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 where 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 Habour), limpets, *Nacella concinna*, and fish, *Harpagifer georgianus*, were collect 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

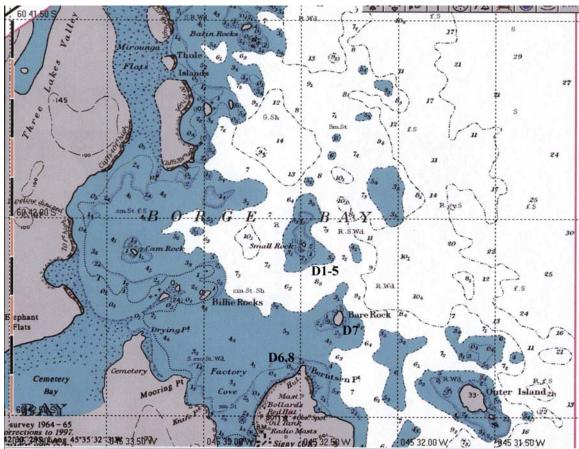


Figure 3. Chart of Borge Bay showing dive sites for dives 1-8 (D1-8).

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

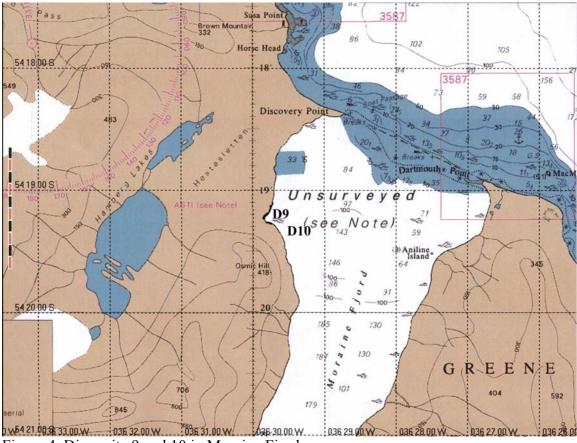


Figure 4. Dives site 9 and 10 in Moraine Fjord.

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

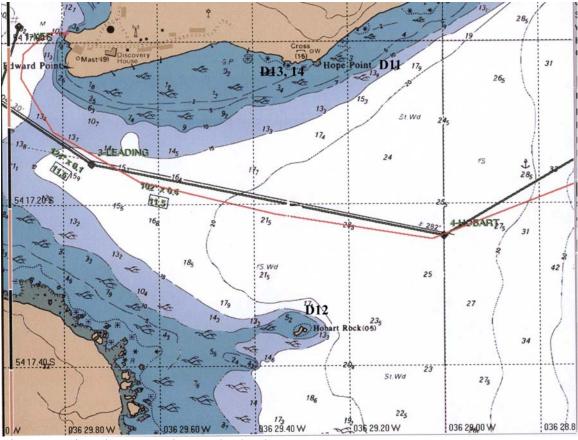


Figure 5. Dive sites 11-14 in Cumberland East Bay.

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

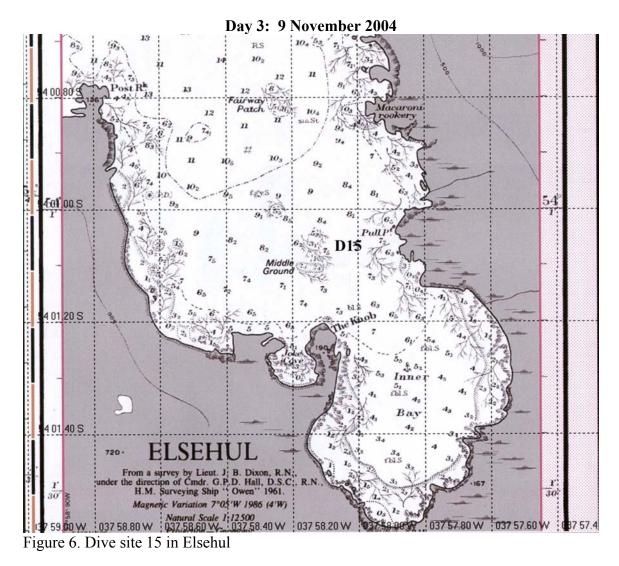
Shallow water dive was terminated early due to inquisitive male elephant seal.

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



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*

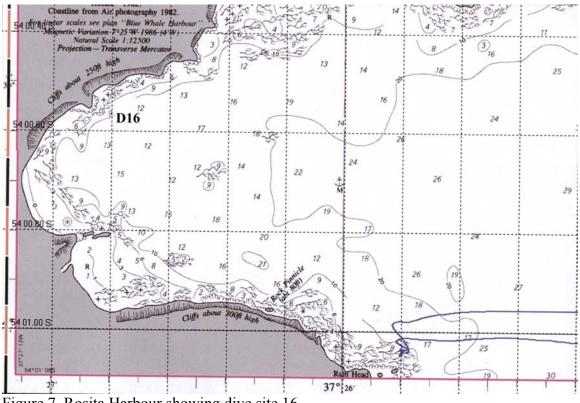


Figure 7. Rosita Harbour showing dive site 16

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.

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Dive Contractor	r: John Dudeney,	Deputy Di	rector, Britisl	h Antarctic Sur	vey.		
Institute Dive O	fficer: John Hall				Field D	ive Officer:	Matt Brown
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Supervisor Signature:

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Date: 3110/0			Site: BEA	R Rock, Bo	RGE BAY ,	SIGNY	
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DCIEM Schedu Diver 1 D. KARNES	Diver 2 S. MOREN	L/S	Depth		A/S	Safety Sto	p: <u>3@6</u>
DCIEM Schedu Diver 1 D. KARNES	Diver 2 S. MOREN	L/S	Depth		A/S	Safety Sto	p: <u>3@6</u>
DCIEM Schedu Diver 1 D. KARNES	Diver 2 S. MOREN	L/S	Depth		A/S	Safety Sto	p: <u>3@6</u>
DCIEM Schedu Diver 1 D. KARNES	Diver 2 S. MOREN	L/S	Depth		A/S	Safety Sto	p: <u>3@6</u>
DCIEM Schedu Diver 1 D. KARNES	lle: Diver 2 5. Morter e:	L/S 0746	Depth		A/S	Safety Sto	p: <u>3@6</u>
DCIEM Schedu Diver 1 D. Lances Multi Level Div	lle: Diver 2 5. Morter e:	L/S 0746	Depth		A/S	Safety Sto	p: <u>3@6</u>
DCIEM Schedu Diver 1 D. Lances Multi Level Div	lle: Diver 2 5. Morter e:	L/S 0746	Depth		A/S	Safety Sto	p: <u>3@6</u>
DCIEM Schedu Diver 1 D. & Aawes Multi Level Div Marine Mamm	al Encounter: Y	L/S 0746	Depth		A/S	Safety Sto	p: <u>3@6</u>
DCIEM Schedu Diver 1 D. Lances Multi Level Div	al Encounter: Y	L/S 0746	Depth		A/S	Safety Sto	p: <u>3@6</u>
DCIEM Schedu Diver 1 D. & Aawes Multi Level Div Marine Mamm	al Encounter: Y	L/S 0746	Depth		A/S	Safety Sto	p: <u>3@6</u>
DCIEM Schedu Diver 1 D. & Aawes Multi Level Div Marine Mamm	al Encounter: Y	L/S 0746	Depth		A/S	Safety Sto	p: <u>3@6</u>
DCIEM Schedu Diver 1 D. & Aawes Multi Level Div Marine Mamm	le: Diver 2 5. Morter e: al Encounter: Y Actions Taken:	L/S 0746	Depth		A/S	Safety Sto	p: <u>3@6</u>
DCIEM Schedu Diver 1 D. Laaves Multi Level Div Marine Mamm Emergencies &	le: Diver 2 5. Morter e: al Encounter: Y Actions Taken:	L/S 0746	Depth		A/S	Safety Sto	p: <u>3@6</u>
DCIEM Schedu Diver 1 D. Laaves Multi Level Div Marine Mamm Emergencies &	le: Diver 2 5. Morter e: al Encounter: Y Actions Taken:	L/S 0746	Depth		A/S	Safety Sto	p: <u>3@6</u>

Supervisor Signature:

.1

	or: John Dudeney Officer: John Hall				Field D	ive Officer	r: Matt
Date: 31/10/0			Site: 7	ernsrein	POINT, BORG	E GAT ,	Sign
	- 109 Af.	RAPHY .			Nature of I	Dive: Shor	re 🕭
			Arrangen	ents Co-oro	linated by: JCR	Ops superviso	n fan th
appoint:	Kalon	fraser			as diving	superviso	r 101 r
Signad.	M	mon	•		(Field Dive	officer, on beha	lf of Johr
Signed: Non-divers in (LINSE	CARGO 7			
			GARNES				
		<u>s.</u>	mores	- an-		on complet	tode
Weather/Sea S	state: $f_{.}$			Pre-di	ve area observati	on complete $f \leq 24$	tea: 4 -
Divers have r	ead and understa	and the BA	S Diving I	olicy, Roth	era Dive manual	and releva	nt risl
assessment to			5	-	FDO sign:	VPA	mur
Specific Pre-dive Ri	sk Assessment:				FDO sign:	··· / ·· ·· / ·· ·· ·· ·· ·· ·· ·· ·· ··	
Etwal Association	aanta (Cirala) I	Vallar	Higher		(If bi	gher, list co	ontrole
Final Assessn DCIEM Sched	nent: (Circle) Lo [.] Iule:	weighorm	rigner	<u></u>	(11 111	Safety S	
Diver 1	Diver 2	L/S	Depth	B/T	A/S	D/T	Di
M. BROWN	P. ENDERLEM	1114	9_	25	11 39	25	
Multi Level Di	ive:		-				
		["					
	1						
Marina Marr	nal Encounter: V	les No					
Marine Mamr	nal Encounter: Y	(es No					
Marine Mamı	nal Encounter: Y	(es No					
		<u> </u>					
	nal Encounter: Y & Actions Taken	<u> </u>					<u></u>
		<u> </u>					
Emergencies &	& Actions Taken	: Yes(No)					
Emergencies &		: Yes(No)					
Emergencies &	& Actions Taken	: Yes(No)					
Emergencies &	& Actions Taken	: Yes(No)					

I ____

	RC			CTIC SURVE STATION DI			
Dive Contracto	r: John Dudeney	, Deputy D	irector, Britis	h Antarctic Su	rvey.		
Institute Dive C	Officer: John Hal]			Field 1	Dive Officer:	Matt Brown
Date: SAT 6			Site: Osu	we Hill, M	ORAINE FSO	S.F. S.F.	
Task: Conec A		NUCA			Nature of	Dive: Shore	- Coat - Ice
418			Arrangeme	nts Co-ordinat	ted by: JCR	Ops	
I appoint:	MATT BROM	μ L			as divin	g supervisor	for this task.
Signed:	3	hears		•••••••••••••••	(Field Dive	Officer, on behalf o	of John Dudeney)
Non-divers in o	peration:		ES - <u>Bon</u> t				
		K. LINSE P GUDE	- BOAT REEINS - B	canif of			
Weather/Sea St	ate: C	I. ENUE		Pre-dive a	rea observat	ion complete	d:
	F,					YES	30 Arin ON Site
Divers have re	ad and underst	and the B A	AS Diving Po	licy, Rothera I	Dive manua	l and relevan	t risk
assessment to				ED	O signe		لحتمان
Specific Pre-dive Rish	Assessment:			FD	o sign:	···· /··· /····	515
		~					
· · · · · · · · · · · · ·	ent: (Circle) Lo	wer/Korm	aDHigher		(lf bi	gher, list con	
DCIEM Schedu	ile: 18m					Safety Sto	·
Diver 1	Diver 2	L/S	Depth	B/T	A/S	D/T	Dive No.
K. FRANER	S. MORCET	1032	17.5	27	1102	30	
Multi Level Div	/e:						
Marine Mamm	al Encounter: Y	esNo					
Emergencies &	Actions Taken:	Yes/No:)					
		<u> </u>					
Diana Paraka	Tuinuist- 1						
Diver Problems	s, injuries etc: Y	enno					

Supervisor Signature:

Institute Dive	or: John Dudeney Officer: John Hal	, Deputy D	irector, Britis	in Antarctic Sur	Field D	Dive Officer	Matt Brown
Date: 6th			Site: 03-	mic Hill ,	MORAINE	fold.	<u> </u>
Task: Conieca Ah. JR10	rion (LATE	ennla					e Boat- Ice
	Emergenc	y Support	Arrangeme	nts Co-ordinat	ed by: JCR	Ops	for this task.
I appoint:	PL	SER .					
Signed:	····· k··· k·· k·· (·· ····			<u></u>	(Field Dive	Officer, on benan	BI JOHN Dudeney)
Non-divers in	operation:	P. ENDER 5. Mon					
		K. UN	•				
Weather/Sea S	state:			Prc-dive ar	ea observat	ion complet	ed: Yes
assessment to Specific Pre-dive Ri				FD	O sign:		
Final Assessr DCIEM Scheo	nent: (Circle) Lo Jule: Z ø ~	wer/Norm	al/Higher		(If hi	gher, list co Safety St	ntrols above) cop: <u>3@6</u>
Diver 1	Diver 2	L/S	Depth	B/T	A/S	D/T	Dive No.
M. BROWN	D. BARNES	11 47	20-	23 mm	12.14	27	
Multi Level D					L		
	mal Encounter: Y & Actions Taken	<u> </u>					
Emergencies		:: Yes/10:					
Emergencies of Diver Probler	& Actions Taken ns, Injuries etc: `	:: Yes/10:					
Emergencies	& Actions Taken ns, Injuries etc: ` gnature:	:: Yes/10:					

	ector: John Dudeney ve Officer: John Hal		rector, Briti		Field D	vive Officer:	Matt Brown
Date: 06			Site:	YOPE POINT	, 5.5.		
Task: Ce	NIECTION CATER	NULA					
A/	G JRIOM.					Dive: Shore	– F oat – Ice
			Arrangeme	ents Co-ordina	ted by: JCR	Ops supervisor f	East this task
I appoint:	M. Breash	I			as diving	supervisor	or this task.
Signed:	in operation:	K. KASE	0	·····	•••••(Field Dive	Officer, on behalf o	f John Dudeney)
Tion urvers	in operation.	S. Mun		19 7			
							<u> </u>
Weather/Se	a State:			Pre-dive a	rea observati	on complete	1: 1 6.
assessment	e read and underst t to the task: e Risk Assessment:		0)O sign:	Moron	
Final Asse DCIEM Sci	ssment: (Circle) Lo hedule:	werNorma	Higher		(If hi	<u>gher, list con</u> Safety Sto	
D: 1	21 m	L/S	Donth	B/T	A/S	D/T	Dive No.
Diver 1	Diver 2		Depth				Direitor
K. LINSE	P. ENDERLEN	\$20	18	22 min	1S 4S	25	
Marine Ma	mmal Encounter:-						
Emergencie	es & Actions Taken	: FES/10 :					
Diver Probl	lems, Injuries etc: Y						
	lems, Injuries etc: Y		TOLIN.				

Dive Contract	or: John Dudene	y, Deputy I	Director, Briti	sh Antarctic Su			
	Officer: John Ha			0		Dive Officer:	
$\frac{\text{Date: } \mathcal{F}_{[n]}}{\text{Task: } Const.}$		RNULA	Site: A	ALL ROOMS,	SCYTVILL	5~ S. S	÷.
TASK. COLLE					Noture of	Diver Chan	
411		ev Sunnor	t Arrangeme	nts Co-ordina	Ind has ICD	Dive: Shore	(- D0a
I appoint:	K. FRASER	cy suppor	t Allangenie	nis Co-oruma		g supervisor	for thi
••						B suber (1991	
Signad.	RA	roun .					
Signed: Non-divers in o			••••••		(Field Dive	Officer, on behalf	of John D
Non-divers in o	peration:	C. LINSE ENPERLE	i al				
	-	MOTEL					
Weather/Sea S			-	Pre-dive ar	ea observat	ion complete	d:
	r _i −					tes	
	ead and underst	and the B	AS Diving Po	licy, Rothera I	Dive manua	and relevan	t risk
assessment to	the task:					. 01	
Specific Pre-dive Ris	k Assessment:			FD	O sign:	. f. Wyson	
1							
			-				
Final Assessm	ent: (Circle) Lo	wer/Norm	Al/Higher		(If hi	gher, list con	trols a
		wer/Norm	1/Higher		(If hi	gher, list con Safety Sto	
		wer/Norm	L/Higher Depth	B/T	(If hi A/S		p: <u>3@</u>
DCIEM Sched	ule:		- -	B/T 19 mm/m		Safety Sto	
DCIEM Sched Diver 1 み. られのいへ	Diver 2 D. Baenes	L/S	Depth		A/S	Safety Sto	p: <u>3@</u>
DCIEM Sched Diver 1 M. 610 NA	Diver 2 D. Baenes	L/S	Depth		A/S	Safety Sto	p: <u>3@</u>
DCIEM Sched Diver 1 M. 610 NA	Diver 2 D. Baenes	L/S	Depth		A/S	Safety Sto	p: <u>3@</u>
DCIEM Sched Diver 1 M. 610 NA	Diver 2 D. Baenes	L/S	Depth		A/S	Safety Sto	p: <u>3@</u>
DCIEM Sched Diver 1 み. られのいへ	Diver 2 D. Baenes	L/S	Depth		A/S	Safety Sto	p: <u>3@</u>
DCIEM Sched Diver 1 ハ. ちんのいへ	Diver 2 D. Baenes	L/S	Depth		A/S	Safety Sto	p: <u>3@</u>
DCIEM Sched Diver 1 M. 610 NA	Diver 2 D. Baenes	L/S	Depth		A/S	Safety Sto	p: <u>3@</u>
DCIEM Sched Diver 1 M. ໂແວນດ Multi Level Div	Diver 2 D. Ballnes ve:	L/S 0946	Depth		A/S	Safety Sto	p: <u>3@</u>
DCIEM Sched Diver 1 M. ໒ແວມາ Multi Level Div	Diver 2 D. Baenes	L/S 0946	Depth		A/S	Safety Sto	p: <u>3@</u>
DCIEM Sched Diver 1 M. ຍິແວ ພາດ Multi Level Div	Diver 2 D. Ballnes ve:	L/S 0946	Depth		A/S	Safety Sto	p: <u>3@</u>
DCIEM Sched Diver 1 M. ຍິແວ ພາດ Multi Level Div	Diver 2 D. Ballnes ve:	L/S 0946	Depth		A/S	Safety Sto	p: <u>3@</u>
DCIEM Sched Diver 1 M. రిజం ఎంసి Multi Level Div	ule: Diver 2 D. Balmes ve: al Encounter: Y	L/S 0 946	Depth		A/S	Safety Sto	p: <u>3@</u>
DCIEM Sched Diver 1 M. రిజం ఎంసి Multi Level Div	Diver 2 D. Ballnes ve:	L/S 0 946	Depth		A/S	Safety Sto	p: <u>3@</u>
DCIEM Sched Diver 1 M. రిజం ఎంసి Multi Level Div	ule: Diver 2 D. Balmes ve: al Encounter: Y	L/S 0 946	Depth		A/S	Safety Sto	p: <u>3@</u>
DCIEM Sched Diver 1 או נאס שאר Multi Level Div Marine Mamm	ule: Diver 2 D. Balmes ve: al Encounter: Y	L/S 0 946	Depth		A/S	Safety Sto	p: <u>3@</u>
DCIEM Sched Diver 1 ח. לאס היא Multi Level Div Marine Mamm Emergencies &	Diver 2 D, Balmes ve: al Encounter: Y Actions Taken:	L/S 0 946	Depth		A/S	Safety Sto	p: <u>3@</u>
DCIEM Sched Diver 1 ח. 6גם האל Multi Level Div Marine Mamm Emergencies &	ule: Diver 2 D. Balmes ve: al Encounter: Y	L/S 0 946	Depth		A/S	Safety Sto	p: <u>3@</u>
DCIEM Sched Diver 1 ח. 6גם האל Multi Level Div Marine Mamm Emergencies &	Diver 2 D, Balmes ve: al Encounter: Y Actions Taken:	L/S 0 946	Depth		A/S	Safety Sto	p: <u>3@</u>

	RC	BRITI DTHERA F			IC SURV ATION D			
Dive Contracto Institute Dive (r: John Dudeney Officer: John Hal	, Deputy D l	irector, Bi	ritish A	ntarctic Si	urvey. Field	Dive Officer	Matt Brown
Date: 7/]04		-	Site: /	Hole	POINT	KEP.	South 9.	
Task: Courc		ETS.		1	10.001			
Af sei						Nature of	f Dive: Shor	e - (Boat) - Ice
		y Support	Arrange	ments (Co-ordina	nted by: JCI	R Ops	
I appoint:	M. BRO							for this task.
Signed:	····/	~~~~~				(Field Div	e Officer, on behalf	of John Dudency)
Non-divers in o	peration:	D. BARNES						
		P. ENDERE						
		K. LINSE			x	1	4************	
Weather/Sea-St							ition complete VES	
	ad and understa	and the BA	S Diving	Policy,				
assessment to					וקו	O alam	Moro	274.
Specific Pre-dive Ris	k Assessment:				F	DO sign:	<i>4</i>	
Final Assessm	ent: (Circle) Lov	wer/Norma	Higher			(If)	igher, list coi	trols above)
DCIEM Schedu		der ter ter ter ter ter ter ter ter ter t	- inghei			(Safety St	
201201000000								<u> </u>
Diver 1	Diver 2	L/S	Depth	B /		A/S	D/T	Dive No.
K. IRASER	S. MURLEY	1038	2-		27	1105	27.	
Multi Level Div	/e:							
	1				1			
			_					
Marine Mammal Encounter Ts/No								
ELEPHONT SEAL								
Emergencies & Actions Taken: VegNo:								
DIVERS REMOVED FROM WATER.								
Diver Problems, Injuries etc: Yes No								
Supervisor Sign	nature:		have					·
Supervisor Sign	nature:		from.					

	RC		ISH ANTAR RESEARCH				
Dive Contracto	r: John Dudeney	, Deputy D	irector, Britis	h Antarctic	Survey.		
	Officer: John Hal	1	~			Dive Officer	r: Matt Brown
Date: 7/10/04	TIDA HARRE		Site: 40h	F POINT -	KEP.	· · · · · · · · · · · · · · · · · · ·	
	AUY.	· 3			Noture of I	Direct Char	
		v Sunnart	Arrangeme	te Co-ordi	Nature of I nated by: JCR		re (Boat) Ice
I appoint:	M. Blown	<u>، oupport</u> د	Allangemen	113 CO-01 UI			r for this task
Signed:		Zona .			(Field Dive	Officer, on behal	f of John Dudeney)
Non-divers in o	peration: S.	MORLEY GARNES	- Болт с. <u>7</u> снати	ee.			
Weather/Sea St	tate:	c. FRASER	<u>, , , , , , , , , , , , , , , , , , , </u>	Pre-dive	area observati	on complet	ed:
Divers have re	ad and understa	nd the BA	S Diving Pol	icy. Rother	a Dive manual	and releva	7 E s nt risk
assessment to				-		. 01	
Specific Pre-dive Risk	«Assessment;			ł	DO sign:	f fre	2 6 / 7 ·
Final Assessme	onte (Cinalo) I or		1/TT:		(161)		
DCIEM Schedu	ent: (Circle) Lov de:	ver/norm2	al/Higaer		(If hig	Safety St	ntrols above) op: <u>3@6</u>
Diver 1	Diver 2	L/S	Depth	B/T	A/S	D/T	Dive No.
K. LINSE	P. ENDERLEIN	1526	2.	31	1557	31	
Multi Level Div				01		φŢ.	
Multi Level Div	е.						
	1						
Marine Mamme	al Encounter: Ye						
ina ne manna	a Bacounter. 10						
Emergencies & .	Actions Taken:	Ver No					
Diver Problems	Injuries etc: Ye						
bitter i fobsetilis,	injuries etc. re						
Supervisor Signa	ature:		MAro	2.2.			
	••••••		k				

Dive Contracto	r: John Dudeney Officer: John Hal	, Deputy Di	rector, Britis	h Antarctic Sur	vey. Field D	ive Officer: I	Matt Brown
Date: 9/11/0			Site: Erse	HUL			
	TION CATURNULI	A					Â.
	207					Dive: Shore	-(Boat)- Ice
			Arrangemen	nts Co-ordinat	ed by: JCR (Ops supervisor f	an this tool
appoint:	M. brown	~ 1					
Signed: Non-divers in (operation: P	ENDERCES			(FIEM DIVE	Jinter, on Denan o	
Weather/Sea S	FL					on completed	<i>18</i> .
Divers have r assessment to Specific Pre-dive Ris		and the BA	S Diving Po		Dive manual O sign:	and relevant	: risk سريور
Final Assessn DCIEM Sched	nent: (Circle) Lo ule: المالية	wer/Norm	Higher		(If hig	gher, list con Safety Sto	
Diver 1	Diver 2	L/S	Depth	B/T	A/S	D/T	Dive No.
P. bALNES	S. Moret	1027	16m	12min	1040	15000	
	nal Encounter: 7						
Diver Problen	ns, Injuries etc:	Yes					
	gnature:	MA	row.				

		ROTHERA	'ISH ANTAR RESEARCH	STATIO	N DIVE LOG	}	
Dive Contract	or: John Duder	iey, Deputy I	Director, Britis	h Antarcti	c Survey.		
	Officer: John H	fall					er: Matt Brown
Date: 9/11 0 Task: Conce		Rowld	Site: Las	ETTE B	4y. Sou	TH YOURGIA	•
Ali JRI	09		-	nto Co. or	Nature linated by: J0	of Dive: Sho	ore Boat - ce
I appoint:	M. Krow	ency suppor	Anangeme	ats Co-ort			or for this task.
Signed:		5~			(Field I	Dive Officer, on beh	alf of John Dudeney)
Non-divers in (operation:	S. MORLET K. LINSE	1				
Weather/Sea S	itate:			Pre-div	e area observ	ation comple	eted: H
	ead and under	stand the BA	AS Diving Pol	icy, Roth	era Dive man	ual and relev	ant risk
assessment to Specific Pre-dive Ris					FDO sign:	K	. have
Final Assessm DCIEM Sched	nent: (Circle) L ule:	.owor/Norm	alHigher		(If		ontrols above) top: <u>3@6</u>
Diver 1	Diver 2	L/S	Depth	B/T	A/S	D/T	Dive No.
P. ENOBRIEN	W. FRASER	1818	26	16	1536	18	
Marine Mamm	al Encounter:	Vesto					
Cmergencies &	Actions Taker	n: Yes/160					
Diver Problems	, Injuries etc:	YesNo					
upervisor Sign	ature:		Grow	، سحر			
Supervisor Sign	nature: 		Groe	حر			

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	Fjord	Rosita Bay	Elsehul
	18m	20m	25m	17m
Annelida, Polychae	eta 3	3		1
Oligochaeta	6	5		
Bryozoa, Cheilostome	0	5		
Cyclosto	me 1	1		
Chelicerata, Pycnogo		2		
Chordata, Ascidiac		4		1
Pisces	1	1	1	
Cnidaria, Anthozo	a 2	3		
Hydrozo	oa -	1		
Crustacea, Copepoo	la	1		
	4	5	2	4
Malacostraca				
Echinodermata,	4	4	1	
Asteroidea Echinoid	dea 1	1		
Lennow	1	1 2		
Holothuroidea	1	2		
Echiura		1		
Mollusca, Bivalvia	2	2	1	
,	8	4	2	2
Gastropoda				
Nematoda	1+	1+	1	
Nemertea	2	2		
Platyhelminthes,	1	1		
Turbellaria Porifera,	2	3		1*
Demospongiae	2	5		1
- •		2		
Hexactinellida				
Sipuncula			1?	
Uniramia, Hexapod				
Species Richness	42	49	9	9