"SEA TIGER REPORT"

REPORT ON COMPARITIVE TESTS OF A "SEA TIGER" SEA KAYAK AND OTHER SEA KAYAKS ON BEHALF OF THE BRITISH CANOE UNION. (FIRST DRAFT)

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LARGS,

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12/6/90.

"Sea Tiger" Report

Index

1 TEST OF "SEA TIGER" RESCUE

2 NORDKAPP AND SEA TIGER : A COMPARISON
MICHAEL TAYLOR. EDINBURGH 1989

3 RECORD OF TELEPHONIE CONVERSATION
DAVID HAYTER. LOCH MELFORD 1989

4 REPORT OF TEST ON SEA TIGER
GEORGE KERR. KILBIRNIE 1989

INTRODUCTION

The writers involvement in this project came about in a rather happenstance manner. Having attended the B.C.U. Sea Touring Committee meeting at Croster on 14th June 1989 to represent the Scottish Canoe Association, Touring Committee, and talk to two items on the agenda and minutes of the previous meeting, ie a "Sea Tiger" document and the revision of the British Standards Institute Specification MA 91 dealing with safety in canoes.

As it turned out no discussion took place as the B.C.U. Coaching Committee had set up a working party to look at these items, had appointed two members and requested that the S.T.C. appoint "the other two". I was asked to be one and John Rowell the other.

The working party was to be chaired by Ray Rowe and the fourth member was Alan Rees. Enquiry soon revealed that discussion of B.S. MA 91 was not part of the working party remit. There were five terms of reference for the working party the first being " To consider the complaints referred to the B.C.U. by Frank Goodman on behalf of the BCMA safety panel

1) That to design a kayak for the sea with free flowing surfaces is an inherantly dangerous practice
2) That to advocate the removal of hatches as a

basic system for emptying water from the hull whilst at sea is inherently dangerous advice."

The working party "met" by telephone conference (excepting Alan Rees) and one paragraph of its report reads "Working party has no practical experience of the Sea Tiger's handling characteristics with water on board but does have first hand experience of emergency flooded compartment in a conventional kayak fitted with bulkheads. It was therefore felt that a simple trial should be carried out on a Sea Tiger in a shell-flooded state in order to discover any performance phenomenon which might make it significantly more dangerous than a conventionally built sea kayak. A conventionally built kayak would need to be available for comparison."

Shortly after the above meeting Ray Rowe left the B.C.U's employ and John Ramwell resigned from the working party, for good reasons. This rather left things in limbo and in a fit of utter madness I offered to do the <u>simple trial</u> for the B.C.U.!

Aims

The basic aims of these tests are as stated in the working party report. It was decided to use different states of loading of the Sea Tiger and progressively flood the hull while photographing the resultant trim and recording the paddlers comments. As in the internal Peter Lamonts report on progressive flooding of a Sea Tiger in an unloaded condition became available it was decided not to repeat his efforts but to concentrate on a "Bay trip" loading and a "Touring load".

Method & Equipment

Nick Padwick provided two Sea Tigers for the trials. Other craft had to be procured, it was a case of what was available. People were reluctant, understandably, to loan their shiny new Skerrays, Mariners, Huntsmans, Icefloes etc. So a club Nordkapp and Aras Acuta were obtained together with a couple of Hebrides and a KWT with a pod from Geoff Good.

Bathroom scales were used to weigh the loads, a "calebrated" plaster bucket provided the "on board" water and waterproof paper used to record the results.

For each test the paddler first paddled round the course with the kayak at the test load to get a feel of the unflooded craft.

When measured quantities of water were poured into one hatch as detailed in the test reports, the kayak paddled round the course and his or her comments of the handling recorded. A photograph was taken at each stage of flooding.

At conditions of flooding where it was obvious that the cockpit or pod would have flooded eventually it was deliberately filled to save time on the test.

Summary of Results

Tests with day trip loading :- as expected all the bulkheaded boats went out of trim to a greater or lesser degree when water was put in either bow or stern. This of course results in a craft which is difficult to control in windy conditions ie. weathercocking effect is greatly magnified. The buoyant effect of even one clothes bag (without the air squeezed out) was amply demonstrated. Stability was also affected although the "feel" differed between different kayak designs. No matter which compartment was flooded the stability was at its worst in a partially filled state, improving somewhat as the compartment reached capacity. A situation well known to the drivers of road tankers!

Both craft with pods stayed in trim for much longer than bulkheaded boats. In longer waves pitching did cause the Sea Tiger to take up an end down attitude, this was with much larger amounts of water on board and the permanent buoyancy which is standard on this boat prevented the large angle of dip experienced with the others.

Tests with Touring Load :- These were only carried out on the Sea Tiger and when the equipment was packed in a realistic manner a great improvement was observed. No matter how much water was put in the kayak stayed fairly well in trim although with a large sea running with head and tail or waves some degree of out of trim must be expected at interim flooding levels. The stowed equipment also acted as baffles to slow down water movement thus improving stability.

While no touring load tests were carried out on bulkheaded kayaks similar improvements in performance can reasonably be expected although with flooding of an end compartment trim will still be affected and flooding of the cockpit area should not give as much an improvement due to its much lower proportion of volume available for gear stowage.

RESCUES For organisational reasons most emptyings were carried out ashore. The Sea Tiger was rescued with an unnatural cruising load and a day trip load by the "Hatches off" method. An Aros Acuta with cockpit and aft hatch flooded was rescued by a combination of straight lift and H I, not all that easy! There is room here for some of the "old" sling lifts used in Scotland in the days of canvas boats!

Conclusions While the writer has conducted these tests he feels that it is up to the B.C.U. working party to draw its own conclusions from the results.

In this respect it is understood that Geoff Good B.C.U. Director of Coaching is considering re-constituting the working party to allow it to finish its job. However, the writer will give his opinions.

Information from other Sources As there was a lack of direct experience of the Sea Tiger it was decided to obtain some feed back from users, who had experience of both the Sea Tiger and conventional sea kayaks. Nick Padwick provided some names and most responded. However, the two examples in the appendex were sourced by the writer without Nick Padwicks knowledge so should be free from any possibelity of "collusion", not that I think there would be any anyway.

A seperate series of small tests were conducted by Mr George Kerr during his school outdoor activities sessions. George is an experienced sea touring canoeist, yachtsmon, canoe builder, S.I. Sea, E2., S1. Inland and uses a Nordkapp for his own canoeing and has done for some years. His report is also appended.

OPINION The following are the writers own opinions, without prejudice to the conclusions of the B.C.U. working party or anyone else.

While conducting these tests from a strictly neutral position (I use my own home built and designed sea canoe, so have no axe to grind, with regard to the disputants designs) I have been mildly surprised by some of the results. Considering these and the feed in from others I do not consider that the Sea Tiger contains inherently dangerous design practices indeed it seems to be a good boat which suits some people very well but like any other sea canoe it will not suit everybody. One aspect I do like is the provision of permanent buoyancy as standard, my own kayak has it too, although with an unbulkheaded hull it should be anyway. One aspect highlighted by the tests was the marked improvement in performance when flooded brought about by the presence of a properly packed load in the in the boat ie the restriction of both the volume available to take in water and its ability to move freely. In this respect I think that greater publicity should be given to the recommendation of one speaker at last years Sea Canoeing / Coaching conference that the free space left in the stowage compartment /.

/ compartments should be taken up with air bags. This would minimise the effects of water penetration to these compartments and increase the performance of the craft very greatly in such circumstances.

I feel that these tests satisfy the requirements set out in the working party report for a "sniffle trial" and should permit that part of the working parties remit on the actual Sea Tiger to be concluded.

Should the B.C.U. decide that further trials are required, I suggest that co-operation of the canoe trade would be required to supply a selection of kayaks to have holes drilled at suitable locations and all paddled together, as a cruising group, round a triangular course, in both directions until one by one they fell by the wayside. The whole to be recorded on video and repeated for three loads, empty, day cruising and touring and three flooding conditions bow compartment, cockpit and aft compartment.

I doubt if the trade would wish to come up with the boats (based on comments at meetings) and the exercise would be expensive, not justified and those that did not like the results would find some reason to ignore it.

(again based on comments at meetings about the dispute)

Finally I suggest that this report is made available, by the B.C.U., at reproduction cost to anyone who wants it.

Acknowledgements I would like to thank both Garnock Canoe Club and the Royal West of Scotland Amateur Boat Club for their assistance in conducting these "simple trials" and in particular the following individuals some of whom actually got quite wet in the process.

George Kerr	Garnock Canoe Club
Bill Dunlop	" " "
Jennifer Irons	" " "
Ewan Hunter	" " "
Shona Cowrie	" " "
Austin Kelly	" " "
Stuart Irons	" " "
Les O'Neill	R.W.S.A.B.C.
Helen Sutherland	"
Lindsay Bawds	"

"SEA TIGER" TEST - 1 5/11/89

Location Largs Marina, North Ayrshire, Firth of Clyde.

Conditions Weird N.W. force 4 to 5 on shore with a short breaking sea. Tide - 2 hours to 3½ hours after low water. No stream at test side.

Course Kayak was paddled into, across and with the seas.

Paddler Duncan R. Wining, Scottish Hostellers Canoe Club & Garnock Canoe Club, just short of 50 years old, 6'-0", 14 stone. Has been paddling on the sea for forty years. S.I. sea, E.I. and T.I inland.

Load Touring load 98 lbs (44.45 kg)

Front Hatch :-	Sand bag	- 42 lbs (19 Kg)
Aft Hatch :-	3 Large B.D.H. bottles	- 39 lbs (17.7 kg)
	1 Medium B.D.H. bottle	- 7 lbs (3.2 kg)
	1 Sand bag	- 10 lbs (4.5 kg)
	Total	- 98 lbs (44.45)

Observations This test was set up to evaluate the "Hatches off" rescue method advocated by Nick Padwick (see seperate report) but the kayak behaviour at different degrees of flooding was noted as well. The loading was not really representative of a touring load as it was to concentrated thus allowing

"SEA TIGER" TEST - 1

Observations continued

more water on board than would be possible with more "bulky" packing and it could more about thus affecting stability.

"SEA TIGER" TEST - 1

Stage No	Water litres	Photo No	Remarks / Paddlers Comments
1	0	0.1	Kayak fairly heavy, handled quite satisfactorily. Paddling hard into head sea brought water up deck and into pod (no spray sheet)
2	40	0.2	kayak stayed level. entrapped water caused a slight roll but not bad.
3	60	0.3 & 0.4	"Cargo" began to move about with the wave action accentuating the roll but it was quite controllable
4	80	0.5	Same as stage 3 only a stronger roll
5	100	0.6	Same comment as stage 4.
6	120	0.7 & 0.8	after the pod flooded Definately tippy & balance had to be given some thought, especially when turning. When running down a wave the water movement to the bow caused the bow under and it stayed there with the stern in the air. Balance had to be worked at and although the kayak could be paddled it was not really going to go anywhere.

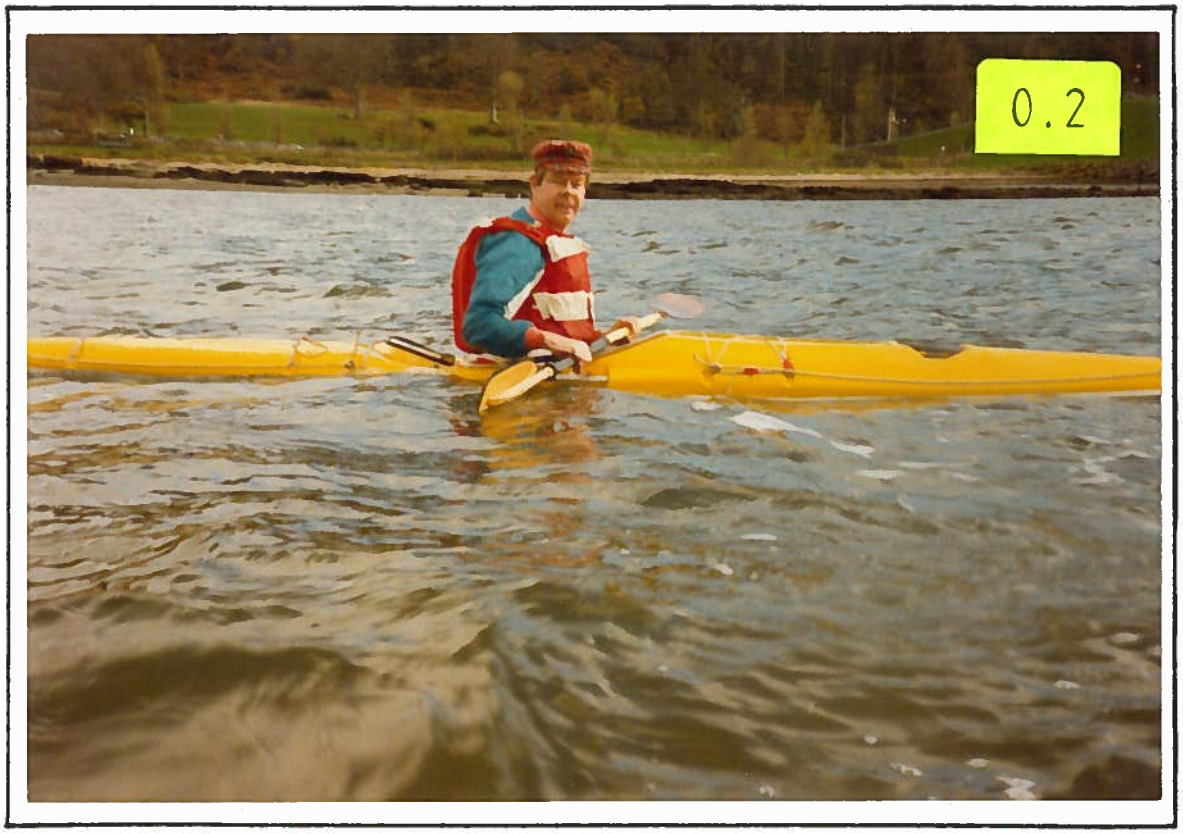
"SEA TIGER" TEST -1

Stage No	Water litres	Photo No.	Remarks / Paddlers Comments
6	120	0.7 & 0.8	Continued :- The kayak was rescued, not easily as it was heavy, by two canoeists using the "Hatches off" rescue method advocated by Nick Padwick

SEA TIGER TEST NO. 1 5/11/89

_0_ LITRES WATER IN HULL NEG. NO. 0.1

SEA TIGER TEST NO. 2 5/11/89



40 LITRES WATER IN HULL NEG. NO 0.2

SEA TIGER TEST NO. 3 5/11/89

±60 LITRES WATER IN HULL NEG. NO. 0.3

SEA TIGER TEST NO. 3 5/11/89

±60 LITRES WATER IN HULL NEG. NO 0.4

SEA TIGER TEST No. 4 5/11/89.

80 LITRES WATER IN HULL NEG. No. 0.5

SEA TIGER TEST No. 5 5/11/89

100 LITRES WATER IN HULL NEG. No 0.6

SEA TIGER TEST NO. 6 5/11/89.

120 LITRES WATER IN HULL NEG. NO. 0.7

SEA TIGER TEST NO. 6 5/11/89

120 LITRES WATER IN HULL NEG. NO 0.8

"SEA TIGER" TEST - 2 28/5/90

Location Royal West of Scotland Amateur Boat Club, Esplanade, Greenock.

Conditions Small waves, not breaking, Wind strength 1 to 3 offshore (at right angles to second leg of course) ie S.W. Tide 2 hours to 3½ hours after H.W. Stream approx 1½ knots (parallel to second leg of course). Washes from various power craft and small ships crossing course from different directions from time to time.

Course From slipway out round two moored boats and back to slipway giving a triangular circuit with legs of approx 100 metres each.

Paddler Helen Sutherland, R.W.S.A.B.C., 17 years old, 9 stone 9lbs, 5'-7". Has been canoeing for approx one year on river and sea and is ready to sit the sea proficiency test.

Load Day trip load 14lbs (7.71 Kg)

Front Hatch:- Clothes bag - 9lbs (4.08 kg)

Aft Hatch:- Medium B.D.H., lunch & emergency food
Medium B.D.H., first aid & repair kit
Vacuum flask (full)
Parachute flare in container
Smoke flare in container
} 8lbs (3.63 Kg)

"SEA TIGER" TEST -2

Bouyancy. The bouyant effect of the equipment carried, when fully immersed, is equal to the weight of water displaced minus the weight of the items.

Bouyancy in ford. hatch:-

Volume of clothes bag measured is approx 14 litres = 3.08 gallons

Weight of 3.08 gallons of sea water = 31.49 lbs

Bouyancy is displacement minus weight = 31.49 - 9 lbs

= 22.49 lbs

Bouyancy in aft hatch:-

Volume of articles in total, measured is approx. 9.1 litres = 2.00 gallons

Weight of 2.00 gallons of sea water = 20.46 lbs

Bouyancy is displacement minus weight = 20.48 - 8 lbs

= 12.48 lbs

Observations Due to various factors photographs were only taken from the shore at the start of each stage.

The test was carried out without a spraysheet as it was felt that the kayak with a flooded hull would eventually suffer a flooded pod also. However, there was no time available at this test to allow this to happen naturally.

"SEA TIGER" TEST - 2

Stage No	Water litres	Photo No	Remarks / Paddlers Comments
			Water introduced to hull through ford. hatch.
1	0	1.1	Paddles easily, is manoeuveable (centre board is raised at all stages). Feels bulky compared to the boats that Helen is used to and is uncomfortable in that no foot rest position was arranged for the test!
2	60	1.2	less stable but quite manageable
3	80	1.3	As stage 2 but heavier to paddle
4	100	1.4	Still paddles O.K. Not rolling as much but rolls further and with more force
5	120	1.5	When paddled water is level with stem. A lot less stable. Paddler has to concentrate now!
6	140	1.6	When paddled 18" of stem deck is under water. Felt very tiffy. Took approx 1 gallon of water in pod.
7	160	1.7	Same as stage 6 only more so!
8	180	1.8	At this point the pod was very close to flooding so it was helped to do so.

"SEA TIGER" TEST - 2

Stage No	Water litres	Photo No	Remarks / Paddlers Comments
8	180	1.8	Stage 8. continued:- With the pod flooded the boat was fairly stable but not really going anywhere. So Helen exited the cockpit. She was able to stop paddling and place her hands on the cockpit rim, push herself out rearwards and keep her hair dry!! No photo is available of the "flooded" position but 30" of bottom were showing at the bow and the boat was under from the cockpit aft. ie not with as high an inclination as in Peter Lamont's paper, picture P11. (In this test the paddler was lighter and there was 12.48 lbs of bouyancy aft.).
Photo before pod flooded!			
9	-	-	With no paddler on board the Sea Tiger leveled out and was easily rescued by one paddler using the "hatches off" method advocated by Nick Padwick.
	-	-	On landing and unloading the kayak the bow bouyancy block was found to have come loose!

"SEA TIGER" TEST - 2

Stage No	Water litres	Photo No	Remarks / Paddlers Comments
9	180	3.22	As no photographs were taken at stage 9 on the 28th the opertunity was taken on the "Sea Tiger" test-3 on the 9th June to put in the same day trip load and 180 litres of water to get a picture. On this occassion the Sea Tiger leveled out as shown in photo 3.22. The bow was lifted as shown in photo 3.23 giving a similar attitude to that found on the 28th. However, the kayak slowly returned to the level. It was not possible to ascertain the location of the bouyant gear in either case as the items were not fixed in position but the location of 12½ lbs of bouyancy could certainly effect the trim.

Plus Pod!

SEA TIGER TEST NO. 1 28/5/90.

_0_ LITRES WATER IN HULL NEG. NO. 1.1

SEA TIGER TEST NO. 2 28/5/90

60 LITRES WATER IN HULL NEG. NO 1.2

SEA TIGER TEST NO. 3 28/5/90.

80 LITRES WATER IN HULL NEG. NO. 1.3

SEA TIGER TEST NO. 4 28/5/90

100 LITRES WATER IN HULL NEG. NO 1.4

SEA TIGER TEST NO. 5 28/5/90.

120 LITRES WATER IN HULL NEG. NO. 1.5

SEA TIGER TEST NO. 6 28/5/90

140 LITRES WATER IN HULL NEG. NO 1.6

SEA TIGER TEST NO. 7 28/5/90.

160 LITRES WATER IN HULL NEG. NO. 1.7

SEA TIGER TEST NO. 8 28/5/90

180 LITRES WATER IN HULL NEG. NO 1.8

SEA TIGER TEST NO. 9 28/5/90

180 LITRES WATER IN HULL NEG. NO. 3.22

SEA TIGER TEST NO. 9 28/5/90

"ANAS ACUTA" TEST 30/5/90

Location Royal West of Scotland Amateur Boat Club esplanade, Greenock.

Conditions Calm sea, wind variable S.W./S./S.E. force 1 to 4. Tide - High water to 1½ hours after. Stream about one knot parallel to second leg of course.

Course As for "Sea Tiger Test-2"

Paddler Lindsay Lowds, R.W.S.A.B.C., 14 years old, 5'-8", approx 9½-10 stones. Has been paddling approx. one year on river and sea and is ready to sit the sea proficiency test.

Load As for "Sea Tiger Test-2"

Bouyancy As for "Sea Tiger Test-2"

Observations In the tests it was not possible to get the amount of water into the hatches as was thought from the "Valley" brochure which quotes 60 and 80 litres for the fore. and aft hatches respectively. The quantities achieved in the tests were 65 plus and 60 plus allowing for the load. There was not time to check the cockpit volume in case of non-standard bulkhead positions. This may be done later if requested.

"ANAS ACUTA" TEST

Stage No	Water litres	Photo No	Remarks / Paddlers Comments
			Water introduced through ford hatch.
1	0	1.9	No apparent effect from cross wind. Note:- photo with paddler from "Sea Tiger" test -2" used here to show trim only.
2	20	1.12	Had to constantly correct course on all three legs of circuit. Not unstable
3	40	1.13	As stage 2 but more correction needed
4	50	1.14	Ford. compartment full. almost unsteerable!
5	50 & Cockpit	1.15	In addition the cockpit was flooded. The boat became more steerable but very tippy!
6	65 & Cockpit	1.16	Cockpit was drained. The clothes bag removed from the ford. compartment and 15 litres of water added (with difficulty!). The cockpit was then flooded again. The bow was on the bottom. It is reasonable to assume that in deep water the kayak would have adopted a vertical position.
7	65 plus.	1.17	Cockpit was drained. Hatch removed and by rocking the boat and pushing it down a small amount of additional water was introduced. Not measurable.

"ANAS ACUTA" TEST

Stage No	Water litres	Photo No	Remarks / Paddlers Comments
7	65 Plus	1.17	The boat was fairly stable but was uncontrolable ie not steerable. boat drained
			Water introduced to cockpit.
8	20	1.18	The kayak felt quite normal (the clothes bag was re-stowed in the ford. compartment)
9	40	1.19	As in stage 8.
10	60	1.20	Beginning to feel less stable.
11	80	1.21	Boat getting heavy to paddle!
12	95	1.22	Cockpit full, boat heavy to paddle, diffecult to control direction but more stable than stage 10! Cockpit was drained
			Water introduced through stern hatch
13	50	1.23	Course had to be corrected on two legs of circuit but was O.K. dead into wind! felt heavy but stable.
14	50 plus	1.24 & 1.25	Aft compartment took very little more water, not measurable with equipment. Behaved as 13. Very difficult to steer!
15	50 plus & Cockpit	2.1	Cockpit was flooded. Stern was on bottom. Potential Cleopatras needle!

ANAS ACUTA TEST NO. 1 30/5/90.

0 LITRES WATER IN NEG. NO. 1.9

ANAS ACUTA TEST NO. 2 30/5/90

20 LITRES WATER IN BOW NEG. NO 1.12

ANAS ACUTA TEST NO. 3 30/5/90.

40 - LITRES WATER IN BOW NEG. NO. 1.13

ANAS ACUTA TEST NO. 4 30/5/90

50 LITRES WATER IN BOW NEG. NO 1.14

ANAS ACUTA TEST NO. 5 30/5/90.

50 LITRES WATER IN BOW PLUS COCKPIT FLOODED. NEG. NO. 1.15

ANAS ACUTA TEST NO. 6 30/5/90

65 LITRES WATER IN BOW PLUS NEG. NO 1.16

ANAS ACUTA TEST NO. 7 30/5/90.

65± LITRES WATER IN BOW NEG. NO. 1.17

ANAS ACUTA TEST NO. 8 30/5/90

20± LITRES WATER IN COCKPIT NEG. NO 1.18

ANAS ACUTA TEST NO. 9 30/5/90.

40 LITRES WATER IN COCKPIT NEG. NO. 1.19

ANAS ACUTA TEST NO. 10 30/5/90

60 LITRES WATER IN COCKPIT NEG. NO 1.20

ANAS ACUTA TEST NO. 11 30/5/90.

80± LITRES WATER IN COCKPIT NEG. NO. 1.21

ANAS ACUTA TEST NO. 12 30/5/90

95± LITRES WATER IN COCKPIT (FULL) NEG. NO 1.22

ANAS ACUTA TEST NO. 13 30/5/90.

$\pm$50 LITRES WATER IN STERN NEG. NO. 1.23

ANAS ACUTA TEST NO. 14 30/5/90

$^{+}_{-}$50 LITRES WATER IN STERN (FULL) NEG. NO 1.24

ANAS ACUTA TEST NO. 14 30/5/90.

50+- LITRES WATER IN STERN (FULL) NEG. NO. 1.25

ANAS ACUTA TEST NO. 15 30/5/90

50+- LITRES WATER IN STERN PLUS COCKPIT FLOODED (STERN ON BOTTOM) NEG. NO 2.1

"NORDKAPP" TEST 30/5/90

Location Royal West of Scotland Amateur Boat Club, esplanade, Greenock.

Conditions Calm sea, wind variable S.W./S./S.E. force 1 to 4. Tide - 1½ hours after High water to 3 hours after. Stream approx one knot parallel to second leg of course.

Course As for "Sea Tiger Test-2"

Paddler As for "Anas Acuta Test" Lindsay Dowds.

Load As for "Sea Tiger Test-2".

Bouyancy As for "Sea Tiger Test-2".

Observations In the tests it was not possible to get as much water into the hatches as was thought from the "Valley" brochure which quotes 70 litres and 100 litres for the fwd. and aft hatches respectively. Whereas the tests only managed 60 litres and 70 litres allowing for the load and the "plus" amounts. There was not time to check the cockpit volume in case of non standard bulkhead positions. This may be done later if requested.

"NORDKAPP" TEST

Stage No	Water litres	Photo No	Remarks / Paddlers Comments
			Water introduced through fwd. hatch
1	0	2.3	Handled O.K.
2	20	2.4	Had to correct course on all three legs of circuit. Stability was O.K.
3	40	2.5	Full to top of hatch. Steering difficult but stable.
4	55	2.6	Clothes bag removed. Boat stable but direction quite uncontrollable
5	55 plus	2.7	Hatch off, boat rocked to release trapped air, a small amount of additional water entered. Behaved as in stage 4.
6	55 plus & Cockpit	2.8	Cockpit was flooded. Bow sank to bottom. In deep water it is assumed the kayak would go vertical. Boat drained. bag replaced in fwd. compartment.
			Water introduced through aft. hatch
7	20	2.9	Manoeuvrability O.K. Stability "iffy" No obvious course corrections.
8	40	2.10	Unstable, hard to turn but keeping on course in conditions (wind dropped)

"NORDKAPP" TEST

Stage No	Water lines	Photo No	Remarks / Paddlers Comments
9	57	2.11	Compartment full. Hard to turn but more stable.
10	57 plus	2.12	Hatch off, boat rocked to release trapped air, a small additional amount of water entered. Behaved as stage 9.
11	57 plus & Cockpit	2.13	Cockpit flooded. stern sank to bottom In deep water it is assumed that kayak would go vertical. boat drained
			Water introduced to cockpit
12	40	2.14	Stability "iffy"
13	60	2.16	Very unstable, otherwise O.K.
14	80	2.17	Not much different from stage 13. Very difficult to turn.
15	100	-	Not much change - no photo!
16	130	-	Cockpit full. - more stable but very heavy and hard to manoeuvre.

NORDKAPP TEST NO. 1 30/5/90.

0 LITRES WATER IN NEG. No. 2.3

NORDKAPP TEST NO. 2 30/5/90

20 LITRES WATER IN BOW NEG. No 2.4

NORDKAPP TEST NO. 3 30/5/90.

40 LITRES WATER IN BOW NEG. NO. 2.5

NORDKAPP TEST NO. 4 30/5/90

55 LITRES WATER IN BOW NEG. NO 2.6

NORDKAPP TEST NO. 5 30/5/90.

55+ LITRES WATER IN BOW (FULL) NEG. NO. 2.7

NORDKAPP TEST NO. 6 30/5/90

55+ LITRES WATER IN BOW PLUS COCKPIT FLOODED BOWL ON BOTTOM NEG. NO 2.8

NORDKAPP TEST NO. 7 30/5/90.

20 LITRES WATER IN STERN NEG. NO. 2.9

NORDKAPP TEST NO. 8 30/5/90

40 LITRES WATER IN STERN NEG. NO 2.10

NORDKAPP TEST NO. 9 30/5/90.

57 LITRES WATER IN STERN NEG. NO. 2.11

NORDKAPP TEST NO. 10 30/5/90

57+ LITRES WATER IN STERN (FULL) NEG. NO 2.12

NORDKAPP TEST NO. 11 30/5/90.

57± LITRES WATER IN STERN (FULL) PLUS COCKPIT FLOODED STERN ON BOTTOM NEG. NO. 2.13

NORDKAPP TEST NO. 12 30/5/90

40± LITRES WATER IN COCKPIT NEG. NO 2.14

NORDKAPP TEST NO. 13 30/5/90.

±60 LITRES WATER IN COCKPIT NEG. NO. 2.16

NORDKAPP TEST NO. 14 30/5/90

±80 LITRES WATER IN COCKPIT NEG. NO 2.17

HEBRIDES TEST 4/6/90

Location Largs Marina, North Ayrshire, Firth of Clyde.

Conditions Calm sea, wind force 1, tide - 3 hours after low water.

Course Close to Marina slipway

Paddler Austin Kelly, Garnock Canoe Club, 43 years old, 5'-5", 10 stone 12 lbs. Has paddled for two years on sea and this winter on rivers.

Load Nill

Observations This test was only conducted to observe the difference in flooding two similar kayaks. Both with bulkheads but one with permanant buoyancy at each end as well. This second kayak does not have deck hatches but larger hatches in the bulkheads. In the photographs the normal bulkhead / deck hatch / no additional buoyancy kayak is designated "HEBRIDES (1)" and the bulkheaded / no deck hatch / additional buoyancy kayak is designated "HEBRIDES (2)".

HEBRIDES TEST

Stage No	Water litres	Photo No	Remarks / Paddlers Comments
1	0	2.18	No water or load in kayak.
2	75	2.19	Ford. compartment full of sea water, tippy but controllable
3	75 plus	2.20	By rocking the boat to release air a small amount of additional water was added. No change in handling
4	90	2.23	Aft. compartment full of sea water less stable, for less controllable ie very hard to turn.
5	-	3.1	Ford. compartment full of sea water kayak more level & more stable than 'HEBRIDES (1)'.
6	-	3.2.	Stern compartment full of sea water steadier and more controllable than "HEBRIDES (1)"
7	-	3.6	"HEBRIDES (1)" hatches off, flooded, sunk!
8	-	3.7	"HEBRIDES (2)" hatches off, flooded, floating!
9	-	3.9	Cockpit only flooded. Heavy but paddleable.

HEBRIDES (1) TEST NO. 1 4/6/90

.0 LITRES WATER IN NEG. NO. 2.18

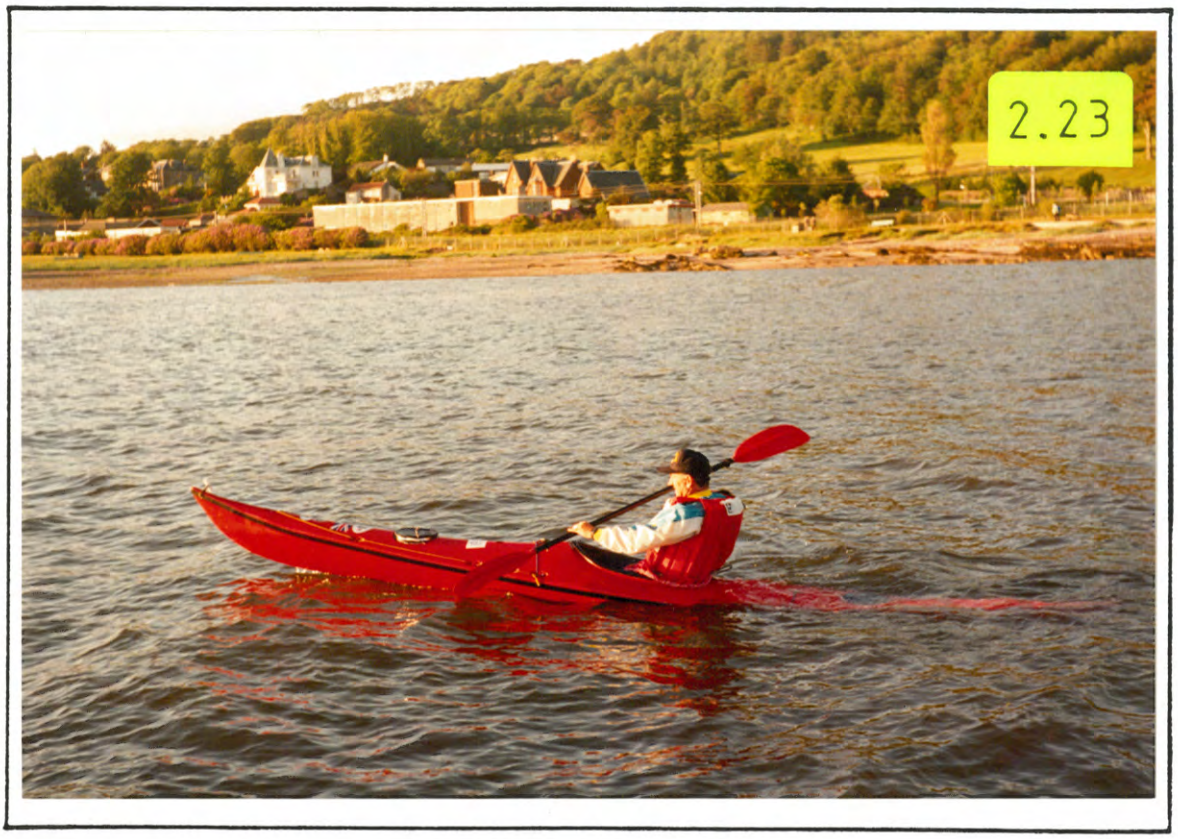
HEBRIDES (1) TEST NO. 2 4/6/90

.75 LITRES WATER IN BOW NEG. NO 2.19

HEBRIDES (1) TEST NO. 3 4/6/90

$\pm^{5}_{-}$ LITRES WATER IN BOW NEG. NO. 2.20

HEBRIDES (1) TEST NO. 4 4/6/90



$\pm^{90}_{-}$ LITRES WATER IN STERN NEG. NO 2.23

HEBRIDES (2) TEST NO. 5 4/6/90

-"- LITRES WATER IN BOW (FULL) NEG. NO. 3.1

HEBRIDES (2) TEST NO. 6 4/6/90

-"- LITRES WATER IN STERN (FULL) NEG. NO 3.2

HEBRIDES (1) TEST NO. 7 4/6/90

-_ LITRES WATER IN KAYAK (FLOODED) NEG. NO. 3.6

HEBRIDES (2) TEST NO. 8 4/6/90

-_ LITRES WATER IN KAYAK (FLOODED) NEG. NO 3.7

HEBRIDES (2) TEST NO. 9 4/6/90

-"- LITRES WATER IN COCKPIT (FLOODED) NEG. NO. 3.9

HEBRIDES TEST NO. 4/6/90

--LITRES WATER IN NEG. NO

"SEA TIGER" TEST - 3 9/6/90

Location Largs Marina, North Ayrshire, Firth of Clyde.

Conditions Calm sea, wind force one, tide one hour either side of high water, no stream at test site.

Course Triangular from Marina slipway approx 100 metre legs.

Paddler Shona Cowrie, Garnock Canoe Club. 18 years old, 5'-4½", 10 stone 2 lbs. Has been paddling for four years has sea proficiency and is a T.I. sea.

Load Towing load 90 lbs. (40.82 Kg)

Front Hatch :-	Clothes bag	- 9 lbs (4.08 kg)
	Sleeping bag & air bed	- 8 lbs (3.63 kg)
Aft Hatch :-	Tent, Ellyheat & ground sheet	- 14 lbs (6.35 kg)
	Primus, billies & Paraffin	- 11 lbs (4.99 kg)
	Flask, emergency flask & water bottle	- 15 lbs (6.80 kg)
	First Aid & Repair kits, emergency food	- 7 lbs (3.18 kg)
Around pod :-	Food, 10 - 400g tins & 4 - 820g tins at sides, bag at back	- 26 lbs (11.80 kg)
	Total	- 90 lbs (40.82 kg)

"SEA TIGER" TEST - 3

Stage No	Water litres	Photo No	Remarks / Paddlers Comments
			Water introduced to hull through ford. hatch.
1	0	3.10	Easy to paddle, comfortable, dislikes centre board rattle!
2	40	3.11	Stable
3	60	3.12	Slightly less stable
4	80	3.13	No change in stability, tins rattling!
5	100	3.14	No change in stability
6	120	3.15	Getting heavy to paddle and slightly less stable again. Spray sheet fitted!
7	140	3.16	As 6 above
8	160	3.17	Water level inside equals water level outside! Slighty less stable again
9	180	-	Water level inside higher than outside
10	200	3.18	Difficult to get the last of the water in! ie full to the top of the hatch (aft hatch). Surprisingly stable! Hatches left off.

"SEA TIGER" TEST - 3

Stage No	Water lines	Photo No	Remarks / Paddlers Comments
11	200 & Pod	3.19	Pod was flooded. Note in photograph water is flowing out off aft hatch.
		3.20	Water can flow in and out of hull space at will
		3.21	Shona paddling the flooded "Sea Tiger" hard. The kayak was obviously very heavy and hard to get going but once making way paddled O.K. Kayak hard to turn but not affected by wind very much!

SEA TIGER TEST NO. 1 9/6/90

0 LITRES WATER IN HULL NEG. NO. 3.10

SEA TIGER TEST NO. 2 9/6/90

SEA TIGER TEST No. 3 9/6/90

60 LITRES WATER IN HULL NEG. No. 3.12

SEA TIGER TEST No. 4 9/6/90

SEA TIGER TEST NO. 5 9/6/90

100 LITRES WATER IN HULL NEG. NO. 3.14

SEA TIGER TEST NO. 6 9/6/90

SEA TIGER TEST NO. 7 9/6/90

140 LITRES WATER IN HULL NEG. NO. 3.16

SEA TIGER TEST NO. 8 9/6/90

SEA TIGER TEST NO. 10 9/6/90

200 LITRES WATER IN HULL NEG. NO. 3.18

SEA TIGER TEST NO. 11 9/6/90

SEA TIGER TEST NO. 11 9/6/90

200 LITRES WATER IN HULL, HATCHES OFF, WATER FLOWS IN & OUT AT WILL. NEG. NO. 3.20

SEA TIGER TEST NO. 11 9/6/90

"KWIY" TEST 9/6/90

Location Largs Marina, North Ayrshire, Firth of Clyde

Conditions Small waves, wind force 2, Tide - one hour to 1½ hours after high water, no stream at test site.

Course Triangular from Marina slipway approx. 100 metre legs.

Paddler Stewart Irons, Garnock Canoe Club, 16 years old, 6'-1", 10 stone 6 lbs. Has been paddling for under a year, mostly on rivers.

Load Day trip load 17 lbs (7.71 kg) As for "Sea Tiger" Test - 2" but all in the aft hatch as the fwd. hatch could not be opened easily.

Observations There was a hole in the pod connecting to the hull space fitted with a tube formerly attached to a foot pump. The seal between the pod and tube was not good and some water was lost to the pod from the hull space. It was not measured. There was also a leak at the aft end toggle hole. There is polystyrene foam pillar buoyancy in the aft end. No observation was possible fwd. of the pod, at this time.

KW7 TEST

Stage No	Water litres	Photo No	Remarks / Paddlers Comments
			Water introduced to hull through aft hatch
1	0	4.0	Very manoeuvrable and easy to paddle
2	20	4.1	Slightly heavier to paddle
3	40	4.2	Begining to feel tiddy
4	60	4.3	Same as stage 3 but more so
5	80	4.4	Ditto
6	100	4.5	Paddler feels very unstable
7	120	4.6	Same as stage 6 but more so becoming much harder to turn but keeping course in condetions.
8	140	4.8	Becoming stern heavy
9	160	4.9	Paddlr getting very nervous
10	180	4.10	Getting more stable again!
11	200	4.13	Kayak has a slow roll which the paddler can predict
12	200 & pod	4.14	Kayak afloat with bow submerged. This paddler would have capsized soon. Could not go anywhere in this condition

KW7 TEST NO. 1 9/6/90

-0- LITRES WATER IN HULL NEG. NO. 4.0

KW7 TEST NO. 2 9/6/90

20 LITRES WATER IN HULL NEG. NO 4.1

KW7 TEST No. 3 9/6/90

40 LITRES WATER IN HULL NEG. No. 4.2

KW7 TEST No. 4 9/6/90

60 LITRES WATER IN HULL NEG. No 4.3

KW7 TEST No. 5 9/6/90

80 LITRES WATER IN HULL NEG. No. 4.4

KW7 TEST No. 6 9/6/90

100 LITRES WATER IN HULL NEG. No 4.5

KW7 TEST No. 7 9/6/90

120± LITRES WATER IN HULL NEG. No. 4.6

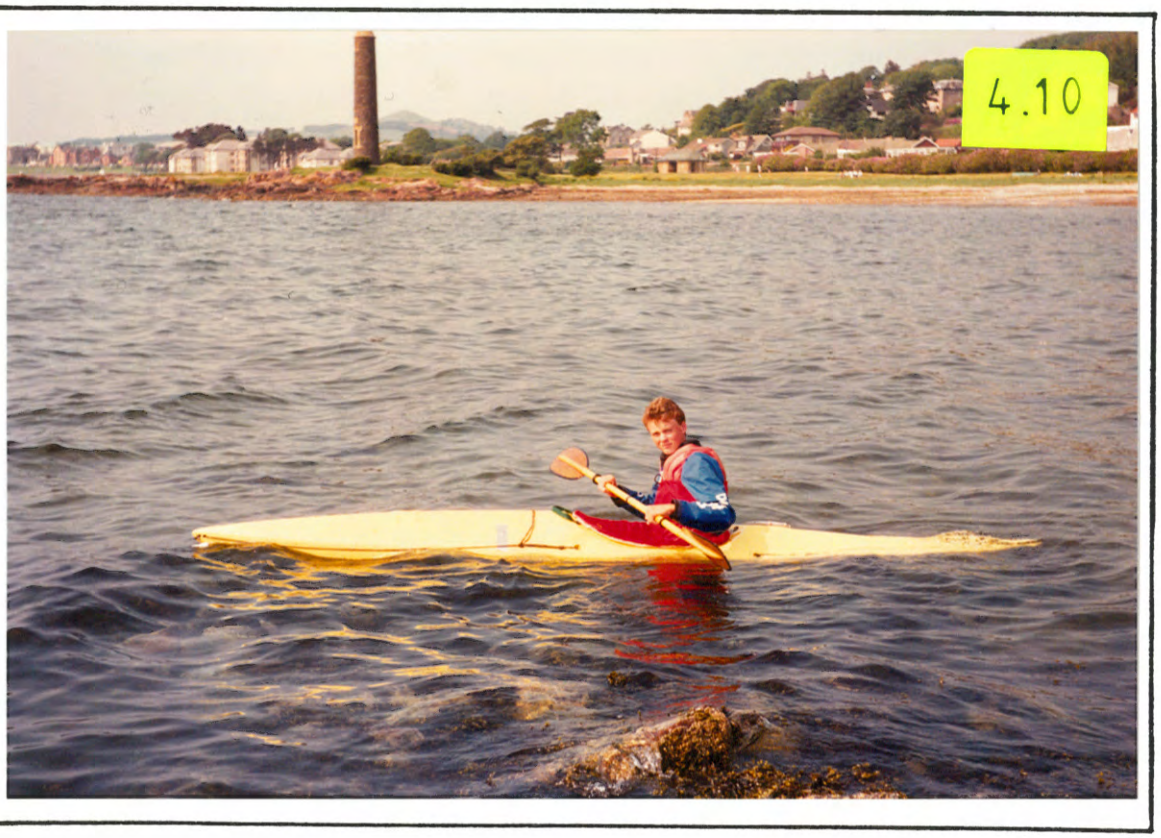
KW7 TEST No. 8 9/6/90

140± LITRES WATER IN HULL NEG. No 4.8

KW7 TEST NO. 9 9/6/90

160 ± LITRES WATER IN HULL NEG. NO. 4.9

KW7 TEST NO. 10 9/6/90



180 ± LITRES WATER IN HULL NEG. NO 4.10

KW7 TEST NO. 11 9/6/90

200 LITRES WATER IN HULL NEG. NO. 4.13

KW7 TEST NO. 12 9/6/90

200 LITRES WATER IN HULL NEG. NO 4.14

POD FLOODED.

APPENDEX 1.
3 PAGES

TEST OF "SEA TIGER" RESCUE

OBJECT To assess the viability of the "Sea Tiger" "hatches off" rescue method with a loaded kayak.

LOCATION Largs, Ayrshire. Sunday November 5, 1989

WEATHER Wind N.W. force 4-5 on shore with short breaking sea. Tide flooding North; neaps.

LOADING A "Sea Tiger" kayak was loaded as follows:-

Front Hatch

1	Sand Bag	42lbs (19kg)

Aft Hatch

3	Large B.D.H. Bottles	39lbs (17.7kg)
1	Medium B.D.H. Bottle	7lbs (3.2kg)
1	Sand Bag	10lbs (4.5kg)
Total for Aft Hatch		56lbs (25.4 kg)
Total for Kayak		98lbs (44.45kg)

This loading was not as fair on the kayak as it should have been, in that the weights were concentrated and this meant that; a) the cargo was prone to shifting where a normal cruising load would have been bulkier for the given weight and would have filled the space better and prevented movement; b) the concentrated load allowed more water into the kayak than would have been possible with a normal bulkier load. The B.D.H. bottles were filled with water (fresh)

For the test the Sea Tiger was paddled by an experienced paddler who had previously been in a Sea Tiger for about one hour two years ago; he weighed in at 197lbs (85.45kg) in canoeing gear ready to step into the boat. All items were weighed on a set of bathroom scales.

METHOD The kayak was launched, as loaded , and paddled into, across and with the seas to get a feel for its handling. Then measured amounts of sea water were introduced into the hull via the forward hatch and the course re-paddled with each new loading until the kayak became unpaddleable. The loads were as follows:-

1. Loaded as defined 98lbs (44.45kgs)

2. Ditto Plus 40 litres Sea Water (41.0kg) (8.8gals - 90.0lbs)
3. Ditto Plus 60 litres Sea Water (61.5kg) (13.2gals - 135.3lbs)
4. Ditto Plus 80 litres Sea Water (82.0kg) (17.6gals - 180.4lbs)
5. Ditto Plus 100 litres Sea Water (102.5kg) (22.0gals - 225.5lbs)
6. Ditto Plus 120 litres Sea Water (132.0kg) (26.4gals - 270.6lbs)

The kayak initially handled as expected being fairly heavy. Paddling hard into the head sea brought water up the foredeck and into the cockpit (for the tests a spray sheet was not used). It did not, however, seem excessively wet.

With increasing amounts of water in the hull, the kayak became harder to paddle (ie heavier) and had a tendency to list slightly to one side due to "shifting cargo", also the rolling increased but the period of roll was slow enough to make balance quite easy up to stage 5, through support strokes, while paddling. Trim appeared to stay level. Initially, stage 6 was much the same but needing a bit more thought to balance, then the pod flooded and balance had to be worked at and progress was slow. Within a short time, when paddling down wind and sea, the water surge in the hull (not violent) took the bow under the surface and the stern became airborne. The paddler was still in the cockpit at this stage and balancing the boat, although not easily. However, as the kayak was now unpaddleable the paddler exited the cockpit (with his head remaining dry!).

The kayak now floated upright and level. The two rescuing canoeists had never seen a Sea Tiger before the day and following verbal instructions, removed the hatches, turned the kayak upside down and positioned themselves, in a raft, to do an X rescue. As anticipated, the kayak was very heavy and the hardest bit was getting the initial lift of the stern prior to breaking the water seal at the aft hatch. After that the water drained out of the front hatch and the kayak was pulled over the raft, slowly, until level then turned right side up, returned to its element and the paddler re-instated.

OBSERVATIONS While the rescue was successful it was not exactly easy, strength was needed for the initial lift and one of the rescuing kayaks did receive some damage. The kayak immediately before rescue (ie with the hatches removed) was for all practical purposes full and supported only by the permanent buoyancy fitted in the ends, additional water having entered after the removal of the hatches.

Although the following did not happen it would be quite possible to; a) lose small loose items out of the forward hatch; b) have the flow of water out of the forward hatch blocked by gear. This could be freed by the canoeist in the water, if he or she is fit enough. Perhaps this should be mentioned in the "Sea Tiger" write up.

However, this test was really quite harsh. It is reasonable to assume that a group of sea-proficient canoeists would have attended to a leaking boat long before the situation reached the unpaddleable state which was contrived in this test.

The test should not be considered as typical of the tests, which the B.C.U. working party on the Sea Tiger recommended. Rather, it was a quick shot at getting something on the rescue method in time for the meeting of interested parties at Nottingham on the November 9, 1989. It was not practical to attempt more in the time considering the test kayaks had only become available to the testers on the week of the test and they all have their livings' to earn.

Another point highlighted by the test was the importance of packing a kayak well, so the cargo does not shift and that it is made as bulky as space permits (excess air in gear bags) to limit the space available to be occupied by an ingress of water. Another point for the makers instructions? of all kayaks?

CONCLUSIONS

The rescue method as described in the "Sea Tiger" publication titled "The Sea Tiger" "X" or "H" Rescue - for use in the event of a major leak caused by damage" - is a viable rescue method for "Sea Tiger" sea kayaks.

Duncan R. Winning

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Duncan R Winning
22 Brisbane Glen Road
LARGS
Ayrshire
November 7, 1989

APPENDEX 2
3 PAGES

Nordkapp and Sea Tiger: A Comparison

I should start with my background. My first sea kayak was a secondhand Anas Acuta which I sold only because it lacked the luggage capacity for a long trip. I bought a Nordkapp which I used without reservation for three years. I then went on a day-trip with someone twenty years older than me who outpaddled me in a quartering sea in his thirty year-old, home designed and built, rudder controlled boat. I managed to convince myself that his advantage was not due to his greater ability but to his rudder. I immediately had one fitted to my Nordkapp and became an instant convert. Nevertheless, I haven't had the courage to retest my ability against the man who converted me!

Two unrelated events led me to try a Sea Tiger. First, I saw the kayak at the 1988 Scottish Canoe Exhibition and listened to Noel Chidwick arguing his design's features. Secondly, in summer 1988, the flange that connects the footrest to the hull broke off my Nordkapp as I paddled across the Sound of Gigha; fortunately the final leg of a week's expedition. During the same trip, the rubber sleeve that covers the rudder cable where it passes through the deck had perished resulting in a very wet cockpit. I was reminded of the old Skye man who taught me to climb and who refused to go to the hills with any adjustable equipment on the grounds that anything adjustable must have a built-in weakness. I reflected that the Sea Tiger has the minimum adjustable and moving parts; no footrest, no rudder, no pump, an integral back-rest.

On return home I bought a Sea Tiger which I have paddled as well as the Nordkapp for one year. The following is a comparison of the two.

Speed. I expected the Nordkapp to win easily. It is the longer boat by 2 feet 5 inches. I suppose that the only genuine test is for the two boats to be paddled against each other by paddlers of identical ability. As a compromise I paddled them over identical courses, once at a comfortable, all day pace and once flat out. On both occasions the Nordkapp won by similar margins; around half-a-minute on a thirty minute course. I would not claim to draw any conclusion from this other than that any difference in speed is unlikely to be significant. I am sure that the respective designers would claim that this was not a fair test and that their boat would perform better in rough conditions.

When paddling with friends we have swapped the two boats during journeys to make comparisons. I believe that the Nordkapp is the faster in calm water and in a head sea; the Sea Tiger is faster in a quartering or following sea.

Handling. Just as a rudder transformed sea paddling for me when I first tried one, I am now a convert to skegs. The Sea Tiger's skeg is easily set and the boat then holds its course unerringly. When retracted the kayak becomes more manoeuvrable than any other sea boat I've tried. I have just one serious and one minor reservation. The serious one is that I cannot adjust the skeg without breaking the rhythm of the paddling action (although I have met someone who claims to be able to do this) and, consequently, I have to stop paddling for a second or so to make the adjustment. This must be a disadvantage in a big sea compared with the rudder's foot control which is completely independent of the paddling action.

The minor reservation is the care with which the Sea Tiger has to be packed to ensure it is well trimmed. If it is not, it is difficult to judge the necessary position for the skeg.

The Sea Tiger is considerably more stable than the Nordkapp. The latter feels like a thoroughbred which the former does not. This, of course, is completely subjective. In testing conditions the stability of the Sea Tiger gives it a clear edge.

The Nordkapp is an expedition boat and is designed to handle well when packed. When empty is is very bouncy. The Sea Tiger handles very similarly whether packed or empty.

Capacity. I was surprised at the clear margin by which the Sea Tiger wins here. Not only does the boat hold a lot more than the Nordkapp, it will hold items of more awkward shapes and it is a lot easier to load. This is due to a combination of the boat's greater depth, the space between the hull and the pod and the angle of the rear hatch.

Comfort No question here either. The backrest on my Nordkapp is adjusted perfectly and I've positioned Karrimat round the seat with loving care so that the boat fits me like the proverbial glove. Although the Sea Tiger's seat feels unusual when first sitting on it, I felt at home as soon as I was on the water. Unpadded, I could spend hours in it comfortably. The Sea Tiger also gets high marks for not requiring a foot rest with the result that there is plenty of room for my feet.

The Nordkapp is the drier boat, not through any noticeable difference in water displacement but because a Twin Seal spraydeck keeps the cockpit dry in almost any conditions. I have not been able to find a spraydeck that prevents water entering the Sea Tiger in anything but the calmest conditions. As the area of the bottom of the pod is comparatively small, several inches of water can accumulate in a short time. Good overtrousers or a wet suit are essential.

Handling out of the water. I expected the Sea Tiger to have a clear edge. The shorter length and the metal rails alongside the cockpit do make it easier to manoeuvre than the Nordkapp and the shape of the pod results in water emptying naturally from the cockpit as soon as the boat is turned on its side. However, the impossibility of getting one's fingers round the inside of the cockpit combing (owing to the design of the pod) make it more difficult to manoeuvre in some situations. For the solo paddler, the Sea Tiger has a substantial advantage as it can be carried laden far more easily.

Safety. I won't go over the arguments concerning the pod and deck rails that have been aired before in this magazine. I confess that I had been unable to visualise the pod from what I had read. There is no doubt that this is the area where the Sea Tiger has the greatest advantage. For an average paddler like me, the possibilities of self and assisted rescue are transformed. Rolling it with the pod full of water without the spraydeck is almost as easy as rolling it with the spraydeck on. Re-entry in a deep sea and subsequent rolling is comparatively straightforward.

Workmanship. Until recently I'd have taken good workmanship for granted. My Nordkapp was perfect on arrival and it was entirely watertight until time and repeated chipping of the gel-coat on rocks took their toll. However, when Valley fitted the rudder the quality was not the same. The seal between the rudder and the hull leaked, the flanges that hold the cables in position dropped off within days, and, as explained earlier, the footrest flange broke after two years. On the Sea Tiger, the skeg required major surgery with an electric sander before it would move freely and the boat had to be returned to find the cause of leaking hatches. I'm assured that the fault lay in the manufacture of the Valley hatches.

Conclusion Which would I chose? If I was going out in modest seas, did not have to carry a massive load and wanted an aesthetically pleasing kayak I'd take the Nordkapp. It looks the part and has a balance and undefinable character that the Sea Tiger lacks. If there was a chance of testing conditions or I wanted to carry a massive load, the pleasure of paddling the Nordkapp would be outweighed by the sheer practicality and safety features of the Sea Tiger.

APPENDEX 3
2 PAGES
21ST AUGUST 1989

PHONE CONVERSATION WITH DAVID HAYTER. (SEA TIGER USER)
BARBRECK 665 - KILMELFORD 232.

AS A USER OF A SEA TIGER I ENQUIRED ABOUT PROBLEMS WITH THE DECK/HULL JOINT. IN 1987 DAVIDS SEA TIGER SUFFERED A 3" SPLIT AT THE SEAM AFTER BEING STRAPPED DOWN ON A ROOF RACK IN A FULLY LOADED CONDITION AND DRIVEN FOR SOME HOURS THE LAST SECTION ON ROUGH ISLAND ROADS WITH SOME SEVERE JOLTS. IMEDIATELY THEREAFTER DAVID AND A COMPANION CROSSED THE MINCH. CONDITIONS BECAME NORTH 5 TO 6 I.E ON THE BEAM WITH WIND OVER TIDE. DAVIDS BOAT TOOK WATER IN AT THE SEAM. ON REACHING THE OUTER HEBRIDES DAVID EMPTIED OUT 10 TO 15 GALLONS? (HE RECKONS. HE COULD HAVE NOT GOT MUCH MORE IN BECAUSE OF THE AMOUT OF GEAR IN THE BOAT) HE SAID THAT ALTHOUGH HE REALISED HE HAD WATER ON BOARD HIS BOAT STILL HANDLED ACCEPTABLY IN THE CONDITIONS AND WAS FASTER THAN HIS COMPANIONS, A NORDKAP WITH RUDDER.! DUE TO CONDITIONS!

DURING DAVIDS ST KILDA TRIP HE AND SEA TIGER SLID SOME 25 FEET DOWN THE ROCK OF HASKEIR AND GOT SWEPT UP UNDER AN OVERHANG DAMAGING SOME OF HIS DECK MOUNTED EQUIPMENT HE WAS ABLE TO PERFORM A SELF RESCUE AND GET HIS LOADED KAYAK RIGHTED AND HAULED BACK UP THE ROCK. HE DOUBTED THE FEASABILITY OF ACHEIVING THIS WITHOUT A SAFETY COCKPIT.

HE ALSO SPOKE OF LANDING IN BAD CONDITIONS BY SWIMMING IN WITH BOAT IN TOW AND STATED THAT THE DECK

ARRGT ON THE SEA TIGER MADE THE ATTACHMENT OF LINES BEFORE LEAVING THE COCKPIT MORE EASILY ACCOMPLISHED THAN A MORE CONVENTIONAL DECK ARRGT.

HE COMPLAINED AT THE ATTITUDE OF THE CANOEING ESTABLISHMENT IN THAT HE FOUND INFORMATION ON SEA KAYAKS OMITTED REFERENCE TO THE SEA TIGER WHICH HE HAS FOUND TO BE THE SAFEST BOAT FOR HIM.

Duncan L Winning

Z.

APPENDEX 4
1 PAGE

REPORT OF TEST ON SEA TIGER. WED 8TH NOV. 84.

The canoe was found to be very buoyant and very stable by several beginners who have only been canoeing for 3 months. They much preferred it to the county Kwadicapps which they usually paddle. It responded well to turns and manoeuvrability tests but was almost impossible to turn by a beginner with the skeg in the lowered position. Its directional stability in a quartering sea was excellent with the skeg down. This also helps considerably with its stability in beam seas.

The canoe was filled with water in the hatches to simulate swamping from a crack or hole below the waterline. It was still paddleable with approx 150 lbs of water aboard and a 12 stone paddler. At 200 lbs of water it was barely paddleable but was still fairly high in the water thanks to the foam buoyancy, presumably 30 lbs at each end.

The test was carried out in force 3 conditions in short steep waves and there was no problem encountered in water rushing from bow to stern provided one was aware of the sloshing action in dipping the bow and stern alternatively. With 150 lbs of water aboard it was quite fun actually.

The most disappointing aspect of the whole canoe was the fact that you were always sitting in a pool of water which very quickly made you cold and wet in the lower extremities.

Giles