Annex A

Bay Island Voyages' advertising leaflet

The Flat Holm Project
Tel - 029 2035 3917
www.cardiff.gov.uk/flatholm

Kids Birthday Specials

**Half Hour - Bay	£80.00
**One Hour - Coastal Blast	£120.00

Maximum 12 persons

Trips and Prices

	Adult	Child*
1hr. Coastal Blast (through lock gates)	£18.00	£12.00
2hr. Flatholm and Steepholm Sightseeing	£28.00	£16.00

Group Discount on all trips

- Whole Boat Hire

1/2 hr	£96.00
1 hour	£165.00
2 hours	£265.00

- Twin identical boats 12 persons each
- Larger groups catered for

BAY
ISLAND VOYAGES

A family run business with over 30 year maritime experience. Run by a former coastguard auxiliary and R.N.L.I. Lifeboatman. Professionally trained as a fast rescue coxswain and offshore oil industry medic.

All our skippers and crew are trained to meet the stringent coastguard codes of practice for your safety and comfort.

LOCATION -

Look for the white trailer near the Welsh Assembly Building.
There is ample parking opposite Techniquest or voucher parking along Harbour Road. Our booking office/ trailer is situated at the end of the lower boardwalk adjacent to the Welsh Assembly Debating Chamber.

BOOKING DETAILS

- Sea conditions can very enormously but trips are usually suitable for all ages, including school parties and special groups.
- We understand that people may have disabilities or are concerned about boats - Just tell us and we will do our utmost to help. If you have any doubts visit our booking office prior to departure.
- Full third party insurance liability is provided for all passengers.

Personal effects are excluded but may be carried at your own risk.

- Refunds 24 hours prior to departure or if voyage has to be cancelled for bad weather, etc.
- Always wear warm waterproof clothing. We will provide waterproofs in any case.
- All information provided is subject to sea conditions and policy changes. We shall do our best to maintain sailing times.

TEL: 01446 420692
WWW.BAYISLAND.CO.UK

7TH GREAT SEASON!

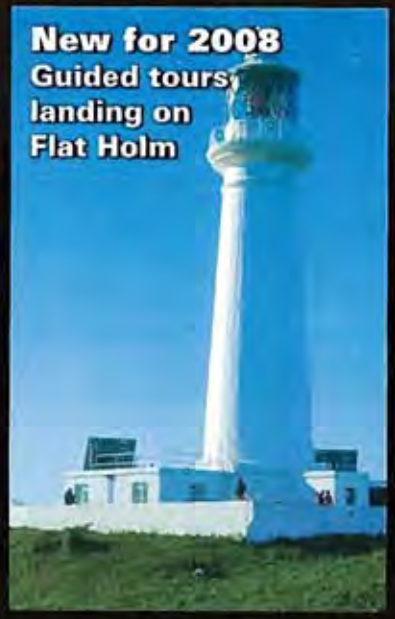
BAY ISLAND VOYAGES

Adventure boating specialists

CARDIFF BAY'S ORIGINAL FAST RIB RIDE

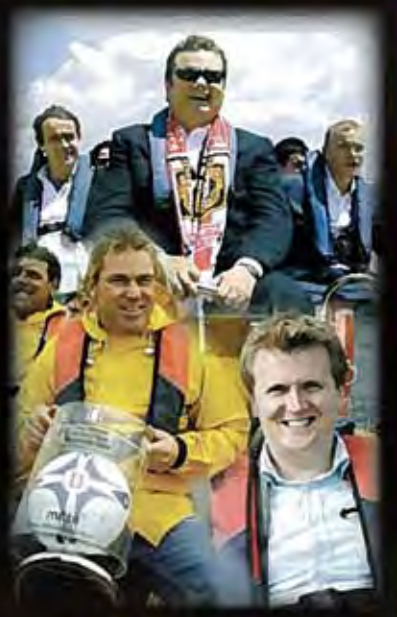
WWW.BAYISLAND.CO.UK

Adventure boating specialists



Double the fun ...

... for you to enjoy!!



Sightseeing

Wildlife is abundant with many rare and common bird species making the islands their home. Plenty of wonderful views of unspoilt cliff scenery, high headlands, ruins and beautiful flowers

- One Hour and Half Hour Kids Birthday Specials
- Team Building and Corporate Events on Land and Water. Large groups catered for.
- Activity breaks including Ribs, Quads, Climbing and Shooting can be arranged
- Stag and Hen
- Special Occasions

Open all year

- No two trips are the same
- Lightweight comfortable lifejackets fitted to all
- Plenty of photo stops
- Suitable for all ages including young children
- Dry pontoon boarding
- Individual internal seating

Telephone 01446 420692

WWW.BAYISLAND.CO.UK

All photos are originals taken by our crew and grateful customers

Annex B

Celtic Pioneer and *Celtic Ranger* SCV Certificates

MECAL

MCA Authorised Certifying Authority for Small Commercial Vessels
Queen Anne's Battery Marina, PLYMOUTH, PL4 0LP Tel 01752-227989 Fax 01752-227990 Email mecal@mcg.uk.com

SMALL COMMERCIAL VESSEL CERTIFICATE
"CELTIC PIONEER"
MECAL Unique No. M05MV0090635

Name of Owner/Managing Agent	**Bay Island Voyages**
Address	**21 Clos yr Wylan** **Nells Point** **BARRY** **Vale of Glamorgan** **CF62 5DB**

Type Of Vessel	**Motor Vessel (RHIB)**
Official Number	**N/A**
Port of Registry	**N/A**
Gross Tonnage	**N/A**
Maximum no.of persons (max.12 passengers)	**14**
Length Overall	**9m**
Load Line Length	**N/A**
Date of Build	**2005**

This is to certify that the above named vessel was examined by MECAL Authorised Examiner, **J.Fearnley of MCG Survey at Yeovil on 06 June 2005** and found to be in accordance with the requirements of the ***Code of Practice for the Safety of Small Commercial Vessels,*** published by the Maritime & Coastguard Agency of the United Kingdom Department for Transport.

This certificate will remain valid until **06 June 2010** subject to the vessel, its machinery and equipment being efficiently maintained, annual examinations and manning complying with the Code of Practice, and the following conditions:
1. Compliance with parts 4 & 5 of the Documentation of Compliance SCV2.

Maximum loading condition	**Total loading of persons and equipment is not to exceed 1050kg**

Permitted area of operation	**Category 4 (Up to 20 miles in daylight & favourable weather)**

Midterm examination by a MECAL Authorised Examiner due before (Please note certain Vessels require this to be done out of water)	**06 June 2008** SEE ATTACHED 15 SEP 2008

This certificate was issued at **Plymouth,** with an effective start date of: **06 June 2005**
This certificate expires on : **06 June 2010**
Name [redacted] for and on behalf of *MECAL* Ltd.

Date: **21 June 2005** Signature:

Change of owner, name of vessel, or any change of circumstance relating to the Code of Practice renders this certificate invalid

Pearl Assurance House
Duke Street
Tavistock
PL19 0BA
Tel: #44(0)1822 615500, Fax #44(0)1822 615588
email: admin@mecal.co.uk
Website: www.mecal.co.uk

Report of Survey

Name of Vessel: **Celtic Pioneer**
Type of Vessel: **RHIB**
Surveyor: **Ross Millard**
Survey: **Mid Term**
Date of Survey: **16th June 2008**
MCA Code / Area Category / No. of Persons: **Yellow/ CAT 4/ 14 Persons**
MECAL Unique Number:
Location/Conditions for Survey: **Cambrian Marina, Penarth/ Afloat**

Part 1 – Hull, Deck & Structure	Satis	Unsat	NA	SR/Remarks*
1.1 General condition of hull & structural attachments	X			
1.2 General condition of deck areas	X			
1.3 General condition of accommodation			X	
1.4 Hatches / companionways / doors / skylights	X			
1.5 Portlights & windows			X	
1.6 Ventilators	X			
1.7 Air pipes & closing devices			X	
1.8 Sea inlets & discharges			X	
1.9 Water freeing arrangements	X			
1.10 Keel / skeg / rudder attachments and rudder shaft play			X	
1.11 Stern tube / P bracket attachments & shaft play/Prop(s)			X	
1.12 Watertight doors & bulkheads			X	
1.13 Other items			X	
Part 2 – Machinery & Systems				
2.1 Main engine general condition			X	
2.2 Auxiliary engine general condition			X	
2.3 Outboard engine general condition	X			Serviced every 100hrs. Last service Feb '08. Booked for service 23/7/08
2.4 Engine start systems	X			
2.5 Petrol stowage	X			
2.6 Electrical systems	X			
2.7 Battery stowage / protection / ventilation	X			
2.8 Steering gear	X			
2.9 Bilge pumps & alarms	X			
2.10 Other equipment			X	
Part 3 – Deck Equipment				
3.1 Anchors & cables	X			
3.2 Windlass			X	
3.3 Mooring bitts / cleats	X			
3.4 Winches			X	
3.5 Sheet tracks / blocks			X	
3.6 Superstructures / gantries	X			
3.7 Other equipment			X	
Part 4 – Rig (Sailing Vessels)			X	
4.1 Spars			X	
4.2 Chainplates			X	
4.3 Standing rigging			X	
4.4 Running rigging			X	
4.5 Sails				
4.6 Other equipment				

Part 5 – Navigation & Radio Equipment				
5.1 Magnetic compass & Deviation Table	X			
5.2 Navigation lights / shapes / sound signals	X			
5.3 Radio equipment	X			
5.4 Nautical publications	X			
5.5 Other equipment	X			
Part 6 – Fire Safety				
6.1 Fire detection / alarm system			X	
6.2 Fire extinguishers	X			EXP 05/2009
6.3 Fire pump			X	
6.4 Hoses /nozzles			X	
6.5 Gas installation & detection / alarm	X			
6.6 Engine space insulation			X	
6.7 Fuel cut-off(s)	X			
6.8 Other equipment	X			
Part 7 – Protection of Personnel				
7.1 Bulwarks / handrails / handholds	X			
7.2 Jackstays & safety harnesses	X			
7.3 Non-slip decks	X			
7.4 Safety harnesses	X			
7.5 Man overboard recovery arrangement	X			Scramble net+Ladder
7.6 Other equipment			X	
Part 8 – Life Saving Apparatus				
8.1 Liferaft (expiry date)	X			EXP 09/2008
8.2 Hydrostatic release (expiry date & correct connection)			X	Float free
8.3 Flares (expiry date)	X			Exp 12/2012
8.4 Lifebuoys & lights	X			
8.5 Lifejackets & lights	X			Lights NR. Serviced 05/2008
8.6 MOB recovery line	X			
8.7 EPIRB / SART			X	
8.8 Man overboard searchlight			X	
8.9 Signalling Torch	X			
8.10 Portable VHF	X			
8.11 Thermal Protective Aids	X			
8.12 First aid equipment & manual	X			EXP 06/2008. New ordered
8.13 Training Manual on board	X			
Part 9 – Special Equipment				
9.1 Towing Gear			X	
9.2 Cargo securing arrangements			X	
9.3 Deck crane(s)			X	
9.4 Additional equipment for pilot duties (see SCV2)			X	
9.5 Other equipment			X	

** Indicate where tested (attach any relevant supporting documents). Use this column to list LSA service dates*

SR - Remarks & Deficiencies (continue on separate sheet if necessary) :

Record any changes to the SCV2 on a separate sheet

Subject to satisfactory close-out of discrepancy list items, I recommend that MECAL certification is confirmed

Examiner : [redacted] MECAL AUTHORISED EXAMINER **Date : 18th June 2008**

NOTES:

Examination concerns only those parts relevant to MCA code requirements. This report should not be used as a statement of condition of the vessel & it's equipment for any other purpose

We have not inspected woodwork or other parts of the structure which are covered, unexposed or inaccessible and we are, therefore, unable to report that any such part of the structure is free from defect

PART 5 – DECLARATION BY OWNER / MANAGING AGENT

I declare that the vessel CELTIC PIONEER

Is designed, built and equipped as shown in this form.

I undertake;

1. To maintain the vessel in a sound and seaworthy condition.
2. To report to the Certifying Authority any changes to the details shown on this form.
3. To notify the Certifying Authority of any collision, grounding, fire or other event which causes major damage. The nature and extent of major repairs must be approved by the Certifying Authority.
4. To make an annual report to the Certifying Authority, confirming that she is in sound and seaworthy condition and that the details shown on this form are correct and to sign this form appropriately
5. To make the vessel available for examination by the Certifying Authority at any time during the validity of the Small Commercial Vessel Certificate.
6. To ensure that the vessel is manned at all times as required by the code.

Signature of Owner/Managing Agent [redacted] Date 27 JUN 2005

[redacted]

To be entered on both the Owner/Managing Agent's copy by the person carrying out the examination and on the Certifying Authority's copy by the Certifying Authority on receipt of a report of examination.

1st examination (Owner/Managing Agent) – after 1 year

Carried out by: [redacted]	Date: 25 MAY 2006
At: CAMBRIAN MARINA	Signature [redacted]

2nd examination (Owner/Managing Agent)

Carried out by: [redacted]	Date: 11 MAY 2007
At: CAMBRIAN MARINA.	Signature: [redacted]

3rd examination (Authorised Examiner)

Carried out by: [redacted]	Date: 16TH JUNE 2008 MECAL AUTHORISED EXAMINER
At: CAMBRIAN MARINA	Signature: [redacted]

4th examination (Owner/Managing Agent)

Carried out by:	Date:
At:	Signature:

5th examination (Authorised Examiner – renewal)

Carried out by:	Date:
At:	Signature:

Certifying Authority for Small Commercial Vessels

First Floor Office
Pearl Assurance House
Duke Street
Tavistock
PL19 0BA
Tel: #44(0)1822 615500, Fax: #44(0)1822 615588
email: admin@mecal.co.uk Website: www.mecal.co.uk

SMALL COMMERCIAL VESSEL CERTIFICATE
"CELTIC RANGER"
MECAL Unique No. M02MV0090125

Name of Owner/Managing Agent	**Bay Island Voyages**
Address	**21 Clos Yr Wylan** **Nells Point** **BARRY** **Vale of Glamorgan. CF62 5DB**

Type Of Vessel	**Motor Vessel (RHIB)**
Use of Vessel	**Tripping**
Official Number	**SSR100717**
Port of Registry	**N/A**
Gross Tonnage	**N/A**
Maximum no.of persons (max.12 passengers)	**14**
Length Overall	**9m**
Load Line Length	**N/A**
Date of Build	**2002**

This is to certify that the above named vessel was examined by MECAL Authorised Examiner, **G.Boerne at Cambrian Marine, Cardiff on 09 May 2007** and found to be in accordance with the requirements of the ***Code of Practice for the Safety of Small Commercial Vessels,*** published by the Maritime & Coastguard Agency of the United Kingdom Department for Transport.

This certificate will remain valid until **09 May 2012** subject to the vessel, its machinery and equipment being efficiently maintained, annual examinations and manning complying with the Code of Practice
For limitations & Conditions please see the reverse of the certificate.

Maximum loading condition	**Total loading of persons and equipment is not to exceed 1500kg**

Permitted area of operation	**Category 4 (Up to 20 miles in daylight & favourable weather)**

Midterm examination by a MECAL Authorised Examiner due before (Please note certain Vessels require this to be done out of water)	**09 May 2010**

This certificate was issued at **Tavistock,** with an effective start date of: **09 May 2007**
This certificate expires on : **09 May 2012**
Name [redacted] for and on behalf of *MECAL Technical Committee.*

Date: **10 July 2007** Signature: [redacted]

Annex C

Bay Island Voyages' risk assessment

Risk Assessment Register

RA No.	Activity Description	Initial Date of RA	Risk Assessment Review Dates					
1+2	BOARDING PONTOONS, BOARDING BOAT.	27/05/02	27/05/03 27 MAY 2009	27/5/04	27 MAY 2005	27 MAY 2006	27 MAY 2007	27 MAY 2008
3	INJURY TO PASSENGERS ON VOYAGE	27/05/02	27/05/03 27 MAY 2009	27/5/04	27 MAY 2005	27 MAY 2006	27 MAY 2007	27 MAY 2008
4.	TRANSITING LOCKS	27/05/02	27/05/03 27 MAY 2009	27/5/04	27 MAY 2005	27 MAY 2006	27 MAY 2007	27 MAY 2008
3i.	INJURY TO PASSENGERS ON VOYAGE	27/5/04	27 MAY 2005 27 MAY 2009	27 MAY 2006	27 MAY 2007		27 MAY 2008	

1

Risk Assessment Record

RISK ASSESSMENT RECORD: **R.A. REF NO:** 1 **SHT OF**

WORK ACTIVITY BOARDING PASSANGERS AND CREW – INJURY OF PASSANGERS **CARRIED OUT BY:** **LEADER:**

DATE 15 SEP 2008

REVIEWED AND ACCEPTED BY **DATE:**

HAZARD REF NO	HAZARD DESCRIPTION DROWNING	RISK			DESCRIPTION OF EXISTING PREVENTIVE/PROTECTIVE MEASURES	ARE EXISTING MEASURES ACCEPTABLE		COMMENT CAR REF
		WHO / WHAT O.P.W.E	WILL IT HAPPEN L.M.H.	EXTENT L.M.H.		YES	NO	
1.	RISK OF CREW OR PASSANGERS FALLING OFF PONTOONS AT CAMBRIAN. M. OR OVAL BASIN BERTH	O.P.	LOW.	LOW.	BEFORE ANY CREW OR PASSANGERS ARE ON PONTOONS THEY DON – AUTO-INFLATE LIFE JACKETS. PASSENGERS ARE NOT PERMITED TO PASS THE LOCKED GATE AT THE			
					OVAL BASIN UNTILL KITED UP WITH LIFE JACKETS PRIOR TO BOARDING.	YES.		
2.	BOARDING OF R.I.B "CELTIC RANGER" BY CREW AND PASSANGERS RISK OF FALLING O/B	O.	LOW.	LOW.	NON-SLIP MATTING LAYED ON PONTOON ADJ. TO BOARDING POINT NON-SLIP MAT ON BOAT SPONSON TO STEP ONTO BOAT. ALL PASSENGERS	YES.		
					ARE ASSISTED BY THE CREW. V/C HAVE NON SLIP DECKS			
3.	INJURY TO PASSENGERS ON VOYAGE		LOW	LOW	SAFETY BRIEFING PRIOR TO DEPARTURE BY SKIPPER. ALL PASSENGERS INFORMED TO HOLD TIGHT WHEN BOAT IS UNDERWAY IN A SEAWAY AT SPEED.	YES		

Key: O = Operator, P = Passers By, W = World at Large, E = Environment, L = Low, M = Medium, H = High

Risk Assessment Record

RISK ASSESSMENT RECORD: **R.A. REF NO:** **SHT OF**

WORK ACTIVITY ENTERING LOCK, PASSING THROUGH LOCK. **CARRIED OUT BY:** **LEADER:**

DATE: 15 SEP 2008

REVIEWED AND ACCEPTED BY **DATE:**

HAZARD REF NO	HAZARD DESCRIPTION	RISK			DESCRIPTION OF EXISTING PREVENTIVE/PROTECTIVE MEASURES	ARE EXISTING MEASURES ACCEPTABLE		COMMENT CAR REF
		WHO / WHAT O.P.W.E	WILL IT HAPPEN L.M.H.	EXTENT L.M.H.		YES	NO	
4.	HANDS CRUSHED BETWEEN BOAT SPONSON AND LOCK PONTOON	CREW PASSANGERS	LOW	LOW	PASSANGERS INFORMED TO KEEP HANDS AWAY FROM SPONSONS. AND HOLD TIGHT TO HAND RAIL IN FRONT	YES		
	FALLING OVERBOARD IN THE LOCK				FENDERS "3" ARE OVER THE SIDE OF BOAT ON COMING ALONG SIDE, BETWEEN			
					THE BOAT AND PONTOON. PASSANGERS ARE INFORMED TO REMAIN SEATED WHILST TRANSITING THE LOCK			
3i	INJURY TO PASSENGERS ON VOYAGE	Passengers.	LOW	LOW	CORRECT SEATING POSITION DEMONSTRATED BY SKIPPER. CREWMAN OBSERVES PASSENGERS AT ALL TIMES WHILST UNDERWAY. VESSEL SLOWED OR STOPPED IF PASSENGERS NOT SEATED CORRECTLY.	YES.		

Key: O = Operator, P = Passers By, W = World at Large, E = Environment, L = Low, M = Medium, H = High

Annex D

Bay Island Voyages' operating procedures and emergency contingency plans

BAY-ISLAND-VOYAGES

PRE-BOARDING & PRE-SAILING SAFETY CHECK LIST

SKIPPER & BOATMAN

1. Passengers marshalled onto pontoon wearing "Auto-inflation lifejackets" by shore staff.
2. Check all lifejackets are fitted correctly.
3. Give "Company Safety Briefing" to all passengers, clearly and in a informative manner, holding attention to the importance of information being conveyed.
4. Point out the safety features of the boat.
5. Asses the "weight / size" of the different passengers to weight distribution on the boat, prior to boarding.
6. With the assistance of the shore staff & boatman commence embarking the passengers, safely one at a time over the step gangway, conveying the passenger safely to the pod seat. **Inform passenger to keep seated.**
7. Once all passengers seated. Evaluate list/even keel/trim of boat.
8. Head count. Figures agreed with shore staff .
9. Passage plan for voyage logged with shore staff. Return ETA logged.
10. Make address to passengers "Not to stand or attempt to get out of, or change seats" once the boat is underway.

SAFETY CHECKS BEFORE LETING GO

1. Instruments check. "Fuel" "Engine temp" Log.
2. Compass, G.P.S. Echo sounder. Log.
3. Fixed V.H.F. Radio tested. Log.
4. Back up hand held V.H.F. tested. Log.
5. Latest weather report received.
6. S.H.M.Tidal graph for the day referred to.
7. All loose items and equipment stowed. Deck clear.
8. Monitor other traffic movements in the area, make Sure of a clear passage away from berth.

NOTICE TO ALL SKIPPERS & BOATMEN

All Cardiff Bay Harbour Authority Rules & By laws are to be strictly complied with at all times. Speed is to be kept within the limits set by the Harbour Authority At all times.

BAY-ISLAND-VOYAGES.

EMERGENCY CONTINGENCY PLAN FOR NAVIGATION IN THE BRISTOL CHANNEL

1. The "Boat Skipper" will refuse to board any person observed to be under the influence of "Drugs or Alcohol"
2. In the event of a passenger suffering on voyage "Heart Attack" "Stroke" "epileptic- fit" or any condition necessary for immediate medical attention, the Skipper will make a "Pan.Pan" or "May Day" broadcast on "VHF Ch.16"

On reception of the "Pan Pan" by the Coast Guard, the Skipper will give vessels position and E.T.A. to "Penarth Coast Guard" slipway, convey details of the casualty and type of medical emergency and any fist aid being given.
At Penarth coast guard slipway the casualty can be taken ashore at any state of tide to an ambulance on the beach.

3. In the event of a person falling overboard." M.O.B. rescue techniques employed and person recovered from the water"
Depending upon the time and degree of hypothermia the person may be suffering after recovery from the water. Coast Guard to be informed if a "Medical Evacuation" of the casualty will be necessary at "Penarth Coast Guard Slipway"

4. In the event of a person or persons acting or behaving in a way that could endanger themselves or other persons in the boat. The Skipper Will issue a "strong verbal warning" that the trip will be "Aborted" and the boat will return to "Cardiff Bay"
If the Skipper decides that a person or persons are not heeding the warning, and continue to behave in a way that may cause danger, he may decide to inform the "Coast Guard" of the situation and request "Police assistance" for disembarking the person or persons.

5. In the event of Engines Breakdown/Steering Failure/Fouled propeller. The Skipper will consider anchoring (Depending on the vessels position) Call Coast Guard with "Position" and
"P.O.B" in the event of vessel being considered safely anchored. Arrangements made for a tow back to Cardiff Bay. If in any doubt about the safety of the "Vessel, Passengers or crew " The Skipper will make "Pan Pan" or "Mayday" Broadcast.

6. In the event of a "Draw down" of "Cardiff Bay" when the vessel is operating outside the Barrage locks. Return through the Barrage locks to Penarth Marina, if it is safe to do so. Disembark passengers on prepared steps in the outer harbour, if the Barrage locks are unavailable. Disembark passengers at Penarth pier or Barry harbour if conditions warrant.

7. In the event of Collision, Fire, Grounding, Abandoning the vessel. The same Contingency plans are to be followed as for Navigating in "Cardiff Bay"

BAY-ISLAND-VOYAGES

EMERGENCY CONTINGENCY PLAN WHEN NAVIGATING IN CARDIFF BAY

1. In the event of a passenger suffering from, "Heart Attack" "Stroke" "Epileptic fit" or any other medical condition that requires immediate medical attention. Urgency broadcast to be made on V.H.F. giving details. Boat to return to pontoon or as directed by emergency services.
   The Skipper shall administer "first aid" to the casualty and update condition of casualty to emergency services.
   Boat to dock near to ambulance and casualty conveyed ashore.
   Follow up reports made to "Harbour Authority" "M.C.A" "Insurance Company" and all relevant persons.

2. In the event of "Engines break-down" "Loss of steering" "Fouled propeller " or any other condition that may affect the safe manoeuvring of the boat.
   The Skipper is to consider the safe position of the boat with reference to "Set & Drift" in view to anchoring.
   Harbour Authority to be informed on V.H.F. of position of the boat and details of the "Break down" and P.O.B.
   Company shore staff informed and tow arrangements made to return to berth.
   Note. Depending upon the circumstances of the case the Skipper may decide to upgrade the situation to an "Urgency or May Day" if any immediate danger to life is envisaged.

3. In the event of collision with another vessel, a bouy, or structure the Skipper shall asses the situation concerning the immediate safety of the boat, passengers and crew. Urgency or May Day broadcast on V.H.F. giving details of boats position, P.O.B. any injuries to persons and damage sustained to boat. Assistance required.
   If the collision was with another vessel, the Skipper may render such assistance to the other vessel as is required, after he has satisfied himself that there is no danger to own boat, passengers or crew.
   If in danger of flooding / sinking, life saving equipment to be deployed and passengers and crew transferred to life-raft.

   In all cases of collision, "however minor" follow up reports are to be submitted to the "Harbour Authority. M.C.A. & Insurance Co."

EMERGENCY CONTIGENCY PLAN WHEN NAVIGATING IN CARDIFF BAY

4. In the event of the boat running aground.
The Skipper shall asses the situation as to the position of the boat, check position on G.P.S. and chart. Determine the current direction and rate, wind speed & direction. Determine if the boat, passengers or crew are in any danger, if so, life saving equipment made ready for use.
An Urgency or May Day broadcast on V.H.F. giving details of position, assistance required, P.O.B. and any other relevant details.
The Skipper shall determine the water tight integrity of the hull. Sound void spaces and bilges. Start bilge pumps if necessary and calculate if hull is breached that pumps can cope with the in-flood of water.
When assistance arrives the Skipper shall decide if it is safe to accept a tow line for towing off the ground. Subject to any hull breaches, ingress of water and bilge pumps capacity to deal with any in-flooding.
If in any doubt regarding the severity of hull damage affecting the Buoyancy of the boat the "Emergency Life Raft" to be inflated and made fast alongside. All passengers and crew transferred to the liferaft and tow line made fast to the liferaft.
Liferaft towed away by rescue boat to position to embark passengers to herself.

The above is a "Worst Case Scenario" as most of Cardiff Bay is soft mud. Also by construction a R.I.B. has a great amount of buoyancy.

Follow up reports to. "Harbour Authority. M.C.A. Insurance Co."

5. In the event of a person or persons falling overboard.
Urgency or May Day Broadcast. Depending on the circumstances and the situation.
The Skipper or Boatman shall jettison lifebouy, the boat turned around (Williamson Turn) all the time keeping casualties in sight. Person or persons retrieved from the water using M.O.B. techniques . If person or persons are undetected S.A.R. search patterns commence (with other craft)
Upon rescue of casualties, Skipper to administer first aid and treat for hypothermia. On direction from Emergency services proceed to the nearest berth to transfer the casualty to Ambulance.

Note. All passengers and crew wear "Auto-inflate lifejackets" at all times.

BAY- ISLAND- VOYAGES.

PASSAGE PLAN

From: Cardiff Bay. **To:** Ranie bouy. Flat Holm. Steep Holm. Monkstone Lt.h. Return to Cardiff Bay.

Wpt.	Position.	Lat.	Long.	Course.	Distance.
1.	Lavernock pt.(Ranie bouy)	51 24.2 N	03 09.1 W	176 Mag.	2.3 NM
2.	NE Flat Holm.	51 23.1 N	03 06.7 W	132 Mag.	1.9 NM
3.	N Steep Holm.	51 20.6 N	03 07.8 W	185 Mag.	2.5 NM
4.	Monkstone Lt.H.	51 24.8 N	03 06.0 W	013 Mag.	4.2 NM
5.	South Cardiff Bouy.	51 24.1 N	03 08.6 W	246 Mag.	1.8 NM
6.	Cefn-y-Wrach Chan.	51 26.8 N	03 09.7 W	350 Mag.	2.2 NM

Chart sequence.
B.A. Chart No.1182 "Barry and Cardiff roads with approaches"
B.A Chart No. 1176 "Severn Estuary-Steep Holm to Avonmouth"
B.A Chart No. 1179 "Bristol Channel"
Electronic Chart NE176T16 "Bristol Inner Channel"

Publications.
Bristol Channel Pilot (Stanfords)
Harmonic tide predictions secondary ports (Flat Holm & Steep Holm) SHM.
B.A. and local Notices to Mariners.
Reeds Nautical Almanac (2002)

Notes.
Contact Barrage on VHF Ch. 18.
Cefyn-y-Wrach Channel (Comercial Vessels) VHF Ch. ~~14~~. 69
Penarth & Swansea Coast Guard. VHF Ch. 16. & 67.

Be aware of strong tides/currents in all area's of the channel,very strong current off the "Ranie bouy" area.
Be aware of large rise & fall of the tide.Daily Ref. "Drying heights" to "SHM" to compute the "Minimum safe height" to pass over soundings at chart datum.

Bay-Island Voyages. Passage plan.Trip Schedule.

	Location	Course.	Distance.	Speed.	Time.
1	Passengers kit-up.Saftey Briefing.				10 min.
2	Boarding.Let go.Proceed to Sea Lock.	VAR	250 mts.	05 k.	05 min.
3	Enter Sea Lock.Make fast / Let go.				15 min.
4	Exit Sea Lock.Slow speed to clear harbour..	VAR	250 mts.	05 k.	03 min.
5	Outer bouys to Ranie bouy.	176 mag.	2.30 nm.	VAR	05 min.
6	Talk on Lavernock Point.				03 min.
7	Ranie bouy to Flat Holm.	132 mag.	2,38 nm.	VAR	05 min.
8	Round Flat Holm with talk.	VAR	1.50 nm.	VAR	10 min.
9	Flat Holm S.E. to Steep Holm.N.	184 mag.	1.82 nm.	VAR	03 min.
10	Round Steep Holm with talk.	VAR	1.50 nm.	VAR	10 min.
11	Steep Holm to Monkstone light House.	041 mag.	4.20 nm.	VAR	07 min.
12	Round Monkstone Ligh House,	VAR	0.25 nm.	VAR	03 min.
13	Monkstone to South Cardiff bouy.	246 mag.	1.60 nm.	VAR	03 min.
14	South Cardiff bouy to outer harbour bouy.	350 mag.	2.26 nm.	VAR	05 min.
15	Outer harbour bouy through harbour to lock.	VAR	250 mts.	05 k.	03 min.
16	Enter Sea Lock.Make fast / Let go.				15 min.
17	Exit Sea Lock.Slow Speed to berth.	VAR	250 mts.	05 k.	05 min.
18	Tie up.Passengers kit off.				05 min.
				Total:= 1 hr.55 m.	

1	**Total Distance :=**	18.31 nm.
2	**Total VAR/Full**	28 min.
3	**Total Manv revs :=**	42 min.
4	**Lock Times Appr :=**	30 min.
5	**Kit up/Off.Saftey :=**	15 min.
	Total trip time :=	**1 hr. 55 m.**

Trip sched.Commencing in the Morning.

	Time.		Details of Trip.
1	0945 hrs.		Passengers kit up.Safety briefing.Boarding and seating.
2	0955 hrs.		Let go from berth.Proceed to Sea Lock. Prior Notice on VHF.
3	1000 hrs.		Proceed into Sea Lock.Make Fast.More about Safety equipment.
4	1015 hrs.		Let go from Sea Lock proceed to outer harbour.(Slow speed)
5	1018 hrs.		Outer bouys to Ranie bouy. (Full speed)
6	1023 hrs.		Off Ranie bouy.Talk on Lavernock Point.
7	1026 hrs.		Depart Ranie.Proceed to Flat Holm East. (Full speed)
8	1031 hrs.		Off Flat Holm East.Proceed Around Island.Talk / Intresting points.
9	1041 hrs.		Depart Flat Holm.Proceed to Steep Holm. (Full speed)
10	1044 hrs.		Off Steep Holm North.Proceed around Island.Talk.etc.
11	1054 hrs.		Depart Steep holm.Proceed to Monkstone L.H. (F/Speed)
12	1101 hrs.		Off Monkstone L.H. Proceed around the L.H. Talk/History etc.
13	1104 hrs.		Depart Monkstone L.H. Proceed to South Cardiff Bouy. (F/Speed)
14	1107 hrs		Alter course for outer harbour bouys. (Full speed)
15	1112 hrs.		Off outer harbour.Proceed to Sea Lock.(prior VHF Notice given.)
16	1115 hrs.		Enter Sea Lock And make fast. (Time in locks approx.15 min.)
17	1130 hrs.		Let go from Sea Lock and proceed to berth. (not yet Known)
18	1135 hrs.		Off berth.Tie up.De rig/De brief Passengers.Disembark all.
19			**Get ready for the next lot. Kitting up at 1145 hrs.**

COMPASS DEVIATION CARD

MV ... 15 SEP 2007 .....

Compass Type / Make / Model ...MAG. LC CAIRON.....

Adjusting Date .....27th MAY 2002.....

Deviation	Magnetic		Course to Steer
0°	North	0°	000°
		15°	
		30°	
½° W.	N/E	45°	045½°
		60°	
		75°	
1° W	East	90°	091°
		105°	
		120°	
2° W.	S/E	135°	137°
		150°	
		165°	
½° E	South	180°	179½°
		195°	
		210°	
½° E	S/W	225°	224½°
		240°	
		255°	
1½° E	West	270°	268½°
		285°	
		300°	
½° E	N/W	315°	314½°
		330°	
		345°	

Annex E

Medical report by RNLI consultant occupational physician

[redacted]
CONSULTANT PHYSICIANS IN OCCUPATIONAL MEDICINE
[redacted]

November 24, 2008

[redacted]
Inspector of Marine Accidents
Marine Accident Investigation Branch
Carlton House, Carlton Place,
Southampton
SO15 2DZ

[redacted]

'Wedge' Compression Fractures

Axial loads (loads applied compressively through the longitudinal axis of the spine) are capable of causing spinal fracture if of sufficient magnitude. Typically such fractures occur in the lumbar spine and the mechanism of action is axial compression with a degree of forward flexion. Such fractures are less commonly seen in the thoracic spine. The forward flexion occurs because the centre of gravity of the trunk in a seated individual is situated in the chest just behind the sternum (breast bone). When the load is applied the lumbar spine flexes bringing the front of the vertebrae into apposition and this results in the forward (anterior) parts of adjacent vertebrae coming together causing a wedge shaped crush.

Experimental studies have shown that a number of factors affect the injury risk. These are:

a) The magnitude of the acceleration and the rate at which the acceleration is applied.

[redacted]

Early work with escape systems in military aircraft showed that spinal fracture occurred almost invariably at accelerations as low as 10G when associated with rates of onset of circa 1000G.sec-1, Subsequent development of escape systems showed that the adult male spine, when well restrained, was capable of withstanding higher peak accelerations when the rate of onset was lower. In essence the quicker the onset the more 'brittle' the spine is in its response.

High peak accelerations with high rates of onset can cause the vertebra to 'burst'; in this case the vertebral body, instead of crushing, splits into fragments. This is sometimes called a high energy fracture. Such a fracture is unstable and compromise the spinal cord or spinal nerves with a risk of paralysis.

b) The effect of posture

Clearly, the better the spinal alignment the more protection is afforded against wedge fracture as the load is distributed more evenly across the vertebra. Loads through the spine are carried predominantly by the vertebral bodies but some load is also carried across facet joints. The load is thus effectively triangulated across these with the load shifting to the vertebral body with forward flexion and towards the facet joints with rearwards bending (extension in orthopaedic speak). Twisting puts a torsional load on the intervertebral disc and differentially loads the facet joints. The literature suggests that the effect of this is to reduce the mechanical strength of the vertebra/intervertebral disc unit by about 1/3rd.

c) Seating

Careful attention needs to be paid to seating to ensure that the individual is 'coupled' to the seat as effectively as possible and that any comfort layer helps to attenuate rather than reinforce the impact. It is important on RIBs not to be seated on the sponson as this invariably results in loss of spinal alignment as well as increasing the chance of 'dynamic overshoot' in the event of an impact.

At risk populations

Much of the biomechanical work on the response of vertebral bodies to impact has been undertaken in relation to young adult males. Other work has looked at the increasing vulnerability of the spine in osteoporosis where there is a loss of mineralization in the spine. This can be of such severity in the elderly that fracture occurs spontaneously. The risk of fracture can be determined by measuring Bone Mineral Density by x-ray absorption techniques. Each standard deviation (SD) below normal represents a doubling of fracture risk with 1SD being referred to as osteopenia (a reduction in BMD) and 2.5SD as osteoporosis. Treatment is reserved for this latter group. Clearly small changes in BMD represent a significant increase in risk in potentially hazardous environments such as high speed marine craft.

The most obvious at risk populations are those of post menopausal women and women with a strong family history of osteoporosis. Other groups include those born with hereditary disorders of bone, those who have had prolonged steroid therapy for certain

types of disease, those who have a body mass index below 19kg/m2 and those who are on certain types of cancer or immunosuppressant treatment. It should be noted that lighter weight individuals may be at greater risk anyway, irrespective of BMD, as for a given input Force they will experience a higher acceleration than an a heavier individual.

Injury to subject of this investigation

Subject is a 55 year old female. Investigation showed that she sustained a compression fracture of the second lumbar vertebra (L2) with compression of the superior (upper) endplate (the upper part of the shell of the vertebra). Associated with this was a triangular separated fragment of vertebral body that was bulging posteriorly towards the spinal canal. The appearance is thus of a moderately high energy fracture with a separated vertebral segment that fortunately has not caused any neurological damage.

It is not possible to be certain whether the subject was at greater risk without further investigation and knowledge of her medical history.

Please get back to me if you have any queries and feel free to use the body of this report (amended if needs be subject to retention of its sense).

With kind regards

Yours sincerely

[redacted]

Consultant Physician in Occupational Medicine

[redacted]

High speed craft; motion, ergonomics and injury: A summary report for the MAIB

HIGH SPEED CRAFT;
MOTION, ERGONOMICS & INJURY:
A summary report for the MAIB.

Trevor Dobbins and Stephen Myers

STR/MAIB//1.0/2008

December 2008

Parts of the document have derived from separate funding and are being provided by way of information only.

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West Sussex
PO20 7NA
UK

CONTENTS

1. Introduction

i) The following background information is provided to the MAIB for their investigation into an injury sustained on a Rigid Inflatable Boat (RIB).

ii) The information provided within this document is a very brief synopsis of the area. It is advised that interested parties obtain more detailed information before any significant decisions are considered.

2. High-speed craft shock and vibration

i) High Speed Craft (HSC) have been shown to experience impacts in excess of 20g perpendicular to the deck, and in excess of 10g parallel to the deck. An example of typical motion experience in a HSC is shown in Figure 1. This illustrates a section of a three hour transit in a 28' RIB, travelling at ~40 knots, in a sea state 1-2. Note the predominance of impacts of around two to three g, a number of impacts around seven g, and a twenty g impact.

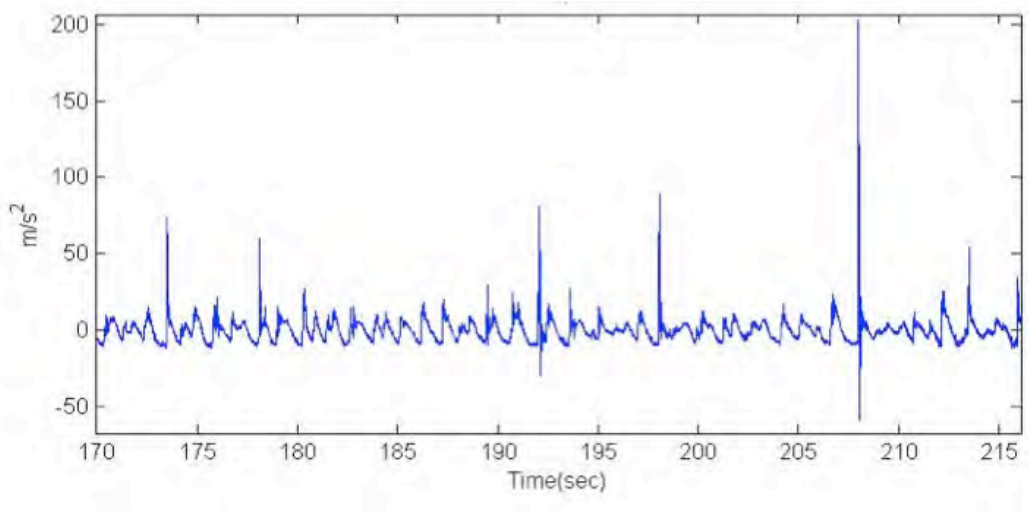

Figure 1. An example of the deck motion (gZ) of a 28' RIB travelling at ~40 knots in a sea-state 1-2.

ii) Previous research utilised traditional naval architecture methodologies for analysing the motion of HSC such as RIBs. This principally focused on the average vibration (rms), and the Vibration Dose Value (VDV) method that provides an additional emphasis on the shocks encountered. These methods have been found to be ineffective or relatively poor for the analysis of HSC motion.

iii) The motion of HSC can be defined as a series of discreet impacts/shocks. This concept was used by the US Army to develop an analysis methodology (ISO 2631 Pt5) for exposure to repeat shocks of up to 4g in land vehicles.

iv) Recent research by the USN, specifically targeted at HSC motion analysis, has further developed the ISO 2631 Pt5 to increase it's validity to >14g. UK researchers have developed an analysis methodology for examining the magnitudes and distribution of the impacts, this is known as the Impact Count Index (ICI).

v) The impacts experienced by a HSC are generally greater at the front of the boat and reduce towards of the rear of the craft. Therefore those sitting at the front of the HSC are likely to be exposed to greater impacts than those at the rear.

3. Lower back injuries sustained on HSC.

i) The magnitude of the forces experienced by HSC occupants (re: Section 2.i) put an excessive load on the skeletal system and particularly the lower back. Although the spinal column can tolerate large loads when applied axially, the risk of injury is exacerbated with the application of transverse loads, for which the spine is not designed, and if the spine is misaligned/bent during the application of the force.

ii) Poor spinal postural alignment is common on HSC where seats with poor ergonomics are used and/or the occupants are undertaking activities that result in misalignment.

iii) Examples of seat design features that can lead to increased risk of injury include seat cushions that can result in an increase in the impact magnitude. This is because the individual will still be moving downwards, compressing the cushion, while the boat has landed and is travelling upwards. This results in an increased impact magnitude as the boat seat and occupant are travelling in opposite directions at the point of impact.

iv) Fast jet pilot ejection's and helicopter crash landing have the same issue with seat cushions, and great efforts are made to optimise the cushioning material to reduce the impact magnitude along with using seat-belts to maintain contact between the individual and the seat.

v) Increasing foam thickness may enhance comfort by reducing vibration in relatively benign conditions, but it will lead to an increase in impact magnitude (re: 3.iii). Therefore thinner, firmer cushioning material should be considered along with optimising the shape to distribute the contact pressure.

vi) Handles that are poorly located, e.g. too narrow and low, can result in a lack of support to the torso resulting in poor spinal alignment and the risk of impact injuries from falling. Refer to Section 5 for further information.

4. Shock mitigation

Shock mitigation can be achieved by two means, procedural and engineering solutions.

i. Procedural solutions can be divided into a number of areas

   a. Coxswain training; the coxswain has a direct influence over the crafts motion exposure by their use of the steering and throttle to control the craft. The principal mechanism influencing craft performance and therefore shock exposure is throttle response. The ability of the coxswain to use the throttle to reduce shock exposure, i.e. reduce power before reaching the top of a wave, may be taught, and is enhanced with training. It should be noted that in certain circumstances and sea conditions increasing speed can enhance ride comfort, but, this is a technique for very skilled coxswain. It is understood that there is no recognised course that provides such training to enhance coxswain skill in poor sea conditions.

   b. Sea condition exposure; the greater the sea-state the greater the risk of impacts occurring. The organisation responsible for the HSC transits should, within their risk assessment, document the sea conditions that they are responsible for operating in. In general, emergency operations will take place in harsh sea conditions whilst pleasure rides may be restricted to relatively benign conditions.

   c. Passenger briefing; the individuals should understand what they will be exposed to during a HSC transit. The importance of good posture should be stressed, along with highlighting the risks to health in a similar manner to those for a roller coaster ride.

ii. Engineering solutions; Systems are readily available to reduce exposure to repeated shocks.

   a. A HSC Human Factors Engineering Design Guide is available to the industry as a free download from the internet. This provides assistance to designers, builders, buyers and operators on how to enhance their craft and its operation.

   b. Ergonomics; HSC seats and support features (hand-holds etc.) should be designed to optimise the occupants posture and therefore spinal alignment. The occupant's interaction with the crafts systems (steering, throttle, navigation, communications, etc.) should be designed so that spinal alignment is maintained.

   c. The magnitude of the impact on a HSC are greater at the bow, and reduce towards the stern of the craft. Placing the passengers on seats at the front of the craft will expose them to the greatest impacts. When the coxswain is located at the rear of the craft they will experience a reduced impact magnitude than the passengers. By locating the coxswain at the front of the craft they will receive the greatest impacts and are therefore more likely to reduce speed, also the passengers will be positioned toward the rear of the craft and experience a reduced magnitude of impact. If it is important for a

crew person to be able to monitor the passengers (which would be impossible for the coxswain at the front of the craft) then a second crew-member should be located at the rear of the craft.

d. Suspension seats; there are a number of commercially available suspension seats that are designed for HSC applications. A number of these have been tested and shown to reduce the magnitude of exposure to repeated impacts.

e. Suspended deck; although there are a number of patents describing suspended deck systems, only one has been developed and demonstrated in a small HSC. Initial testing has shown that the system is capable of reducing impact magnitudes; further testing is required to verify the results.

f. Hull design; The geometry of the HSC hull has a large effect on the ride comfort and impact exposure. Larger craft have a more comfortable ride, although this is also normally related to an increase in weight that enhances ride comfort. For a mono-hull, the dead-rise angle is also critical to reducing impacts, the steeper the angle the better the ride, whereas the shallower the angle (i.e. a flat bottomed boat) the harsher the ride. Catamarans and multihull designs can also enhance ride comfort although there are often operational requirements that limit the use of these designs.

5. Specific issues relating to the casualty's posture

From the information provided by the MAIB the following points are made relating to the casualty's posture and related issues:

i. Posture; the principal issue is with the front seat and its handle. The position of the handle is considered to be too low and too narrow. By being too low it provides no support to stop the individual from being thrown forward as the boat impacts with the water. By being too narrow it provides little lateral support to the individual when the boat impacts with the water or during cornering. This poor support means that the individual will use other means of support and stability wherever possible. In this case the individual used the rope on the RIB sponson to provide additional lateral support. The problem with this is that it can result in the spine being misaligned and therefore being put at an increased risk of injury. Also the position of the seat means that the left foot of the occupant is not placed on the flat deck with a non-slip surface, and is therefore on an angled surface that will be slippery when wet. This may also reduce the stability of the seat occupant. This situation can be avoided by repositioning the seats so that they have the appropriate non-slip deck space around them. This would most likely require the number of passenger seats on the boat to be reduced. The issues with seat design and the occupants posture are graphically described in Figures 2, 3 and 4 where an illustration using a skeleton has been used to describe the resultant posture of the spine.

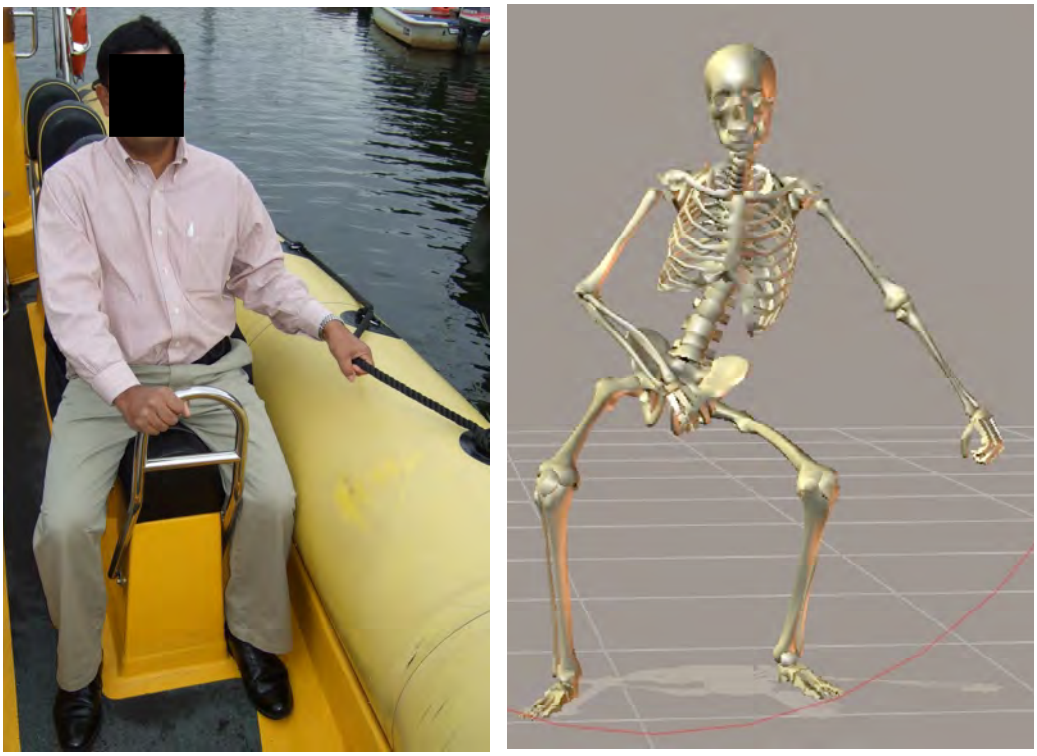

Figure 2. An illustration of the casualty's anticipated posture during the transit indicating the curvature of the spine.

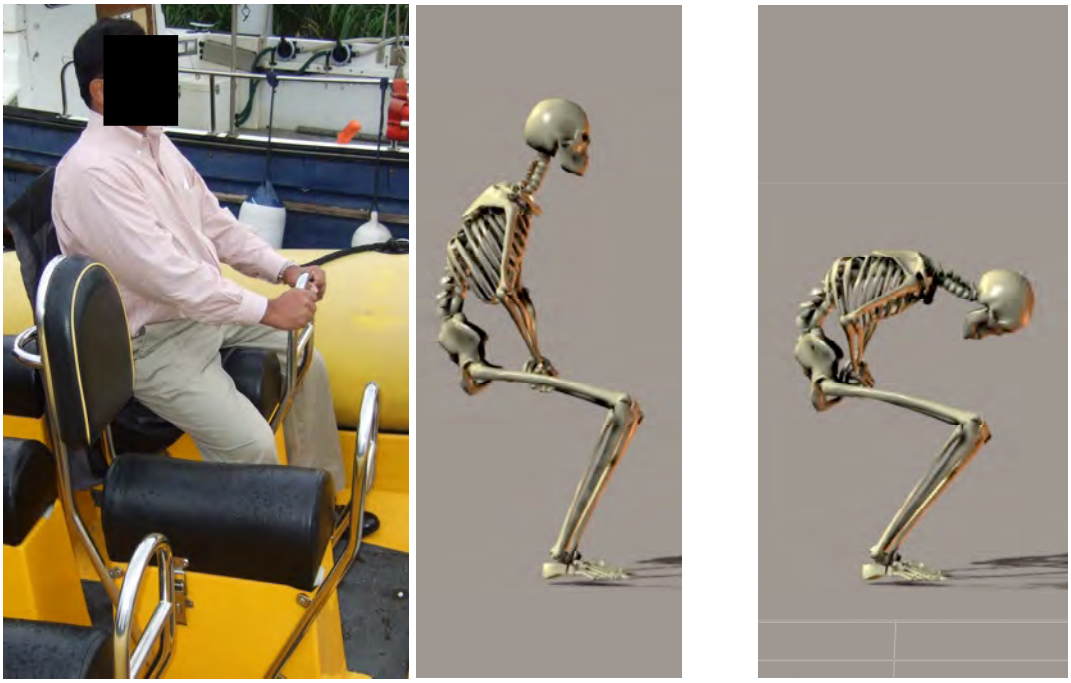

Figure 3. A graphical representation of the effect of using a 'low, narrow' handle on the seat occupants posture pre and post wave impact indicating the inability to maintain a good posture with spinal alignment.

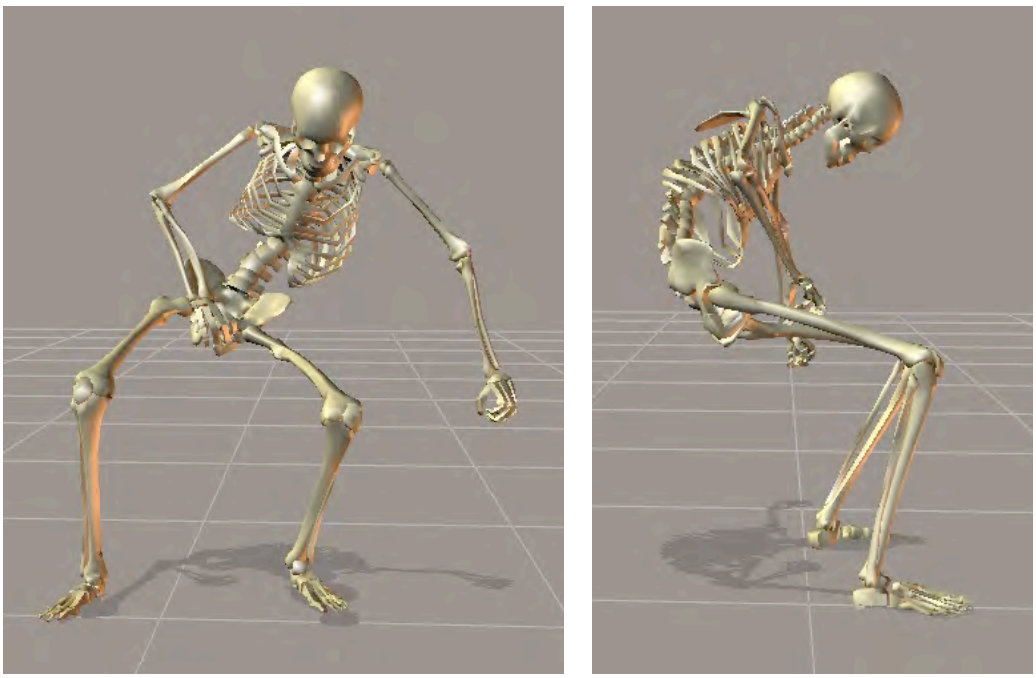

Figure 4 An illustration of the casualty's anticipated posture during the wave impact.

ii. Seat; The seat used on the RIB was fixed and had no shock mitigation capability. The cushioning on this type of seat is generally designed to provide comfort. Unfortunately when a boat with this design of seat lands the boat reaction (bounce) means that the seat base is travelling upwards as the occupant is still moving downwards compressing the cushion. The resultant impact is greater than the deck impact and therefore leads to a greater risk of injury (Re: Section 3iii-3v).

iii. Unfortunately the HSC industry does not recognise the seat as being one of the most important features of the boat. An example of this is shown in Figure 5 where the seat cushion covers have been allowed to degrade and no maintenance has been undertaken. This lack of maintenance will allow water ingress to the cushion, as well as the foam material to protrude through the holes, both of which will accelerate the degradation process.

Figure 5. An example of wear-and-tear on a RIB seat, demonstrating a lack of maintenance, which accelerates the degradation of the seat cushion.

6. Legislation

i) The EU Physical Agents Directive includes the control of exposure to whole body vibration (WBV).

ii) This legislation for the UK marine industry is overseen by the UK Maritime and Coast Guard Agency (MCA). An MCA Marine Guidance Note has been issued and can be found at www.mcga.gov.uk/c4mca/353.pdf.

iii) An example of how extreme HSC motion is compared to terrestrial transport is that the 8 hour WBV exposure action value can be exceeded within 15 minutes in an 8.5m RIB travelling at ~40kts in a seat state 2. The graph shown in Figure 6 indicates how far in excess of the recognised Exposure Action Value (EAV) and Exposure Limit Value (ELV) a 28' RIB travelling at ~40kts in a sea-state 2 will be. At one hour the exposure is 7.5 times the EAV, while at four hours the exposure is 10 times the ELV and 24 times the EAV.

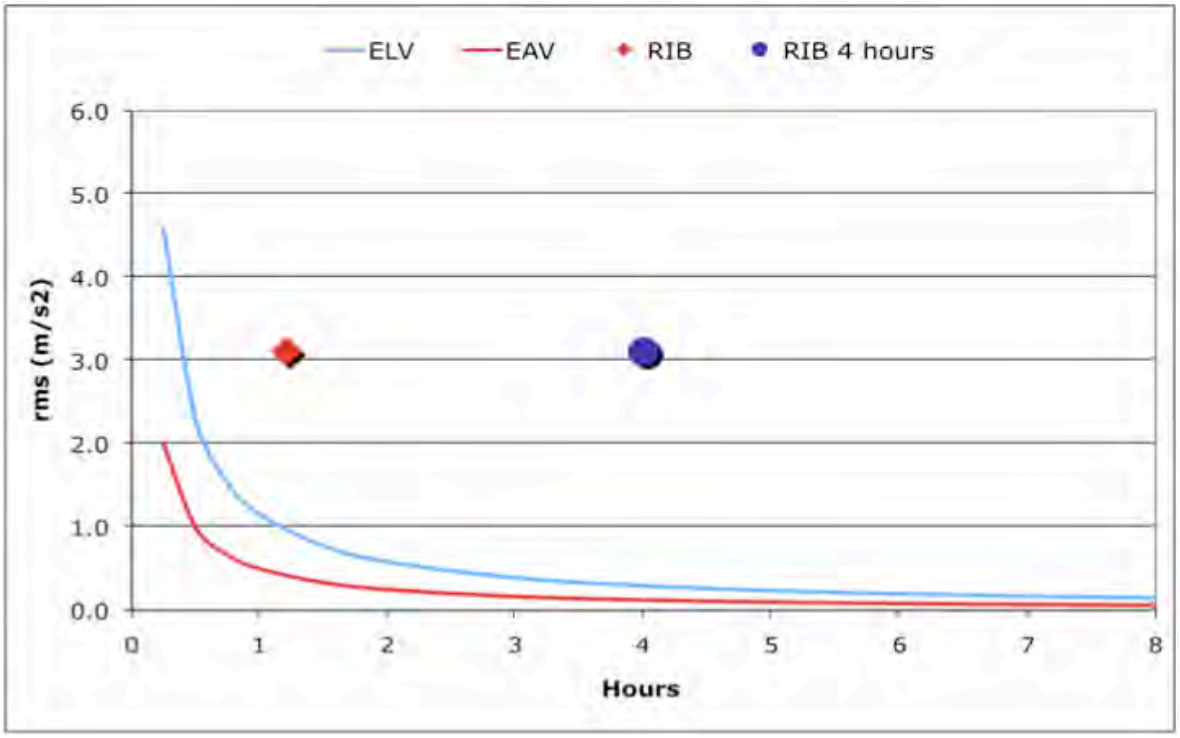

Figure 6. An example of how a 28' RIB travelling at ~40kts in a sea state 2 will exceed the EU WBV Exposure Action and Limit Values.

iv) Compliance with this legislation by the HSC industry sector will assist in reducing both the risk of the acute injuries described above and chronic injuries that are common in professional HSC operators.

7. Bibliography

The following references and documents are provided as sources of further information.

High Speed Craft Human Factors Engineering Design Guide. ABCD-TR-08-01. www.highspeedcraft.org

ASTM F1166-07 Standard Practice for Human Engineering Design for Marine Systems, Equipment, and Facilities.

European Union Directive (2002/44/EC) on the health and safety requirements regarding the exposure of workers to the risks arising from physical agents

ISO 2361-Pt5: Method for evaluation of vibration containing multiple shocks

Ensign, W., Hodgdon, J., Prusaczyk, W.K., Ahlers, S, Shapiro, D., and Lipton, M. (2000), A survey of self-reported injuries among special boat operators; Naval Health Research Centre, Tech Report 00-48.

Carvalhais, A. (2004) Incidence and severity of injury to surf boat operators. Conference Proceedings 75th SAVIAC Conference, Virginia Beach, VA. October 2004.

Annex 9 to the Yellow Code; Skippered Charter - Safety Briefing

ANNEX 9
SKIPPERED CHARTER – SAFETY BRIEFING

1 Before the commencement of any voyage the skipper should ensure that all persons on board are briefed on the stowage and use of personal safety equipment such as lifejackets, thermal protective aids and lifebuoys, and the procedures to be followed in cases of emergency.

2 In addition to the requirements of 1, the skipper should brief at least one other person who will be sailing on the voyage regarding the following:-

.1 Location of liferafts and the method of launching;

.2 Procedures for the recovery of a person from the sea;

.3 Location and use of pyrotechnics;

.4 Procedures and operation of radios carried on board;

.5 Location of navigation and other light switches;

.6 Location and use of firefighting equipment;

.7 Method of starting, stopping, and controlling the main engine; and

.8 Method of navigating to a suitable port of refuge.

Safety cards will be considered to be an acceptable way of providing the aboveinformation.

RYA powerboat training course syllabi

RYA NATIONAL POWERBOAT SCHEME

LEVEL 1

INTRODUCTION TO POWERBOATING

Preparation:
Launching & recovering
Safety equipment
Pre-start checks
Personal buoyancy

Boat handling and manoeuvres:
Starting and stopping
Use of kill cord
Steering controls
Securing to a buoy
Leaving and coming alongside
Being towed

Theory and background:
IRPCS
Ropework
Awareness of other water users

LEVEL 2

NATIONAL POWERBOAT COURSE

Preparation:
Launching & recovering
Safety equipment
Lines & fenders
Fuel tanks

Boat handling and manoeuvres:
Effects of current or tide
High and low speed manoeuvring
Propeller controls
Securing to a buoy
Anchoring
Being towed
Leaving and coming alongside
Man overboard

Theory and background:
Types of craft and engine
Maintenance checks
IRPCS
Weather forecasts
Emergency action

INTERMEDIATE

POWERBOAT DAY CRUISING COURSE

Preparation:
Pilotage
Navigation
Fuel and engine checks

Boat handling and manoeuvres:
Effect of waves and rougher conditions
Power trim and trim tabs
Berthing in differing situations
Use of GPS in high speed navigation and pilotage by day

It is strongly recommended that candidates hold a first aid certificate and a VHF operator's certificate

ADVANCED

POWERBOAT DAY CRUISING COURSE

Preparation:
Passage planning
Meteorology
Skipper's responsibilities

Boat handling and manoeuvres:
High speed boat handling
Advanced manoeuvres
Manoeuvring in rough weather
Chart plotters and radar
Pilotage by day and by night
Emergency situations
Differences for a twin engine vessel

You are required to hold a first aid certificate and a VHF operator's certificate

SAFETY BOAT COURSE
Preparation:
Safety equipment; Assistance with race management; Crew communications.
For holders of the
Boat handling and manoeuvres:
Positioning in respect to fleet; Standing off another craft; Coming alongside under way; Dinghy (including high performance) and windsurfer rescue; Towing; Mark laying.
Theory and background:
Rescue of other water users
Communications
VHF
First aid

RYA/MCA ADVANCED POWERBOAT CERTIFICATE OF COMPETENCE
Pre-exam experience:
2 years relevant experience including night pilotage. As a guide: 30 days, 2 days as skipper, 800 miles, 12 night hours.
For holders of the
Advanced Powerboat course completion certificate:
20 days, 2 days as skipper, 400 miles, 12 night hours.
Form of examination:
Practical exam lasting 4-5 hours for one candidate, up to 7 hours for 2 or 3 candidates.
Certification required before examination:
VHF/SRC Operator's licence, valid first aid certificate.