LMG00-04 ANTARCTIC PENINSULA
SEDIMENT TRAP DEPLOYMENT AND WATER CHEMISTRY CRUISE
R/V L.M. GOULD (APRIL 26, 1999 to MAY 12, 2000)

by

David A. Mucciarone

S-072 Cruise Participant: Robert B. Dunbar, David A. Mucciarone, and Lauren A. Rogers all from Stanford University

Travel Logistics:

Departed San Francisco (SFO) at 1325 on 4/21/00 on UA Flt#:985 and arrived in Miami (MIA) at 2246. Departed MIA on UA Flt#:997 at 2330 and arrived in Santiago (SCL) at 0750 on 4/22/00. Departed SCL on LA Flt#:89 at 1305 on 4/22/00 and arrived in Punta Arenas (PUQ), Chile at 1730 on 4/22/00. We met with AGUNSA for clothing issue on 4/23/00 at 1000.

We boarded the LMG at 1400 on 4/24/00. A majority of the day was spent verifying cargo and supplies, staging and setting up equipment, and meetings. We were delayed one day for cargo, some of our supplies did not arrive until 1730 on 4/26/00. We also had to wait for a cargo shipment for Palmer Station, however, this cargo was loaded before ours arrive resulting in a 3 hour longer delay. At 1800 on 4/26/00 the LMG departed the dock in Punta Arenas for the Antarctic Peninsula. The transit from Punta Arenas to Palmer Station took approximately 4 ½ days arriving at 0800 on 5/1/00. Preliminary cargo operations were completed by the evening of 5/1/00 with departure from Palmer Station at 0800 on 5/2/00 to begin mooring and CTD operations. We had the additional assistance from Mark Pomeroy, Mo Hodgins, and Brett Pickering (all three from Raytheon Polar Services), and Jeffrey Lord (from WHOI/Raytheon). We completed mooring and CTD operations on 5/5/00 and arrived at Palmer Station at 1230 on 5/5/00 to complete cargo operations. We departed Palmer Station at 2000 on 5/6/00 for our return transit to Punta Arenas.

We arrived in Punta Arenas at 1500 on 5/10/00. We departed PUQ at 1355 on 5/13/00 on UC Flt#:280 and arrived in SCL at 1805. Departed SCL on UA Flt#:996 at 2005 and arrived in MIA at 0440 on 5/14/00. Departed MIA on UA Flt#:984 at 0715 and arrived in SFO at 1016 on 5/14/00.

Summary of Field Operations:

Chief Scientist and PI for cruise LMG00-04 was Robert Dunbar. The cruise began on 4/26/00 at 1800 from Punta Arenas. Cruise LMG00-04 lasted 14 days, consisted of 13 hydrocast stations, 139 underway filters, and one mooring recover and redeployment. The cruise on the L.M. Gould ended in Punta Arenas at 1500L on 5/10/00. Refer to Figure 1 for a map of the cruise track.

Cruise objectives included collecting and CTD and underway water for various analyses such as, POC, PON, nitrate $\delta^{15}N$, salinity (via Portasal to confirm the SBE conductivity sensor measurements). In addition water was collected for ^{10}Be for Staffanie at the University of Minnesota and PO_4 for Adina Payton at Stanford University. One mooring in the Palmer Deep was recovered, serviced, and deployed.

L.M. Gould 00-04 Cruise:

We recovered static mooring array in the Palmer Deep basin. This mooring was equipped with an ADCP with syntactic foam buoy, 3 current meters, 2 CT units, 2 sediment traps, and 2 acoustic releases. The mooring was serviced by R. Dunbar (instrument data down load and data quality, instrument programming, and assisted in recovery/deployment operations), J. Lord (serviced hardware, assisted in recovery/deployment operations), and D. Mucciarone (instrument data down load, instrument programming, serviced hardware, lead recovery/deployment

operations. Deck assistance for mooring operations was also provided Herb Baker (MPC), Trent Sanamo, and Joshua Spillane all from RPSC, and ECO crewmembers.

A total of 107 underway filters were collected for POC and PON, and 60 bottles for nitrate $\delta^{15}N$. Thirteen hydrocasts (Stations 1 - 13) were taken and sampled for POC, PON, nitrate $\delta^{15}N$, PO_4, ^{10}Be, and salinity. Andy Nunn (RPSC) was the CTD operator with L. Rogers, M. Pomeroy, M. Hodgins, B. Pickering, R. Dunbar, J. Lord, D. Mucciarone all participated in collecting and filtering sea water from either the CTD or underway system. XBT's were also collected during the southern transect for a group at SCRIPPS Institute with numerous participants launching probes and collecting profiles.

Mooring Operation:

Mooring Palmer Deep (Recovery and Deployment)

We recovered/deployed the *Palmer Deep* mooring at 1710 GMT on 5/2/00. 64º 51.689'S 64º 12.340'W, water depth 1040 m (Bathy2000) (Fig. 2). The mooring is equipped with two McLane 78G-13 sediment trap at the top and bottom, three Aanderaa RCM8 current meters, two SeaBird Electronics (SBE) SeaCat 16-04 CT units, two EdgeTech 8202 acoustic release, seven 3 pack Billings floats, and one RDI BBADCP in a 50" syntactic foam buoy. The mooring recovery went smoothly taking a total of 1 hour 50 minutes from locating to final recovery. Actual recovery of the mooring, once grappled, took 1 hour 6 minutes. It took approximately 2 ½ days to completely service the mooring. A lot of corrosion was found on the stainless steel hardware of the ADCP and SBE frames. In addition miscellaneous bit of stainless steel hardware were replaced on all instruments and mooring line due to corrosion. The deployment also went well with only one exception, we missed the drop point and need to drag the mooring array for approximately 45 minutes to the correct location (i.e., water depth). The release of the anchor was clean ending mooring operations at 1507 GMT on 5/5/00 located at 64º 51.81'S 64º 12.16'W.

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PALMER DEEP MOORING RECOVERY STATISTICS: (May 2, 2000 @ 1710 GMT)

Information on the mooring equipment deployed in the Palmer Deep basin. The mooring deployment was supervised by David Mucciarone (S-072) and performed on the L.M. Gould (Fig. 1 in mooring deployment section). Preparation of all equipment was a joint effort between David Mucciarone, Rob Dunbar, and Jeff Lord (WHOI). There were no problems preparing the mooring and individual instruments on this array for deployment. A detailed outline on the deployment is listed below.

We recovered/deployed the *Palmer Deep* mooring at 1710 GMT on 5/2/00. 64º 51.689'S 64º 12.340'W, water depth 1040 m (Bathy2000) (Fig. 2). The mooring is equipped with two McLane 78G-13 sediment trap at the top and bottom, three Aanderaa RCM8 current meters, two SeaBird Electronics (SBE) SeaCat 16-04 CT units, two EdgeTech 8202 acoustic release, seven 3 pack Billings floats, and one RDI BBADCP in a 50" syntactic foam buoy. The mooring recovery went smoothly taking a total of 1 hour 50 minutes from locating to final recovery. Actual recovery of the mooring, once grappled, took 1 hour 6 minutes.

Mooring location and release @	1310L/(1710Z 5/2/00)
RDI ADCP w/ Syntactic foam float on deck @	1354
Top McLane 78G-13 sediment trap on deck @	1404
Top Aanderaa RCM8 current meter w/ P and Tº sensors on @	1410
Top SBE 16-04 CT unit on deck @	1410
Middle Aanderaa RCM8 current meter w/ P and Tº sensors on @	1425
Middle float package, 7-3 pack Billings floats on at @	1435
Bottom McLane 78G-13 sediment trap on deck @	1452

Top SBE 16-04 CT unit on deck @	1458
Bottom Aanderaa RCM8 current meter w/ P and Tº sensors on @	1459
Dual EdgeTech 8202 acoustic release on deck @	1500L/(1900Z 5/2/00)

McLane 78G-13 Sediment Trap Deployment Statistics: (TOP)

Trap Cups Deployed/Recovered:	13/13
Recovery Filename:	TOP2243.DEP
TattleTale Interface Serial Number:	2243
Battery Condition:	9.36 VDC (1-Micro 9v alkaline) 19.8 VDC (14-Motor C-cell alkaline)
Sample cup preservative:	6% Na-borate formaline solution with filtered sea water.
Trap History:	Same as Bottom trap, see below

McLane 78G-13 Sediment Trap Deployment Statistics: (BOTTOM)

Trap Cups Deployed/Recovered:	13/13
Deployment Filename:	BOT2244.DEP
TattleTale Interface Serial Number:	2244 with 4093 TT8
Battery Condition:	9.36 VDC (1-Micro 9v alkaline) 19.5 VDC (14-Motor C-cell alkaline)
Sample cup preservative:	6% Na-borate formaline solution with filtered sea water.
Trap History:	Same as Top and as follows

Mooring Palmer Deep Top and Bottom Sediment Trap Deployment Program which was deployed on 4/3/99 at 2311 and Recovered on 5/2/00 at 1710. McLane 78G-13 Sediment Traps began and ended with an open hole under funnel.

Duration	GMT Time	GMT Date		Event #	Cup #
--- Days	2311	03 April	1999	Event 0	Open
25 Days	0100	06 April	1999	Event 1	Cup 1
31 Days	0100	01 May	1999	Event 2	Cup 2
61 Days	0100	01 June	1999	Event 3	Cup 3
61 Days	0100	01 August	1999	Event 4	Cup 4
15 Days	0100	01 October	1999	Event 5	Cup 5
16 Days	0100	16 October	1999	Event 6	Cup 6
15 Days	0100	01 November	1999	Event 7	Cup 7
15 Days	0100	16 November	1999	Event 8	Cup 8
15 Days	0100	01 December	1999	Event 9	Cup 9
16 Days	0100	16 December	1999	Event 10	Cup 10
15 Days	0100	01 January	2000	Event 11	Cup 11
16 Days	0100	16 January	2000	Event 12	Cup 12
29 Days	0100	01 February	2000	Event 13	Cup 13
	0100	01 March	2000	Event 14	Open

Mooring Palmer Deep Top and Bottom Sediment Trap Recovery Cup Accumulation Rate.

Duration	GMT Time	GMT Date		Top (cm)	Bottom (cm)	Cup #
25 Days	0100	06 April	1999	1.2	6.5	Cup 1
31 Days	0100	01 May	1999	1.2	5.5	Cup 2
61 Days	0100	01 June	1999	3.0	10.75	Cup 3
61 Days	0100	01 August	1999	2.0	6.5	Cup 4

15 Days	0100	01 October	1999	1.0	1.3	Cup 5
16 Days	0100	16 October	1999	0.5	1.5	Cup 6
15 Days	0100	01 November	1999	1.0	1.0	Cup 7
15 Days	0100	16 November	1999	1.0	0.75	Cup 8
15 Days	0100	01 December	1999	0.6	2.5	Cup 9
16 Days	0100	16 December	1999	0.7	2.5	Cup 10
15 Days	0100	01 January	2000	0.2	1.5	Cup 11
16 Days	0100	16 January	2000	0.2	1.5	Cup 12
29 Days	0100	01 February	2000	0.5	2.5	Cup 13
	0100	01 March	2000			Open

SeaBird SeaCat 16-04 CT units:

TOP SBE S/N:	1615016-2259
Battery condition:	8.0 VDC (6 alkaline D-cells)
Battery condition:	5.6 VDC (lithium)
Sampling interval:	1800 seconds (30 minutes)

BOTTOM SBE S/N:	1615016-2260
Battery condition:	7.9 VDC (6 alkaline D-cells)
Battery condition:	5.6 VDC (lithium)
Sampling interval:	1800 seconds (30 minutes)

Aanderaa RCM8 current meter:

RCM8 S/N:	12119
Battery condition:	7.33 VDC (Type 3382 lithium)
Sampling interval:	30 minutes

RCM8 S/N:	12120
Battery condition:	7.33 VDC (Type 3382 lithium)
Sampling interval:	30 minutes

RCM8 S/N:	12119
Battery condition:	7.33 VDC (Type 3382 lithium)
Sampling interval:	30 minutes

RDI Broadband ADCP:

BBADCP 150KHz transducer S/N:	2562
BBACCP canister (pressure case) S/N:	1510
Battery pack assembly (alkaline)	ABPM (includes 19 alkaline C cells)
Alkaline battery packs	ABP-R (19 C cells/pk, 6 pks/unit)
Battery condition front 3 pack:	52.9 VDC
Battery condition rear 3 pack:	53.0 VDC

EDGETECH ACOUSTIC RELEASES

8202 Dual Channel release S/N:	020898
Battery condition:	8.38 VDC
Battery condition:	15.06 VDC
Battery condition:	21.83 VDC

8202 Dual Channel release S/N:	021618
Battery condition:	8.37 VDC
Battery condition:	15.04 VDC
Battery condition:	21.82 VDC

Palmer Deep Mooring Hardware Statistics:

Top syntactic foam buoy w/ RDI ADCP S/N: 2562/1510 (+700 lbs./+318.2 kg)	=	7.65 m
-Above buoy = 4.85 m; below buoy = 1.7 m; buoy = 1.1		
Top McLane 78G-13 trap w/ pendant S/N 2243 (-77 lbs./-35 kg)	=	5.1 m
-Above top of cone = 2.7 m, below top of cone = 2.4 m		
Top Aanderaa RCM8 w/ P and C sensors S/N 12119 (-50 lbs./22.73 kg)	=	0.52 m
Top SBE SeaCat 16 CTD unit S/N 1615016-2259 (-32 lbs./-14.55 kg)	=	0.84 m
Middle Aanderaa RCM8 w/ P and C sensors S/N 12120 (-50 lbs./22.73 kg)	=	0.52 m
Seven Billings 3 pack floats (+462 lbs./150 kg)	=	3.5 m
Bottom McLane 78G-13 trap w/ pendant S/N 2244 (-77 lbs./-35 kg)	=	5.1 m
-Above top of cone = 2.7 m, below top of cone = 2.4 m		
Bottom SBE SeaCat 16-04 CT unit S/N 1615016-2260 (-32 lbs./-14.55 kg)	=	0.84 m
Bottom Aanderaa RCM8 w/ P and C sensors S/N 12121 (-50 lbs./-22.73 kg)	=	0.52 m
Dual EdgeTech 8202 dual channel acoustic release S/N 020898 (-75 lbs/-34.1 kg)		
-and S/N 021618 (-75 lbs/-34.1 kg)	=	0.62 m
Galvanized 1/2” anchor chain	=	3.0 m
Anchor 2400 lb./1090.9 kg	=	1 m

All rope is:	822-	Meters 12 mm single braid Duron w/ 1/2” nylon thimbles
Hardware:	08-	1/2” galvanized chain shackles (floats)
	02-	1/2” galvanized anchor shackles (floats)
	08-	1/2” stainless steel anchor shackles (trap top)
	20-	1/2” galvanized anchor shackles (trap bottom)
	02-	1/2” galvanized pear links (traps)
	02-	1/2” stainless steel anchor shackles (ADCP)
	04-	3/8” stainless steel chain shackles (CT meters)
	02-	1/2” galvanized anchor shackles (releases)
	08-	5/8” galvanized anchor shackles (releases)
	01-	5/8” galvanized eye and eye swivel (releases)
	01-	1/2” galvanized master link (releases)
	02-	EdgeTech release link (releases)
	01-	1/2” galvanized chain, 3 meters long (anchor)

EdgeTech 8202 Release Command Codes for *Palmer Deep Mooring*:

	S/N 021618		**S/N 020898**
Command A (Release)	**626654**	**Command A (Release)**	**626133**
Command B (Disable A)	**610540**	**Command B (Disable A)**	**607134**
Command C (Enable A & B)	**610563**	**Command C (Enable A & B)**	**607151**
Command D (Disable B)	**610601**	**Command D (Disable B)**	**607172**

Old Mooring Location:	**64° 51.689’S 64° 12.340’W**
Water Depth:	**1040 meters**
Date/Time (GMT) Deployed - Recovered	**04/03/99 @ 2311 - 05/02/00 @ 1710**

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PALMER DEEP MOORING DEPLOYMENT STATISTICS: (May 5, 2000 @ 1507 GMT)

Information on the mooring equipment deployed for *Palmer Deep*. The mooring deployment was supervised by David Mucciarone (S-072) and performed on the RVIB N.B Palmer (Fig. 1 in mooring deployment section). Preparation of all equipment was a joint effort between Rob Dunbar and David Mucciarone. There were a number of problems preparing the mooring and individual instruments on this array for deployment. Most of which were related to corrosion of hardware. Since the individual instruments preformed well there they only required routine maintenance. A detailed outline on the deployment is listed below. There was one mooring modification, the top SBE SeaCat which was originally located below the top MRL sediment trap was repositioned 5 m below the RDI ADCP. The deployment also went well with only one exception, we missed the drop point and need to drag the mooring array for approximately 45 minutes to the correct location (i.e., water depth). The release of the anchor was clean ending mooring operations at 1507 GMT on 5/5/00 located at 64º 51.81'S 64º 12.16'W.

RDI ADCP w/ Syntactic foam float in water @	0855L/(1255Z 5/2/00)
Top SBE 16-04 CT unit in water @	0855
Top McLane 78G-13 sediment trap in water @	0908
Top Aanderaa RCM8 current meter w/ P and Tº sensors in @	0909
Middle Aanderaa RCM8 current meter w/ P and Tº sensors in @	0930
Middle float package, 7-3 pack Billings floats in at @	0940
Bottom McLane 78G-13 sediment trap in water @	1055
Bottom SBE 16-04 CT unit in water @	1057
Bottom Aanderaa RCM8 current meter w/ P and Tº sensors in @	1058
Dual EdgeTech 8202 acoustic release in water @	1100
Anchor released @	1107L (1507Z 5/2/00)

McLane 78G-13 Sediment Trap Deployment Statistics: (TOP)

Trap Cups Deployed:	13
Deployment Filename:	TOP2243.DEP
TattleTale Interface Serial Number:	2243
Battery Condition:	9.51 VDC (1-Micro 9v alkaline) 22.2 VDC (14-Motor C-cell alkaline)

Tests performed:	Motor - OK; Interface - OK
Sample cup preservative:	6% Na-borate formaline solution with filtered sea water.
Trap History:	Same as Bottom trap, see below

McLane 78G-13 Sediment Trap Deployment Statistics: (BOTTOM)

Trap Cups Deployed:	13
Deployment Filename:	BOT2244.DEP
TattleTale Interface Serial Number:	2244 with 4093 TT8
Battery Condition:	9.50 VDC (1-Micro 9v alkaline) 22.1 VDC (14-Motor C-cell alkaline)
Tests performed:	Motor - OK; Interface - OK
Sample cup preservative:	6% Na-borate formaline solution with filtered sea water.
Trap History:	Same as Top and as follows

Mooring Palmer Deep Top and Bottom Sediment Trap Deployment Program which was deployed on 5/5/00 at 1507. McLane 78G-13 Sediment Traps began and ended with an open hole under funnel.

Duration	GMT Time	GMT Date		Event #	Cup#
--- Days	1507	05 May	2000	Event 0	Open
40 Days	0100	06 May	2000	Event 1	Cup 1
47 Days	0100	15 June	2000	Event 2	Cup 2
45 Days	0100	01 August	2000	Event 3	Cup 3
47 Days	0100	15 September	2000	Event 4	Cup 4
44 Days	0100	01 November	2000	Event 5	Cup 5
48 Days	0100	15 December	2000	Event 6	Cup 6
42 Days	0100	01 February	2001	Event 7	Cup 7
47 Days	0100	15 March	2001	Event 8	Cup 8
45 Days	0100	01 May	2001	Event 9	Cup 9
47 Days	0100	15 June	2001	Event 10	Cup 10
45 Days	0100	01 August	2001	Event 11	Cup 11
47 Days	0100	15 September	2001	Event 12	Cup 12
92 Days	0100	01 November	2001	Event 13	Cup 13
	0100	01 February	2002	Event 14	Open

Sediment Trap Supplies needed:

08	½" Stainless steel anchor shackles
20	½" Galvanized anchor shackles
02	½" Galvanized pear link
26	500 ml Nalgene wide mouth bottles
26	500 ml Nalgene wide mouth bottle o-rings
02	Pressure case o-ring kits
02	Pressure case anode kits
01	Stainless steel hardware kit
28	C-cell alkaline batteries
02	9V alkaline batteries

SeaBird SeaCat 16-04 CT units:

TOP SBE S/N:	1615016-2259
Battery condition:	9.56 VDC (6 alkaline D-cells)
Sampling interval:	3600 seconds (30 minutes)
GMT Start:	5/4/00 @ 12:00:00

BOTTOM SBE S/N:	1615016-2260
Battery condition:	9.55 VDC (6 alkaline D-cells)
Sampling interval:	3600 seconds (30 minutes)
GMT Start:	5/4/00 @ 12:00:00

SBE SeaCat Supplies needed:

04	3/8” Stainless steel anchor shackles
02	Stainless steel frames
02	McLane pressure case anode kits for frames
02	Pressure case o-ring kits
04	Sea Caps anti fouling devices
12	D-cell alkaline batteries

Aanderaa RCM8 current meter:

RCM8 S/N:	12119
Battery condition:	7.35 VDC (Type 3382 lithium)
Sampling interval:	60 minutes
GMT Start:	5/4/00 @ 14:00:00

RCM8 S/N:	12120
Battery condition:	7.33 VDC (Type 3382 lithium)
Sampling interval:	60 minutes
GMT Start:	5/4/00 @ 14:00:00

RCM8 S/N:	12121
Battery condition:	7.35 VDC (Type 3382 lithium)
Sampling interval:	60 minutes
GMT Start:	5/4/00 @ 14:00:00

Aanderaa RCM8 Supplies needed:

06	Stainless steel cotter pins
03	Vane anode kits
03	Pressure case anode kits
03	Pressure case o-ring kits
06	Nylon thimbles
03	Lithium batteries 3382

RDI Broadband ADCP:

BBADCP 150KHz transducer S/N:	2562
BBACCP canister (pressure case) S/N:	1510
Battery pack assembly (alkaline)	ABPM (includes 19 alkaline C cells)
Alkaline battery packs	ABP-R (19 C cells/pk, 6 pks/unit)
Battery condition front 3 pack:	60.1 VDC
Battery condition rear 3 pack:	60.1 VDC

RDI ADCP Supplies needed:

02	½" Stainless steel anchor shackles
02	McLane pressure case anode kits (frame)
02	EdgeTech anode kits (frame)
01	Pressure case o-ring kits
06	Alkaline battery packs

EDGETECH ACOUSTIC RELEASES

8202 Dual Channel release S/N:	020898
Battery condition:	9.41 VDC
Battery condition:	15.62 VDC
Battery condition:	22.43 VDC

8202 Dual Channel release S/N:	021618
Battery condition:	9.40 VDC
Battery condition:	15.84 VDC
Battery condition:	22.63 VDC

EdgeTech Acoustic Release Supplies needed:

02	1/2" galvanized anchor shackles (releases)
08	5/8" galvanized anchor shackles (releases)
01	5/8" galvanized eye and eye swivel (releases)
01	1/2" galvanized master link (releases)
02	EdgeTech release link (releases)
02	Release anodes
01	Frame anode
02	Pressure case o-ring kits
02	Alkaline battery packs

Palmer Deep Mooring Hardware Statistics:

Top syntactic foam buoy w/ RDI ADCP S/N: 2562/1510 (+700 lbs./+318.2 kg)	=	1.5 m
Top SBE SeaCat 16 CTD unit S/N 1615016-2259 (-32 lbs./-14.55 kg)	=	0.84 m
Top McLane 78G-13 trap w/ pendant S/N 2243 (-77 lbs./-35 kg)	=	5.1 m
-Above top of cone = 2.7 m, below top of cone = 2.4 m		
Top Aanderaa RCM8 w/ P and C sensors S/N 12119 (-50 lbs./22.73 kg)	=	0.52 m
Middle Aanderaa RCM8 w/ P and C sensors S/N 12120 (-50 lbs./22.73 kg)	=	0.52 m
Seven Billings 3 pack floats (+462 lbs./150 kg)	=	3.5 m
Bottom McLane 78G-13 trap w/ pendant S/N 2244 (-77 lbs./-35 kg)	=	5.1 m
-Above top of cone = 2.7 m, below top of cone = 2.4 m		
Bottom SBE SeaCat 16-04 CT unit S/N 1615016-2260 (-32 lbs./-14.55 kg)	=	0.84 m
Bottom Aanderaa RCM8 w/ P and C sensors S/N 12121 (-50 lbs./-22.73 kg)	=	0.52 m
Dual EdgeTech 8202 dual channel acoustic release S/N 020898 (-75 lbs/-34.1 kg)		
-and S/N 021618 (-75 lbs/-34.1 kg)	=	0.62 m
Galvanized 1/2" anchor chain	=	3.0 m
Anchor 2400 lb./1090.9 kg	=	1 m

All rope is:	822-	Meters 12 mm single braid Duron w/ 1/2" nylon thimbles
Hardware:	08-	1/2" galvanized chain shackles (floats)
	02-	1/2" galvanized anchor shackles (floats)
	08-	1/2" stainless steel anchor shackles (trap top)
	20-	1/2" galvanized anchor shackles (trap bottom)
	02-	1/2" galvanized pear links (traps)
	02-	1/2" stainless steel anchor shackles (ADCP)

04- 3/8” stainless steel chain shackles (CT meters)
02- 1/2” galvanized anchor shackles (releases)
08- 5/8” galvanized anchor shackles (releases)
01- 5/8” galvanized eye and eye swivel (releases)
01- 1/2” galvanized master link (releases)
02- EdgeTech release link (releases)
01- 1/2” galvanized chain, 3 meters long (anchor)

EdgeTech 8202 Release Command Codes for *Palmer Deep Mooring*:

	S/N 021618		S/N 020898
Command A (Release)	**626654**	**Command A (Release)**	**626133**
Command B (Disable A)	**610540**	**Command B (Disable A)**	**607134**
Command C (Enable A & B)	**610563**	**Command C (Enable A & B)**	**607151**
Command D (Disable B)	**610601**	**Command D (Disable B)**	**607172**

New Mooring Location:	**64° 51.81’S 64° 12.16’W**
Water Depth:	**1040 meters**
Date/Time (GMT)	**05/05/00 @ 1507**