (ppm)	Eu (ppm)	Gd (ppm)	Tb (ppm)	Dy (ppm)	Ho (ppm)	Er (ppm)	Tm (ppm)	Yb (ppm)	Lu (ppm)
96SMS01LC01	AA			0.58	0.42	0.25	22.78	16.09																									
96SMS01LC03	AA	Cr	Blk	0.73	0.55	0.07	22.79	14.91	3.68	0.52	0.78	3.19	0.37	271	1410	1540	519	519	602	261	188.4	771.1	25.9	120.1	25.1	6.5	33.9	4.6	30.0	6.7	21.6	3.1	21.9	3.7
96SMS01LC03	A1		Ot	0.87	0.51	0.05	24.59	15.82																									
96SMS01LC03	A2		In	0.71	0.50	0.07	22.57	16.94																									
96SMS01LC04	AA	Cr	Blk	0.58	0.66	0.09	21.72	12.09	2.44	0.41	0.77	6.35	0.88	210	1657	1123	594	576	548	318	193.1	729.7	27.2	123.7	25.5	6.5	32.7	4.6	29.5	6.5	21.1	3.0	21.1	3.6
96SMS01LC04	A1		Ot	0.58	0.47	0.07	21.82	16.39																									
96SMS01LC04	A2		In	0.51	0.66	0.09	20.43	10.15																									
96SMS01LC05	AA	Cc	Blk	0.51	0.76	0.10	22.17	10.72	1.64	0.17	0.97	4.89	0.67	189	2055	982	618	536	525	690	279.0	1134.6	39.1	176.4	35.6	8.8	46.4	6.1	39.4	8.7	27.5	3.9	26.5	4.4
96SMS01LC05	A1		Sf-Ot	0.43	0.77	0.09	20.98	8.78																									
96SMS01LC05	A2		Sf-In	0.70	1.00	0.17	25.10	13.44																									
96SMS01LC05	BB	Nd	Blk	0.54	1.31	0.23	23.33	9.88																									
96SMS01AD07	AA	Cr	Blk	0.57	0.50	0.13	19.15	17.47	8.60	1.34	0.92	2.01	0.20	144	1695	500	496	236	378	353	191.6	495.3	29.6	139.7	30.3	7.6	34.4	5.0	31.6	6.6	20.2	2.8	19.3	3.2
96SMS01AD07	A1		Ot	0.59	0.47	0.12	20.85	17.79																									
96SMS01AD07	A2		In	0.36	0.64	0.19	10.83	10.76																									
96SMS01AD07	BB	Cr	Blk	0.46	0.45	0.16	17.80	17.55																									
96SMS01AD07	CC	Cr	Blk	0.52	1.02	0.34	24.32	16.10																									
96SMS01AD08	AA	Cr	Blk	0.67	0.52	0.10	21.64	14.31																									
96SMS01AD08	A1		Ot	0.98	0.43	0.06	22.41	17.68	5.70	0.60	1.11	2.07	0.19	179	1406	1316	430	314	400	360	183.2	712.5	25.0	115.0	23.6	5.9	29.9	4.2	27.4	6.0	19.0	2.8	19.4	3.2
96SMS01AD08	A2		In	0.60	0.58	0.12	24.36	15.34	1.69	0.34	0.68	7.38	1.04	183	1682	1038	703	539	503	786	260.2	728.8	33.1	156.8	31.0	8.1	40.9	5.9	39.9	9.4	29.9	4.2	28.7	5.0
96SMS01AD09	AA	Cc	Blk	0.67	0.41	0.15	23.24	17.40	3.79	0.39	1.06	2.14	0.13	204	1580	946	452	469	550	149	317.0	951.6	56.6	257.2	56.1	13.6	59.2	9.1	55.3	10.9	32.0	4.4	30.9	4.8
96SMS01AD09	A1		Sf-Ot	0.77	0.35	0.10	23.32	18.51																									
96SMS01AD09	A2		Sf-In	0.69	0.45	0.18	23.51	16.56																									
96SMS01AD09	BB	Cc	Blk	0.93	0.53	0.15	24.71	15.26	4.83	0.66	1.09	2.19	0.12	181	1488	606	482	397	444	230	247.3	961.2	44.8	196.9	44.0	10.6	47.3	7.1	42.5	8.4	24.8	3.5	24.2	3.8
96SMS01AD09	B1		Sf	0.87	0.47	0.16	24.47	16.44																									
96SMS01AD09	B2		Rv	0.98	0.62	0.17	25.02	13.78																									
96SMS01AD10	AA	Cr	Blk	0.79	0.53	0.18	24.31	16.17	4.23	0.47	1.03	2.30	0.18	207	2081	1239	526	468	539	215	279.2	830.4	46.3	210.3	45.6	11.1	48.1	7.5	46.7	9.5	28.8	4.1	28.8	4.6
96SMS01AD10	BB	Cr	Blk	0.73	0.51	0.20	23.31	16.08	4.57	0.60	1.03	2.62	0.14	200	2346	680	515	452	519	268	254.0	765.8	41.2	185.6	39.7	10.1	44.7	6.8	42.2	8.6	26.3	3.7	26.0	4.2
96SMS01AD11	AA	Cc	Sf-Blk	0.66	0.78	0.07	23.14	10.01	2.77	0.28	0.85	2.44	0.18	191	1391	1215	710	652	457	502	257.3	777.2	33.3	155.9	31.4	8.1	41.8	6.0	40.7	9.6	30.9	4.3	29.6	5.0
96SMS01AD11	A1		Sf-Ot	0.88	0.47	0.04	25.02	16.21																									
96SMS01AD11	A2		Sf-In	0.49	0.95	0.08	22.40	7.26																									
96SMS01AD11	BB	Cc	Rv-Blk	0.60	0.66	0.08	23.47	11.54	1.71	0.25	0.77	6.41	0.99	206	1918	1391	679	702	536	446	202.4	781.7	29.7	135.6	28.1	7.0	34.1	4.8	30.1	6.5	20.6	2.9	19.8	3.3
96SMS01AD11	B1		Rv-Ot	0.61	0.55	0.11	24.32	16.25																									
96SMS01AD11	B2		Rv-In	0.50	0.94	0.07	22.29	6.80																									
96SMS01AD12	AA	Cc	Blk	0.70	0.70	0.07	22.66	9.89	1.28	0.14	0.75	7.05	1.16	159	1856	1150	650	469	391	711	181.7	857.0	26.0	119.1	24.6	6.2	32.9	4.4	28.3	6.2	19.5	2.7	18.7	3.1
96SMS01AD12	A1		Sf-Ot	0.87	0.50	0.05	25.16	16.06	2.71	0.30	0.88	2.48	0.24	303	1418	1702	435	642	625	408	270.8	959.3	40.8	190.0	40.5	10.0	48.2	7.1	45.0	9.5	29.7	4.2	28.9	4.8
96SMS01AD12	A2		Sf-In	0.52	0.77	0.09	20.81	8.26	0.57	0.09	0.53	13.06	1.96	149	1862	878	667	505	396	1091	374.8	1206.0	43.8	206.7	40.0	10.4	57.5	8.2	56.7	13.9	44.7	6.0	40.9	7.1
96SMS01AD12	A3		Rv-Ot	0.93	0.65	0.06	26.20	14.37																									
96SMS01AD12	A4		Rv-In	0.35	0.74	0.08	18.57	6.46																									
96SMS01AD12	BB	Cc	Blk	0.85	0.42	0.04	22.87	16.94																									
96SMS01AD13	AA	Cc	Blk	0.49	0.62	0.19	24.08	15.69	3.29	0.46	0.98	2.77	0.13	158	2111	330	647	370	487	626	216.2	753.2	33.0	149.8	31.9	7.8	34.7	5.2	32.2	7.1	20.7	3.0	20.4	3.3
96SMS01LC14	AA	Cr	Blk	0.81	0.53	0.07	23.83	16.21	3.37	0.38	0.77	2.23	0.14	262	1342	2057	434	554	589	324	192.0	694.8	26.2	114.6	26.8	6.8	30.9	4.8	30.5	6.6	21.2	3.1	20.6	3.5
96SMS02LC01	AA	Cr	Blk	0.55	0.57	0.16	22.53	16.65																									
96SMS02LC02	AA	Cr	Blk	0.76	0.55	0.09	23.14	16.37	4.31	0.48	0.90	2.13	0.13	241	1360	2443	491	546	579	380	221.7	661.6	30.5	134.1	30.8	7.8	35.3	5.7	36.7	8.0	25.3	3.7	24.8	4.2
96SMS02LC02	A1		Ot	0.90	0.56	0.06	24.97	15.59																									
96SMS02LC02	A2		In	0.56	0.48	0.10	21.92	17.23																									
96SMS02LC02	BB	Cc	Blk	0.92	0.71	0.09	25.84	14.99																									
96SMS02LC04	AA	Cr	Blk	0.71	0.52	0.07	22.70	15.76	4.74	0.57	0.95	2.16	0.14	191	1504	1559	490	440	480	379	174.9	619.0	23.3	101.2	23.4	5.9	27.7	4.3	27.8	6.1	19.7	2.9	20.0	3.4

Appendix Table 4(2) Results of chemical analysis for manganese crusts

Sampling point No.	Code No.	Crust type	Layer	Co (%)	Ni (%)	Cu (%)	Mn (%)	Fe (%)	Si (%)	Al (%)	Ti (%)	Ca (%)	P (%)	As (ppm)	Ba (ppm)	Pb (ppm)	Zn (ppm)	Mo (ppm)	V (ppm)	Pt (ppb)	La (ppm)	Ce (ppm)	Pr (ppm)	Nd (ppm)	Sm (ppm)	Eu (ppm)	Gd (ppm)	Tb (ppm)	Dy (ppm)	Ho (ppm)	Er (ppm)	Tm (ppm)	Yb (ppm)	Lu (ppm)
96SMS02LC04	A1		Ot	0.81	0.51	0.05	23.58	15.67																									
96SMS02LC04	A2		In	0.52	0.48	0.08	20.96	16.45																									
96SMS02LC05	AA	Cr	Blk	0.66	0.50	0.08	23.14	15.88																									
96SMS02LC06	AA	Cr	Blk	0.50	0.47	0.10	21.18	17.89																									
96SMS02AD07	AA	Cr	Blk	0.65	0.55	0.12	19.77	11.19	2.56	0.29	0.85	7.92	0.97	158	1432	910	425	407	409	429	256.5	620.9	35.2	153.1	35.2	8.8	38.6	6.3	39.7	8.6	26.9	3.8	25.7	4.2
96SMS02AD07	A1		Ot	0.92	0.55	0.07	24.88	15.63																									
96SMS02AD07	A2		In	0.85	0.61	0.16	25.75	14.50																									
96SMS02AD07	A3		Im	0.22	0.40	0.13	11.20	6.10																									
96SMS02AD07	A4		Rv	1.16	0.58	0.10	25.73	13.15	1.75	0.15	1.45	2.49	0.11	175	1691	1186	493	380	392	701	244.5	938.0	36.8	158.2	37.1	9.3	40.8	6.5	39.3	8.0	23.9	3.4	23.2	3.7
96SMS02AD08	AA	Cr	Blk	0.76	0.45	0.06	24.65	16.81	3.84	0.34	1.03	2.20	0.15	200	1396	721	448	474	521	116	290.0	720.1	45.5	195.8	46.9	11.5	47.5	7.9	48.4	9.8	29.4	4.1	27.6	4.4
96SMS02AD08	BB	Cr	Blk	1.29	0.59	0.07	25.88	13.45																									
96SMS02AD10	AA	Cr	Blk	1.41	0.48	0.05	24.51	14.96																									
96SMS02AD11	AA	Nd	Blk	0.69	0.72	0.10	24.35	14.95	3.14	0.42	0.90	2.54	0.18	223	1625	866	617	560	582	668	239.9	657.8	31.4	138.7	31.1	8.0	36.7	5.8	37.5	8.2	26.0	3.7	25.1	4.3
96SMS02AD12	AA	Cr	Blk	0.96	0.60	0.10	25.34	14.43	1.84	0.21	1.20	2.37	0.12	217	1796	2021	560	530	538	1466	255.9	1206.7	36.0	153.1	35.3	8.7	41.0	6.0	37.0	7.8	24.0	3.4	23.1	3.9
96SMS02AD12	BB	Cr	Blk	0.92	0.54	0.07	24.43	15.28																									
96SMS02AD13	AA	Cc	Blk	0.39	0.36	0.05	18.85	10.38	1.29	0.14	0.79	10.81	1.62	181	4095	866	523	568	695	216	393.6	1378.1	43.8	178.7	34.3	8.7	44.8	6.2	39.6	8.8	27.3	3.7	24.2	4.0
96SMS02AD13	A1		Sf-Ot	0.46	0.33	0.04	21.56	11.41																									
96SMS02AD13	A2		Sf-In	0.30	0.25	0.03	16.85	10.13																									
96SMS02AD13	A3		Rv	0.40	0.33	0.07	18.38	9.99																									
96SMS02AD13	A4		Nd	0.27	0.50	0.10	10.20	5.92																									
96SMS02AD14	AA	Cr	Blk	0.65	0.45	0.17	21.34	16.12	5.09	0.66	1.08	2.09	0.13	196	1777	1397	507	425	523	218	295.7	860.1	46.4	196.7	46.5	11.5	46.6	7.7	46.6	9.4	28.4	4.0	27.2	4.5
96SMS02AD14	BB	Cr	Blk	0.81	0.44	0.11	21.39	16.18																									
96SMS02AD15	AA	Cr	Blk	1.08	0.51	0.06	24.19	15.63																									
96SMS02AD16	AA	Cc	Sf-Blk	0.57	0.48	0.11	22.37	14.65																									
96SMS02AD16	A1		Sf-Ot	0.74	0.44	0.06	24.43	17.27	2.86	0.20	0.86	2.16	0.18	264	1305	1816	439	577	618	116	305.1	710.9	45.9	199.5	46.3	11.6	48.3	8.1	50.1	10.3	31.4	4.4	29.2	4.7
96SMS02AD16	A2		Sf-In	0.64	0.52	0.13	25.46	16.37	2.09	0.21	1.00	2.34	0.13	230	1979	859	598	668	683	433	293.8	873.3	47.4	197.9	46.9	11.2	47.1	7.4	43.6	8.5	25.7	3.5	23.2	3.8
96SMS02AD16	A3		Sf-Im	0.45	0.56	0.15	21.00	11.27																									
96SMS02AD16	A4		Rv	0.54	0.63	0.17	20.53	12.17																									
96SMS02AD16	BB	Nd	Blk	0.32	0.47	0.12	17.00	9.85																									
96SMS02AD17	AA	Cr	Blk	1.35	0.48	0.06	24.35	15.01																									
96SMS02AD18	AA	Cc	Blk	0.50	0.61	0.11	21.14	12.56	2.48	0.33	0.83	5.37	0.49	188	1702	606	599	466	533	414	237.4	676.1	31.4	137.3	31.1	7.9	35.2	5.6	35.5	7.7	24.0	3.4	22.7	3.9
96SMS02AD18	A1		Sf-Ot	0.85	0.83	0.10	27.32	13.95																									
96SMS02AD18	A2		Sf-In	0.48	0.57	0.11	21.61	13.28																									
96SMS02AD18	A3		Sf-Im	0.57	0.65	0.10	20.88	8.01																									
96SMS02AD18	A4		Rv	0.79	0.89	0.12	25.99	13.31																									
96SMS02AD18	BB	Nd	Blk	0.55	0.81	0.21	23.86	13.31																									
96SMS02AD18	CC	Cc	Blk	0.65	0.55	0.08	18.89	11.07																									
96SMS02AD18	C1		Sf-Ot	0.92	0.57	0.05	25.36	15.13	3.94	0.53	0.90	3.74	0.35	212	1464	1440	544	462	539	449	243.4	692.0	32.7	143.4	32.5	8.3	38.2	5.8	37.8	8.3	26.0	3.7	24.5	4.2
96SMS02AD18	C2		Sf-In	0.34	0.51	0.10	13.62	6.70	1.29	0.22	0.53	17.15	2.93	134	2083	1523	514	376	399	701	341.9	923.4	39.6	175.3	37.9	9.8	49.5	7.2	47.8	11.2	35.9	4.9	33.0	5.8
96SMS02AD18	C3		Rv	0.82	0.68	0.07	22.63	13.25																									
96SMS03LC01	AA	Cr	Blk	0.66	0.51	0.14	24.25	16.53	3.26	0.35	1.03	2.27	0.17	177	1688	960	539	454	507	257	222.0	605.8	32.8	141.8	32.7	8.2	34.8	5.7	35.1	7.3	22.4	3.2	21.7	3.6
96SMS03LC01	A1		Ot	0.76	0.53	0.11	25.68	16.25																									
96SMS03LC01	A2		In	0.57	0.69	0.25	25.17	15.50																									
96SMS03LC05	AA	Cr	Blk	0.44	0.53	0.19	17.02	9.48																									
96SMS03AD07	AA	Cr	Blk	0.48	0.33	0.07	18.02	13.93																									
96SMS03AD07	BB	Cr	Blk	1.23	0.61	0.06	26.34	13.61																									
96SMS03AD09	AA	Cr	Blk	0.52	0.64	0.16	21.43	13.07	2.87	0.39	0.86	5.05	0.75	151	1779	607	599	390	437	555	201.1	587.7	27.9	122.2	28.2	7.1	32.0	5.1	32.1	7.0	22.3	3.2	21.7	3.7

Appendix Table 4(3) Results of chemical analysis for manganese crusts

Sampling point No.	Code No.	Crust type	Layer	Co (%)	Ni (%)	Cu (%)	Mn (%)	Fe (%)	Si (%)	Al (%)	Ti (%)	Ca (%)	P (%)	As (ppm)	Ba (ppm)	Pb (ppm)	Zn (ppm)	Mo (ppm)	V (ppm)	Pt (ppb)	La (ppm)	Ce (ppm)	Pr (ppm)	Nd (ppm)	Sm (ppm)	Eu (ppm)	Gd (ppm)	Tb (ppm)	Dy (ppm)	Ho (ppm)	Er (ppm)	Tm (ppm)	Yb (ppm)	Lu (ppm)
96SMS03AD09	A1		Ot	0.64	0.58	0.11	23.70	15.70																									
96SMS03AD09	A2		In	0.39	0.76	0.19	20.95	12.39																									
96SMS03AD09	BB	Cr	Blk	0.67	0.55	0.08	23.47	15.05																									
96SMS03AD09	B1		Ot	0.62	0.65	0.14	24.56	15.21	3.18	0.39	0.92	2.34	0.14	160	1672	282	599	403	442	426	191.2	546.2	28.4	124.2	29.3	7.3	30.9	5.0	31.1	6.6	20.2	2.9	19.5	3.3
96SMS03AD09	B2		In	0.33	0.53	0.15	17.14	10.74	1.44	0.28	0.60	14.65	2.47	150	1615	743	515	348	393	609	339.2	749.6	40.8	183.5	39.8	10.5	48.4	7.5	50.2	11.7	37.7	5.1	35.1	6.1
96SMS03AD09	CC	Nd	Blk	0.55	0.98	0.27	25.95	12.64																									
96SMS03AD10	AA	Cr	Blk	0.61	0.34	0.09	18.51	14.54	2.87	0.30	1.04	8.03	0.93	159	2203	365	468	363	508	595	355.4	1174.4	47.3	201.1	44.8	11.2	51.9	7.8	49.1	10.8	33.8	4.6	31.3	5.4
96SMS03AD10	A1		Ot	0.82	0.38	0.07	21.99	16.99																									
96SMS03AD10	A2		In	0.35	0.28	0.14	14.62	11.84																									
96SMS03AD11	AA	Cr	Blk	0.95	0.56	0.10	25.67	14.07	1.77	0.14	1.33	2.38	0.10	171	1857	825	583	462	452	949	268.3	1478.8	42.4	176.6	41.9	10.3	48.3	6.9	41.4	8.2	24.7	3.5	23.8	3.8
96SMS03AD12	AA	Cr	Blk	0.63	0.51	0.16	21.49	17.06																									
96SMS04LC02	AA	Cr	Blk	0.59	0.47	0.14	23.32	15.85	3.19	0.34	1.11	2.46	0.13	195	1894	328	584	511	542	353	236.4	770.9	37.5	159.0	37.9	9.2	38.6	6.1	37.3	7.6	23.1	3.3	22.6	3.7
96SMS04LC02	A1		Ot	0.57	0.47	0.11	23.25	15.95																									
96SMS04LC02	A2		In	0.57	0.47	0.18	23.81	16.12																									
96SMS04LC03	AA	Cr	Blk	0.57	0.85	0.07	21.62	8.45																									
96SMS04AD04	AA	Cr	Blk	0.59	0.53	0.12	20.46	11.86																									
96SMS04AD04	A1		Ot	0.84	0.56	0.06	25.59	14.64	2.56	0.20	0.92	2.36	0.13	198	1411	235	510	557	527	123	254.9	588.9	38.7	168.0	39.2	9.6	39.9	6.8	42.2	8.6	26.6	3.8	24.8	4.0
96SMS04AD04	A2		In	0.70	0.66	0.16	26.16	13.78	2.03	0.23	1.03	3.15	0.19	161	1958	287	626	512	466	548	194.0	641.4	30.1	128.5	30.2	7.4	31.8	5.0	30.5	6.2	19.2	2.7	18.5	2.9
96SMS04AD04	A3		Im	0.29	0.53	0.17	16.29	8.73																									
96SMS04AD04	BB	Co	Blk	0.75	0.62	0.08	23.07	14.74																									
96SMS04AD05	AA	Cr	Blk	0.65	0.58	0.12	24.44	15.02																									
96SMS04AD06	AA	Co	Blk	1.24	0.52	0.03	26.06	14.37	1.68	0.19	0.69	2.28	0.20	281	1066	1407	387	670	619	262	230.6	684.6	32.4	142.6	33.3	8.5	37.2	6.1	39.2	8.5	26.8	3.8	25.3	4.2
96SMS04AD06	BB	Cr	Blk	0.83	0.64	0.07	25.19	13.02	2.08	0.31	0.83	4.02	0.46	221	1651	695	544	624	593	479	190.1	766.1	26.5	115.6	26.6	6.7	31.5	4.7	29.6	6.4	20.1	2.8	19.0	3.3
96SMS04AD06	B1		Ot	0.90	0.59	0.07	25.37	14.73																									
96SMS04AD06	B2		In	0.62	0.82	0.08	23.47	8.94																									
96SMS04AD06	CC	Cr	Blk	1.11	0.47	0.03	25.23	15.17																									
96SMS04AD07	AA	Cr	Blk	0.59	0.61	0.07	21.07	11.90	2.23	0.30	0.65	8.15	1.12	202	1512	522	495	515	519	482	253.5	695.7	31.4	140.1	31.0	8.1	39.3	6.0	39.6	9.1	29.5	4.0	26.8	4.7
96SMS04AD07	A1		Ot	0.85	0.49	0.04	23.89	14.82																									
96SMS04AD07	A2		In	0.39	0.66	0.09	18.90	10.19																									
96SMS04AD08	AA	Cr	Blk	0.97	0.53	0.07	24.84	15.20																									
96SMS04AD09	AA	Co	Blk	0.61	0.40	0.12	22.08	17.29	4.75	0.49	1.03	2.03	0.13	189	1531	984	516	396	504	177	276.0	826.5	47.3	202.7	49.6	12.1	50.3	8.1	48.6	9.5	28.0	3.9	26.1	4.2
96SMS04AD09	A1		Sf-Ot	0.55	0.42	0.13	22.37	17.09																									
96SMS04AD09	A2		Sf-In	0.69	0.35	0.13	22.06	17.81																									
96SMS04AD09	BB	Co	Blk	0.86	0.37	0.08	22.52	17.16	4.21	0.42	1.11	2.11	0.15	179	1303	414	411	391	495	113	290.7	834.2	51.2	219.6	54.3	13.2	54.2	8.8	51.8	10.0	29.4	4.1	27.3	4.4
96SMS04AD09	CC	Co	Blk	0.47	0.34	0.19	21.82	17.53	3.64	0.44	1.19	2.38	0.15	204	3333	1368	655	613	816	389	260.7	1533.9	40.4	165.0	36.9	8.9	43.4	5.7	32.3	6.2	18.1	2.5	17.3	2.8
96SMS04AD09	C1		Sf-Ot	0.72	0.38	0.16	22.10	17.30																									
96SMS04AD09	C2		Sf-In	0.33	0.32	0.20	21.94	18.39																									
96SMS04AD11	AA	Cr	Blk	1.19	0.44	0.03	25.12	15.83																									
96SMS04AD11	BB	Co	Blk	1.19	0.45	0.03	24.87	16.12	2.63	0.25	0.83	2.25	0.15	277	1219	1857	395	531	548	231	214.2	668.4	30.2	134.1	31.3	8.0	35.9	5.7	36.0	7.7	24.1	3.4	22.8	3.8
96SMS04AD11	CC	Co	Blk	1.08	0.42	0.03	23.88	16.72	3.09	0.41	0.65	4.06	0.50	236	1395	804	532	458	534	377	232.7	638.7	32.2	142.8	33.1	8.5	38.0	6.1	39.3	8.5	26.7	3.7	24.9	4.1
96SMS04AD12	AA	Co	Blk	0.74	0.57	0.06	20.85	11.21																									
96SMS04AD12	A1		Sf-Ot	1.03	0.45	0.03	23.71	15.75	3.90	0.34	0.82	2.21	0.17	251	1371	1204	421	488	547	170	228.5	680.7	34.8	162.3	34.3	8.8	37.5	6.0	37.9	8.3	25.2	3.6	24.8	3.9
96SMS04AD12	A2		Sf-In	1.03	0.55	0.05	25.14	14.96	3.15	0.31	0.82	2.47	0.20	238	1348	679	468	577	593	295	196.8	730.8	26.2	116.3	26.8	6.8	32.2	5.0	32.6	7.2	23.0	3.4	23.0	3.9
96SMS04AD12	A3		Rv-Ot	1.21	0.53	0.04	24.22	14.47																									
96SMS04AD12	A4		Rv-In	0.41	0.91	0.10	20.49	7.02	0.64	0.08	0.46	12.28	1.92	141	1669	612	731	587	420	441	207.7	722.3	23.3	103.9	22.5	6.0	30.5	4.4	29.8	7.1	23.1	3.2	21.8	3.8
96SMS04AD12	A5		Rv-Im	0.21	0.43	0.07	12.68	5.79	0.67	0.08	0.40	17.01	2.72	106	1355	429	500	396	326	447	168.7	649.7	20.0	86.9	18.9	4.9	25.4	3.8	24.1	5.5	17.6	2.5	16.5	2.8
96SMS04AD13	AA	Cr	Blk	1.31	0.68	0.03	28.51	12.49																									

Appendix Table 4(4) Results of chemical analysis for manganese crusts

Sampling point No.	Code No.	Crust type	Layer	Co (%)	Ni (%)	Cu (%)	Mn (%)	Fe (%)	Si (%)	Al (%)	Ti (%)	Ca (%)	P (%)	As (ppm)	Ba (ppm)	Pb (ppm)	Zn (ppm)	Mo (ppm)	V (ppm)	Pt (ppb)	La (ppm)	Ce (ppm)	Pr (ppm)	Nd (ppm)	Sm (ppm)	Eu (ppm)	Gd (ppm)	Tb (ppm)	Dy (ppm)	Ho (ppm)	Er (ppm)	Tm (ppm)	Yb (ppm)	Lu (ppm)
96SMS04AD14	AA	Cr	Blk	0.92	0.49	0.08	22.96	15.70	3.50	0.37	1.03	2.22	0.14	666	1481	603	466	423	521	326	232.0	738.2	32.0	139.0	32.6	8.1	36.4	5.7	37.0	7.9	25.1	3.7	24.6	4.2
96SMS04AD14	A1		Ot	0.91	0.45	0.05	23.84	16.33																										
96SMS04AD14	A2		In	0.67	0.47	0.11	22.90	16.49																										
96SMS04AD14	BB	Cr	Blk	0.58	0.56	0.14	23.03	15.96																										
96SMS04AD14	CC	Cr	Blk	0.51	0.61	0.14	21.65	16.23	3.00	0.35	1.01	2.42	0.19	215	1861	991	571	499	572	588	228.5	721.9	32.7	142.5	32.5	8.2	36.4	5.7	35.2	7.5	23.6	3.4	23.1	3.9
96SMS04AD15	AA	Cr	Blk	0.90	0.42	0.04	23.38	16.89	3.82	0.34	0.82	2.29	0.16	256	1169	2055	428	472	548	147	235.9	627.4	35.2	155.3	36.9	9.2	38.9	6.5	40.0	8.4	25.8	3.6	24.1	4.0
96SMS04AD15	BB	Cr	Blk	0.97	0.44	0.04	23.28	16.68																										
96SMS05AD05	AA	Nd	Blk	0.90	0.76	0.16	27.28	13.98	2.60	0.38	0.99	2.39	0.14	198	1633	1272	679	568	579	414	160.8	671.4	20.8	91.7	21.0	5.5	26.7	4.0	26.4	5.8	18.8	2.7	19.3	3.3
96SMS05AD05	BB	Nd	Blk	0.98	0.85	0.13	27.13	13.30																										
96SMS05AD05	CC	Nd	Blk	1.02	0.88	0.11	27.98	13.66																										
96SMS05AD06	AA	Cc	Sf-Blk	1.35	0.72	0.04	30.24	12.52	1.10	0.14	0.79	2.55	0.15	237	1531	2521	558	809	599	317	158.1	788.6	21.5	93.8	21.5	5.5	27.2	4.0	25.7	5.7	18.3	2.7	17.8	3.0
96SMS05AD06	BB	Cc	Sf-Blk	0.96	0.77	0.05	27.27	10.97																										
96SMS05AD06	B1		Sf-Ot	1.17	0.66	0.04	28.90	13.74	1.21	0.15	0.80	2.96	0.21	249	1804	2404	575	872	640	274	158.1	811.3	22.3	95.9	22.3	5.6	27.4	3.9	24.8	5.3	17.1	2.5	16.3	2.8
96SMS05AD06	B2		Sf-In	0.56	0.99	0.05	22.89	6.46	0.50	0.06	0.43	9.84	1.48	160	1668	693	814	842	536	239	166.2	774.2	20.6	89.7	20.0	5.1	25.9	3.8	24.9	5.7	18.7	2.6	17.1	2.9
96SMS05AD06	CC	Cc	Sf-Blk	1.60	0.81	0.04	30.80	11.36																										
96SMS05AD06	DD	Cc	Sf-Blk	1.12	0.82	0.07	29.56	12.56																										
96SMS05AD07	AA	Cc	Blk	1.43	0.60	0.04	27.51	14.48																										
96SMS05AD07	BB	Nd	Blk	0.93	0.72	0.17	24.59	13.62																										
96SMS05AD07	B1		Ot	0.96	0.83	0.20	25.64	13.71																										
96SMS05AD07	B2		In	0.70	0.86	0.18	22.51	9.61																										
96SMS05AD08	AA	Cr	Blk	1.07	0.79	0.05	28.25	11.39	1.03	0.13	0.77	3.62	0.28	229	1714	1357	557	847	626	287	174.4	844.8	23.6	101.7	23.1	6.0	29.8	4.3	27.7	6.1	19.6	2.8	18.7	3.2
96SMS05AD09	AA	Cr	Blk	0.61	0.55	0.28	22.57	15.00	4.09	0.51	0.98	2.22	0.15	171	1993	758	568	452	508	310	182.6	692.7	26.9	115.2	26.8	6.9	30.6	4.7	29.1	6.0	18.9	2.7	18.6	3.1
96SMS05AD09	A1		Ot	0.62	0.56	0.26	22.68	15.32																										
96SMS05AD09	A2		In	0.62	0.55	0.30	22.64	15.06																										
96SMS05AD10	AA	Nd	Blk	0.71	0.56	0.07	19.45	9.75																										
96SMS05AD10	A1		Ot	1.10	0.66	0.05	25.51	12.55																										
96SMS05AD10	A2		In	0.27	0.39	0.06	14.16	8.84																										
96SMS05AD11	AA	Cr	Blk	0.86	0.65	0.09	25.24	13.64																										
96SMS05AD11	A1		Ot	0.99	0.68	0.06	26.83	13.85	1.86	0.14	0.81	2.14	0.14	208	1321	1206	545	615	538	189	200.5	580.3	27.9	122.7	28.3	7.2	31.9	5.2	33.6	7.1	22.5	3.2	22.2	3.7
96SMS05AD11	A2		In	0.82	0.66	0.12	25.32	13.80	1.66	0.19	0.87	3.85	0.36	178	1713	518	639	582	547	425	206.7	821.5	28.9	124.0	28.1	7.2	33.6	5.1	32.6	7.0	22.2	3.2	21.6	3.6
96SMS05AD11	BB	Nd	Blk	0.73	0.79	0.21	23.69	12.87																										
96SMS05AD11	CC	Cr	Blk	0.93	0.64	0.09	25.56	13.33																										
96SMS05AD11	C1		Ot	0.89	0.57	0.07	25.62	14.61	2.16	0.17	0.99	2.30	0.13	215	1449	1259	492	601	587	241	248.2	734.4	34.8	153.0	35.1	8.8	39.4	6.5	40.9	8.6	27.4	3.9	26.3	4.3
96SMS05AD11	C2		In	0.68	0.62	0.10	21.98	10.78	1.22	0.12	0.87	3.74	0.31	157	1734	194	591	521	537	449	193.9	855.5	29.0	121.9	28.2	7.0	32.5	4.8	29.6	6.2	19.2	2.8	18.3	3.1
96SMS05AD12	AA	Cr	Blk	1.15	0.67	0.13	26.87	13.21																										
96SMS05AD13	AA	Nd	Blk	0.74	0.54	0.14	24.82	15.70																										
96SMS05AD13	BB	Cc	Blk	0.84	0.53	0.09	24.33	16.35																										
96SMS06AD01	AA	Cr	Blk	1.07	0.55	0.04	25.01	14.46																										
96SMS06AD01	BB	Cr	Blk	0.85	0.41	0.06	19.84	14.19																										
96SMS06AD02	AA	Cr	Blk	0.73	0.62	0.11	24.29	13.37																										
96SMS06AD02	A1		Ot	0.85	0.60	0.08	25.81	14.57	2.44	0.23	0.98	2.29	0.12	193	1498	1407	510	539	511	285	230.1	662.2	34.4	148.4	35.0	8.7	37.0	6.0	37.6	7.7	24.3	3.5	23.5	3.8
96SMS06AD02	A2		In	0.72	0.62	0.14	26.02	14.87	1.76	0.19	1.00	2.43	0.12	222	2022	704	621	711	656	433	238.3	843.2	36.6	154.8	35.5	8.7	36.9	5.9	35.7	7.1	22.2	3.2	21.1	3.5
96SMS06AD02	A3		Im	0.40	0.73	0.15	18.75	7.78	1.14	0.17	0.60	11.13	1.41	135	1661	307	600	538	412	373	168.0	720.8	22.3	97.9	21.9	5.6	28.3	4.1	26.8	6.1	19.9	2.9	19.7	3.4
96SMS06LC06	AA	Cr	Blk	0.62	0.64	0.17	21.14	13.76																										
96SMS06FD01	AA	Cr	Blk	0.55	0.47	0.10	19.82	14.01																										
96SMS06FD01	A1		Ot	0.70	0.46	0.07	21.09	16.55	5.00	0.52	0.97	1.93	0.15	207	1334	1066	455	399	516	401	206.5	762.2	25.5	112.5	24.7	6.5	31.6	4.8	32.3	7.2	23.5	3.5	24.3	4.2
96SMS06FD01	A2		In	0.56	0.54	0.14	22.77	15.14	2.15	0.30	0.91	4.54	0.51	201	1884	688	600	504	611	518	217.3	824.0	29.5	127.1	28.4	7.4	35.3	5.2	32.9	7.2	23.2	3.3	22.8	4.0

Appendix Table 4(5) Results of chemical analysis for manganese crusts

Sampling point No.	Code No.	Crust type	Layer	Co (%)	Ni (%)	Cu (%)	Mn (%)	Fe (%)	Si (%)	Al (%)	Ti (%)	Ca (%)	P (%)	As (ppm)	Ba (ppm)	Pb (ppm)	Zn (ppm)	Mo (ppm)	V (ppm)	Pt (ppb)	La (ppm)	Ce (ppm)	Pr (ppm)	Nd (ppm)	Sm (ppm)	Eu (ppm)	Gd (ppm)	Tb (ppm)	Dy (ppm)	Ho (ppm)	Er (ppm)	Tm (ppm)	Yb (ppm)	Lu (ppm)
96SMS06FD01	A3		Im	0.20	0.33	0.12	12.48	9.29	2.34	0.37	0.62	15.29	2.18	115	1525	295	394	218	379	449	246.9	740.9	29.1	131.0	28.1	7.4	37.0	5.4	35.6	8.4	26.6	3.7	25.3	4.5
96SMS06AD07	AA	Nd	Blk	0.83	0.66	0.11	24.57	14.79	3.20	0.45	0.92	2.34	0.14	181	1499	981	573	463	503	366	147.2	607.6	19.0	84.5	19.2	5.0	24.4	3.6	24.1	5.4	17.5	2.6	17.3	3.0
96SMS06AD07	BB	Nd	Blk	1.01	0.64	0.08	26.03	14.88	2.57	0.32	0.99	2.35	0.13	219	1636	858	582	558	596	372	198.3	786.8	27.6	119.0	27.9	6.9	33.0	5.0	31.1	6.7	21.2	3.0	20.6	3.5
96SMS06AD07	CC	Nd	Blk	0.84	0.58	0.08	25.08	15.55																										
96SMS06AD07	DD	Nd	Blk	0.83	0.71	0.13	25.29	15.14																										
96SMS06AD09	AA	Cr	Blk	0.69	0.53	0.16	24.91	15.81	3.46	0.41	1.07	2.24	0.14	186	1787	840	544	437	554	471	265.4	882.2	40.0	171.2	40.4	10.2	44.3	6.9	42.6	8.7	27.0	3.9	26.2	4.4
96SMS06AD09	A1		Ot	0.80	0.55	0.11	25.34	15.46																										
96SMS06AD09	A2		In	0.69	0.54	0.20	24.91	15.82																										
96SMS06AD10	AA	Cr	Blk	0.81	0.43	0.04	23.90	16.88																										
96SMS06AD10	BB	Cr	Blk	0.86	0.46	0.06	25.09	16.67	3.21	0.26	0.91	2.20	0.14	235	1196	517	437	499	585	115	290.9	754.4	49.6	214.4	52.6	12.8	51.6	8.7	51.8	10.2	30.2	4.2	28.4	4.5
96SMS06AD11	AA	Cr	Blk	1.28	0.68	0.08	27.72	13.17	2.23	0.18	1.20	2.39	0.10	194	1524	1311	531	457	524	572	257.6	1043.7	41.4	185.6	40.0	10.1	44.2	6.8	42.5	8.7	27.0	3.9	26.0	4.1
96SMS06AD12	AA	Cr	Blk	0.61	0.38	0.14	22.14	17.37																										
96SMS06AD12	A1		Ot	0.67	0.35	0.09	22.46	17.88	4.82	0.41	1.00	2.04	0.14	189	1475	125	427	406	529	110	275.0	707.8	45.8	208.9	45.4	11.4	47.5	7.9	43.5	9.8	29.7	4.2	27.9	4.3
96SMS06AD12	A2		In	0.60	0.45	0.21	22.17	16.45	4.48	0.54	1.04	1.97	0.13	164	1735	748	481	380	492	354	257.0	759.5	42.5	188.5	40.9	10.2	43.2	6.9	42.0	8.6	26.3	3.7	25.8	4.1
96SMS06AD13	AA	Cc	Blk	0.81	0.55	0.06	24.71	13.93																										
96SMS06AD13	A1		Sf-Ot	0.87	0.52	0.05	25.23	15.03	2.12	0.20	1.02	2.37	0.17	242	1574	1274	482	586	615	244	232.2	826.1	35.5	159.7	33.9	8.4	37.1	5.8	35.8	7.4	23.1	3.4	22.5	3.5
96SMS06AD13	A2		Sf-In	0.68	0.57	0.07	24.04	13.10	1.08	0.13	0.73	8.51	1.27	205	1645	896	564	658	586	365	241.3	697.3	33.6	153.2	30.5	7.9	35.6	5.7	37.0	8.2	26.2	3.8	25.1	4.1
96SMS06AD13	BB	Nd	Blk	0.87	0.68	0.10	25.22	14.07																										
96SMS06AD13	B1		Ot	0.98	0.74	0.10	26.16	13.92																										
96SMS06AD13	B2		In	0.79	0.65	0.11	25.04	13.97																										
96SMS06AD13	CC	Nd	Blk	0.81	0.72	0.09	25.93	13.46	2.14	0.30	0.91	3.24	0.25	202	1679	750	618	610	601	396	200.3	842.2	28.2	127.6	26.3	6.7	31.9	4.7	30.4	6.8	21.3	3.1	20.8	3.5
96SMS07AD01	AA	Nd	Blk	0.86	0.61	0.10	24.92	14.92																										
96SMS07AD01	A1		Ot	0.91	0.60	0.09	25.11	15.18																										
96SMS07AD01	A2		In	0.78	0.61	0.12	24.46	15.16																										
96SMS07AD01	BB	Nd	Blk	0.58	0.50	0.12	19.97	14.07	3.23	0.44	0.97	3.62	0.29	169	1775	588	574	439	524	454	254.2	784.9	35.7	162.4	33.2	8.5	37.8	5.8	37.3	8.2	25.2	3.6	24.5	4.0
96SMS07AD01	B1		Ot	0.74	0.61	0.13	24.05	15.24																										
96SMS07AD01	B2		Im	0.39	0.38	0.13	17.26	12.38																										
96SMS07AD01	CC	Nd	Blk	0.80	0.61	0.12	24.84	15.09	3.28	0.41	0.98	2.09	0.14	182	1546	794	557	468	545	385	196.6	738.6	29.1	131.7	27.4	7.0	32.2	4.9	31.2	6.7	21.1	3.1	21.2	3.4
96SMS07AD02	AA	Cr	Blk	0.92	0.60	0.13	25.32	14.67																										
96SMS07AD02	A1		Ot1	1.06	0.52	0.06	25.47	15.43	2.39	0.20	0.94	2.24	0.15	222	1282	1136	478	565	576	187	254.1	727.3	39.6	180.4	38.6	9.8	41.3	6.8	43.3	9.1	28.6	4.2	27.9	4.5
96SMS07AD02	A2		Ot2	0.84	0.59	0.13	24.40	14.93	3.45	0.38	1.13	2.14	0.11	162	1565	358	483	422	445	421	206.8	709.6	30.3	135.2	28.7	7.3	32.4	5.1	32.8	7.2	22.5	3.4	22.6	3.7
96SMS07AD02	A3		In	0.67	0.64	0.18	26.13	14.65	1.68	0.19	1.02	2.38	0.10	174	2116	696	594	514	504	695	196.7	769.0	29.4	130.2	27.0	6.8	31.0	4.6	29.0	6.2	19.4	2.8	19.1	3.1
96SMS07AD03	AA	Cr	Blk	1.00	0.70	0.17	27.04	13.53	2.02	0.19	0.99	2.32	0.10	179	1466	852	503	538	482	532	215.8	573.7	34.7	156.8	34.2	8.7	34.4	5.9	37.2	7.8	23.6	3.5	23.1	3.6
96SMS07AD03	A1		Ot	1.13	0.69	0.13	27.91	13.66																										
96SMS07AD03	A2		In	0.94	0.71	0.21	26.75	13.38																										
96SMS07AD03	BB	Cc	Blk	0.83	0.69	0.13	26.42	14.32	2.58	0.38	1.03	2.37	0.13	217	2000	648	631	599	587	587	195.2	751.8	30.1	135.6	28.3	7.1	31.0	4.8	30.7	6.4	20.1	3.0	20.1	3.3
96SMS07AD03	CC	Nd	Blk	0.84	0.70	0.15	26.08	13.98																										
96SMS07AD03	DD	Nd	Blk	0.87	0.59	0.06	25.11	14.21	2.53	0.29	0.86	2.82	0.19	200	1398	1465	544	528	527	271	214.7	580.3	33.5	153.4	32.9	8.2	34.6	5.7	35.8	7.6	23.3	3.4	22.6	3.6
96SMS08LC01	AA	Cr	Blk	0.90	0.56	0.06	24.94	15.03	2.94	0.34	0.84	2.20	0.14	245	1495	641	527	612	649	304	184.1	736.9	26.1	119.8	25.5	6.4	30.1	4.5	29.2	6.3	20.3	3.0	20.4	3.3
96SMS08LC01	A1		Ot	0.99	0.54	0.04	25.65	14.87																										
96SMS08LC01	A2		In	0.75	0.49	0.06	23.79	15.97																										
96SMS08LC02	AA	Cr	Blk	0.66	0.51	0.07	23.01	15.85	3.43	0.35	0.85	2.30	0.19	212	1414	409	546	535	575	409	170.5	704.5	24.2	111.3	23.0	6.0	27.6	4.1	26.8	5.9	18.9	2.8	19.5	3.3
96SMS08LC02	A1		Ot	0.84	0.58	0.06	25.20	14.61																										
96SMS08LC02	A2		In	0.49	0.54	0.11	19.59	12.46																										
96SMS08LC03	AA	Cr	Blk	0.43	0.70	0.16	20.78	12.40																										
96SMS08AD04	AA	Cc	Blk	0.95	0.46	0.05	24.11	16.10	3.40	0.33	0.76	2.47	0.21	246	1006	1031	443	531	602	144	240.0	649.5	39.1	181.6	39.9	9.8	40.8	6.6	41.4	8.5	26.1	3.7	24.7	3.9
96SMS08AD04	BB	Cc	Blk	0.93	0.37	0.03	21.89	16.62																										

Appendix Table 4(6) Results of chemical analysis for manganese crusts

Sampling point No.	Code No.	Crust type	Layer	Co (%)	Ni (%)	Cu (%)	Mn (%)	Fe (%)	Si (%)	Al (%)	Ti (%)	Ca (%)	P (%)	As (ppm)	Ba (ppm)	Pb (ppm)	Zn (ppm)	Mo (ppm)	V (ppm)	Pt (ppb)	La (ppm)	Ce (ppm)	Pr (ppm)	Nd (ppm)	Sm (ppm)	Eu (ppm)	Gd (ppm)	Tb (ppm)	Dy (ppm)	Ho (ppm)	Er (ppm)	Tm (ppm)	Yb (ppm)	Lu (ppm)
96SMS08AD05	AA	Cr	Blk	0.67	0.56	0.10	23.44	13.89																										
96SMS08AD05	A1		Ot	0.95	0.56	0.06	26.07	14.77	2.02	0.24	0.86	4.30	0.36	181	1566	524	557	506	525	336	189.6	643.6	28.0	125.5	26.1	6.7	29.4	4.6	29.1	6.3	19.6	2.9	19.0	3.1
96SMS08AD05	A2		In	0.52	0.65	0.11	22.03	11.49	1.26	0.16	0.74	5.94	0.65	179	1744	151	563	538	577	347	218.3	752.3	32.7	145.9	29.5	7.5	33.0	5.1	31.5	6.7	21.3	3.1	20.5	3.3
96SMS08AD06	AA	Cr	Blk	0.72	0.51	0.16	22.71	15.71																										
96SMS08AD07	AA	Cr	Blk	0.81	0.36	0.04	21.16	16.60																										
96SMS08AD07	BB	Nd	Blk	0.98	0.52	0.06	23.18	15.18																										
96SMS08AD08	AA	Nd	Blk	0.67	0.51	0.28	23.15	15.54																										
96SMS08AD09	AA	Cr	Blk	1.08	0.56	0.05	25.77	14.09																										
96SMS08AD10	AA	Cr	Blk	0.84	0.44	0.06	22.23	15.79																										
96SMS08AD10	BB	Nd	Blk	0.62	0.69	0.15	23.31	13.91																										
96SMS08LC11	AA	Cr	Blk	0.51	0.62	0.09	21.17	12.83	2.22	0.28	0.84	3.00	0.28	207	1650	446	550	611	642	379	197.7	742.6	29.1	131.9	27.1	6.9	31.0	4.8	30.2	6.5	20.6	3.0	19.9	3.4
96SMS08LC11	A1		Ot	0.66	0.51	0.08	23.09	15.58																										
96SMS08LC11	A2		In	0.58	0.67	0.10	22.77	12.00																										
96SMS08AD12	AA	Cr	Blk	0.64	0.65	0.12	22.55	12.79																										
96SMS08AD12	A1		Ot	0.88	0.57	0.07	24.99	14.62	3.33	0.27	0.76	2.09	0.14	214	1274	618	472	563	582	201	205.6	641.0	30.4	141.1	29.6	7.5	32.5	5.3	34.2	7.4	23.3	3.4	23.2	3.7
96SMS08AD12	A2		In	0.50	0.67	0.15	21.14	12.02	1.97	0.32	0.81	5.47	0.65	184	1703	193	595	491	550	582	187.0	672.0	26.7	121.4	25.1	6.3	30.2	4.5	29.2	6.6	21.3	3.1	21.4	3.6
96SMS08AD12	BB	Cc	Blk	0.75	0.57	0.10	24.39	15.06	2.89	0.35	0.95	2.57	0.16	206	1688	736	555	352	533	533	178.4	679.6	25.0	121.6	25.7	6.5	27.8	4.4	27.7	5.9	18.0	2.5	17.7	2.9
96SMS08AD12	B1		Sf	0.88	0.55	0.07	24.76	14.87																										
96SMS08AD12	B2		Rv	0.65	0.57	0.12	23.64	15.34																										
96SMS08AD12	CC	Cc	Blk	0.42	0.53	0.13	18.76	10.43																										
96SMS08AD12	C1		Sf-Ot	0.69	0.57	0.13	24.19	14.73																										
96SMS08AD12	C2		Sf-In	0.39	0.61	0.14	18.02	9.31																										
96SMS08AD12	C3		Sf-Im	0.43	0.42	0.11	18.25	9.12																										
96SMS08AD12	DD	Cr	Blk	0.53	0.62	0.13	19.49	10.87																										
96SMS08AD12	D1		Ot	0.87	0.54	0.07	23.32	15.14	3.78	0.40	0.85	2.12	0.17	208	2279	235	470	519	550	333	182.7	650.8	26.4	122.6	26.1	6.5	30.1	4.6	30.1	6.6	20.5	3.0	20.5	3.4
96SMS08AD12	D2		In	0.44	0.70	0.14	19.13	10.09	1.25	0.21	0.67	11.97	1.69	152	1728	549	572	461	461	606	233.4	719.1	28.8	133.9	26.2	6.8	33.9	5.0	33.2	7.9	25.2	3.6	24.3	4.1
96SMS08AD12	D3		Im	0.43	0.48	0.10	16.41	7.89	1.22	0.20	0.67	12.00	1.86	165	1726	706	571	536	512	581	258.0	840.7	31.5	145.2	28.5	7.3	37.1	5.4	35.9	8.5	27.7	3.9	26.7	4.6
96SMS08AD12	EE	Nd	Blk	0.68	0.56	0.11	23.89	15.57																										
96SMS08AD13	AA	Nd	Blk	0.74	0.60	0.10	24.73	15.36	2.01	0.28	0.88	3.83	0.31	185	1699	854	594	501	553	542	230.6	745.0	31.1	143.0	29.0	7.4	35.1	5.3	34.3	7.7	24.8	3.5	23.6	3.9
96SMS08AD13	BB	Nd	Blk	0.75	0.72	0.10	25.26	12.69																										
96SMS08AD13	CC	Nd	Blk	0.89	0.54	0.06	25.01	15.37																										
96SMS08AD14	AA	Cc	Blk	0.48	0.53	0.09	18.05	10.27																										
96SMS08AD14	A1		Sf-Ot	0.75	0.58	0.08	23.70	15.76	3.04	0.40	1.00	2.25	0.18	208	1624	1441	525	435	498	526	173.1	676.2	23.8	107.0	22.3	5.7	26.6	4.0	26.2	5.8	18.7	2.8	19.1	3.2
96SMS08AD14	A2		Sf-In	0.71	0.67	0.10	26.10	14.13	1.42	0.19	0.83	6.42	0.73	160	1866	875	595	490	464	609	202.6	695.2	28.1	127.2	25.9	6.5	31.8	4.7	30.1	6.8	21.6	3.1	20.8	3.4
96SMS08AD14	A3		Sf-Im	0.41	0.45	0.09	14.82	7.20	1.12	0.16	0.56	17.13	2.93	108	1671	315	515	282	397	720	248.2	851.9	31.3	144.0	28.5	7.5	38.1	5.5	36.8	8.7	27.9	3.9	27.0	4.6
96SMS08AD14	BB	Nd	Blk	0.83	0.80	0.10	26.03	13.61																										
96SMS08AD15	AA	Cr	Blk	0.82	0.43	0.03	24.06	16.54																										
96SMS08AD16	AA	Cr	Blk	0.60	0.50	0.12	22.55	16.02	3.45	0.42	1.01	2.65	0.25	217	1764	904	531	508	614	499	231.3	790.0	35.4	160.0	33.6	8.5	37.2	5.8	36.4	7.8	24.1	3.5	23.9	3.9
96SMS08AD16	A1		Ot	0.74	0.51	0.08	23.91	15.50																										
96SMS08AD16	A2		In	0.54	0.50	0.15	22.76	15.98																										
96SMS08AD16	BB	Nd	Blk	0.75	0.60	0.13	23.73	15.13																										
96SMS08AD17	AA	Cr	Blk	0.77	0.36	0.07	22.90	17.05																										
96SMS08AD18	AA	Cr	Blk	0.92	0.45	0.08	23.44	16.08																										
96SMS09LC01	AA	Cr	Blk	0.31	1.11	0.85	18.06	8.95																										
96SMS09LC02	AA	Cr	Blk	0.62	0.49	0.12	22.10	15.36																										
96SMS09LC04	AA	Cr	Blk	0.61	0.93	0.13	25.55	11.50	2.60	0.34	0.76	3.78	0.27	208	2890	1203	661	646	620	771	211.5	756.3	28.9	133.8	27.0	7.1	33.1	5.0	33.4	7.6	24.3	3.5	22.8	3.8
96SMS09LC05	AA	Cr	Blk	0.65	0.94	0.13	24.59	9.58																										

Appendix Table 4(7) Results of chemical analysis for manganese crusts

Sampling point No.	Code No.	Crust type	Layer	Co (%)	Ni (%)	Cu (%)	Mn (%)	Fe (%)	Si (%)	Al (%)	Ti (%)	Ca (%)	P (%)	As (ppm)	Ba (ppm)	Pb (ppm)	Zn (ppm)	Mo (ppm)	V (ppm)	Pt (ppb)	La (ppm)	Ce (ppm)	Pr (ppm)	Nd (ppm)	Sm (ppm)	Eu (ppm)	Gd (ppm)	Tb (ppm)	Dy (ppm)	Ho (ppm)	Er (ppm)	Tm (ppm)	Yb (ppm)	Lu (ppm)
96SMS09LC06	AA	Cr	Blk	0.70	0.59	0.06	23.53	13.87	2.49	0.28	0.74	4.18	0.43	225	1607	329	587	638	625	384	204.5	794.8	29.7	135.1	28.1	7.1	32.9	5.0	31.4	6.9	21.7	3.1	21.2	3.5
96SMS09LC06	A1		Ot	0.79	0.52	0.05	24.26	14.96																										
96SMS09LC06	A2		In	0.54	0.98	0.08	23.31	7.94																										
96SMS09AD07	AA	Cc	Blk	0.60	0.93	0.16	20.45	8.23	2.22	0.34	0.60	9.28	1.39	150	1555	808	750	444	431	610	277.8	624.4	36.3	170.3	34.0	8.7	40.3	6.4	43.0	9.9	31.5	4.4	29.3	4.9
96SMS09AD07	A1		Sf-Ot	0.93	0.53	0.06	22.76	15.04																										
96SMS09AD07	A2		Sf-In	0.42	1.21	0.23	16.96	5.69																										
96SMS09AD07	BB	Cr	Blk	0.79	0.48	0.09	21.46	15.54	5.60	0.54	0.82	2.67	0.21	193	1287	958	425	402	479	353	197.4	610.9	28.9	133.1	27.9	7.2	31.7	5.1	33.0	7.3	22.8	3.2	22.2	3.7
96SMS09AD07	B1		Ot	0.81	0.43	0.06	21.54	16.14																										
96SMS09AD07	B2		In	0.71	0.54	0.10	21.65	15.01																										
96SMS09AD07	CC	Nd	Blk	0.86	0.63	0.10	24.22	15.21																										
96SMS09AD08	AA	Cr	Blk	0.71	0.57	0.14	23.52	15.24	3.90	0.38	1.03	2.24	0.13	178	1614	948	484	463	543	268	216.8	672.8	36.3	162.0	35.2	8.6	35.3	5.8	34.7	7.2	22.0	3.2	21.2	3.3
96SMS09AD08	A1		Ot	0.70	0.46	0.07	23.28	15.86																										
96SMS09AD08	A2		In	0.65	0.56	0.18	23.44	15.13																										
96SMS09AD08	BB	Cr	Blk	0.88	0.47	0.06	24.50	16.14																										
96SMS09AD08	CC	Cr	Blk	0.74	0.46	0.08	21.60	15.06																										
96SMS09AD09	AA	Cc	Blk	0.77	0.37	0.03	22.50	17.49	4.38	0.54	0.90	2.62	0.25	236	908	1076	407	433	586	122	249.8	694.0	43.6	199.3	44.6	11.0	44.0	7.2	44.1	8.9	26.9	3.8	25.2	3.9
96SMS09AD10	AA	Nd	Blk	0.68	1.00	0.16	25.93	10.29																										
96SMS09AD11	AA	Cr	Blk	0.93	0.60	0.06	25.32	13.42																										
96SMS09AD11	A1		Ot	1.01	0.50	0.03	25.51	15.21	2.28	0.21	0.70	2.22	0.19	285	1129	1127	401	665	647	230	228.7	701.7	34.6	159.8	33.9	8.5	36.7	5.9	37.9	8.1	25.2	3.6	24.1	3.8
96SMS09AD11	A2		In	0.71	0.66	0.10	24.04	12.11	1.45	0.22	1.03	4.91	0.33	171	1782	851	578	550	509	784	171.3	761.8	24.6	111.0	23.3	5.9	29.0	4.2	27.1	6.1	19.7	2.8	19.2	3.3
96SMS09AD11	BB	Cc	Blk	0.57	0.75	0.07	21.78	9.54																										
96SMS09AD11	B1		Sf-Ot	0.93	0.52	0.04	24.74	15.39	2.44	0.25	0.65	2.05	0.19	286	1116	2150	438	659	644	291	205.2	704.9	30.6	139.8	30.2	7.4	33.4	5.2	33.5	7.2	22.6	3.3	21.9	3.6
96SMS09AD11	B2		Sf-In	0.71	0.51	0.07	23.92	15.68																										
96SMS09AD11	B3		Sf-Im	0.50	0.92	0.07	21.48	6.80	0.74	0.10	0.56	11.09	1.67	153	1780	588	736	720	511	470	208.8	838.1	26.9	122.9	24.4	6.3	32.7	4.6	30.5	7.1	22.7	3.3	21.4	3.6
96SMS09AD11	CC	Nd	Blk	0.87	0.81	0.10	25.41	13.22																										
96SMS09AD11	DD	Nd	Blk	0.77	0.81	0.10	25.43	12.71	1.88	0.31	0.73	3.89	0.37	199	1681	578	690	640	597	545	194.2	722.7	26.8	122.9	25.7	6.5	31.3	4.6	30.0	6.7	21.5	3.1	20.6	3.4
96SMS09AD12	AA	Cc	Blk	0.67	0.52	0.14	23.22	15.35	3.92	0.46	1.05	2.27	0.15	217	1719	1530	554	534	588	264	201.8	778.1	32.0	143.0	30.9	7.7	33.2	5.1	31.7	6.6	20.2	3.0	20.3	3.2
96SMS09AD12	BB	Nd	Blk	0.70	0.56	0.15	24.40	15.00																										
96SMS09AD13	AA	Cr	Blk	0.66	0.50	0.14	22.11	16.34	4.32	0.49	0.94	1.91	0.15	196	1451	1099	504	406	563	381	209.7	749.9	32.2	145.6	30.8	7.8	34.8	5.3	32.9	6.9	21.4	3.1	21.2	3.4

Legend Cr : Crust, Cc : Cobble crust, Nd : Nodule

Blk : Whole layer, Ot : Outer layer, In : Inner layer, Im : Innermost layer, Sf : Surface side, Rv : Reverse side

Appendix Table 5(1) Summary results of chemical analysis for five major elements

Sea-mount	Classification		No. of Data	Co (wt %)			Ni (wt %)			Cu (wt %)			Mn (wt %)			Fe (wt %)			Mn/Fe			Thickness	
				Max.	Min.	Mean	Max.	Min.	Mean	Max.	Min.	Mean	Max.	Min.	Mean	Max.	Min.	Mean	Max.	Min.	Mean	Max.	Mean
MS01	All Sample		40	0.98	0.35	0.67	1.31	0.35	0.62	0.34	0.04	0.12	26.20	10.83	22.59	18.51	6.46	13.96	3.27	1.00	1.73	90	33
	Crust Section	Bulk	18	0.93	0.46	0.66	1.31	0.41	0.64	0.34	0.04	0.13	24.71	17.80	22.70	17.55	9.88	14.35	2.36	1.01	1.65	90	33
		Outer Part	12	0.98	0.43	0.78	0.77	0.35	0.52	0.17	0.04	0.09	26.20	20.85	23.68	18.51	8.78	15.67	2.38	1.17	1.55	55	18
		Inner Part	10	0.71	0.35	0.54	1.00	0.45	0.72	0.19	0.07	0.11	25.10	10.83	21.09	16.94	6.46	11.20	3.27	1.00	2.09	40	21
		Innermost	0																				
	Topo-graphy and Water Depth	Flat Summit	17	0.88	0.43	0.63	1.31	0.47	0.71	0.23	0.04	0.09	25.10	20.43	22.94	16.94	6.80	12.55	3.27	1.33	1.96	90	39
		1,000- 1,500m	6	0.93	0.35	0.70	0.77	0.42	0.63	0.09	0.04	0.07	26.20	18.57	22.71	16.94	6.46	12.00	2.87	1.35	2.07	50	23
		1,500- 2,000m	3	0.98	0.60	0.75	0.58	0.43	0.51	0.12	0.06	0.09	24.36	21.64	22.80	17.68	14.31	15.78	1.58	1.26	1.45	50	40
		2,000- 2,500m	6	0.59	0.36	0.50	1.02	0.45	0.62	0.34	0.12	0.19	24.32	10.83	19.51	17.79	10.76	15.89	1.53	1.00	1.22	75	25
		2,500- 3,000m	2	0.79	0.73	0.76	0.53	0.51	0.52	0.18	0.20	0.19	24.31	23.31	23.81	16.17	16.08	16.43	1.50	1.44	1.47	50	42
		3,000- 3,500m	6	0.98	0.67	0.82	0.62	0.35	0.47	0.18	0.10	0.15	25.02	23.24	24.05	18.51	13.78	16.33	1.81	1.25	1.48	40	20
		3,500- 4,000m	0																				
MS02	All Sample		46	1.41	0.22	0.70	0.89	0.25	0.54	0.21	0.03	0.10	27.32	10.20	22.08	17.89	5.92	13.61	2.60	1.18	1.66	105	24
	Crust Section	Bulk	28	1.41	0.27	0.74	0.81	0.47	0.58	0.21	0.05	0.10	25.84	18.89	23.06	17.89	11.07	14.71	1.79	1.18	1.58	80	24
		Outer Part	8	0.92	0.46	0.80	0.89	0.33	0.59	0.12	0.04	0.07	27.32	21.56	24.76	17.27	11.41	14.75	1.95	1.32	1.73	30	13
		Inner Part	7	0.85	0.30	0.53	0.57	0.33	0.50	0.11	0.04	0.07	25.36	13.62	22.33	17.27	6.70	14.13	2.03	1.27	1.62	40	17
		Innermost	3	0.57	0.22	0.41	0.65	0.40	0.54	0.15	0.10	0.13	21.00	11.20	17.69	11.27	6.10	8.46	2.60	1.83	2.10	40	23
	Topo-graphy and Water Depth	Flat Summit	26	1.41	0.34	0.76	0.89	0.47	0.59	0.21	0.05	0.09	27.32	13.62	23.02	17.89	6.70	14.36	2.60	1.18	1.64	65	23
		1,000- 1,500m	0																				
		1,500- 2,000m	0																				
		2,000- 2,500m	16	1.16	0.22	0.56	0.63	0.25	0.47	0.17	0.03	0.10	25.75	10.20	20.25	17.27	5.92	11.87	1.95	1.41	1.72	105	27
		2,500- 3,000m	2	1.29	0.76	1.03	0.59	0.45	0.52	0.07	0.06	0.07	25.88	24.65	25.27	16.81	13.45	15.13	1.92	1.46	1.69	30	17
		3,000- 3,500m	2	0.81	0.65	0.73	0.45	0.44	0.45	0.17	0.11	0.14	21.39	21.34	21.37	16.18	16.12	16.15	1.32	1.32	1.32	30	17
		3,500- 4,000m	0																				

Appendix Table 5(2) Summary results of chemical analysis for five major elements

Sea-mount	Classification		No. of Data	Co (wt %)			Ni (wt %)			Cu (wt %)			Mn (wt %)			Fe (wt %)			Mn/Fe			Thickness	
				Max.	Min.	Mean	Max.	Min.	Mean	Max.	Min.	Mean	Max.	Min.	Mean	Max.	Min.	Mean	Max.	Min.	Mean	Max.	Mean
MS03	All Sample		18	1.23	0.33	0.62	0.98	0.28	0.55	0.27	0.06	0.14	26.34	14.62	22.00	17.06	9.48	14.14	2.05	1.23	1.56	75	30
	Crust Section	Bulk	10	1.23	0.44	0.67	0.98	0.33	0.56	0.27	0.06	0.13	26.34	17.02	22.22	17.06	9.48	14.00	2.05	1.25	1.60	75	30
		Outer Part	4	0.82	0.62	0.71	0.65	0.38	0.54	0.14	0.07	0.11	25.68	21.99	23.98	16.99	15.21	16.04	1.61	1.29	1.50	50	27
		Inner Part	4	0.57	0.33	0.41	0.76	0.28	0.57	0.25	0.14	0.18	25.17	14.62	19.47	15.50	10.74	12.62	1.69	1.23	1.53	55	29
		Innermost	0																				
	Topo-graphy and Water Depth	Flat Summit	11	0.76	0.33	0.56	0.98	0.51	0.63	0.27	0.08	0.16	25.95	17.02	22.67	16.53	9.48	13.87	2.05	1.46	1.64	75	46
		1,000- 1,500m	0																				
		1,500- 2,000m	0																				
		2,000- 2,500m	3	1.23	0.48	0.78	0.61	0.33	0.48	0.16	0.06	0.10	26.34	18.02	21.95	17.06	13.61	14.87	1.93	1.25	1.49	20	9
		2,500- 3,000m	4	0.82	0.35	0.68	0.38	0.28	0.39	0.14	0.07	0.10	21.99	14.62	20.20	16.99	11.84	14.36	1.82	1.23	1.40	35	17
		3,000- 3,500m	0																				
		3,500- 4,000m	0																				
MS04	All Sample		43	1.31	0.21	0.76	0.91	0.32	0.52	0.20	0.03	0.09	28.51	12.68	22.96	18.39	5.79	14.43	2.91	1.19	1.66	100	18
	Crust Section	Bulk	23	1.31	0.47	0.84	0.85	0.34	0.52	0.19	0.03	0.08	28.51	20.46	23.45	17.53	8.45	14.84	2.55	1.24	1.62	100	20
		Outer Part	9	1.21	0.55	0.84	0.59	0.38	0.48	0.16	0.03	0.08	25.59	22.10	23.82	17.30	14.47	15.68	1.74	1.27	1.52	25	11
		Inner Part	9	1.03	0.33	0.60	0.91	0.32	0.58	0.20	0.05	0.12	26.16	18.90	22.76	18.39	7.02	13.74	2.91	1.19	1.80	60	21
		Innermost	2	0.29	0.21	0.25	0.53	0.43	0.48	0.17	0.07	0.12	16.29	12.68	14.49	8.73	5.79	7.26	2.18	1.86	2.02	25	20
	Topo-graphy and Water Depth	Flat Summit	2	1.31	0.57	0.94	0.85	0.68	0.77	0.07	0.03	0.05	28.51	21.62	25.07	12.49	8.45	10.47	2.55	2.28	2.42	10	8
		1,000- 1,500m	11	1.24	0.39	0.91	0.82	0.42	0.56	0.09	0.03	0.05	26.06	18.90	23.91	16.72	8.94	13.80	2.62	1.42	1.77	45	12
		1,500- 2,000m	9	1.21	0.21	0.79	0.91	0.42	0.54	0.12	0.03	0.06	25.14	12.68	22.02	16.89	5.79	13.09	2.91	1.38	1.80	40	14
		2,000- 2,500m	10	0.92	0.29	0.68	0.66	0.45	0.55	0.17	0.05	0.11	26.16	16.29	22.60	16.49	8.73	14.45	1.89	1.33	1.58	100	30
		2,500- 3,000m	4	0.97	0.57	0.68	0.53	0.47	0.49	0.18	0.07	0.13	24.84	23.25	23.81	16.12	15.20	15.78	1.63	1.45	1.51	70	42
		3,000- 3,500m	7	0.86	0.33	0.60	0.42	0.32	0.37	0.20	0.08	0.14	22.52	21.82	22.13	18.39	17.09	17.51	1.31	1.19	1.26	40	21
		3,500- 4,000m	0																				

Appendix Table 5(3) Summary results of chemical analysis for five major elements

Sea-mount	Classification		No. of Data	Co (wt %)			Ni (wt %)			Cu (wt %)			Mn (wt %)			Fe (wt %)			Mn/Fe			Thickness	
				Max.	Min.	Mean	Max.	Min.	Mean	Max.	Min.	Mean	Max.	Min.	Mean	Max.	Min.	Mean	Max.	Min.	Mean	Max.	Mean
MS05	All Sample		30	1.60	0.27	0.91	0.99	0.39	0.69	0.30	0.04	0.12	30.80	14.16	25.26	16.35	6.46	12.87	3.54	1.48	2.01	70	16.97
	Crust Section	Bulk	18	1.60	0.61	1.00	0.88	0.53	0.70	0.28	0.04	0.11	30.80	19.45	26.29	16.35	9.75	13.21	2.71	1.49	2.02	70	17
		Outer Part	6	1.17	0.62	0.96	0.83	0.56	0.66	0.26	0.04	0.11	28.90	22.68	25.86	15.32	12.55	13.96	2.10	1.48	1.86	25	14
		Inner Part	6	0.82	0.27	0.61	0.99	0.39	0.68	0.30	0.05	0.14	25.32	14.16	21.58	15.06	6.46	10.76	3.54	1.50	2.14	45	21
		Innermost	0																				
	Topo-graphy and Water Depth	Flat Summit	0																				
		1,000- 1,500m	7	1.60	0.56	1.12	0.99	0.66	0.79	0.07	0.04	0.05	30.80	22.89	28.27	13.74	6.46	11.29	3.54	2.10	2.58	60	23
		1,500- 2,000m	8	1.43	0.27	0.91	0.86	0.39	0.66	0.20	0.04	0.11	27.51	14.16	23.28	14.48	8.84	11.97	2.34	1.60	1.94	45	9
		2,000- 2,500m	10	1.02	0.68	0.88	0.88	0.57	0.71	0.21	0.06	0.11	27.98	21.98	25.66	14.61	10.78	13.38	2.04	1.75	1.92	70	20
		2,500- 3,000m	5	0.84	0.61	0.69	0.56	0.53	0.55	0.30	0.09	0.21	24.82	22.57	23.41	16.35	15.00	15.49	1.58	1.48	1.51	28	10
		3,000- 3,500m	0																				
		3,500- 4,000m	0																				
MS06	All Sample		31	1.28	0.20	0.76	0.74	0.33	0.56	0.21	0.04	0.10	27.72	12.48	23.64	17.88	7.78	14.56	2.41	1.25	1.64	80	19
	Crust Section	Bulk	17	1.28	0.55	0.83	0.72	0.38	0.57	0.17	0.04	0.09	27.72	19.82	24.16	17.37	13.17	14.79	2.10	1.27	1.64	80	20
		Outer Part	6	0.98	0.67	0.81	0.74	0.35	0.54	0.11	0.05	0.08	26.16	21.09	24.35	17.88	13.92	15.57	1.87	1.25	1.58	35	19
		Inner Part	6	0.79	0.56	0.67	0.65	0.45	0.56	0.21	0.07	0.15	26.02	22.17	24.16	16.45	13.10	14.89	1.83	1.34	1.63	30	16
		Innermost	2	0.40	0.20	0.30	0.73	0.33	0.53	0.15	0.12	0.14	18.75	12.48	15.62	9.29	7.78	8.54	2.41	1.34	1.88	20	15
	Topo-graphy and Water Depth	Flat Summit	12	1.01	0.62	0.83	0.74	0.52	0.64	0.17	0.05	0.10	26.16	21.14	24.87	15.55	13.10	14.30	1.92	1.53	1.74	55	15
		1,000- 1,500m	4	0.70	0.20	0.50	0.54	0.33	0.45	0.14	0.07	0.11	22.77	12.48	19.04	16.55	9.29	13.75	1.50	1.27	1.38	70	60
		1,500- 2,000m	5	1.28	0.40	0.80	0.73	0.60	0.65	0.15	0.08	0.11	27.72	18.75	24.52	14.87	7.78	12.75	2.41	1.74	1.97	80	40
		2,000- 2,500m	7	1.07	0.69	0.82	0.55	0.41	0.50	0.20	0.04	0.10	25.34	19.84	24.14	16.88	14.19	15.61	1.72	1.39	1.54	45	7
		2,500- 3,000m	3	0.67	0.60	0.64	0.45	0.35	0.40	0.21	0.09	0.15	22.46	22.14	22.32	17.88	16.45	17.17	1.34	1.25	1.30	50	45
		3,000- 3,500m	0																				
		3,500- 4,000m	0																				

Appendix Table 5(4) Summary results of chemical analysis for five major elements

Sea-mount	Classification		No. of Data	Co (wt %)			Ni (wt %)			Cu (wt %)			Mn (wt %)			Fe (wt %)			Mn/Fe			Thickness	
				Max.	Min.	Mean	Max.	Min.	Mean	Max.	Min.	Mean	Max.	Min.	Mean	Max.	Min.	Mean	Max.	Min.	Mean	Max.	Mean
MS07	All Sample		17	1.13	0.39	0.83	0.71	0.38	0.61	0.21	0.06	0.13	27.91	17.26	24.78	15.43	12.38	14.40	2.04	1.39	1.72	56	17
	Crust Section	Bulk	8	1.00	0.58	0.84	0.70	0.50	0.63	0.17	0.06	0.12	27.04	19.97	24.96	15.09	13.53	14.35	1.99	1.41	1.74	56	21
		Outer Part	5	1.13	0.74	0.94	0.69	0.52	0.60	0.13	0.06	0.11	27.91	24.05	25.39	15.43	13.66	14.89	2.04	1.57	1.71	20	11
		Inner Part	3	0.94	0.67	0.80	0.71	0.61	0.65	0.21	0.12	0.17	26.75	24.46	25.78	15.16	13.38	14.40	1.99	1.61	1.79	28	20
		Innermost	1	0.39	0.39	0.39	0.38	0.38	0.38	0.13	0.13	0.13	17.26	17.26	17.26	12.38	12.38	12.38	1.39	1.39	1.39	15	15
	Topo-graphy and Water Depth	Flat Summit	0																				
		1,000-1,500m	0																				
		1,500-2,000m	0																				
		2,000-2,500m	17	1.13	0.39	0.83	0.71	0.38	0.61	0.21	0.06	0.13	27.91	17.26	24.78	15.43	12.38	14.40	2.04	1.39	1.72	20	9
		2,500-3,000m	0																				
		3,000-3,500m	0																				
		3,500-4,000m	0																				
MS08	All Sample		52	1.08	0.39	0.70	0.80	0.36	0.55	0.28	0.03	0.10	26.10	14.82	22.67	17.05	7.20	13.96	2.07	1.27	1.65	90	21
	Crust Section	Bulk	29	1.08	0.42	0.74	0.80	0.36	0.55	0.28	0.03	0.10	26.03	18.05	22.95	17.05	10.27	14.56	1.99	1.27	1.59	90	21
		Outer Part	11	0.99	0.65	0.81	0.58	0.51	0.55	0.13	0.04	0.08	26.07	23.09	24.41	15.76	14.61	15.07	1.76	1.48	1.62	35	17
		Inner Part	9	0.75	0.39	0.55	0.70	0.49	0.61	0.15	0.06	0.12	26.10	18.02	21.70	15.98	9.31	12.61	1.93	1.42	1.74	40	26
		Innermost	3	0.43	0.41	0.42	0.48	0.42	0.45	0.11	0.09	0.10	18.25	14.82	16.49	9.12	7.20	8.07	2.07	2.00	2.04	25	22
	Topo-graphy and Water Depth	Flat Summit	38	0.99	0.39	0.66	0.80	0.42	0.58	0.16	0.04	0.10	26.10	14.82	22.47	15.97	7.20	13.26	2.07	1.40	1.72	90	30
		1,000-1,500m	0																				
		1,500-2,000m	8	0.98	0.54	0.79	0.60	0.36	0.48	0.15	0.03	0.08	24.11	21.16	22.91	16.62	15.13	15.89	1.56	1.27	1.44	55	13
		2,000-2,500m	2	0.82	0.72	0.77	0.51	0.43	0.47	0.16	0.03	0.10	24.06	22.71	23.39	16.54	15.71	16.13	1.45	1.44	1.45	6	3
		2,500-3,000m	2	1.08	0.92	1.00	0.56	0.45	0.51	0.08	0.05	0.07	25.77	23.44	24.61	16.08	14.09	15.09	1.82	1.45	1.64	10	4
		3,000-3,500m	1	0.67	0.67	0.67	0.51	0.51	0.51	0.28	0.28	0.28	23.15	23.15	23.15	15.54	15.54	15.54	1.48	1.48	1.48	10	3
		3,500-4,000m	1	0.77	0.77	0.77	0.36	0.36	0.36	0.07	0.07	0.07	22.90	22.90	22.9	17.05	17.05	17.05	1.34	1.34	1.34	2	1

Appendix Table 5 (5) Summary results of chemical analysis for five major elements

Sea-mount	Classification		No. of Data	Co (wt %)			Ni (wt %)			Cu (wt %)			Mn (wt %)			Fe (wt %)			Mn/Fe			Thickness	
				Max.	Min.	Mean	Max.	Min.	Mean	Max.	Min.	Mean	Max.	Min.	Mean	Max.	Min.	Mean	Max.	Min.	Mean	Max.	Mean
MS09	All Sample		33	1.01	0.31	0.71	1.21	0.37	0.66	0.85	0.03	0.12	25.93	16.96	23.11	17.49	5.69	13.30	3.15	1.28	1.85	65	22
	Crust Section	Bulk	20	0.93	0.31	0.70	1.11	0.37	0.68	0.85	0.03	0.14	25.93	18.06	23.28	17.49	8.23	13.40	2.56	1.28	1.81	65	22
		Outer Part	6	1.01	0.70	0.86	0.53	0.43	0.49	0.07	0.03	0.05	25.51	21.54	23.68	16.14	14.96	15.43	1.67	1.33	1.53	30	15
		Inner Part	6	0.71	0.42	0.62	1.21	0.51	0.74	0.23	0.07	0.13	24.04	16.96	22.22	15.68	5.69	11.93	2.98	1.44	2.07	60	25
		Innermost	1	0.50	0.50	0.50	0.92	0.92	0.92	0.07	0.07	0.07	21.48	21.48	21.48	6.80	6.80	6.80	3.15	3.15	3.15	40	35
	Topo-graphy and Water Depth	Flat Summit	16	1.01	0.50	0.72	1.00	0.49	0.72	0.16	0.03	0.09	25.93	21.48	24.18	15.68	6.80	12.35	3.15	1.43	2.06	65	27
		1,000-1,500m	0																				
		1,500-2,000m	10	0.93	0.42	0.73	1.21	0.37	0.62	0.23	0.03	0.11	24.40	16.96	21.92	17.49	5.69	13.87	2.98	1.28	1.71	65	22
		2,000-2,500m	6	0.88	0.65	0.72	0.57	0.46	0.50	0.18	0.06	0.11	24.50	21.60	23.08	16.34	15.06	15.63	1.54	1.35	1.47	40	18
		2,500-3,000m	0																				
		3,000-3,500m	0																				
		4,000-4,500m	1	0.31	0.31	0.31	1.11	1.11	1.11	0.85	0.85	0.85	18.06	18.06	18.06	8.95	8.95	8.95	2.01	2.01	2.01	10	1
Total	All Sample		310	1.60	0.20	0.73	1.31	0.25	0.58	0.85	0.03	0.11	30.80	10.20	23.08	18.51	5.69	13.89	3.54	1.00	1.72	105	21
	Crust Section	Bulk	171	1.60	0.27	0.78	1.31	0.33	0.59	0.85	0.03	0.11	30.80	10.20	23.41	17.89	5.92	14.16	2.71	1.01	1.69	105	23
		Outer Part	67	1.21	0.43	0.83	0.89	0.33	0.55	0.26	0.03	0.08	28.90	20.85	24.35	18.51	8.78	15.24	2.38	1.17	1.61	55	16
		Inner Part	60	1.03	0.27	0.58	1.21	0.25	0.62	0.30	0.03	0.13	26.75	10.83	22.00	18.39	5.69	12.72	3.54	1.00	1.84	60	23
		Innermost	12	0.57	0.20	0.38	0.92	0.33	0.52	0.17	0.07	0.12	21.48	11.20	16.79	12.38	5.79	8.36	3.15	1.34	2.06	40	21
	Topo-graphy and Water Depth	Flat Summit	122	1.41	0.33	0.70	1.31	0.42	0.63	0.27	0.03	0.10	28.51	13.62	23.17	17.89	6.70	13.39	3.27	1.18	1.79	90	25
		1,000-1,500m	24	1.60	0.35	0.92	0.99	0.42	0.64	0.09	0.03	0.05	30.80	18.57	24.88	16.94	6.46	12.62	3.54	1.35	2.08	60	18
		1,500-2,000m	44	1.43	0.20	0.75	1.21	0.33	0.56	0.23	0.03	0.10	27.51	10.83	21.89	17.79	5.69	13.87	2.98	1.00	1.65	70	17
		2,000-2,500m	73	1.28	0.22	0.72	1.02	0.25	0.57	0.34	0.03	0.12	27.98	10.20	23.11	17.55	5.92	13.89	2.41	1.01	1.68	105	21
		2,500-3,000m	26	1.29	0.35	0.78	0.59	0.28	0.49	0.30	0.04	0.13	25.88	14.62	23.44	16.99	11.84	15.38	1.92	1.23	1.52	70	17
		3,000-3,500m	19	0.98	0.33	0.69	0.62	0.32	0.42	0.28	0.08	0.15	25.02	21.34	22.73	18.51	13.78	16.85	1.81	1.19	1.35	50	17
		3,500-4,000m	1	0.77	0.77	0.77	0.36	0.36	0.36	0.07	0.07	0.07	22.90	22.90	22.90	17.05	17.05	17.05	1.34	1.34	1.34	2	1
		4,000-4,500m	1	0.31	0.31	0.31	1.11	1.11	1.11	0.85	0.85	0.85	18.06	18.06	18.06	8.95	8.95	8.95	2.01	2.01	2.01	10	1

Appendix Table 6(1) Sample list of analysis and observations

Seamount	Sampling point No.	Sample	Manganese crusts					Rocks						Sediments
			CM	P	X	B	IS	CA	T	X	K	IS	F	F
MS01	96SMS01LC01	Sediments												F1
		Sediments												F2
		Sediments												F3
		Sediments												F4
	96SMS01LC02	Sediments												F1
		Sediments												F2
	96SMS01AD07	Rock						CA1	T1					
	96SMS01AD08	Mn crust	CM1,2	P1	X1									
	96SMS01AD09	Rock							T1					
		Rock							T2					
	96SMS01AD10	Mn crust	CM1	P1	X1									
	96SMS01AD11	Rock							T1					
		Mn crust				B1	IS1							
		Mn crust				B2	IS2							
	96SMS01AD12	Mn crust	CM3	P1	X1									
MS02	96SMS02AD07	Mn crust		P1	X1		IS1							
		Mn crust		P2	X2		IS2							
		Rock											F1	
	96SMS02AD08	Rock								X1				
		Rock							T1		K1	IS1		
		Rock							T2					
	96SMS02AD13	Mn crust		P1	X1									
		Rock											F1	
	96SMS02AD14	Rock							T1					
		Rock							T2					
		Rock								X1				
	96SMS02AD16	Rock						CA1						
	96SMS02AD18	Rock							T1					
MS03	96SMS03LC02	Sediments												F1
	96SMS03LC03	Sediments												F1
	96SMS03AD09	Mn crust	CM2	P1	X1									
		Mn crust	CM3	P2	X2									
		Rock							T1					
	96SMS03AD10	Rock						CA1	T1					

Appendix Table 6(2) Sample list of analysis and observations

Seamount	Sampling point No.	Sample	Manganese crusts					Rocks						Sediments
			CM	P	X	B	IS	CA	T	X	K	IS	F	F
MS04	96SMS04AD04	Mn crust	CM1		X1		IS1							
		Mn crust	CM2		X2		IS2							
		Rock							T1	X3				
	96SMS04AD06	Rock						CA1	T1					
	96SMS04AD09	Rock						CA1	T1		K1	IS1		
		Rock							T2	X1				
	96SMS04LC10	Sediments												F1
	96SMS04AD11	Rock							T1					
		Rock							T2					
		Rock							T3					
	96SMS04AD12	Mn crust	CM3	P1	X1									
	96SMS04AD14	Rock							T1					
		Rock							T2					
	96SMS04AD15	Rock							T1					
		Rock											F1	
MS05	96SMS05LC02	Sediments												F1
	96SMS05AD06	Mn crust	CM1	P1	X1	B1								
		Mn crust				B2								
		Mn crust				B3								
		Rock						CA1	T1		K1	IS1		
		Rock							T2					
	96SMS05AD11	Mn crust	CM1				IS1							
		Mn crust	CM2				IS2							
	96SMS05AD13	Rock							T1	X1				
		Rock								X2				
MS06	96SMS06AD01	Rock							T1					
	96SMS06AD02	Mn crust	CM1	P1	X1		IS1							
		Mn crust	CM2			B2								
		Mn crust	CM3	P2	X2	B3								
	96SMS06LC05	Sediments												F1
		Rock							T1	X1			F2	
	96SMS06FD01	Mn crust	CM1				IS1							
		Mn crust	CM3				IS2							

Appendix Table 6(3) Sample list of analysis and observations

Seamount	Sampling point No.	Sample	Manganese crusts					Rocks						Sediments
			CM	P	X	B	IS	CA	T	X	K	IS	F	F
	96SMS06AD09	Rock						CA1	T1	X1	K1	IS1		
		Rock							T2	X2				
MS06	96SMS06AD12	Mn crust	CM1	P1	X1									
	96SMS06AD13	Rock						CA1						
MS07	96SMS07AD01	Mn crust	CM1	P1	X1									
		Rock							T1	X2				
	96SMS07AD02	Rock							T1	X1				
		Mn crust	CM1			B1								
		Mn crust	CM3			B2								
	96SMS07AD03	Rock							T1	X1				
MS08	96SMS08AD04	Rock						CA1	T1	X1	K1	IS1		
		Rock							T2	X2				
		Rock							T3	X3				
	96SMS08AD05	Rock							T1	X1				
	96SMS08AD08	Rock							T1	X1				
	96SMS08AD12	Rock							T1	X1				
		Rock							T2	X2				
		Mn crust				B1								
		Mn crust				B2								
		Mn crust					IS1							
		Mn crust		P1	X3		IS2							
		Mn crust		P2	X4		IS3							
	96SMS08AD13	Rock							T1	X1				
	96SMS08AD15	Rock						CA1	T1	X1	K1	IS1		
MS09	96SMS09AD08	Mn crust	CM1	P1	X1									
		Rock							T1	X2				
	96SMS09AD09	Rock						CA1	T1	X1	K1	IS1		
		Rock											F1	
	96SMS09AD11	Mn crust	CM1	P1	X1	B1	IS1							
		Mn crust	CM4	P2	X2	B2	IS2							
		Rock						CA1	T1	X3	K1	IS1		

Legend CM : Chemical analysis, P : Polish observation, X : X-ray diffraction analysis, B : Be analysis, IS : Lead isotope analysis,
CA : Chemical analysis, T : Thin section observation, K : K-Ar dating, F : Fossil observation

Appendix Table 7 Sea-Water sound velocity for MBES

LC 01 (MS01)		LC 01 (MS05)		LC 01 (MS09)	
Lat. 14° 23.927 N		Lat. 11° 10.662 N		Lat. 16° 18.013 N	
Long. 160° 50.115 E		Long. 171° 01.066 E		Long. 167° 13.004 E	
Water depth (m)	Sound verocity (ms^{-1})	Water depth (m)	Sound verocity (ms^{-1})	Water depth (m)	Sound verocity (ms^{-1})
10	1,543.8	10	1,542.2	10	1,545.5
20	1,543.9	20	1,542.9	20	1,544.9
50	1,543.0	50	1,542.8	50	1,545.2
70	1,541.4	70	1,541.3	70	1,542.1
150	1,532.2	150	1,527.4	150	1,533.2
200	1,519.7	200	1,511.0	200	1,524.9
300	1,502.4	300	1,496.2	300	1,508.3
400	1,492.3	400	1,493.6	400	1,495.3
500	1,484.6	500	1,490.0	500	1,487.3
700	1,483.0	700	1,488.6	700	1,483.0
1,000	1,483.7	1,000	1,485.9	1,000	1,482.9
1,300	1,484.5	1,300	1,486.3	1,300	1,483.9
1,500	1,486.0	1,500	1,487.2	1,500	1,485.2
1,800	1,489.0	1,800	1,489.4	1,800	1,488.4
2,000	1,491.4	2,000	1,491.6	2,000	1,490.8
2,500	1,498.5	2,500	1,498.6	2,500	1,497.9
3,000	1,506.3	3,000	1,506.4	3,000	1,505.9
3,500	1,514.5	3,500	1,514.5	3,500	1,514.3
4,000	1,523.0	4,000	1,522.9	4,000	1,522.9
4,211	1,526.8	4,561	1,532.7	4,206	1,526.5
Av.	1,500.8	Av.	1,492.5	Av.	1,500.8

Appendix Table 8 Weather and sea-state data

Monthly frequency distribution of wind direction in 1996

W. D / Month	CALM	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Not Clear	Total
Augast	0	0	0	10	153	306	101	37	23	4	1	0	0	0	0	0	0	2	637
%	0.00	0.00	0.00	1.57	24	48	15.9	5.81	3.61	0.63	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.31	100.00
September	4	24	18	23	85	239	85	23	23	15	7	7	3	37	34	22	12	23	684
%	0.58	3.51	2.63	3.36	12.4	34.9	12.4	3.36	3.36	2.19	1.02	1.02	0.44	5.26	4.97	3.22	1.75	3.36	100.00

Monthly frequency distribution of wind velocity in 1996

(W. V: m/sec)

W. V / Month	CALM	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	Not Clear	Total
Augast	0	0	6	26	38	76	101	124	122	67	40	16	3	1	0	0	0	0	2	637
%	0.00	0.00	0.94	4.08	5.97	11.9	15.9	19.5	19.15	10.52	6.28	2.51	0.47	0.16	0.00	0.00	0.00	0.00	0.31	100.00
September	4	0	24	105	108	80	80	65	39	21	3	0	0	0	0	0	0	0	23	684
%	0.6	0	3.5	15.4	15.8	11.70	11.70	9.50	5.70	3.07	0.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.36	100.00

Monthly frequency distribution of weather in 1996

Weather / Month	Fine	Cloudy	Rain	Not Clear	Total	Light rain
Augast	18	7	2	0	27	11
%	66.67	25.93	7.41	0.00	100.00	40.74
September	26	2	0	1	29	7
%	89.66	6.90	0.00	3.45	100.00	24.14

Monthly frequency distribution of atomospheric pressure (daily average) in 1996

(AP: hpa)

A. P / Month	1005.0 ~ 1005.9	1006.0 ~ 1006.9	1007.0 ~ 1007.9	1008.0 ~ 1008.9	1009.0 ~ 1009.9	1010.0 ~ 1010.9	1011.0 ~ 1011.9	1012.0 ~ 1012.9	1013.0 ~ 1013.9	1014.0 ~ 1014.9	1015.0 ~ 1015.9	1016.0 ~ 1016.9	1017.0 ~ 1017.9	1018.0 ~ 1018.9	1019.0 ~ 1019.9	1020.0 ~ 1020.9	Not Clear	Total
Augast	0	1	10	55	135	195	155	69	14	3	0	0	0	0	0	0	0	637
%	0.00	0.16	1.57	8.63	21.19	30.61	24.33	10.83	2.20	0.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00
September	3	2	16	48	93	182	198	108	32	2	0	0	0	0	0	0	0	684
%	0.44	0.29	2.34	7.02	13.60	26.61	28.95	15.79	4.68	0.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00

Monthly frequency distribution of swell direction in 1996

S. D / Month	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Not Clear	Total
Augast	0	0	0	85	222	37	4	0	0	0	0	0	0	0	0	0	289	637
%	0.00	0.00	0.00	13.3	34.9	5.81	0.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	45.37	100.00
September	7	14	17	44	199	49	2	0	1	0	0	12	2	0	6	15	316	684
%	1.02	2.05	2.49	6.43	29.1	7.16	0.29	0.00	0.15	0.00	0.00	1.75	0.29	0.00	0.88	2.19	46.20	100.00

Monthly frequency distribution of swell cycle in 1996

(W. V: m/sec)

S. C / Month	4	5	6	7	8	9	10	11	12	13	14	15	Not Clear	Total
Augast	0	17	142	157	32	0	0	0	0	0	0	0	289	637
%	0.00	2.67	22.3	24.7	5.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	45.37	100.00
September	0	19	103	103	108	34	1	0	0	0	0	0	316	684
%	0.00	2.78	15.06	15.06	15.79	4.97	0.15	0.00	0.00	0.00	0.00	0.00	46.20	100.00

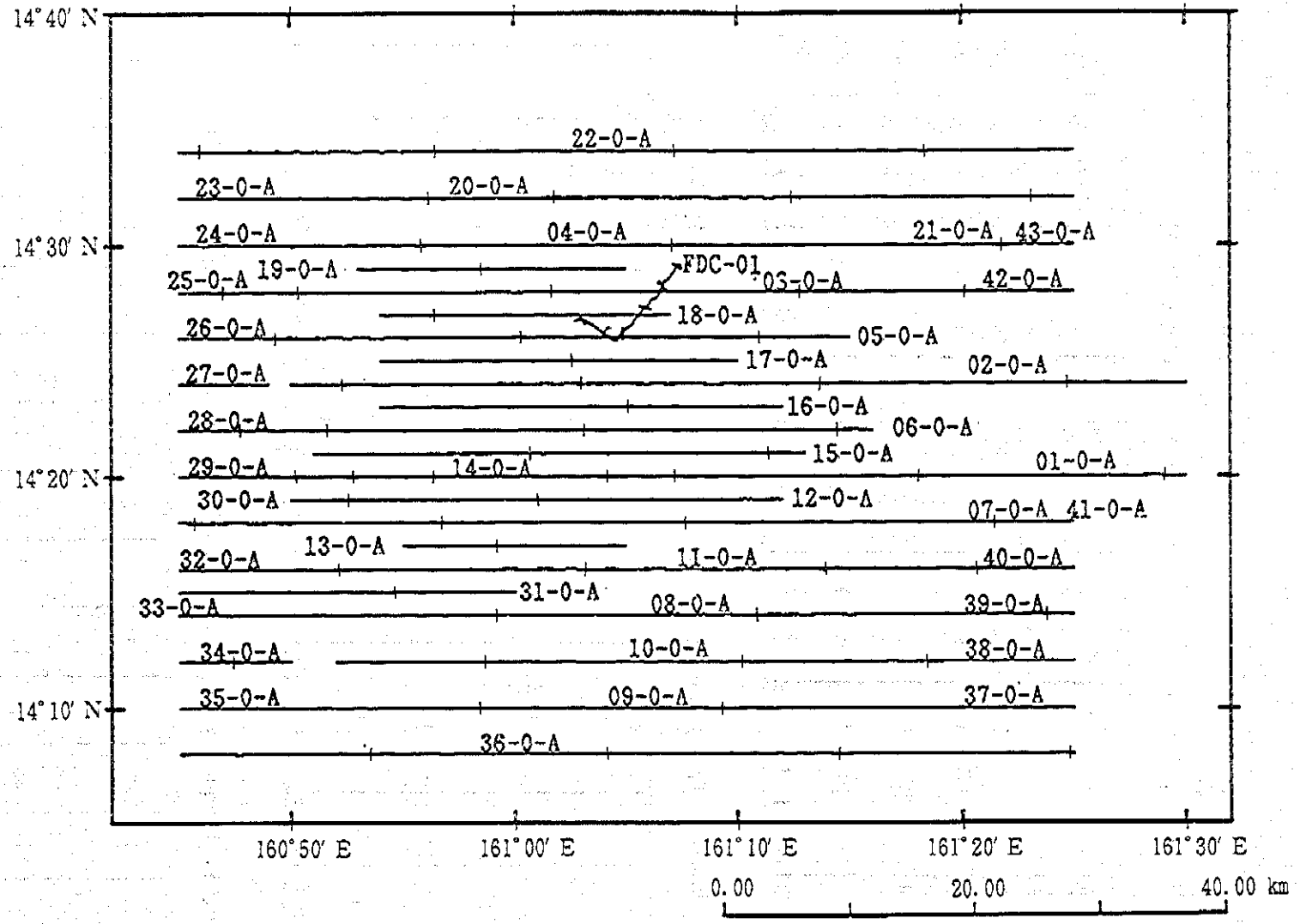
Monthly frequency distribution of swell height in 1996

(S. H:m)

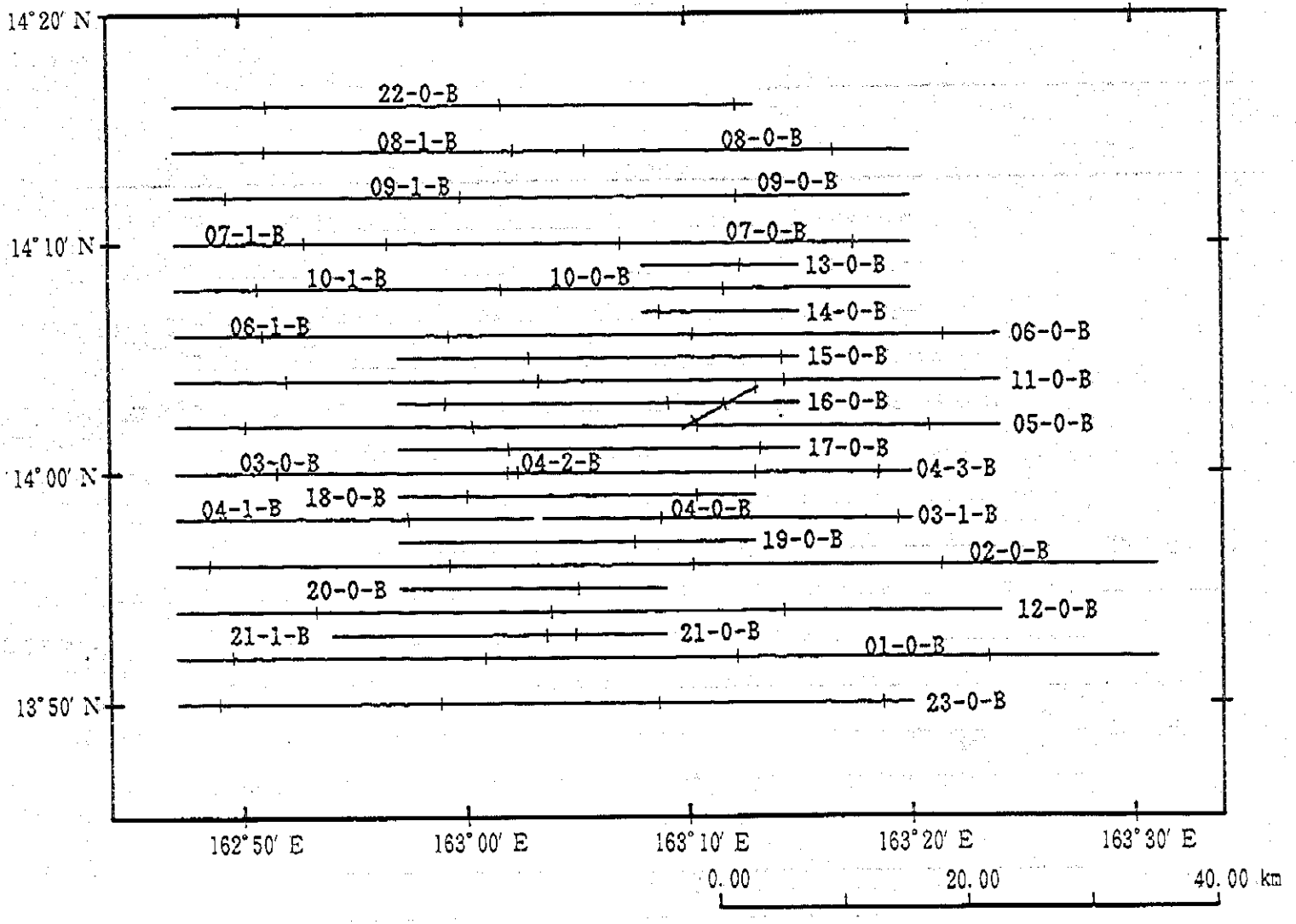
S. H / Month	1	2	3	4	5	6	7	8	9	10	Not Clear	Total
Augast	40	196	100	12	0	0	0	0	0	0	289	637
%	6.28	30.78	15.70	1.88	0.00	0.00	0.00	0.00	0.00	0.00	45.37	100.00
September	272	94	2	0	0	0	0	0	0	0	316	684
%	39.77	13.74	0.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	46.20	100.00

Monthly frequency distribution of degree of cloudiness in 1996

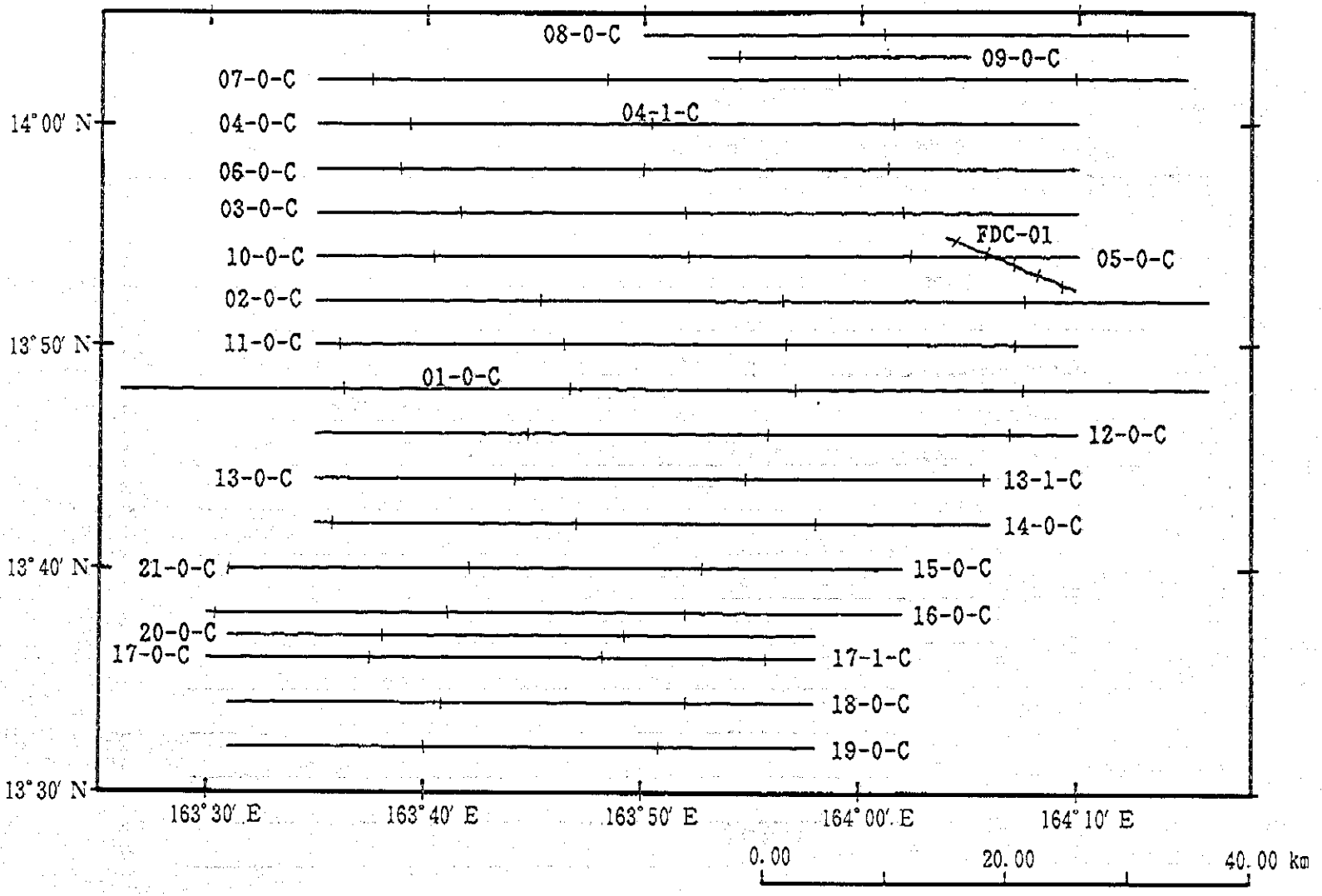
D. C / Month	0	1	2	3	4	5	6	7	8	9	10	Not Clear	Total
Augast	0	1	38	130	107	134	102	75	50	0	0	0	637
%	0.00	0.16	5.97	20.41	16.80	21.04	16.01	11.77	7.85	0.00	0.00	0.00	100.00
September	0	2	48	264	147	107	71	36	9	0	0	0	684
%	0.00	0.29	7.02	38.60	21.49	15.64	10.38	5.26	1.32	0.00	0.00	0.00	100.00



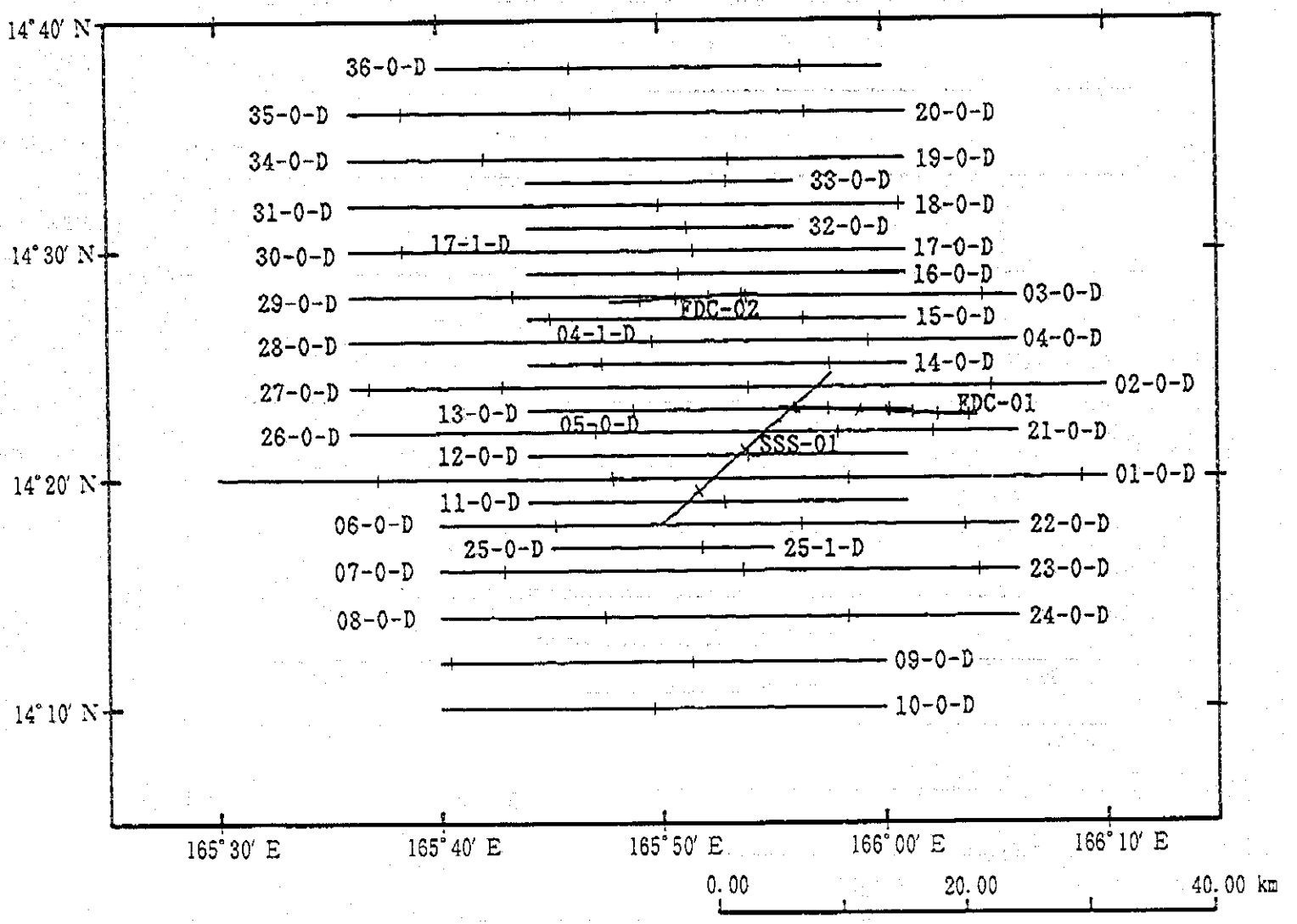
Appendix Fig. 1 (1) Location map of track line of seamount MS01



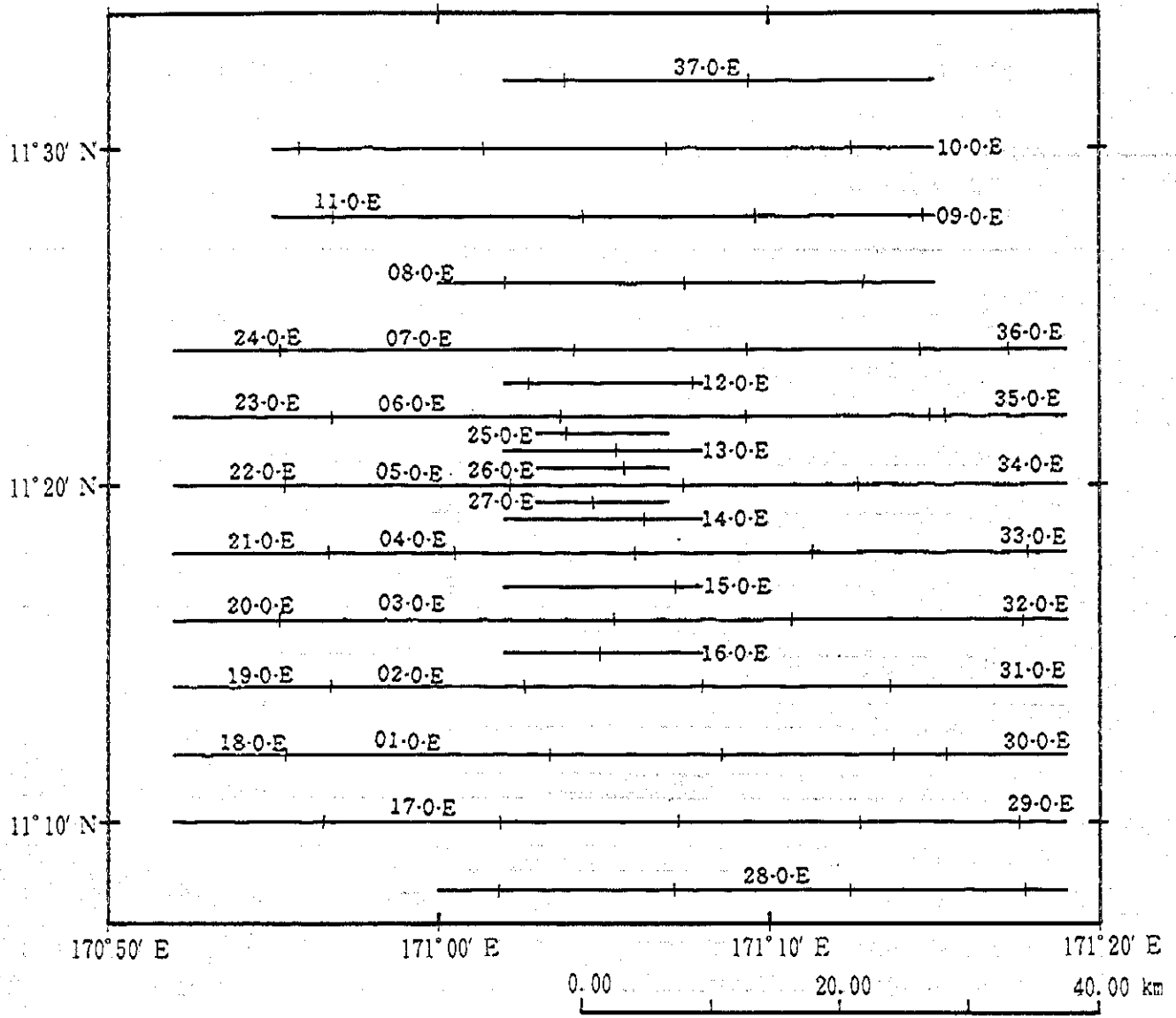
Appendix Fig. 1 (2) Location map of track line of seamount MS02



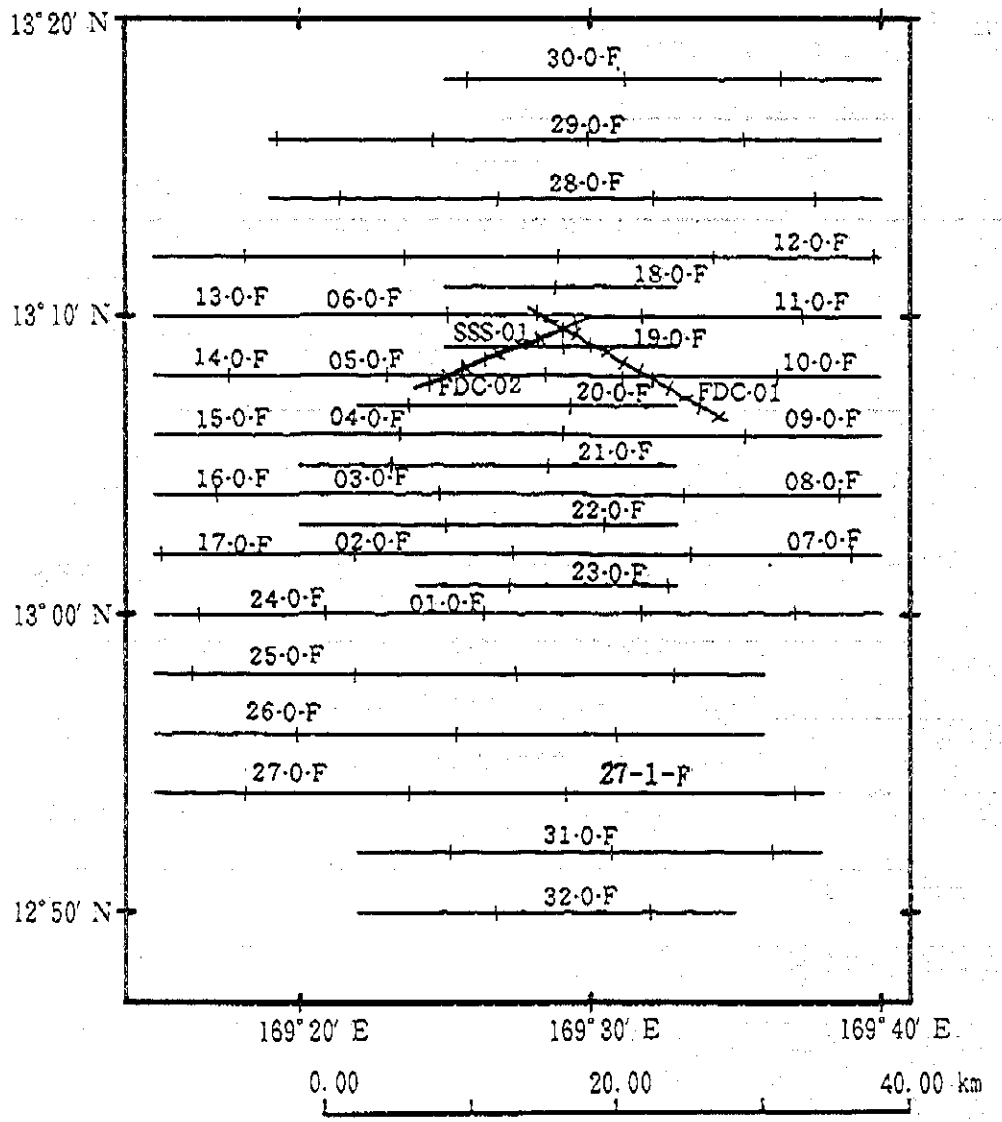
Appendix Fig. 1 (3) Location map of track line of seamount MS03



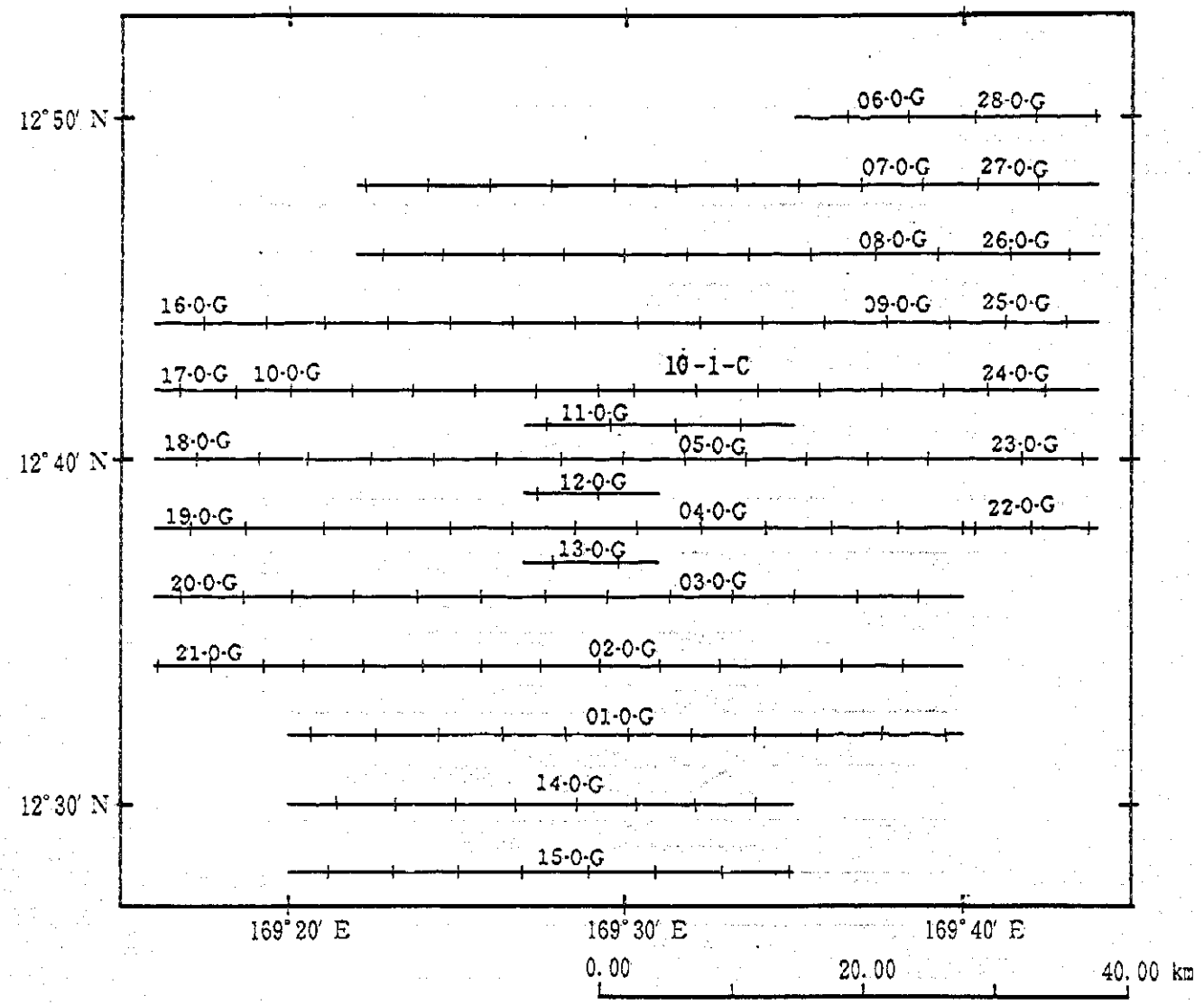
Appendix Fig. 1 (4) Location map of track line of seamount MS04



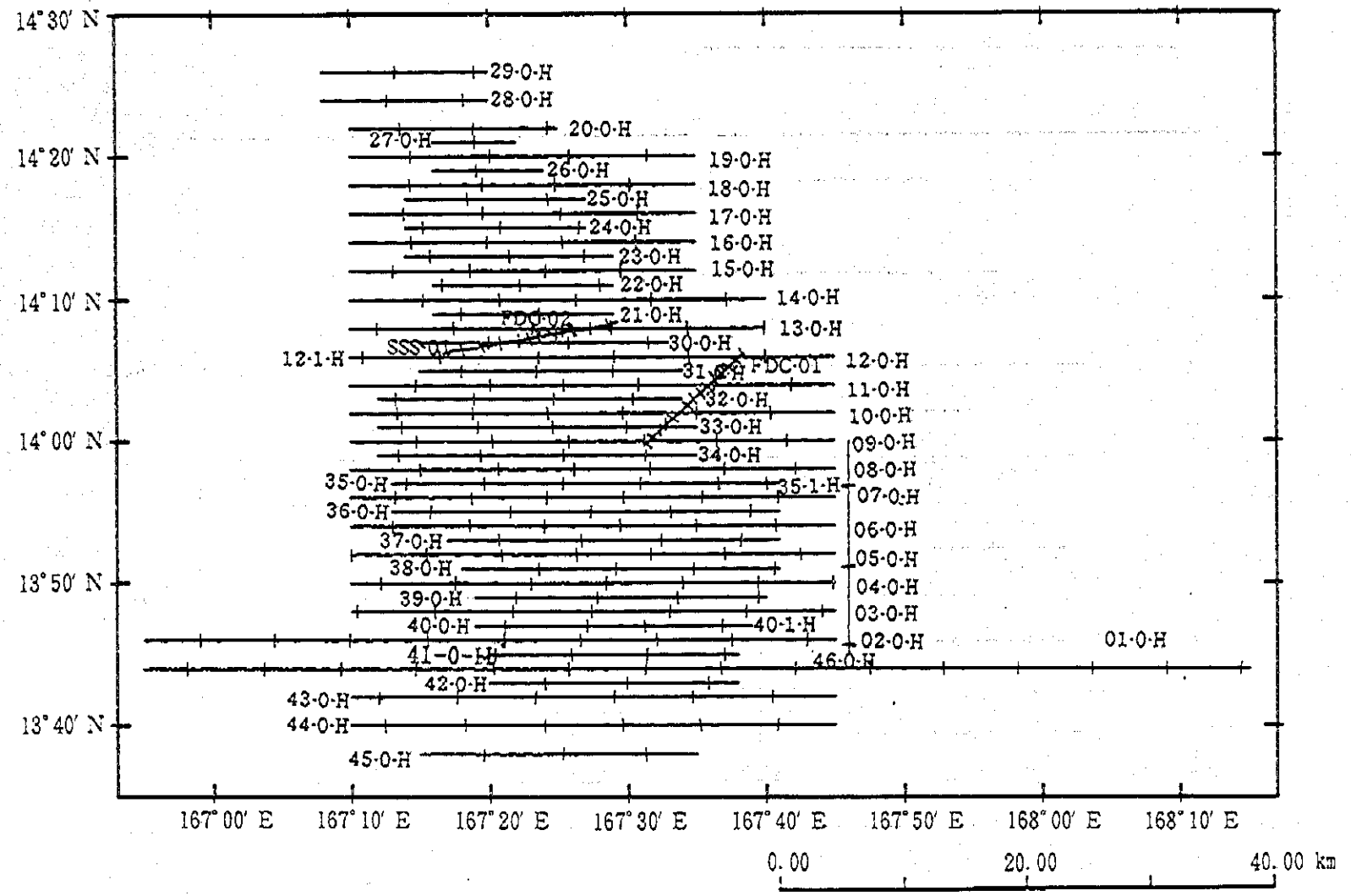
Appendix Fig. 1 (5) Location map of track line of seamount MS05



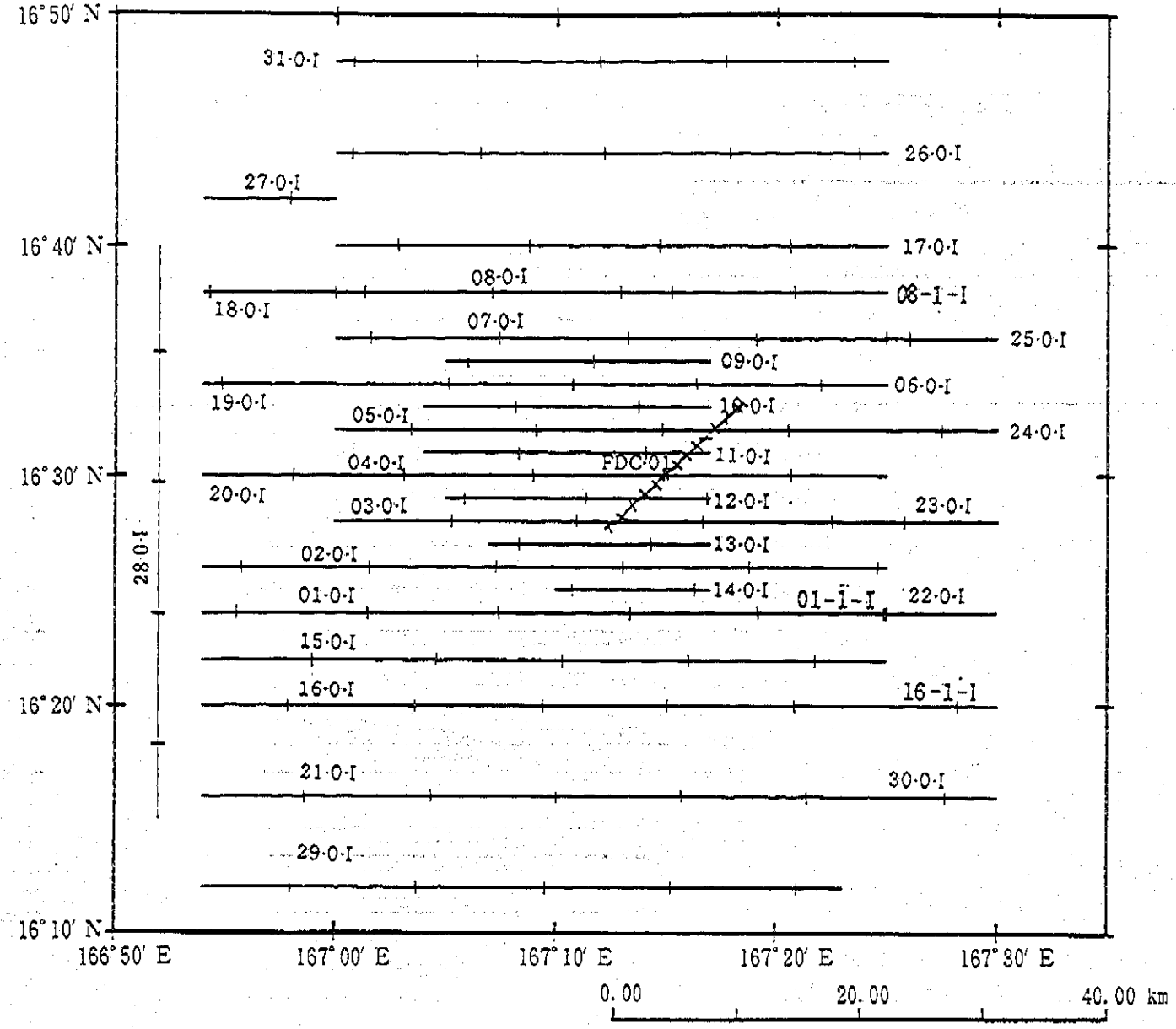
Appendix Fig. 1 (6) Location map of track line of seamount MS06



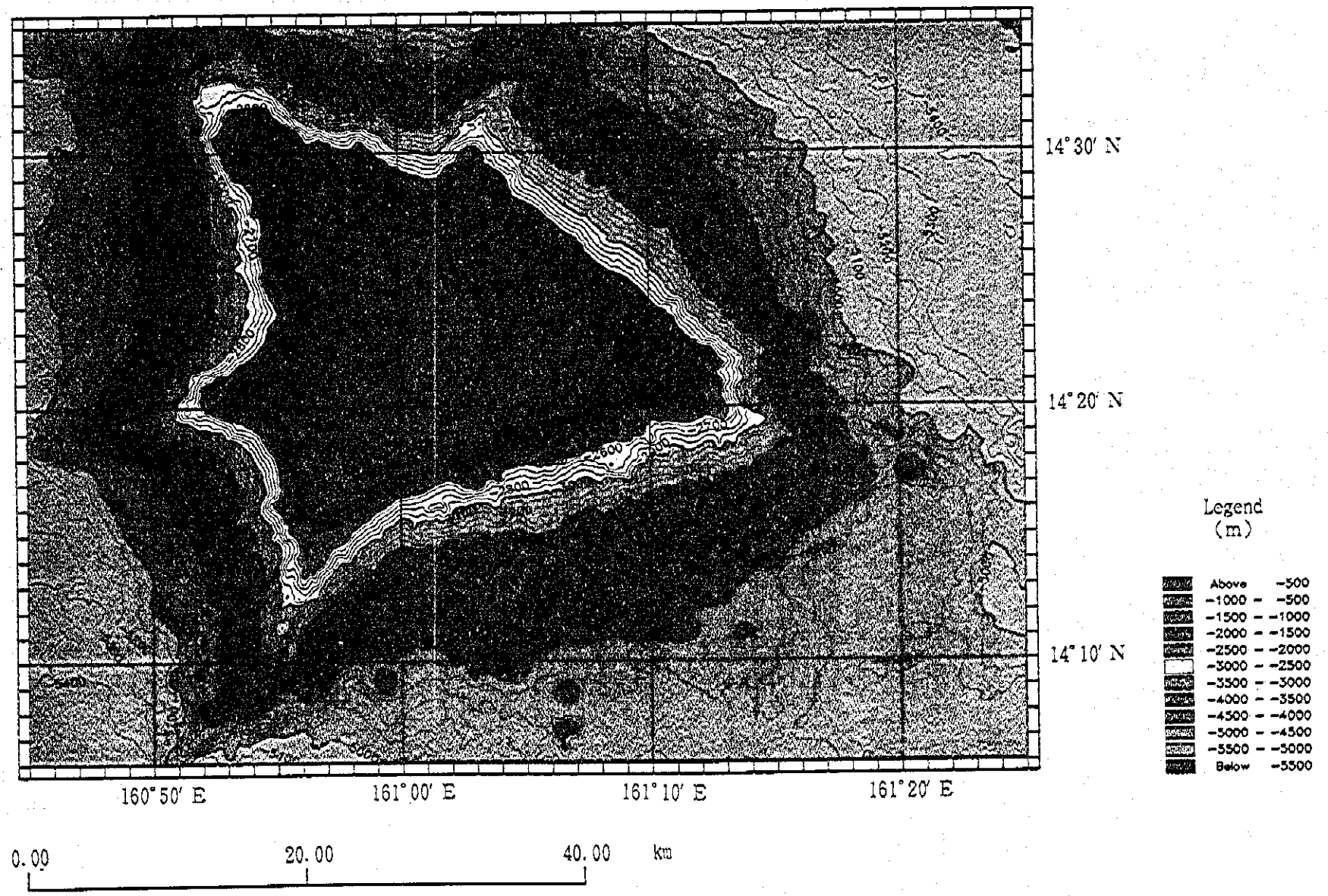
Appendix Fig. 1 (7) Location map of track line of seamount MS07



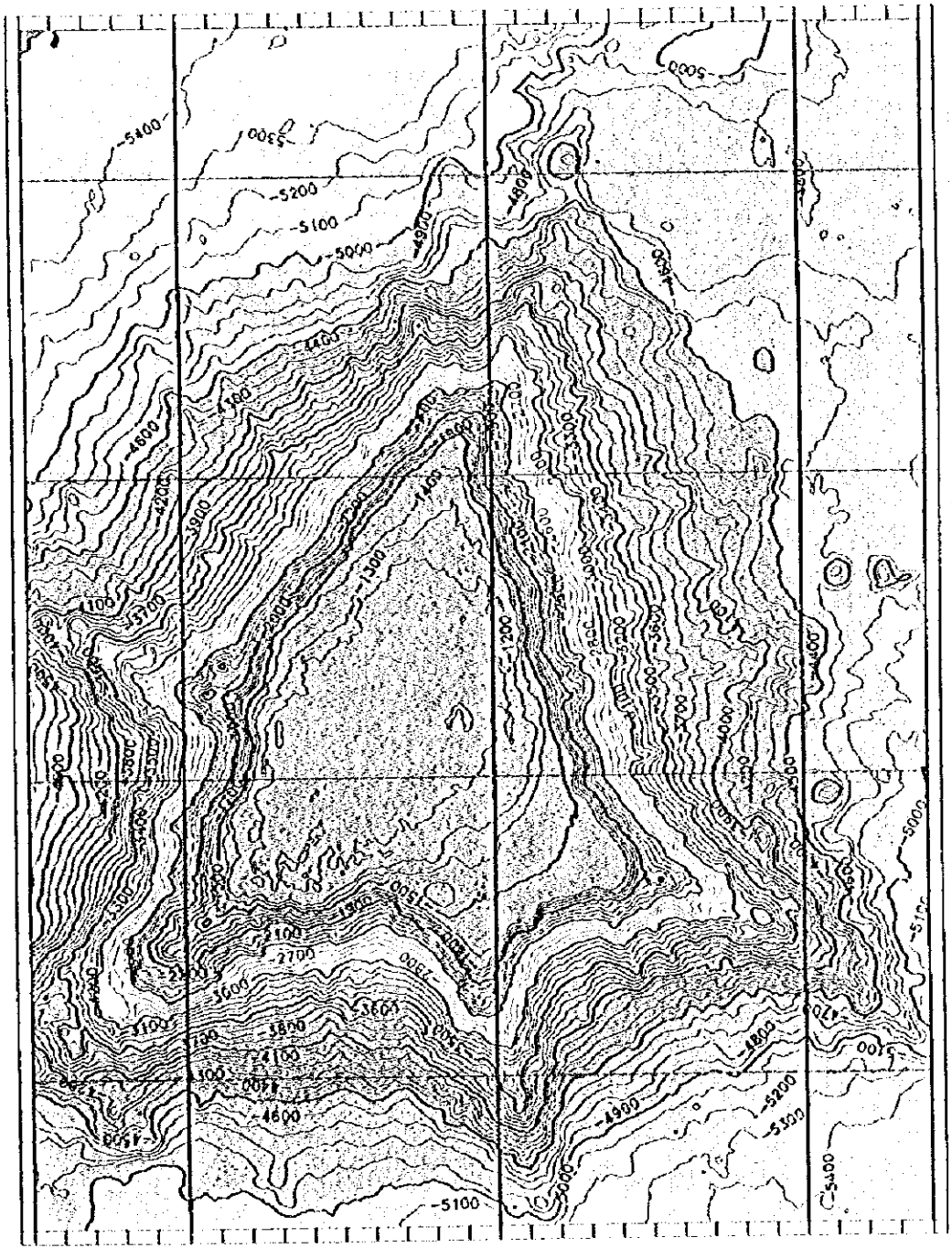
Appendix Fig. 1 (8) Location map of track line of seamount MS08



Appendix Fig. 1 (9) Location map of track line of seamount MS09



Appendix Fig. 2 (1) Color-coded bathymetric map based on MBES of seamount MS01. MBES data are gridded at an about 200m spacing. Contour interval is 100m, color interval is 500m.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