

Cruise report for JR109 (AFI 2/34)

AIM

The aim of cruise JR109 was to collect 100 *Laternula elliptica*, 100 *Nacella concinna* and 10 *Harpagifer sp.* from Signy and South Georgia for a latitudinal comparison with Rothera populations. South Georgia and Signy animals were then transported to Rothera where experiments on thermal evolution/adaptation were conducted.

SUMMARY

During the diving cruise JR109 at Signy and South Georgia three different benthic species were collected during 16 SCUBA dives. All three Signy species were successfully collected within 2 days in Borge Bay, which allowed time for an extra half days benthic sampling and surveying to be conducted for Dave Barnes (MOA) and Cath Waller (MOA PhD).

At South Georgia none of the clam, *Laternula elliptica*, could be found, despite diving a wide range of suitable looking bays along the North coast of South Georgia (King Edward Cove, Elsehul & Rosita Harbour), limpets, *Nacella concinna*, and fish, *Harpagifer georgianus*, were collected within 2 dives at King Edward Point.

Due to the persistence of winter ice around Adelaide Island J.C.R. was unable to reach Rothera at the first attempt. Due to the requirements to use of the cold specimen room for biosciences cruise JR116 the animals were moved into the transport aquarium container and maintained onboard until the second attempt to get to Rothera on 23 January.

PERSONNEL

Simon Morley (PSO)

Matt Brown (Field Diving Officer)

Keiron Fraser (Scientific Diver/Assistant Diving Officer)

Dave Barnes (Scientific Diver)

Katrin Linse (Scientific Diver)

Peter Enderlein (Scientific Diver)

EQUIPMENT FOR DIVING

Dive planning was thorough and more than enough equipment was provided by John Withers (F.D.O. Rothera). There were few problems with equipment used during diving operations. As indicated below the surface marker buoys used routinely at Rothera proved to be ineffective on this cruise. A more substantial buoy was borrowed from the ship which was very effective for open water use.

The recompression chamber functioned effectively in its container.



Figure 1. The containerised recompression chamber.

The only negative issues arose from poor servicing of equipment by external contractors.

- The spare air bank was unusable due to contamination.
- Incorrectly wired chamber (had to be rewired by ships electrician)

A list of improvements to the recompression chamber setup will be submitted by the F.D.O. Matt Brown

A further servicing problem occurred with the chainsaw.

- The chainsaw had a broken engine mount which was not replaced during its service, rendering it unusable.

SHIP SUPPORT

The officers and crew of the James Clark Ross could not have done more to accommodate the divers and make the collections a success. James Clark Ross is the ideal platform for a diving operation such as this. The chamber was situated on the aft deck giving easy access to the wet laboratory where divers prepared for diving.

The only negative comment must be reserved for the ships Combat Support Boat, which was initially used as a dive platform. On such a high specification vessel as the JCR the

CSB stands out as inadequate, it is highly unreliable and required unacceptable levels of repair/maintenance whenever it was put in the water.

MARINE AQUARIUM

Using a similar setup to the transport aquarium worked well in the specimen cold room.



Figure 2. Marine aquarium setup in the Cold Specimen Room

Lucy Conway's expertise, and that of the JCR deck engineers, ensured that temperatures could be maintained between 0 and 1°C (set point -3°C). Water exchange had to be performed manually due to restrictions on the amount of water that could be put down the sink or toilet (waste water had to be treated due to transportation of species into and out of 60°S).

When the requirements for the cold specimen room changed it was a simple procedure to transfer the animals into the transport aquarium container. During cargo operations the container was temporarily housed in a warehouse on FIPAS. Once underway, the container was housed in number 2 hold and although it was not possible to plug the container alarms into the JCR alarm system, temperatures were checked regularly by officers doing rounds. Water was tapped from the forward outlet of the uncontaminated seawater supply and piped through the emergency escape hatch into the hold. Waste water was stored in dustbins, treated for 24 hours with sodium hypochlorite and then pumped overboard using an airlift pump.

Diary of diving operations
(see Appendix 1 for dive logs).
(see Appendix 2 for species list).

Borge Bay Signy

Day 1: 28 October

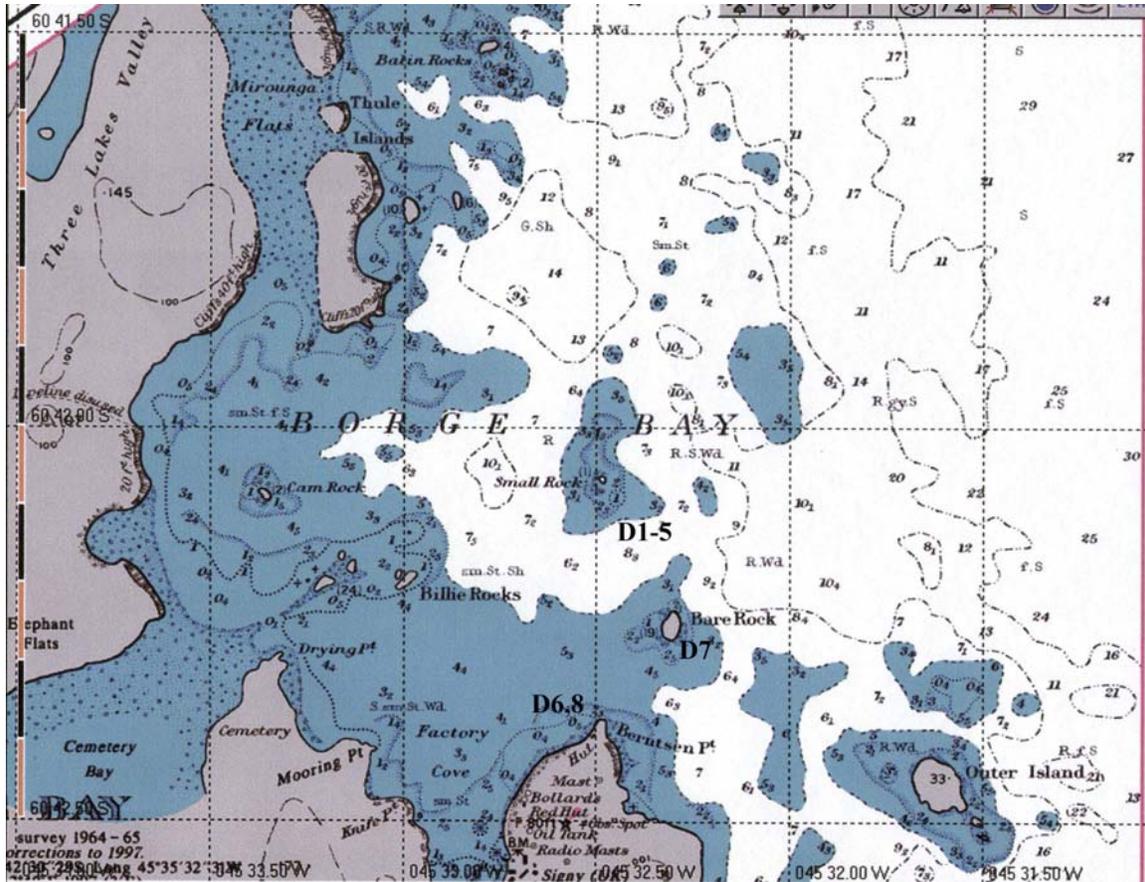


Figure 3. Chart of Borge Bay showing dive sites for dives 1-8 (D1-8).

Diving was initially delayed due to problems with the main crane and then the CSB boat. Diving was then abandoned for the day at 14:30 due to a leopard seal being sighted in Factory Cove.

Evening discussions sought a more pragmatic response to leopard seal sightings. Leopard seals are a constant presence at Signy (due to the abundance of food) unlike Rothera where they are vagrants. It was proposed that after sighting a leopard seal a two hour period would be allowed before a recommencement of a 30 minute seal watch prior to diving. Approval was gained from the diving contractor, John Dudney, the institute diving officer, John Hall, and the field diving officer, Matt Brown.

Specimen Count:

100 *Nacella concinna* were collected by Katrin and Cath Waller from the shore.

Day 2: 29 October

Dive 1: Small Rocks - Keiron (Simon) 60 42.16 S, 45 35.45 W

The CSB was not an ideal diving platform, due to its shape, but reasonable entry was possible. Whilst leaving the CSB the divers surface marker buoy line got tangled and the inadequate float was dragged under the surface. This meant that diver recall was not possible when 2 leopard seals arrived on site. When divers surfaced they were hauled into the CSB, but with difficulty as the ladder was not functional. The larger leopard seal was showing aggressive signs towards the CSB, the smaller leopard seal was showing passive interest in the divers and was observed within 1m of the divers whilst underwater.

Specimen count:

13 *Laternula elliptica*

Diving was postponed for 2 hours before a further 30 minute seal watch was conducted.

Dive 2: Small Rocks - Dave (Matt) 60 42.16 S, 45 35.45 W

Specimen count:

18 *Laternula elliptica*

Dive 3: Small Rocks - Katrin (Peter) 60 42.16 S, 45 35.45 W

Specimen Count:

20 *Laternula elliptica*

Day 3: 30 October

After more technical difficulties with the CSB and its relative unsuitability as a diving platform, diving was transferred to the inflatables.

Dive 4: Small Rocks - Keiron (Simon) 60 42.16 S, 45 35.45 W

Specimen Count:

34 *Laternula elliptica*

Dive 5: Small Rocks - Dave (Matt) 60 42.16 S, 45 35.45 W

Divers were recalled to the surface after a leopard seal was spotted. Getting divers back into inflatables was a much more rapid process than into the CSB. *Laternula elliptica* collection was complete.

Specimen Count:

35 *Laternula elliptica* - Total = 120

Dive 6: Bernstein Point - Katrin (Peter) 60 42.36 S, 45 35.52 W

Specimen Count:

9 *Harpagifer antarcticus*

Day 4: 31 October

As the I.T. work at Signy base was not finished JCR made resources available for extra diving. Divers entered the water from the cargo tender (with the ramp level) and were picked up by an inflatable which worked extremely well.

Dive 7: Bare Rock - Dave (Simon) 60 42.25 S, 45 32.31 W

Species lists were compiled from quadrats (for Cath Waller). Rock samples were collected for a decadal assessment of competitive interactions between clades (for Dave Barnes).

Dive 8: Bernstein Point - Peter (Matt) 60 42.36 S, 45 35.52 W

Species lists were compiled from quadrats.

South Georgia

Day 1: 6 November 2004

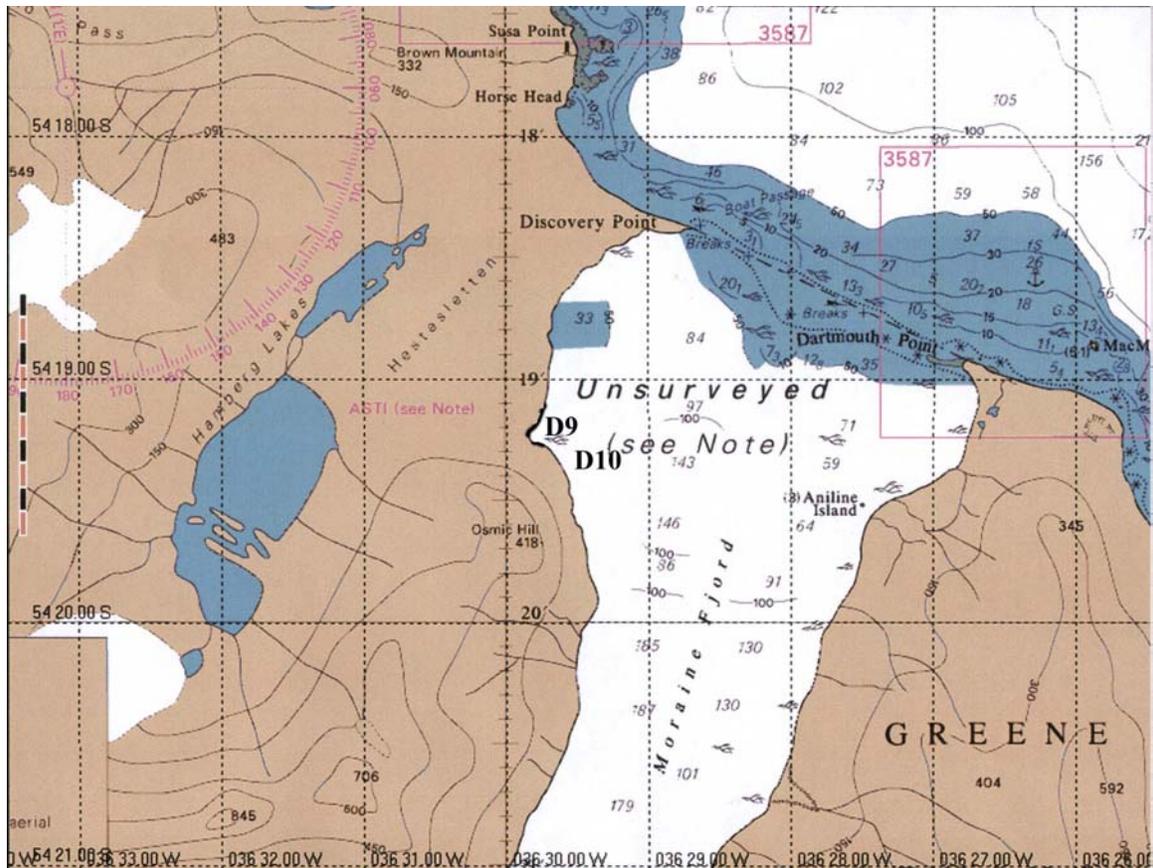


Figure 4. Dives site 9 and 10 in Moraine Fjord.

Dive 9: Moraine Fjord, where Osmic Hill joins Zenca ridge – Keiron (Simon) 54 19.21 S, 36 29.77 W

There was a possible sighting of *Laternula elliptica*, and a definite shell was found. The substratum was too soft and anoxic to be suitable for large beds of *Laternula elliptica*. Visibility was good at the surface (4m+), very poor in mid depths (<1m) then cleared below 15m (2m).

Dive 10: Moraine Fjord, off Osmic Hill - Dave (Matt) 54 19.21 S, 36 29.77 W

Once again the sediment was too soft for *Laternula elliptica*

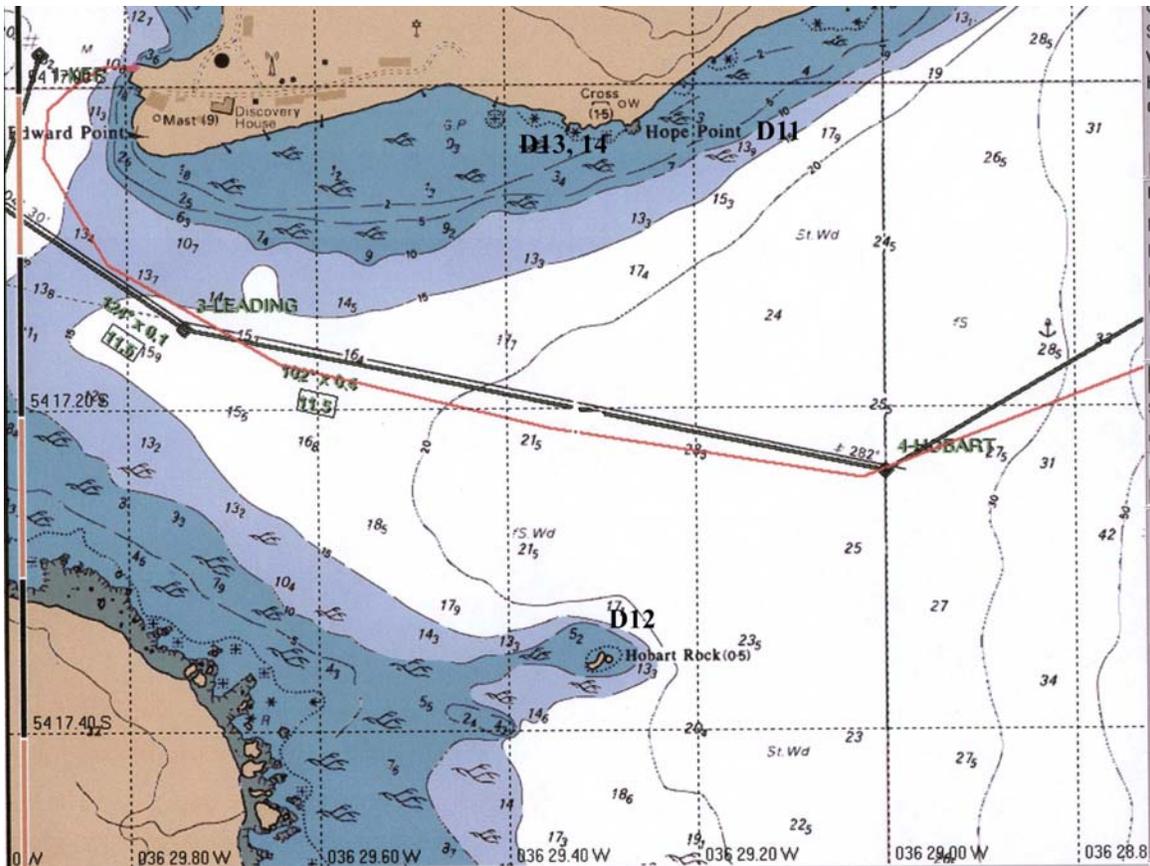


Figure 5. Dive sites 11-14 in Cumberland East Bay.

Dive 11: Off Hope Point 54 17.05 S, 36 29.21 W

Weed covered bottom, cobbly with little mud. No *Laternula elliptica*

Day 2: 7 November 2004

The Grytviken jetty was investigated but was deemed unsafe to dive.

Dive 12: Hobart Rocks - Dave (Matt) 54 17.36 S, 36 29.30 W

A weed covered bottom unsuitable for *Laternula elliptica*

Dive 13: Inside Hope Point - Keiron (Simon) 54 17.03 S, 36 29.48 W

Shallow water dive was terminated early due to inquisitive male elephant seal.

Specimen count

100+ *Nacella concinna*, 1 *Harpagifer georgianus*

Dive 14: Inside Hope Point - Katrin (Peter) 54 17.03 S, 36 29.48 W

Dive was interrupted but not terminated due to inquisitive male elephant seal.

Specimen Count

10 *Harpagifer georgianus*

Day 3: 9 November 2004

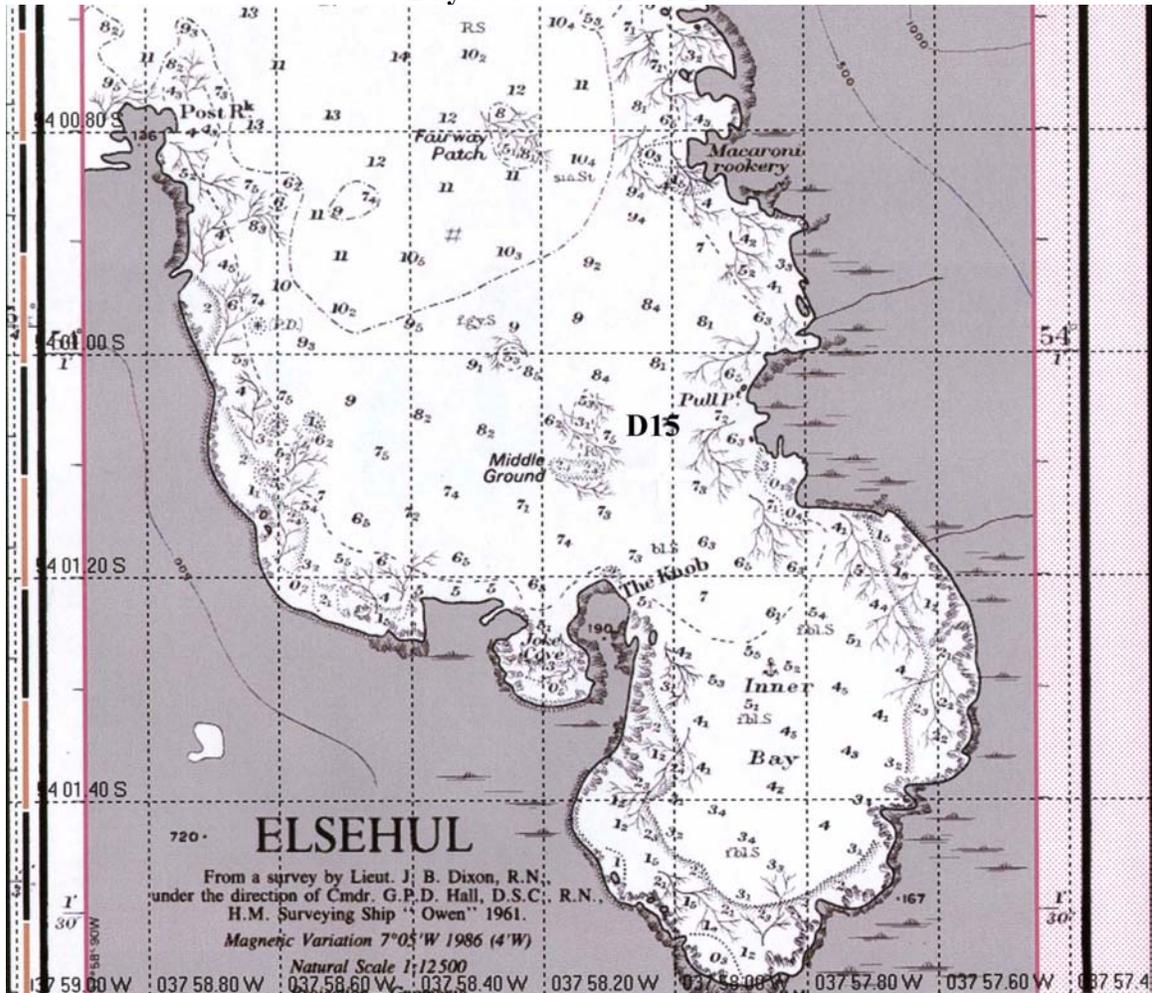


Figure 6. Dive site 15 in Elsehul

Dive 15: Elsehul - Dave (Simon) Elsehul 54 01.11 S, 37 58.02 W

Dive terminated early as the bay was covered in a coarse sandy substrate. Elsehul is too exposed for *Laternula elliptica*

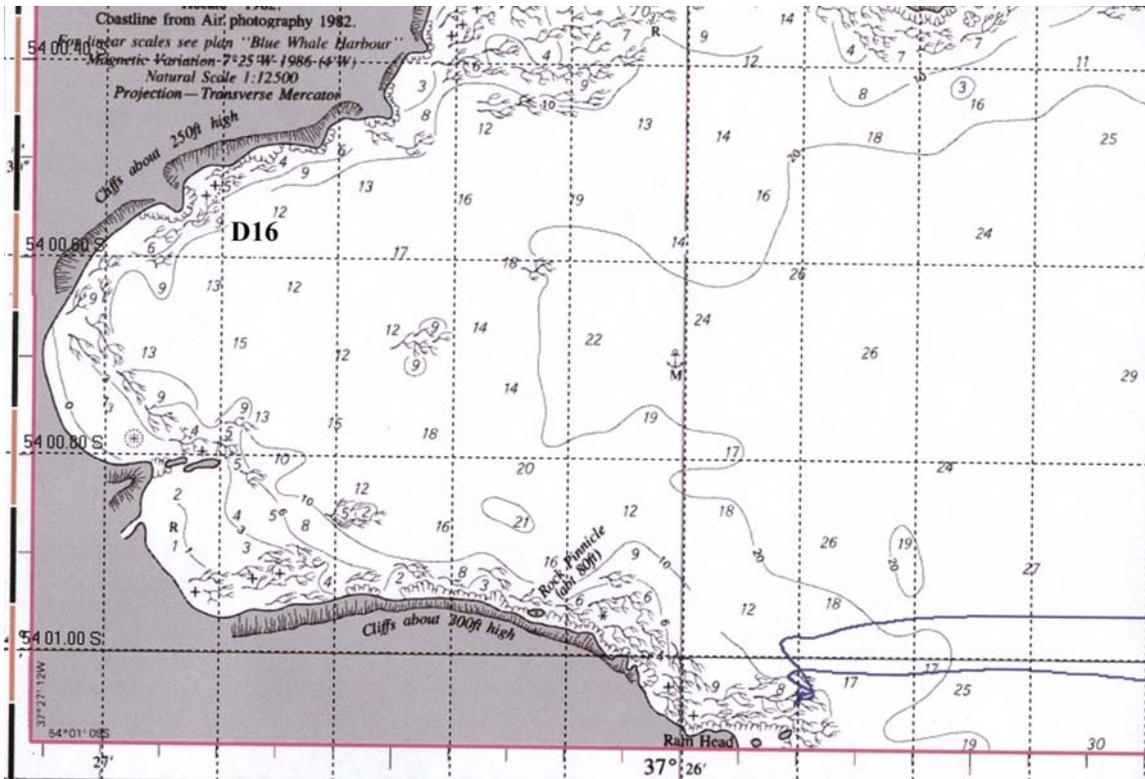


Figure 7. Rosita Harbour showing dive site 16

Dive 16: Rosita Harbour - Keiron (Peter) 54 00.58 S, 37 26.74 W

Suitable looking mud but no sign of any *Laternula elliptica*

Day 4: 10 November 2004

The wind was too strong to dive in Prince Olav Harbour so JCR headed for Stanley.

Appendix 1 – Dive logs.

①

BRITISH ANTARCTIC SURVEY ROTHERA RESEARCH STATION DIVE LOG

Dive Contractor: John Dudeney, Deputy Director, British Antarctic Survey.
 Institute Dive Officer: John Hall Field Dive Officer: Matt Brown
 Date: 29/10/04 Site: BERGE BAY, SIGNY
 Task: COLLECTION - LATERWICK Nature of Dive: Shore - Boat - Ice
 AGI - JR109
 Emergency Support Arrangements Co-ordinated by: JCR Ops
 In appoint: MATT BROWN as diving supervisor for this task.

Signed: M. Brown (Field Dive Officer, on behalf of John Dudeney)

Non-divers in operation: D. BARNES - BOAT
 K. LINSE - JCR
 P. ENDERLIN - JCR.

Weather/Sea State: F₂ Pre-dive area observation completed: YES

Divers have read and understand the BAS Diving Policy, Rothera Dive manual and relevant risk assessment to the task:
 Specific Pre-dive Risk Assessment: FDO sign: M. Brown
 JR109 - Risk Assessment.
 JCR - SMALL BOATS
 JCR - DIVING O/G
 Final Assessment: (Circle) Lower/Normal/Higher (If higher, list controls above)
 DCIEM Schedule: 18 Safety Stop: 3@6

Diver 1	Diver 2	L/S	Depth	B/T	A/S	D/T	Dive No.
K FRASER	S. MORLEY	1045	16.6	29min	117	32min	

Multi Level Dive:



Marine Mammal Encounter: Yes/No

LEP. SEAL - DIVE ABORTED.

Emergencies & Actions Taken: Yes/No

DIVE ABORTED.

Diver Problems, Injuries etc: Yes/No

Supervisor Signature: M. Brown

2

BRITISH ANTARCTIC SURVEY
ROTHERA RESEARCH STATION DIVE LOG

Dive Contractor: John Dudeney, Deputy Director, British Antarctic Survey.
Institute Dive Officer: John Hall Field Dive Officer: Matt Brown
Date: 29/10/04 Site: BORSE BAY, SISAY.
Task: COLLECTION LATERNOCA - AFI JR109 Nature of Dive: Shore - Boat - Ice
Emergency Support Arrangements Co-ordinated by: JCR Ops
I appoint: P. ENDERLIN as diving supervisor for this task.

Signed: *M. Brown* (Field Dive Officer, on behalf of John Dudeney)

Non-divers in operation: K. LINSE - BOAT
K. FRASER - JCR
S. MORLEY - JCR

Weather/Sea State: *f* Pre-dive area observation completed: YES 24R + 30min

Divers have read and understand the BAS Diving Policy, Rothera Dive manual and relevant risk assessment to the task:
Specific Pre-dive Risk Assessment: FDO sign: *M. Brown*
JR109 - Risk Assmnt.
JCR - SMALL BOATING
JCR - DIVING OP
Final Assessment: (Circle) Lower/Normal/Higher (If higher, list controls above)
DCIEM Schedule: 18m Safety Stop: 3@6

Diver 1	Diver 2	L/S	Depth	B/T	A/S	D/T	Dive No.
M. BROWN	D. BARNES	16 15	16.7	20 min	16 40	25 min	

Multi Level Dive:



Marine Mammal Encounter: Yes/No No

Emergencies & Actions Taken: Yes/No No

Diver Problems, Injuries etc: Yes/No No

Supervisor Signature: *P. Enderlin* *M. Brown*

3

BRITISH ANTARCTIC SURVEY
ROTHERA RESEARCH STATION DIVE LOG

Dive Contractor: John Dudeney, Deputy Director, British Antarctic Survey.
Institute Dive Officer: John Hall Field Dive Officer: Matt Brown
Date: 29/10/04 Site: BOKSE BAY, SPHY
Task: COLLECTION CATERNULA - Afi JR109 Nature of Dive: Shore - (Boat) - Ice
Emergency Support Arrangements Co-ordinated by: JCR Ops
I appoint: MATT BROWN as diving supervisor for this task.

Signed: *M. Brown* (Field Dive Officer, on behalf of John Dudeney)

Non-divers in operation: D. BARNES - BOAT
K. FRASER - JCR
S. MORLEY - JCR

Weather/Sea State: *f₂* Pre-dive area observation completed: *Yes*

Divers have read and understand the BAS Diving Policy, Rothera Dive manual and relevant risk assessment to the task:
Specific Pre-dive Risk Assessment: FDO sign: *M. Brown*
JR109 - Risk Assmnt
JCR - Small Boating
JCR - Diving ops.
Final Assessment: (Circle) Lower/Normal/Higher (If higher, list controls above)
DCIEM Schedule: Safety Stop: 3@6

Diver 1	Diver 2	L/S	Depth	B/T	A/S	D/T	Dive No.
K. LINSE	P. ENDERLIN	1709	17.6	20min	17.32	23min	

Multi Level Dive:

Marine Mammal Encounter: Yes/No No

Emergencies & Actions Taken: Yes/No No

Diver Problems, Injuries etc: Yes/No No

Supervisor Signature: *M. Brown*

**BRITISH ANTARCTIC SURVEY
ROTHERA RESEARCH STATION DIVE LOG**

Dive Contractor: John Dudeney, Deputy Director, British Antarctic Survey.
 Institute Dive Officer: John Hall Field Dive Officer: Matt Brown
 Date: 30/10/04 Site: BORNE BAY, SIGNY
 Task: COLLECTION - LATERNULA Nature of Dive: Shore - Boat - Ice
 AA JRIA
 Emergency Support Arrangements Co-ordinated by: JCR Ops
 I appoint: MATT BROWN as diving supervisor for this task.

Signed:.....M. Brown.....(Field Dive Officer, on behalf of John Dudeney)

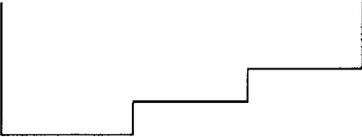
Non-divers in operation: D. BARNES - BOAT
 K. LINSE - JCR
 P. ENDELEIN - JCR

Weather/Sea State: f Pre-dive area observation completed: YES 2hr - 30min ON SITE

Divers have read and understand the BAS Diving Policy, Rothera Dive manual and relevant risk assessment to the task:
 Specific Pre-dive Risk Assessment: FDO sign:.....M. Brown.....

Final Assessment: (Circle) Lower/Normal/Higher (If higher, list controls above)
 DCIEM Schedule: 18 Safety Stop: 3@6

Diver 1	Diver 2	L/S	Depth	B/T	A/S	D/T	Dive No.
S. MORLEY	K. FRASER	1042	17 m	27 min	1112	30 min	

Multi Level Dive:


Marine Mammal Encounter: Yes/No

Emergencies & Actions Taken: Yes/No

Diver Problems, Injuries etc: Yes/No

Supervisor Signature:M. Brown.....

**BRITISH ANTARCTIC SURVEY
ROTHERA RESEARCH STATION DIVE LOG**

Dive Contractor: John Dudeney, Deputy Director, British Antarctic Survey.
 Institute Dive Officer: John Hall Field Dive Officer: Matt Brown
 Date: 31/10/04 Site: BEAR ROCK, BORGES BAY, SICSY
 Task: SURVEY AND PHOTOGRAPHY Nature of Dive: Shore - Boat - Ice
 JR109 Emergency Support Arrangements Co-ordinated by: JCR Ops
 I appoint: M. Brown as diving supervisor for this task.

Signed: M. Brown (Field Dive Officer, on behalf of John Dudeney)
 Non-divers in operation: K. FRASER
 P. ENDERLEIN
 K. LIASE

Weather/Sea State: 1 Pre-dive area observation completed:
YES, 2HR + 30 min on site

Divers have read and understand the BAS Diving Policy, Rothera Dive manual and relevant risk assessment to the task:
 Specific Pre-dive Risk Assessment: FDO sign: M. Brown

Final Assessment: (Circle) Lower/ Normal / Higher (If higher, list controls above)
 DCIEM Schedule: Safety Stop: 3@6

Diver 1	Diver 2	L/S	Depth	B/T	A/S	D/T	Dive No.
D. BARNES	S. MORLEY	0946	7m	41 min	1029	43 min	

Multi Level Dive:


Marine Mammal Encounter: Yes/ No

Emergencies & Actions Taken: Yes/ No

Diver Problems, Injuries etc: Yes/ No

Supervisor Signature: M. Brown

**BRITISH ANTARCTIC SURVEY
ROTHERA RESEARCH STATION DIVE LOG**

Dive Contractor: John Dudeney, Deputy Director, British Antarctic Survey.
 Institute Dive Officer: John Hall Field Dive Officer: Matt Brown
 Date: 31/10/04 Site: BEAR ROCK, BORGES BAY, SICSY
 Task: SURVEY AND PHOTOGRAPHY Nature of Dive: Shore - Boat - Ice
 JR109 Emergency Support Arrangements Co-ordinated by: JCR Ops
 I appoint: M. Brown as diving supervisor for this task.

Signed: M. Brown (Field Dive Officer, on behalf of John Dudeney)

Non-divers in operation: K. FRASER
 P. ENDERLEIN
 K. LIASE

Weather/Sea State: 1 Pre-dive area observation completed:
 YES, 2HR + 30min on site

Divers have read and understand the BAS Diving Policy, Rothera Dive manual and relevant risk assessment to the task:
 Specific Pre-dive Risk Assessment: FDO sign: M. Brown

Final Assessment: (Circle) Lower/ Normal / Higher (If higher, list controls above)
 DCIEM Schedule: Safety Stop: 3@6

Diver 1	Diver 2	L/S	Depth	B/T	A/S	D/T	Dive No.
D. BARNES	S. MORLEY	0946	7m	41min	1029	43min	

Multi Level Dive:

Marine Mammal Encounter: Yes/ No

Emergencies & Actions Taken: Yes/ No

Diver Problems, Injuries etc: Yes/ No

Supervisor Signature: M. Brown

**BRITISH ANTARCTIC SURVEY
ROTHERA RESEARCH STATION DIVE LOG**

Dive Contractor: John Dudeney, Deputy Director, British Antarctic Survey. Field Dive Officer: Matt Brown
 Institute Dive Officer: John Hall
 Date: 31/01/04 Site: Berkner Point, George Bay, SISAT
 Task: SURVEY + PHOTOGRAPHY. Nature of Dive: Shore Boat Ice
 JCR - 109 Af.
 Emergency Support Arrangements Co-ordinated by: JCR Ops
 I appoint: Kelvin Fraser as diving supervisor for this task.

Signed: [Signature] (Field Dive Officer, on behalf of John Dudeney)

Non-divers in operation: K. LINSE - CARGO TENDER
D. BARNES - CHAMBER
S. MURLEY - CHAMBER

Weather/Sea State: 4 Pre-dive area observation completed: Yes 2hr + 30min on site

Divers have read and understand the BAS Diving Policy, Rothera Dive manual and relevant risk assessment to the task:
 Specific Pre-dive Risk Assessment: FDO sign: [Signature]

Final Assessment: (Circle) Lower Normal Higher (If higher, list controls above)

DCIEM Schedule: Safety Stop: 3@6

Diver 1	Diver 2	L/S	Depth	B/T	A/S	D/T	Dive No.
<u>M. Brown</u>	<u>P. ENDERLEIN</u>	<u>1114</u>	<u>9m</u>	<u>25</u>	<u>1139</u>	<u>25</u>	

Multi Level Dive:

Marine Mammal Encounter: Yes No

Emergencies & Actions Taken: Yes No

Diver Problems, Injuries etc: Yes No

Supervisor Signature: [Signature]

**BRITISH ANTARCTIC SURVEY
ROTHERA RESEARCH STATION DIVE LOG**

Dive Contractor: John Dudeney, Deputy Director, British Antarctic Survey.
 Institute Dive Officer: John Hall Field Dive Officer: Matt Brown
 Date: SAT 6th NOV Site: OSNIC HILL, MORANE FJORD, S.S.
 Task: COLLECTION LATERNULA Nature of Dive: Shore - Boat - Ice
 AFI JR109
 Emergency Support Arrangements Co-ordinated by: JCR Ops
 I appoint: MATT BROWN as diving supervisor for this task.

Signed:.....*M. Brown*.....(Field Dive Officer, on behalf of John Dudeney)

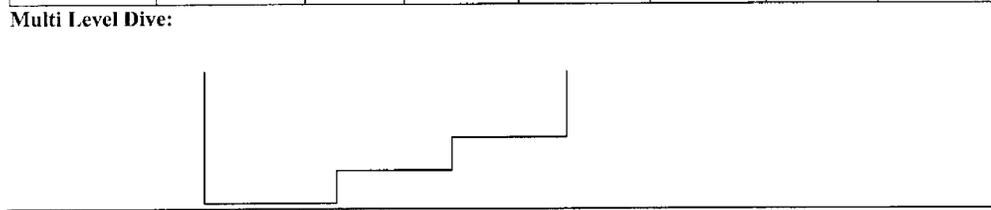
Non-divers in operation: D. BARNES - BOAT
 K. LINSE - BOAT
 P. ENDERLEIN - BOAT.

Weather/Sea State: *4* Pre-dive area observation completed: *YES 30 MIN ON SITE*

Divers have read and understand the BAS Diving Policy, Rothera Dive manual and relevant risk assessment to the task:
 Specific Pre-dive Risk Assessment: FDO sign:.....*M. Brown*.....
 Final Assessment: (Circle) Lower/Normal/Higher (If higher, list controls above)

DCIEM Schedule: *18m* Safety Stop: 3@6

Diver 1	Diver 2	L/S	Depth	B/T	A/S	D/T	Dive No.
<i>K. FRABER</i>	<i>S. MORLEY</i>	<i>10.32</i>	<i>17.5</i>	<i>27 min</i>	<i>1102</i>	<i>30 min</i>	



Marine Mammal Encounter: Yes/No

Emergencies & Actions Taken: Yes/No

Diver Problems, Injuries etc: Yes/No

Supervisor Signature:*M. Brown*.....

**BRITISH ANTARCTIC SURVEY
ROTHERA RESEARCH STATION DIVE LOG**

Dive Contractor: John Dudeney, Deputy Director, British Antarctic Survey. Field Dive Officer: Matt Brown
 Institute Dive Officer: John Hall
 Date: 6th NOV /04 . Site: OSMIC HILL, MORAINÉ FJORD. S.S.
 Task: COLLECTION LATERNULA Nature of Dive: Shore Boat Ice
AH-12109
 Emergency Support Arrangements Co-ordinated by: JCR Ops
 I appoint: K. FRASER as diving supervisor for this task.

Signed: [Signature] (Field Dive Officer, on behalf of John Dudeney)
 Non-divers in operation: P. ENDBLEIGH
S. MORLEY
K. WILSON

Weather/Sea State: V Pre-dive area observation completed: Yes

Divers have read and understand the BAS Diving Policy, Rothera Dive manual and relevant risk assessment to the task:
 Specific Pre-dive Risk Assessment: FDO sign: [Signature]

Final Assessment: (Circle) Lower/Normal/Higher (If higher, list controls above)
 DCIEM Schedule: 20m Safety Stop: 3@6

Diver 1	Diver 2	L/S	Depth	B/T	A/S	D/T	Dive No.
<u>M. BROWN</u>	<u>D. BARNES</u>	<u>11 47</u>	<u>20m</u>	<u>28min</u>	<u>12-14</u>	<u>27min</u>	

Multi Level Dive:


Marine Mammal Encounter: Yes/ No

Emergencies & Actions Taken: Yes/ No

Diver Problems, Injuries etc: Yes/ No

Supervisor Signature: [Signature]

**BRITISH ANTARCTIC SURVEY
ROTHERA RESEARCH STATION DIVE LOG**

Dive Contractor: John Dudeney, Deputy Director, British Antarctic Survey.
 Institute Dive Officer: John Hall Field Dive Officer: Matt Brown
 Date: 06 / NOV / 04 Site: HOPE POINT, S.S.
 Task: COLLECTION CATAPULDA Nature of Dive: Shore - ~~Boat~~ - Ice
At 0810g. Emergency Support Arrangements Co-ordinated by: JCR Ops
 I appoint: M. Brown as diving supervisor for this task.

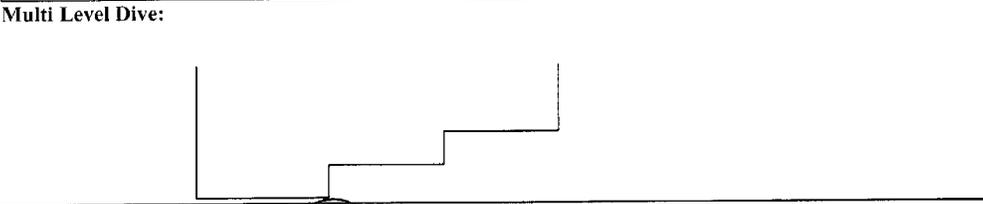
Signed:.....M. Brown.....(Field Dive Officer, on behalf of John Dudeney)
 Non-divers in operation: K. FRASER - Boat
S. MURPHY - Boat

Weather/Sea State: 1 Pre-dive area observation completed: 10

Divers have read and understand the BAS Diving Policy, Rothera Dive manual and relevant risk assessment to the task:
 Specific Pre-dive Risk Assessment: FDO sign:.....M. Brown.....

Final Assessment: (Circle) Lower Normal Higher (If higher, list controls above)
 DCIEM Schedule: 21 m Safety Stop: 3@6

Diver 1	Diver 2	L/S	Depth	B/T	A/S	D/T	Dive No.
<u>K. LINSE</u>	<u>P. ENDERLEN</u>	<u>1520</u>	<u>18</u>	<u>22 min</u>	<u>15 45</u>	<u>25 min</u>	



Marine Mammal Encounter: Yes/No

Emergencies & Actions Taken: Yes/No

Diver Problems, Injuries etc: Yes/No

Supervisor Signature:.....M. Brown.....

**BRITISH ANTARCTIC SURVEY
ROTHERA RESEARCH STATION DIVE LOG**

Dive Contractor: John Dudeney, Deputy Director, British Antarctic Survey.

Institute Dive Officer: John Hall

Field Dive Officer: Matt Brown

Date: 7/1/04

Site: HOLE POINT - KEP.

Task: COLLECTION 'HARRES'

96 JA04.

Nature of Dive: Shore Boat Ice

Emergency Support Arrangements Co-ordinated by: JCR Ops

I appoint: M. Brown

as diving supervisor for this task.

Signed: M. Brown (Field Dive Officer, on behalf of John Dudeney)

Non-divers in operation: S. MORLEY - boat
D. BARNES } CHAMBER
K. FRASER }

Weather/Sea State: 4

Pre-dive area observation completed: Yes

Divers have read and understand the BAS Diving Policy, Rothera Dive manual and relevant risk assessment to the task:

Specific Pre-dive Risk Assessment:

FDO sign: M. Brown

Final Assessment: (Circle) Lower/Normal/Higher

(If higher, list controls above)

DCIEM Schedule:

Safety Stop: 3@6

Diver 1	Diver 2	L/S	Depth	B/T	A/S	D/T	Dive No.
K. LUNSE	P. ENDERBEN	1526	2m	31	1557	31	

Multi Level Dive:



Marine Mammal Encounter: Yes/No No

Emergencies & Actions Taken: Yes/No No

Diver Problems, Injuries etc: Yes/No No

Supervisor Signature:

M. Brown

**BRITISH ANTARCTIC SURVEY
ROThERA RESEARCH STATION DIVE LOG**

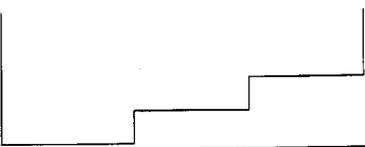
Dive Contractor: John Dudeney, Deputy Director, British Antarctic Survey. Field Dive Officer: Matt Brown
 Institute Dive Officer: John Hall
 Date: 9/11/04 Site: EISEHUL
 Task: COLLECTION CATURWLA Nature of Dive: Shore - Boat - Ice
 AFI 52109
 Emergency Support Arrangements Co-ordinated by: JCR Ops
 I appoint: M. Brown as diving supervisor for this task.

Signed: M. Brown (Field Dive Officer, on behalf of John Dudeney)
 Non-divers in operation: P. Endercoven

Weather/Sea State: 2 Pre-dive area observation completed: Yes

Divers have read and understand the BAS Diving Policy, Rothera Dive manual and relevant risk assessment to the task: FDO sign: M. Brown
 Specific Pre-dive Risk Assessment:
 Final Assessment: (Circle) Lower/ Normal / Higher (If higher, list controls above)
 DCIEM Schedule: 18m Safety Stop: 3@6

Diver 1	Diver 2	L/S	Depth	B/T	A/S	D/T	Dive No.
D. BARNES	S. MORLEY	1027	16m	12min	1040	13min	

Multi Level Dive:


Marine Mammal Encounter: Yes/ No

Emergencies & Actions Taken: Yes/ No

Diver Problems, Injuries etc: Yes/ No

Supervisor Signature: M. Brown

**BRITISH ANTARCTIC SURVEY
ROTHERA RESEARCH STATION DIVE LOG**

Dive Contractor: John Dudeney, Deputy Director, British Antarctic Survey.

Institute Dive Officer: John Hall

Field Dive Officer: Matt Brown

Date: 9/11/04

Site: ROSETTE BAY, SOUTH GEORGIA.

Task: COLLECTION LATROUWA

Afi JR109

Nature of Dive: Shore Boat - Ice

Emergency Support Arrangements Co-ordinated by: JCR Ops

I appoint: M. Brown

as diving supervisor for this task.

Signed: M. Brown (Field Dive Officer, on behalf of John Dudeney)

Non-divers in operation: S. MORLEY

K. LINSE

Weather/Sea State: 2

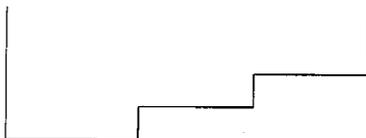
Pre-dive area observation completed: 2

Divers have read and understand the BAS Diving Policy, Rothera Dive manual and relevant risk assessment to the task:
Specific Pre-dive Risk Assessment: _____ FDO sign: M. Brown

Final Assessment: (Circle) Lower Normal Higher (If higher, list controls above)
DCIEM Schedule: _____ Safety Stop: 3@6

Diver 1	Diver 2	L/S	Depth	B/T	A/S	D/T	Dive No.
P. ENGBLEIN	K. FRASER	1518	26	16	1536	18	

Multi Level Dive:



Marine Mammal Encounter: Yes No

Emergencies & Actions Taken: Yes No

Diver Problems, Injuries etc: Yes No

Supervisor Signature: M. Brown

Appendix 2 – Species List. Numbers of phyla, classes and species recorded in shallow marine habitats of the northern coast of South Georgia Island. Notable phyla not represented amongst our observations were Brachiopoda, Entoprocta and Priapula. Sightings of Sipuncula at Rosita Harbour were uncertain (?) and several examples of a single Demosponge species (*) were present but had been dislodged and probably been carried there by prevailing currents. Table produced by Dave Barnes.

Phylum, Class	Cumberland East Bay 18m	Moraine Fjord 20m	Rosita Bay 25m	Elsehul 17m
Annelida, Polychaeta	3	3		1
Oligochaeta				
Bryozoa, Cheilostome	6	5		
Cyclostome	1	1		
Chelicerata, Pycnogona	1	2		
Chordata, Ascidiacea	2	4		1
Pisces	1	1	1	
Cnidaria, Anthozoa	2	3		
Hydrozoa		1		
Crustacea, Copepoda		1		
	4	5	2	4
Malacostraca				
Echinodermata, Asteroidea	4	4	1	
Echinoidea	1	1		
	1	2		
Holothuroidea				
Echiura		1		
Mollusca, Bivalvia	2	2	1	
	8	4	2	2
Gastropoda				
Nematoda	1+	1+	1	
Nemertea	2	2		
Platyhelminthes, Turbellaria	1	1		
Porifera, Demospongiae	2	3		1*
		2		
Hexactinellida				
Sipuncula			1?	
Uniramia, Hexapoda				
Species Richness	42	49	9	9