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NEW SOUTH WALES STATE CORONER'S COURT

STATE CORONER: J ABERNETHY

MONDAY 3 APRIL 2000

5/98 EVENT OF THE 1998 SYDNEY TO HOBART YACHT RACE

INQUEST INTO THE DEATHS OF JAMES MICHAEL LAWLER
MICHAEL BANNISTER
BRUCE RAYMOND GUY
PHILLIP RAYMOND CHARLES SKEGGS
JOHN WILLIAM DEAN
GLYN RODERICK CHARLES

Mr A Hill assisting the Coroner
Mr J Harris for the Cruising Yacht Club of Australia
Mr Elsworth for the Australian Yachting Federation

HILL: Mr Coroner, the situation is that Mr Boyle from the Australian Maritime College, who did the tests on the life rafts that were used by the Winston Churchill, is here to give evidence and he has a 62 page report which we will work our way through. There is also various videos of the demonstrations and some of the other things that were done, such as the training. What Mr Boyle did is he took 10 yachtsmen who had previously been trained in boarding life rafts and righting them and been picked up by helicopters and 10 yachtsmen who had not been trained and he tested on these life rafts and the disparity is quite astounding.

CORONER: This is an important segment of the inquest?

HILL: Yes, because it certainly leads on to a recommendation that you may wish to make about the training of yacht's crews.

CORONER: Before you do that, I would like to comment on today's Herald. "Inquest is stacked," it says yacht club chief. Mr Harris, have you something you want to say about that?

HARRIS: Your Worship, I do. Plainly this article is of extreme concern to my client and they have instructed me to say to your Worship in so far as that article infers less than full support of this club for this inquest, it's categorically denied, that inference is denied.

CORONER: I appreciate that, Mr Harris. I know Mr Kennedy sat through this inquest assiduously and been unfailingly proper in trying to reflect the evidence I think as it's gone through and it really seems to me this might be a sub-editorial headline which doesn't match the article. I don't know but that's what it looks like. What I will say is this, and I put it on the record, Mr Harris, the inquest is attempting to look honestly at the issues and we have

outlined them from the start and will continue to do so for the good of the yachting community I hope. Mr van Kretschmar has, as commodore, I suppose every right to say what he likes and to caucus his members or do whatever he wants to do, as he sees fit and I make no adverse comment about that.

I think the main point to make is this. The inquest from various sources has received substantial data which goes towards concerns about the way the race was organised and run. Everyone knows that. In those circumstances the fairest thing for the inquest to do is to allow the Cruising Yacht Club to be heard last and that's what we propose to do, so that everything is fairly on the table before the first member or executive or race committee person has to get in the witness box. That's all we are trying to do. It is not, as you say in your expression for support, this is no beat up, it is plain and simply another inquest as far as I am concerned. It just happens to concern six dead people, not one or two.

HARRIS: The club accepts that without any doubt or any reservations at all.

CORONER: I understand that and I accept that of course, Mr Harris. Thank you very much.

<ANTHONY JAMES BOYLE(10.11AM)
SWORN AND EXAMINED

HILL: Q. Sir, would you give the inquest your full name please?
A. Yes, my full name is Anthony James Boyle.

Q. And your address, sir?
A. My address is 112 Roseview's Drive, Largana, Tasmania.

Q. And your qualifications?
A. Yes, I hold a Master Class One Limited Certificate of Competency, Bachelor of Education, Fast Rescue Boat Coxswain Certificate, other related maritime short course certificates and I am currently a lecturer at the Australian Maritime College in the faculty of Maritime Transport and Engineering and prior to moving to that faculty, I spend six years as manager of the Maritime College's Emergency Response Centre, which involved looking after our survival training facilities, fire training facility, medical first aid, damage control, crisis management and training.

Q. You have prepared I think a 62 page document or 63 page document on the life rafts that were used aboard the Winston Churchill, is that correct?
A. Yes, that is correct.

Q. If I could take you to page 5 of that, under the heading "Standards for Life Raft Construction, Fittings and Equipment". You there say about the 1998 Sydney to Hobart Race review: "There is currently no Australian Standard for

the construction of life rafts for offshore racing or cruising yachts." Now that was the CYCA's report into the race, is that right?
A. Yes, that is correct.

Q. Is that correct that there are no standards?
A. Yeah, I was referring to Australian Standards and I actually went through and looked at their data base of standards. I could not find an Australian Standard for life rafts. There are for life jackets or personal flotation devices but there are not for life rafts that I could locate.

Q. That's for life rafts for offshore racing or cruising yachts?
A. That's correct.

Q. But there are regulations and rules that relate to life rafts for small commercial as well as larger commercial vessels, is that correct?
A. That's correct, yes.

Q. What this section does is compares the current CYCA rules or guidelines pertaining to life raft construction, equipment packs and fittings with those contained in the Uniform Shipping Laws and of the SOLAS, that's the Safety of Lives at Sea Convention. That's adopted in the Australian Marine Orders, is that correct?
A. Yeah, that's correct.

Q. Basically there is nothing governing the life rafts that are aboard racing yachts but there is a whole series of codes and regulations that cover commercial vessels, is that correct?
A. Yes, yes.

HILL: I should make it quite clear at this stage, Mr Coroner, that the CYC doesn't set the standards, it's the Australian Yachting Federation and they in turn, as I understand it, are governed by some international body which we will find out about later.

CORONER: Yes, it's an important aspect.

HILL: Q. As you say there, the standards adopted by the CYCA and those published in the Australian Yachting Federation are those published in Yachting Federation Rules of Sailing for 1997 to 2000, is that right?
A. Yes.

Q. Their standards are based on those determined by the Offshore Racing Council. What exactly is their standards?
A. Sorry, the Offshore Racing Council standards?

Q. Yes?
A. Well I referred to I think David Lawson from the CYCA in August this year about that. Those standards are prepared my understanding is by a committee get together, form their

standards on an international basis. These are then adopted by Australian yachting authorities and incorporated into the rules for racing. The standards are basically - those that are in the rules for racing are those set by the ORC with the addition that in Australia the equipment packs for the yachts have to be packed inside the life raft. That's the only variant that Mr Lawson pointed out to me when I interviewed him.

CORONER: Q. Who is the ORC? They are international?
A. They are an international body, yes.

Q. Governing blue water racing, are they, offshore racing?
A. That's my understanding but someone from the yachting fraternity would be in a better position to outline exactly what the ORC does.

HILL: Q. You point out there that the AYF and Offshore Racing Council minimum specifications of the yachtsman's life rafts are contained in appendix 2?
A. Yes.

Q. I think that's the blue book - that's that one there?
A. That's correct.

Q. That's where they are contained?
A. That's where they are listed, yes.

Q. You then talk about the coastal standards and it says: "Standards for construction, fittings and equipment for inflatable life rafts carried on board some classes of state registered commercial vessels are contained in appendix J, that's coastal life rafts of the Uniform Shipping Laws." So, as far as commercial vessels are concerned, they are governed by the Uniform Shipping Laws, is that right?
A. That is correct. If they do not comply, they cannot get State Survey and they cannot operate commercially.

Q. Then there comes the Safety of Lives at Sea Convention, which set down a standard for life rafts?
A. That's correct.

Q. That's applied through the Navigation Act, Commonwealth Navigation Act and the marine orders that are made under that, is that right?
A. That is correct.

Q. At 2.2 you point out a comparison of the Australian Yachting Federation and the Uniform Shipping Laws code coastal life rafts. This is just for the coastal area, is it?
A. Yes. The coastal life rafts are basic rafts which - it's a standard for the rafts which would go on. For example, a 25 metre fishing vessel operating out of Sydney Heads, that's the type of minimum standard raft it would have to carry.

Q. Now you compared them, that is the AYF Racing Rules and

the USL Code and the RFD product catalogue - I think you have a copy of that with you, is that right?
A. Yes, I do.

Q. Now the RFD are the makers or the retailers of these particular life rafts that we are talking about with regard to Winston Churchill, is that right?
A. Yeah, they distribute or they sell and distribute the Nautive(?) life raft, the Pro Saver, yes.

Q. There are two areas between the Uniform Shipping Laws and the Australian Yachting Federation's rules in regard to the life rafts that vary, is that right?
A. Yes.

Q. That's the weight of construction materials. What exactly do you mean by that?
A. Right. Looking at the product catalogue for RFD it indicated that there was a significant variation in actual overall weight of the life raft between the coastal standard raft, which is the USL Code raft meets those standards, and the Pro Saver, which is marketed as a super light weight life raft. So, that's one of the major differences, not - that wasn't so much in the actual standards or the rules. This is just a fact that one raft is lighter than the other and that come about as a result of - there does not appear to be a requirement for any durability in use under the AYF rules for racing, whereas the USL code requires 30 days durability in use at sea--

CORONER: Q. In all conditions?
A. In all conditions, yeah, whereas the AYF rule book I could find no reference to that.

HILL: Q. When you talk about the weight of construction, are we talking about thickness of the material?
A. Yes, it comes down to thickness of materials. That was quite evident when we inspected the raft concerned that materials were much thinner, much lighter than similar rafts which were heavier rafts.

Q. Then you say the requirement for withstanding exposure to the elements. So these are the two fundamental areas. That's the weight of construction materials and the requirement for withstanding exposure to the elements?
A. Yes, but I must point out that the weight factor wasn't - there's no rule or regulation talking about the minimum weight of a life raft. The weight factor is more a selling point in the catalogue. That's where the comparison was made.

Q. What you do point out at 2.21: "Withstanding exposure to the elements and the Uniform Shipping Code requires that," and this is in quotation marks "the life raft shall be of suitable material and construction and shall be so constructed as to be capable of withstanding exposure for 30 days afloat in all sea conditions." Now, that's not a requirement for the Pro Saver that was on the Winston

Churchill?
A. Yeah, that's my understanding.

Q. And that requirement, about 30 days in all sea conditions, that's also required in SOLAS life rafts, that's the Safety of Lives at Sea?
A. That's correct.

Q. But there is no such requirement in the AYF or the ORC minimum specifications for yachtsman's life rafts?
A. That's correct.

Q. You point out then that this raises the question of why this standard was omitted from the AYF Rules and why they were developed and leaves to speculation as to the suitability of AYF construction standards for category one races. Now why does it raise that?
A. Well from my point of view it raises that question because I think it opens up the possibility that life rafts may be constructed either to a price or to a weight to provide some advantage in a racing situation, whereas if there were rules saying a raft had to have a minimum durability, then the testing process would ensure that if it was a light raft - a light weight raft that the materials and the method of construction would be such that the raft would survive for 30 days if required.

Q. You asked Mr David Lawson of the CYCA, who is a safety officer, why and he indicated what to you?
A. He indicated that there is a trend in the racing area with yachts for people to move towards lighter weight rafts. In many cases that's a product of modern vessel design, where the vessel designer actually incorporates the weight of the raft and the positioning of the raft as part of the boat's overall design to get optimum trim and balance during a race and that a lot of it is actually dictated by the designer than rather by the person who owns the boat. He said that trend is certainly there. Other people see having a light weight raft as an advantage because it is less weight on the vessel, so therefore the vessel should perform more efficiently during a race.

Q. In effect, do they not sacrifice safety for lightness?
A. Yeah, well that - I guess that depends on whether or not the lightness does compromise the structural integrity of the rafts and without the 30 days test, which is required for a coastal standard raft, you have - the people who buy the raft have no way of knowing whether or not that raft does meet - you know, is up to the job.

Q. Do I take it that the heavier the raft the better, or what is the situation with that?
A. No, I don't - I think it's not fair to say that a raft needs to be heavy to be strong and durable. I think what's important is that a light - if there is going to be a light weight raft that raft should be tested to ensure that it does have a minimum durability in use. There's no - if it meets the 30 day requirement, then perhaps that would be

fine.

Q. What you are advocating then is that it's not so much the weight of the life raft but it's whether or not it passes the 30 day durability test that should be applied?
A. Yeah, that's my opinion.

Q. You have pointed out at page 7 that the life raft tubs(?), you've got a six person Pro Saver, it weighs 28 kilograms and costs $2,527. Is that the one that was used by the Winston Churchill, the six man raft?
A. Yeah, that is the same raft. That's the raft in the product category, yeah, your Worship, yes.

Q. There was also a six person Pacific, that's a different type of raft. That weighed 44 kilograms. Same price $2,500 - well actually $27 less. It does weigh a lot more, why? Is it contents or simply the material is thicker?
A. There will be more content in that the Pacific life raft is a coastal - USL coastal standard approved raft, so there would be slightly more water carried and a bit more equipment but overall it's - yeah, it is heavier construction materials as well but the thing which has at least been done with this Pacific life raft, it has - had to meet the requirement for 30 days durability in all conditions.

Q. So, in effect, there was a life raft, a six man life raft that did comply with the Uniform Shipping Laws for $27 cheaper?
A. Yes.

Q. Now I think the AYF have some rule as to the weight of a life raft that's carried in a valise, is that right? Do you know about this?
A. Yeah, there's a weight limitation in the rules for racing which is in the order of 40 kilograms is the weight for a raft to be stowed below deck. If it exceeds that, it has to be stowed on deck is my understanding and generally once a raft - most people wouldn't want to stow a raft in a valise on deck because of the exposure to the elements that the raft would be subject to.

CORONER: Q. That's an AYF requirement, is it?
A. Yes, yes, your Worship, that's in the AYF Racing Rules.

Q. So, if the Churchill would have had to have stowed - if it chose a six person Pacific, it would have had to stow it on deck to comply?
A. Yes, they would have had to have done that, though the weight may have come down as a result of - if they had the coastal standard raft but went to the AYF equipment pack, they would have carried less water and that may have lightened the raft to the point where they could have perhaps got it below 40 kilograms.

HILL: Q. I think the purpose of that is that it's considered that above 40 kilograms is too heavy for one

person to drag up on deck. Is that your understanding how that works?
A. Yes, that's my understanding.

Q. There is then a six person Sea Saver Plus at 46 kilograms and that's 3,500, about $1,000 more. Does that qualify for the Uniform Shipping Code?
A. Yes, that raft also meets coastal standards and that raft has extra features, such as a double floor so that they can be insulated from a sea wave - I am just going by the product catalogue here - so, that's why you have the additional costs there and it's also built - it's a different design altogether from the Pacific, so - it also has a boarding ramp on one of the versions of the raft to assist with boarding as well.

Q. Then there's the six person Survivor. It weighs 73 kilograms. It meets the Convention - the Safety of Lives at Sea - and has additional 6 kilograms of water. Now that is basically twice as expensive, it's $6,471. What is the difference with these life rafts?
A. The SOLAS life raft requirements are fairly rigorous for testing and evaluation. To ensure they meet the requirements they carry significantly more equipment inside the raft. They have more fittings required and generally are a more robust raft and hence you have got the cost factor. Also most safety equipment which is SOLAS approval seems to have - an automatic price hike goes with it as well. That might just be my cynicism but certainly that's something you can observe in any place that sells safety gear for the maritime environment. SOLAS gear - approved gear is more expensive but it's the sort of gear that's worth spending the money on, in my opinion, because they are a robust survival raft.

Q. Is it just the raft that has to pass that 30 day test?
A. Yes, it's the raft and the fittings that come with it. The way they operate is that the rafts are tested during their manufacture process. I mean, they have to withstand lateral impact at three - I think - when fully laden they swing them into walls and smash them into walls to make sure that their buoyancy chambers don't break. They have to be dropped from a height to ensure that they maintain their integrity. They are then tethered out at sea for the 30 days and they are monitored and checked to check on the integrity of the actual fittings as that time goes by. Obviously not with every raft but they will pick one raft out of a batch and test it.

Q. What about the testing for the six person Pro Saver, is there any testing?
A. You would probably have to check with the manufacturers for that. I would imagine they would have some sort of quality assurance where they do check their rafts but they're - I've not got any information about them doing a prolonged 30 day durability test. I would imagine the distributors for the raft would be better able to answer that question.

Q. You make the point about the AYF approved Pro Saver and the coastal Pacific life raft and the only difference appears to be the 16 kilograms of weight, so you've really got a choice of obtaining a life raft which will comply with the Uniform Shipping Law and the 30 day test or you can buy the Pro Saver and save yourself some 16 kilograms of weight?
A. Yeah, that is correct. It is really what the client wants and the impression that I got from talking with Mr John Ferris, who manages RFD in Australia, was that the manufacturers in general manufacture a product for - to meet their client demand and at the moment the market is demanding the light weight rafts and they all manufacture to that demand, because those rafts - they meet current rules for racing, category one races.

Q. Another way of approaching this might be to simply say that you must have life rafts to the weight of 100 kilograms on board a vessel. This is in the race rules itself and if your life raft only weighs say 70, then you've got to carry another 30 kilograms of weight to make up the difference and then everyone would be the same?
A. Yeah, that would be a fair way of overcoming the - having the tactical advantage of having a light weight raft. I guess a bit like race horses which have penalty weight and that would then make people think if they were purchasing a new raft about, well, there's no advantage to having a super light weight raft, perhaps we will get something a little bit more robust for what's - from here for a cheaper price and we won't lose any advantage - any advantage we would have by having the lighter raft.

Q. There then comes the manufacturer's recommendations, the suitability of category one races and you say that there you've taken the RFD product catalogue and it describes the Pro Saver as follows: "Application racing yachts and recreational boating. A super light weight life raft that combines quality fabrics with the latest manufacturing techniques. The Pro Saver features outstanding strength and durability at a fraction of the weight of other life rafts without compromising any of the necessary safety features. For example, two independent buoys in chambers, ballast pockets, boarding ladder, observation port, etcetera. At seriously competitive prices, this is the answer for the racing yachty or for a small craft, power or sail." Is this more or less bringing forward to the purchaser a light weight raft so that you have an advantage in racing, as you see it?
A. That's the way I read that, yes.

Q. But when they say that "without compromising any of the necessary safety features", in fact it doesn't comply with the 30 day test?
A. It does not comply with that but at the moment there is no requirement for it to comply.

Q. The other thing that's of interest. You say over at page 8: "Additional documentation relating to Pro Saver life rafts originating from the German manufacturer, Nautive, was

provided by John Gibson," - he's the Winston Churchill survivor. He in fact came down and watched these tests, is that right?
A. Yeah, that's correct, yes, he was there.

Q. There are two references to the use of these rafts, that's the Pro Saver: "It is to be used in waters near to the coast." That's what the Pro Saver says in English, is that right?
A. Yes, one of the brochures that I was provided with by John actually stated that and that's in the appendix to the report, a segment from that. Yes, it says "For use in waters near the coast" in English.

Q. But the German text interprets to read "For coastal waters, lakes and rivers." Do you see any difference in that?
A. No, I see that as indicating that this is a raft which is meant to be used very close to the coast. You know, it's not - in my interpretation, which is just my interpretation, I wouldn't use that more than several miles from the coast, something like that.

Q. When you say "several miles"?
A. Three to five nautical miles. That's just my personal view.

Q. That view, if you like, comes from experience of testing these rafts?
A. Yes, that's based on my experience as a sea farer and also working at the Maritime College in the area of emergency response and training a lot of people in use of small life rafts, particularly small commercial vessel operators.

Q. John Ferris of RFD, and they are the retailer of this raft, is that correct?
A. That's correct, yes.

Q. Supplied a similar brochure and that states: "The Pro Saver life raft will meet all regulatory requirements for coastal, offshore and ocean voyages." Now presumably that must mean for yachts only?
A. Yes, I believe so and that document was supplied - John Ferris was also down and observed the trials which we conducted at the Maritime College and once he had seen the German document and the other English - document in English that was his response. He sent that down some weeks later and said, "Look, just to balance that, this is another brochure that I've found," and he asked me if I would include that in the report and I said, yes, certainly I would.

Q. You actually tested the Pro Saver life raft and that was the same life raft that Mr Gibson was in?
A. It was the - similar - it was the same design life raft, yes.

Q. So, it was just another one possibly from a different batch?
A. Yes, it was another one.

Q. But an identical one?
A. Identical life raft, yes.

Q. You say that raft was manufactured in December 1997 and had been in service on a vessel for about 14 months and that's what you took out and tried?
A. That's correct.

Q. Now after testing - I'm going to page 9 and you will see at the top there you say, "During the conduct of the trials the buoyancy and canopy support tubes remained in tact and at full working pressure." Now, that was much the same as what occurred with the survivors, Mr Gibson and Mr Stanley, is that right?
A. Yeah, that's - my understanding is that the buoyancy tubes and canopy support did remain fully inflated, yes.

Q. Now damage sustained to the raft during these activities consisted of damaged stitching adjacent to the canopy entrance hold-back ties for a distance of three to five centimetres either side of each tie?
A. Yes.

Q. What happened with that?
A. Could I have that model behind you? Would that be--

Q. Yes?
A. I can show his Worship.

Q. That, of course, is not--
A. No, it's not a Pro Saver model but it's got a similar entrance. What would happen was during - we had multiple boardings and exits from the raft. Where the stitching attached the - it's like a little tunnel you have here which unrolls and pops out. Yeah, the stitching went around these areas here and that was largely from people grabbing hold of the material to pull themselves in because the raft tended not to have a good system for actually boarding, so people were just grabbing anything they could and that tended to damage the stitching.

Q. Then "Separate stitching for a distance of about four centimetres at the lookout port, point of attachment to the canopy." What was going on with that?
A. I'm - that - the lookout port, that's an example of a lookout port here. On that raft it was actually further down here. That was a result of someone's weight being put on the canopy when the raft was inverted with people inside the raft and the weight was sufficient to start tearing the stitching and we are not sure at what stage that occurred but it occurred in the pool in still water conditions.

Q. Then the third thing was the righting strap attachment point on the corner to the left-hand side of the canopy

entrance, separated from the life raft. Could you show us what happened?
A. Okay, this model doesn't have it but the Pro Saver rafter had - there's a diagram of that later on in the report but it had a webbing strap which basically from a patch around about here diagonally across the floor to a patch on the other side. That strap was what we call a righting strap and its sole use or sole purpose is to allow one person to pull the raft back up from the inverted position to the upright position in the event of the raft capsizing. What we did was we ran through quite a number of righting exercises with the raft empty, with the raft with one person, two people, three people, four people and five people in the raft just to see what was possible to do and we found that with three people in the raft attempting to right it, the patch parted from, or came away from the life raft rendering the righting strap effectively useless without some modification, which we were able to do. We retied that onto the boarding ladder attachment point to see what would happen and then we righted the raft but eventually the boarding ladder attachment point came away as well.

Q. You did not experience that problem with the SOLAS six person raft or the Petrel. Which was the Petrel?
A. The Petrel raft was a six person raft. It was a round design. We managed to procure that from Tamar Marine in Launceston, it had just been condemned after its annual survey and the owners of the raft donated the raft to our study. Now that was a coastal standard life raft and we thought we would take advantage of it and run some comparisons to see what would happen during the righting process, to see whether or not any fittings would carry away under the same load and those rafts with - we were able to right the Petrel and the small SOLAS raft with five people in the raft, with that load and none of the righting straps or righting handles carried away.

Q. The Petrel, when you say coastal, that conforms with the Uniform Shipping Laws?
A. That's correct.

Q. Then you say, "The left-hand boarding ladder and attachment points separated from the left raft". This was after you tied the righting strap onto it, is that right?
A. That's correct.

Q. And then the canopy became detached from the canopy support arch. How did that--
A. The way the raft's designed is you've got the canopy support arch here which is this black tube running across and the canopy is just glued on top of that, just to stop it flapping about. That happened very early in the trials, I'm not sure exactly when but once the raft was inverted, once you get someone's weight on the canopy it just - the glue didn't appear to hold and the canopy came away. It didn't affect the integrity of the raft in itself but it made it reasonably hazardous when the raft is inverted with a number of people inside, because the canopy then - the support arch tended to bend upwards and on a number of occasions police divers got caught between the canopy entrance and the actual buoyancy tube, which was no big deal but it just made things a little bit more awkward during our trials on a couple of occasions.

Q. Were any of those problems experienced with the SOLAS or the coastal liferafts?
A. No, in both cases the canopy remained attached to the support arrangement.

Q. All of that damage was repaired before you did the sea trials, is that right?
A. Yes. We needed the raft intact for the sea trials so our technician at our survival centre re-glued the patches but I must point out that once the original patch is torn off a repair is not going to be as strong as the original gluing. But yes, everything - we fixed the stitching and re-glued on the come-way patches, yes.

Q. During the conduct of the sea trials, you observed that the Pro Saver liferaft floor and canopy were much less resistant to damage than those of the six person Petrel liferaft and you go on to discuss that further. Why was that? Was it just because it's flimsier or what?
A. From our observations which we have video footage for the court to view, it was basically just the lightweight nature of the materials rendered them less resistant to damage, or ongoing damage, once they had - the floor was less resistant to ongoing damage once it had sustained damage and the canopy itself just wasn't up to having any sort of weight put on it. If you've got five persons in an inverted liferaft in a seaway, weight does get put on the canopy and the canopy started to tear away fairly quickly once the first tear occurred, yes.

Q. You then deal with the fittings and equipment and you say this. "A review of the fittings required by the AYF and the Uniform Shipping Law's coastal liferafts found that there is no requirement for canopy lights on the AYF rafts." What sort of - where would a canopy light be?
A. Canopy lights are of two types. You have an external canopy light which is usually placed at the high point of the canopy which is required under the USL code or SOLAS regulations so that the raft can be visible by searching vessels or aircraft to try and locate it. And also an

internal canopy light which allows sufficient light for the raft occupants to be able to find equipment such as torches and paddles and to review immediate action instructions, if they have to board the raft in the dark.

Q. Have you any idea why the light would have been not required in the AYF?
A. No, I don't. I mean that was just something which cropped up when I was doing my comparison, I just noticed it was there and I put it in the report mainly because we found that when we were doing our inversion trials in the dark it was very difficult for the people inside - you've got five people inside an inverted liferaft in the dark and then you need to somehow undo the lashings for the canopy closure and then escape from the liferaft. We found that very difficult to do in the dark but once we added a light source to the raft it made the job a lot easier. So I thought it was worth pointing out so that we could hopefully get some sort of lighting into the rafts to make the job easier in the dark for people.

Q. In fact I think the lights work on a sea activated cell, is that right?
A. Yes, there's two types of cells. You have the actual seawater cell which basically works on seawater flowing into the battery and the seawater acts as an electrolyte, you get a chemical reaction resulting in electricity being generated. That technology is very old now and modern liferafts are tending to use lithium cell technology and they're designed such that lithium cells in a watertight container, you normally have either a pin is removed or a couple of electrodes are exposed and when that's immersed in water the seawater makes the circuit, the lights come on automatically. And then you have a switch in between the battery and the light so that you can switch the light off during the day if you don't need it and you can switch it back on at night when you do need it. So that's the current technology.

Q. Are these things very heavy or something?
A. No. The battery pack is about this long and about that round.

CORONER: Q. Sorry, how long?
A. In the order of what, 12 to 14 centimetres long, probably five, six centimetres in diameter and will probably weigh in the order of two or three hundred grams.

HILL: Q. The light source on the outside, is that visible for some distance?
A. SOLAS regulations require a minimum distance of two nautical miles for a liferaft light.

Q. Obviously these are on the coastal ones that you purchased that comply?
A. Yes.

Q. So it's not difficult to do that?

A. No, it's just - it's not difficult. I guess there would just be the added cost and the added weight factor. The weight factor would be negligible but there'd be added cost with it installing a light, yes.

Q. But if I can take you back to the - I forget the name of it now, the Pacific, wasn't it?
A. Yes, that's correct.

Q. The Pacific one which was in fact cheaper, a liferaft for $2500 that does comply but weighs 44 kilograms is $27 cheaper than the one that was aboard the Winston Churchill and presumably that must have had that light?
A. Yes, it does. Your Worship, there's a photo with a light, that's it there with the light on it.

Q. So although we talk about a cost factor--
A. Maybe it's the weight factor.

CORONER: Yes, 16 kilograms.

HILL: Q. Yes, the weight factor and nothing more.

CORONER: Sixteen kilos.

A Mm.

HILL: Q. Moving on from that, you then did a review of the equipment packs that were found in the AYF pack is superior to the USL, the Uniform Shipping Law's pack, in the requirements. So the AYF pack is better?
A. In some respects, yes. I've always been a little bit critical of the USL code coastal pack that there could be more equipment, particularly pyrotechnics, and it's quite gratifying to see the AYF rules require the additional rocket parachute flares, the additional hand flares and the orange smoke flare, things like sunscreen and plastic bags, they're all very useful things to have and it was good to see they are in the rules. So that was gear that you wouldn't find in a commercial vessel's liferaft.

Q. But the coastal pack is superior to the AYF pack in the requirements for water rations?
A. Yes.

Q. You get more water in it, is it?
A. That's correct, yes.

Q. Fishing line and six hooks, chemical - what is that?
A. Chemiluminescent, yes.

Q. Lights. What exactly are they?
A. You might think of the trade name for those, or one manufacturer is Syloom(?), they make the green lights in plastic which you bend them and you - to break a glass vial and then you shake the two chemicals together and they glow green, or you can get different colours of those things and they will give about 10 to 12 hours of light, provided that

the temperature's not too high. They basically don't require batteries, they're easy to activate and in a survival craft environment they give adequate light to do things by. That's the light we used for the escape exercise in total dark, or it was totally dark until we activated the chemiluminescent light and then everyone was able to egress the raft quite satisfactorily.

Q. I see, so you could just sit in it, it lights up--
A. Yes, you just take it out of its foil wrapper, bend it, break it, shake it. They retail at about $5 or $6 each.

Q. And paddles. Now, the paddles that are in there are quite different to what most people's concept of paddles are but the Uniform Shipping Laws require actual paddles, do they?
A. Yeah well there's not - yeah, every paddle I have seen in a USL code standard liferaft has been a paddle with blades or the timber or plastic blades with a shaft so you can hang on and get some purchase when you're paddling.

Q. What are the paddles like that come in the Pro Saver, yes, in there?
A. The Pro Saver paddles, I'll just have a look in here if I may, I don't think this is a Pro Saver. Is this a Pro Saver pack?

Q. That's how it comes, the equipment comes in that - just one bag, does it?
A. I can't identify any paddles in this particular pack, so this particular raft may have had the paddles in the usual format but the raft that we looked at tended to have paddles which were like this. They were made of the same material, it was in the form of two mitts which you inserted your hand into like so and the idea was you reached over and used your hand to paddle to get clear.

Q. Those were packed inside the equipment bag and that is an equipment bag is it, that - everything goes in there?
A. That's correct, yes.

Q. You say that the nature and method of stowage of the mitt paddles raises concerns relating to the accessibility, identification and effectiveness. Well first of all, accessibility, perhaps if we deal with that. Is it because they're - it's like one sort of kitbag and you've got to sort of dig around in there, is it?
A. Yes. From an accessibility point of view, if you're on a sinking vessel and you've got damage rigging so you've been knocked down, rolled over or the vessel is on fire and you've inflated your raft, your raft is at great risk of damage due to fire or it being - coming into contact with damaged rigging for example, or fractured timbers, planking or fibreglass. The object is to get away from the vessel as soon as you can. The paddles - whilst it is difficult to paddle a liferaft in any sort of seaway, the paddies can help to give you that little bit of extra clearance from the vessel and if you can hop into a raft or board the raft then

locate the paddles straight away, you have the advantage that you can start to use them as soon as you require to get away from the vessel. What concerned me was in the Pro Saver pack the paddles were packed away well down in the equipment pack. It took us a while to recognise them for what they were. We thought what are these, are these balers, what are they and then it finally dawned on us that they were paddles. That would have been - for someone who had not undertaken any training, they would have had a lot of trouble recognising them for what they were, particularly in the dark. It took us a while to work out what they were.

Q. Their operation as opposed to the SOLAS or the Uniform Shipping Laws paddles, what was their efficacy?
A. What we did, we did a very quick trial and it was opportunistic, there was a survival training course going on, so I took the mitt paddles across, I asked for some volunteers if they wouldn't mind paddling across our pool using the mitt paddles. We had two volunteers were doing that and in the report there there is a photograph of that in use. And then the same exercise was repeated across the pool using conventional paddles, using the same subjects, so they would have been a bit more tired after having used the mitt paddles. The results were it took - to paddle nine metres using the mitt paddles took in the order of a minute and 20 seconds to get across. Then immediately after that we did the same thing using conventional design paddles and the same two guys did it in 38 seconds.

Q. Thirty eight seconds?
A. Yes.

Q. So basically it was twice as fast?
A. Yes.

Q. So if you wanted to get to someone, or get away from some place, you can do it twice as fast with the normal paddles?
A. Certainly in the conditions where we did the trial, yes.

Q. The normal paddles would be found in the Pacific complying, if I can use that term, raft, so it must be a weight thing?
A. Yes, it is. Actually I clarified that point with Mr John Ferris who was there, I said what do you think of these paddles, why are they there. He said we - he said we put those in because (a) there is no requirement in the AYF rules for paddles but we put them in anyway, secondly we put these paddles in because they are lightweight and therefore it doesn't increase the weight of the raft significantly. They were the reasons that he gave me.

Q. It seems to be coming through fairly loud and clear that the reason - the whole purpose of this Pro Saver being built is to appeal to the yachtsmen to have something lighter on board their vessel. Is that how you're seeing this?
A. Yes, that was the conclusion that I came to and once again I shared that conclusion with John Ferris and he said

yes, that is the case and he said but if they didn't market a raft like that their competitors would and do. So it's a case of the liferaft manufacturers are producing the rafts to suit the market. The rules say they can have lightweight rafts so they make them and people buy them.

Q. But in effect you do sacrifice safety for weight?
A. In my opinion I believe that's the case, yes.

Q. You then talk about and this is page 13 the location of liferaft equipment. It's that bag?
A. Yes.

Q. What have you got to say about that bag?
A. I say in the report there's a bit of variation, you can open up two different brands of liferaft and they will have a different arrangement. A bag like this is fairly common, it has a velcro seal which makes it easy to access even with cold hands, so that's a good idea. It has attachment straps so this can be attached to the internal safety line inside the liferaft, so that if the raft is turned over on inflation or subsequently capsizes, the equipment should not be lost overboard. Other manufacturers use different systems. They have a bag made out of this type of material and it has a big robust zip across the top. That bag is lashed in place usually to the floor of the raft, it's attached to the floor by lashings, and if people want to access the equipment they unzip it, they can dive in, grab what they want and then they can zip the bag back up again. They are the two common arrangements that you see today. There are other variants but that's the main--

Q. What's their disadvantages?
A. The disadvantage of this system, reading the race review report basically indicated that with this - you saw what I just did, I was looking for a piece of equipment, I had to undo it and it was packed so tightly that the only way to see what was in there was to up-end it. Now when that happens in the dark in a liferaft in a big seaway with everyone's adrenalin levels up and everyone not sure exactly what's going to happen, you find that the equipment becomes scattered across the raft. If you put six people in a six person liferaft you do not have much room and this stuff ends up underneath people. And then if the raft is capsized, particularly if the canopy entrance is left open, a lot of the equipment is lost, it will fall out of the raft and be washed away or sink and that's happened on a number of occasions with rafts capsizing, people have lost equipment. If you've got a system where you can just unzip it, look inside the bag, take what you want, zip it back up, in the event of a capsize you don't lose it. People do tend to have to undo these securing lines to access the gear that's packed inside these.

Q. While we're actually with that, what are the items that are contained in there?
A. Okay. I'll just go through them as I find them. The list of equipment is in the racing rules, it's actually

listed but there's anti-seasickness medication, which is fairly important. We've got a set of leak stopping bungs which are designed to be screwed into a leaking buoyancy chamber as a temporary repair until such time as you can put - glue a patch on it. There's a whistle for attracting attention and it looks like there is a knife in here and also a small plastic measuring cup for doling out water rations. We have that. We have a first aid kit which is adequate for helping to prevent people bleeding to death is the main thing or immobilising wounds. It's got the wound dressings. It's got a little first aid guide in there as well, along with some mild - some Panamax in there and some bandaids and Savlon cream and triangular bandages. That's the sort of gear you find, that's a very useful piece of equipment. We also have water rations here in - there's plastic vials - plastic sachets inside these containers which will either be - yes, these are - there's five by 100 mil rations inside each one of these particular packs. So that helps with the water side of things. We've got carbohydrate based food ration to keep people's energy levels up. We have two tubes here of sunburn cream, which is great for the people who are on lookout, looking out for rescue, to save them getting sun damage or suffering severe sunburn which is something not considered in the SOLAS regulations, which is interesting. This thing here which I said looked like the paddles, this is actually a baler and once again due to the nature of it it can be hard to recognise what it is. We've used this style of baler at our survival training centre where we do simulated abandonments in the dark. When we tend to use this type, we often find that the trainees say we couldn't find the baler and that was after half an hour in a liferaft they still hadn't found it because someone was sitting on it, they didn't realise what it was at the time. But once you know what it is, this is reasonably effective as a baler.

Q. When you say reasonably effective, have you any suggestions for improvement?
A. Yes, I think a solid plastic baler would be more of an improvement because this tends to flop about a bit. Yes, that's what you tend to find. In SOLAS regulations they don't really allow this sort of thing, it has to be a plastic baler as far as I can establish. We have a torch which is meant to be a waterproof torch with a spare set of batteries and a spare bulb and they come packed like this, provided the plastic packaging stays intact, it's not damaged, then that's fine for the batteries but once the batteries become wet with seawater, problems start to ensue fairly quickly so we have that. And that's - once again that's packed in the pack, so you haven't got access to that in a hurry, you've got to go looking for that in the dark sometimes without a light in a raft to get the torch so that you can see what you're doing. So that's--

Q. I think you do make a recommendation that the SOLAS torch is superior to that?
A. I wish I could say it was.

Q. It's not?
A. That torch would meet the requirements for a SOLAS raft. It's, you know, your typical cheap, nasty torch, that's what it is in my opinion and we find that when these are actually used they tend not to last very well in a marine environment. But it's classified as a torch. They don't look terribly hard at what equipment goes into liferafts, they'll look a lot at the construction and the fittings but when it comes to things like a torch, a torch is a torch as far as the authorities are concerned and as long as it works during a survey they're happy with it, which is a bit of a shame. Other interesting bits and pieces, you've got sponges which - these are compressed, for using to mop out the raft or to collect condensation so you can supplement your water ration. And then you've got your pyrotechnics. These ones are live so we'll be careful with them. These are rocket parachute flares, these ones project a rocket to a height of 300 metres where a red flare will come down in a parachute and they'll burn at around 30 to 40,000 candela, visible for up to about 40 kilometres on a clear night. Then you've got red hand - four red hand flares. These are for close range signalling, we're talking 10, 15 kilometres at night, burn for about a minute, 15,000 candela, very good for search and rescue and for day use only technically you've got the orange smoke hand flare which is once again another very useful - particularly if you've got helicopter rescue involved, you can show them what the wind is doing at the surface of the ocean. I think that's the contents of the pack. Except for--

Q. Was there a repair kit for--
A. We've got a bit more, yes, I missed three things. Yes, there's a repair kit, that's it there. We can't see the tubes of glue, they're actually covered by the patches. One of the problems with a lot of the repair kits is that if you read the instructions on the repair kits, they say things like attention, glue must be applied to a clean, dust free, dry surface. And then they say and, you know, deflate the tube, apply the patch and wait 48 hours before reinflating.

CORONER: Q. It's like a bike repair kit.
A. Yes. Some are like that, others are good, you can get some which the glue is designed to be applied to a wet surface and it bonds fairly good. You get all of the correct tools. You get abrasive tools, the spatulas, all the things that you need to do a fairly good repair job. But it would be very difficult to repair a raft in a big seaway, that's where the screw-in bungs are excellent and they do a fantastic job. We demonstrate those for our students and they are confidence builders. Someone sees one of those in use, they realise the bungs are the go until things settle down, then you can think about applying repairs. Other equipment--

Q. Foot pump.
A. --we've got a foot pump here which is used to top up the buoyancy chambers inside the raft with in this case a fitting designed just to slot straight into the appropriate

fitting inside the liferaft and that's just to top the raft up if you have got slow leaks or as the gas cools down at night and you lose pressure, you can top the raft up with that.

Q. We were told Mr Winning had a lot of trouble fitting that into the liferaft to effectively pump it, actually getting the end in and they had to whittle it down. That was the other raft. There was no problem of that nature that you could see?
A. We find generally that the fitting on the end of the hose is the correct diameter to insert into the fittings on the liferaft but there are instances where you can get an - a bit like the pumps you buy to pump up your air mattresses when you go camping, they come with a multitude of different heads that you could possibly fit and if you fitted the wrong one then you would have difficulty applying it to the liferaft, particularly in dark, rough conditions. Certainly, yes. Or if someone put the wrong pump in the raft then you would certainly have big problems. But I wouldn't like to think that that would happen.

HILL: Q. We're told that the pump in question had three separate components for it, one was the nozzle which was the fitting, then the tube, then the pump itself. Do I take it that these pumps are not made for liferaft specific as it were but they're simply made and then they're put in and adopted to liferafts?
A. I think in many cases the raft is specific for - sorry, the pump is specific for the raft. This pump for example is very typical of what you would find in a SOLAS raft or a coastal raft certainly. When we examined the pump that was in the equipment pack for the Pro Saver raft, it consisted of a plastic like - it looked like a plastic syringe with a pump with a handle which you pumped in and out like this and - or a bigger diameter version of a bicycle pump.

CORONER: Q. Like a yabby pump, sort of?
A. Yes, a bit like a yabby pump arrangement and it had a fitting on the end and it had several heads which you could fit and the idea of that was that you'd attach that and then you'd pump away. Looking at that particular unit, it looked like it had the potential but as soon as you got a bit off-line with your thrusts when you were pumping you ran the risk of actually shearing the arm or the shaft for the pump and it would snap off. Now, we didn't actually try that, perhaps we should have but it didn't look like a very robust pump but it was light.

HILL: Q. This was in the Pro Saver?
A. In the Pro Saver, yes.

Q. Did you say it was actually attached already?
A. No, the pump wasn't, the pump was in the equipment pack and you just needed to find it in there and then what you would do, you'd locate the pumping points inside the raft and then you insert the pump nozzle and commence pumping.

Q. The other thing that was a complaint by some of the survivors was that it was a foot pump and one couldn't stand up and a hand pump would have been better, bearing in mind none of the survivors had been trained in any survival techniques and liferaft et cetera.

CORONER: Because there's always a lot of water in the raft.

A. Very difficult to use a foot pump in a raft. We train our guys to use it like this, against their chest.

CORONER: For the record he's placing it against his chest.

HILL: Q. So is it a problem though - you were demonstrating something-that appeared to be like a bicycle pump, that too much enthusiasm you break the shaft, whether that seems to be something that is unlikely to be broken?
A. We've found that these things last for a long time. The thing that's breaking these is there's a little rubber non-return valve here, that if that perishes or becomes damaged then the pump will cease to function. But that's housed inside here, it's fairly well protected, and provided the rubber on the pump itself doesn't perish with age then these pumps should function almost indefinitely, for the use of the actual abandonment certainly. They're a very old design but they work.

Q. You then say at page 14 the recommendations relating to liferaft standards, and you say that consideration should be given to making the following additions to the AYF race rules of sailing for liferafts used on category 1 races. One, all liferafts must meet the requirement for withstanding 30 days exposure to the elements as in the case with the uniform shipping laws, coastal and SOLAS standard liferaft. That's come out of because of the tests that you've conducted, is that right?
A. Yeah, well from the tests we conducted where we saw the damage that was sustained and also just from my view as an ex-professional seafarer and someone who trains people in survival, in that it would be nice to think that people who use recreational vessels are considered to be as important as people who work on a 20-metre fishing vessel off Sydney Heads as far as--

CORONER: Q. I suppose talking to the survivors was instructive too was it?
A. Yeah, it was very helpful to actually have both the survivors of the Winston Churchill there to talk with and to share their - for them to share their experiences with us, yes.

HILL: Q. You say that all new rafts should be fitted with external and internal canopy lights and existing rafts should be supplied with a chemical light suspended from the canopy, ready for immediate operation. I take it there are two in there, that what you're saying is that new rafts must have a light, both internal and external?
A. That's what I'm recommending, yes.

Q. And present rafts should be converted?
A. Yeah. At their next annual survey it would just be a case of fitting a chemical light just suspended from the canopy. You can - there are chemical lights available which are in a protective plastic sheet with a special arrangement for activating it which makes them shockproof so that they won't inadvertently activate, which are in use on things like immersion suits and gear that's worn in - by rescue boat crews where they tend to get knocked around a lot.

Q. And you point out that six chemical lights should be carried as per the USL coastal liferaft requirements, and they're the ones you've told us where you just break the tube as a rule inside?
A. Yes.

Q. You also recommend that two conventional paddles should be carried and stowed in a position where they can be immediately accessed. Is that right?
A. That's correct.

Q. And you point out that the first things that you'll probably need during an abandonment and getting into the raft would be the paddles, the torch, the emergency leak stopping plugs and the seasickness preventative medication.
A. That's correct.

Q. So is that something that should be looked at in regards the packing of the supply bag or what?
A. Yeah, it comes down--

Q. Or they be separate bags or--
A. Yeah. What you find in a lot of rafts, and this does vary from manufacturer to manufacturer, but you find that a lot of the gear is packed in the equipment bag but the paddles are lashed just inside the entrance to the raft. You'd find your paddles would be lashed here so that they - you trip over them getting into the raft, so you don't miss them. Seasickness medication, some manufacturers actually have a small lanyard with the medication in a bag, suspended underneath the light with the instructions for immediate action. So all that stuff's right in their face when they get in the raft and they can't help but miss it. Torch, same thing. That is in a container which is lashed to the raft so that it's immediately available, or it might be attached to the outside of the bag so that they can grab the torch in a hurry and use it. That's not as critical if they've got an internal light though, because with the internal light on then they don't need the torch in such a great hurry. But if they are looking for people in the water at night, for someone who's fallen into the water, then that's where the torch might be useful to have very early in the case.

Q. I also see there that you recommend the easy to open and reseal arrangements on the bag itself. The other thing that I wanted your comments on was drogues, because what we've been told is that it would appear on both liferafts from the

Winston Churchill, once the drogues broke there was virtually no holding these liferafts.
A. Yes. The drogues are a very important piece - or a very important fitting for a liferaft. They serve a number of purposes. The first purpose is they reduce the rate of leeway or drift due to wind.

CORONER: Q. A sea anchor?
A. Yeah, they act as a sea anchor. Well a drogue is a sea anchor, yeah, so they reduce the rate of downwind drift so they help keep the raft in the initial area of abandonment, so that assists with search and rescue. They help to prevent the raft from spinning in circles which can cause seasickness related problems. But probably another important job of a drogue is they tend to hold the raft down and keep it a bit more stable. I mean a raft has water pockets and it's a pity they don't make the pockets in proportion to the size of this model. If they were that big on rafts you wouldn't have anywhere near as much trouble with them capsizing. But the drogue is attached in such a way and it runs out quite a distance, and the order is - sorry, the reason for that is, is that whilst the raft is drifting down, as the raft comes across the crest of a wave it often exposes part of the liferaft floor, and if you've got very strong wind, the wind gets underneath the floor as it's exposed and then creates a capsizing moment on the raft and then the raft will go over as a result of the wind. So the drogue can tend to hold that windward edge of the liferaft down and keep it that little bit more stable.

CORONER: Q. The evidence I seem to have before me is that in both rafts off the Winston Churchill the drogues were lost very early in the piece, I think within minutes. Have you any comment about that?
A. Yeah. What - the thing with the abandonments that took place in that particular race were they were very extreme conditions, and that's something we shouldn't lose sight of from the liferaft perspective. They were extreme conditions. But the problem with these rafts, I'm sure that they were never designed to take that sort of punishment, and the problem with the drogues is they were using very small diameter lines. The breaking strain on those was obviously not up to what they were - what was required for the particular conditions they were in, and the attachment points on the rafts as well tend to come away without having to apply too much load. And if you've got a, you know, a seven or eight metre wave breaking on a liferaft and you've got, you know, 50 or 60 knot winds blowing it along as well, there's a lot of load on the drogue and it's - I'm not surprised that the drogues parted. I'm not surprised people had lacerations from handling the lines. The diameter of those lines is way too small in my opinion. They need to beef up the arrangements for attaching them. For example, in a SOLAS liferaft they have to have a towing arrangement whereby the raft with its full complement can be towed at a speed of three knots by a lifeboat or a rescue boat. They effect that by having usually two strong points with a bridle between them so that shares the load, and if you were

to use something like that as your drogue attachment point then - and you used a reasonable diameter line, the chances of the drogue parting are probably somewhat less, and if the drogues themselves were beefed up a little bit - a lot of drogues are actually just made out of material like this. They have no shape or form, they're just a bit like a parachute, and one hopes that they will open up when they're deployed. They open up and they just have a small bridle. What you tend to see on commercial liferafts, a lot of the drogues actually have a wire insert in the throat of the drogue. Sometimes it's actually a significant - about eight, nine millimetres, 10-millimetre diameter. That gives it a lot of rigidity. It's made out of fairly strong material and it has an anti-twist, anti-collapse bridle so that it's got the weight so you can throw it out and deploy it so your line doesn't get tangled, and then it's robust enough that it will do the job. And we use them fairly regularly in Bass Strait with our trainees when we let them float around in liferafts for an hour or so off our training vessel, and they seem to work fairly well.

Q. Did you have any trouble with the drogues when you were testing this type of raft?
A. We didn't deploy the drogue during the test. It was mainly a safety factor because we were capsizing the raft in the seaway and we didn't want guys becoming entangled.

Q. Do you know whether the two - of the three types or four types you've mentioned on about page 8, the other types, do you know whether they all have a stronger drogue system, the Pacific Sea Saver and the Survivor?
A. I didn't get to check that, but generally the drogues on coastal standard liferafts are pretty poor as well.

Q. But the Pacific's a 30-day, it's all conditions isn't it?
A. Yes, but what - it states all conditions, but I'm sure that they don't test them in that sort of extreme conditions, yeah.

CORONER: That's probably a good point to take a break isn't it?

HILL: Yes, it is. I will be going on from page 16 which was the liferaft stowage and what you've found in a survey of yachts.

CORONER: When did you want to show this?

HILL: Probably start at after I've finished. I'll be quite short with that stowage area.

SHORT ADJOURNMENT

HILL: Q. Sir, I was just moving on to page 16 of your report. Now before we go any further, I think you wanted to say something about the instructions that were inside the bag, the survival bag?
A. Yeah, that's correct. That was the part of the equipment in the bag which I'd overlooked. It was buried alive down here on the desk. This is some additional equipment. We have a heliograph, which is a mirror used for flashing the sun towards a searching vessel or aircraft. They've got a signals card in this bag and in this container here where it says, or this bit of paper where it says "Unfold", that to me - I can see through it - it looks like the instructions for immediate action on boarding the raft. I would have to open that to verify that. I will do that now and that's what it is, that's instructions for immediate action. The paper is a plasticised paper or it's got a light lamination so it should not fall to pieces if it gets wet - immediate action and subsequent actions. How to - what your topping up valves look like, how to attach your pump and then there's two - two pictures of two different life rafts with labels saying what the components of the raft are. Then all sorts of other instructions to do - what to do on rescue. The big problem with that being where it is, is that if no-one knew where to look for it they wouldn't know it was there.

CORONER: Q. Some of it you may need before you actually get into the raft, is that right?
A. Yeah, basically. Well, there's some certain things you need to do on getting into the raft and if people aren't aware of that, then they may do the wrong thing.

HILL: Q. Now there is a section later on about the labelling in these rafts and I will take you to that but first if I could deal with what you've done here under the heading of "Life Rafts Stowage and Access", and what you looked at was that upon abandonment, if it becomes necessary, you looked at the location of the life raft, the degree of accessibility to the life raft and the securing and release system. Now I am not going to take you through each item but first of all what exactly did you do about that?
A. Well, I wasn't originally sure what to do. I wanted to get a - this is when I took on the project - I decided that I'd send out a questionnaire survey to participants in that 1998 race to find out exactly how and where and why they stowed their rafts, so that I could get a bit of a cross section to have a look and I followed that up with a visit to see CYCA in Sydney. That's where I met and spoke with Mr Lawson, the safety officer and I spent the day there just taking photos of some of the vessels that were in and talking to some of the crew members and we got something like 61 surveys came back, questionnaires came back from that which were processed - some of the data - just to get an idea of--

Q. Just so I understand this. You sent out to every yacht that was in the race--

A. I believe so. I sent the survey to the New South Wales Police and they distributed the surveys on my behalf and I have been informed that--

Q. Of the 117 vessels 61 replied?
A. Yes. I actually received a couple more than that but by that time it was too late to include them in the data, so I had 61 useable responses.

Q. Yes, go on?
A. So, that was just to get a cross section of the type of raft, the rules that the raft conformed to, the weight of the raft, whether it was stowed on deck, below deck, what advantage - the reasons it was stowed there and then I went and got some photographs of some of the ways rafts were stowed typically.

Q. I notice that at page 18 that 72 per cent of the rafts that were carried were less than 50 kilograms - that's just up from the bottom there - and 66.7 per cent of the rafts surveyed were 40 kilograms or less?
A. Yes, that's correct.

Q. Presumably if they say 40 kilograms or less they certainly weren't using the Uniform Shipping Laws compliance, wouldn't you say that's right?
A. No, that would probably be the case. In fact, when part of the survey actually asked what standard they were, in all but several occasions all the rafts were AYF - to AYF rules.

Q. I am sorry, I interrupted you?
A. That's all right. Where was I? I have lost my train of thought. That's right. It was just a case of getting a cross section for the report and just to see what motivated people about where they stowed their rafts, what their concerns were and why - yeah, why they thought their method of stowage was appropriate for their vessel.

Q. What were your findings on that?
A. Well the findings, or part of the finds were that the - some of the - we have approximately half of the rafts were stowed in soft valises and half in rigid fibreglass containers. All up from the 61 vessels that we got responses that we could use, that covered 85 life rafts in those 61 responses and so half - approximately half were soft valise, half rigid container and we found that - what was it? - 52.9 per cent of the rafts were stowed on deck and 47.1 per cent were stowed below deck in the cabin. We included - on deck included rafts which were stowed in a - outside the vessel but in a pre constructed locker for the life raft which just had a lid which sealed so that the raft was out of everybody's way and protected from waves and being lost overboard accidentally. Seven of the responses stowed their rafts that way in a pre built locker out on deck and when it comes to some of the reasons why people stowed their rafts the way they did, the - on page 20 of the report there's a summary of the reasons and with the number of times those reasons were stated on the questionnaires and

the most common reason that was given for on deck stowage was easy to access followed by easy to launch for on deck. That's by the users. The most common - interestingly enough, the most common response for the guys who stowed them below deck on the vessels was - and we got 14 responses here - was it was easy to access and the other one was that it was safe from being washed overboard. So, one of the biggest concerns for people who stowed their rafts below decks is they believe that their raft would be lost overboard if it was stowed on deck, so they like to have it below deck. Some of the responses were that it enhanced the stability of the raft by having it below deck and it also enhances the trim and balance of the vessel by having it below deck. Others said it was just a part of the original design of the vessel, that's where the raft was meant to be for that design of vessel.

Q. Going back to the fear of having the life raft washed away if it was on deck, I think you have in fact a photograph at page 19 which shows the locker that you talk about. It's flush with the deck. You simply open it up and the life raft is in there, is that right?
A. Yeah, that's correct. The life raft is located in the locker and you have to open the hatch to access it. The life raft is still in a rigid container but it's out of the way and it's protected from waves.

Q. That's been purpose built for that?
A. That's correct.

Q. Now you've told us about them stowing below deck. I think you found that some people were actually using it as movable ballast, is that right?
A. Yes, there some people - I think I had something like four admissions - I would have to find it - actually admitted that they were using the rafts and movable ballast and that's not in accordance with the rules but once they are away from the jetty who's going to find out and apparently just talking to people who I know who do offshore racing, it's a fair - it is a common practice in some vessels that they - that's 40 kilograms of weight they can distribute where they want to during the course of a race but I am not sure how extensive that practice is but it certainly was reported in some of the surveys I got back and I must admit I'm - I'd like to thank the people who did report that back honestly because that's given us an insight into what's actually going on.

Q. At page 22 you talk about the problems associated with below deck stowage and what are the main ones there that concerned you?
A. There are a number of problems and the ones that I have listed there is that - well I spoke to Mr Walker, who was a crew member on Business Post Naiad. I rang him up and had a chat with him and he basically said that what happened to them after the knock down and roll over events which occurred, they had significant amount of water inside the cabin area, they had diesel, they had oil in there, it was

dark and the rafts being stowed in soft valises - in a soft valise tent the water got into the valise because they are just held together with velcro. The - that added the weight to the raft, made it - it was slippery, it was difficult to manoeuvre out through the companionway. The other thing that happened was some of the velcro came undone. A loop of the line called the painter, which is used for securing the raft to the yacht prior to it launching, so it doesn't blow away, but also it activates the CO2 cylinder so you can - or the gas cylinder so you can inflate the raft, a loop fell out which was close to the gas cylinder. Someone stood on it when the raft was being manoeuvred at one stage and the raft began to inflate in the companionway and it was only through quick action that they managed to get the raft out onto the deck so it didn't inflate below decks or jam up the companionway or become damaged. That's some of the problems that are experienced with that. There are others and that is - on page 21 there was some cases rafts, in fact eight respondents said that their rafts were not stowed in accordance with the rules of sailing, racing rules of sailing. They were stowed either right forward or they were just jammed underneath the galley table or they were jammed somewhere or just left loose in the cabin. In the event of a roll over or a knock down those rafts could be easily lost underneath sails and other equipment and if you needed to find it in a hurry you might have a big problem. That's certainly my view on that. So, I saw that as being a problem.

Q. What about stowage on deck, were there problems with that?
A. Stowage on deck does present some problems. Some of the respondents felt that having it on deck did pose a real risk of having the raft washed overboard. Others stated that they believed that if the raft stayed on deck it would get in the way of the crew during racing activities, that they would be something for them to trip over and just one extra thing to get in the way of what they are trying to do, so they like to have it below deck for that reason but from my experience if a - this is an experience based on what I do at the college not yachting - provided a life raft or any piece of deck equipment is adequately secured, the chances of it being washed overboard are fairly minimal but it can still happen. A lot of vessels had their life rafts stowed in the cockpit area of the yacht, just immediately after the companionway or on the transom of the vessel and securely lashed. Some people used specific webbing lashing, others used rope and just tied the thing down, others used pelican clips or Senhouse(?) slips for manual releasing. Quite a range. Some had hydrostatic release incorporated. Quite a range of choice of stowage. In the cases where rafts were lost, one I think was Gundy Grey lost one of her life rafts, I was shown the lashing arrangement for that particular raft and that's in figure 3.8 on page 25 and it shows the webbing strap coming down. The raft itself was secured by a line about the same diameter as this line and it was just one - one turn had been taken around to secure that and what I would imagine was the line has probably been weakened

through chaffing and being exposed to ultra violet light and when a wave has hit the raft that line's carried away and that was the weak link in the whole system. The webbing looked to be in really good order but just that one turn of the line--

Q. So you had a very strong strap tied with, or secured to the deck with what appears to be some twine?
A. Yeah and just recently RFD posted me a couple of sheets which they are - or notices which they are distributing to people who purchase their products. Basically it's an important notice - securing a life raft to the deck. They supply a securing kit and they talk about ensuring that stainless steel pad eyes are strongly fastened to the deck, that backing plates and washers are used under the deck. This kit includes one metre of 600 pound breaking strength cord which can be used to attach to the pelican hooks, snap shack or other manual release device. RFD recommends multiple turns to join the release to the lashing, so they are talking about multiple turns and it talks about checking for UV degradation. That goes out with the new raft now apparently and they also, at annual survey, they send out a reminder notice, reminder to check the state of your lashings to ensure that they are okay. That's something I received about three weeks ago.

Q. I take it you would approve of that, that they should be reminded basically constantly?
A. I think so. People - human nature is probably such that you set and forget. You put the thing on, tie it up and that will be right and then the time goes by and the degradation occurs and then all of a sudden you find yourself in conditions you didn't plan on being in and a big wave breaks the lashing and you have lost your raft.

Q. I think also part of the survey you did was, among the yachtsmen, how often they actually used them and did things with the life raft. How much training they gave their crew etcetera?
A. Yeah, that's correct. I'm just trying to remember where I put that.

Q. Was that part of this section?
A. I can't find it in this section but basically part of the survey about this - the questions that were asked were questions along the lines of: Do you ever practice with your crew? Do you show them where - how your raft is lashed? What the means of releasing your raft is? Do you practice taking the raft from its stowed position to its launching position? Do you do that and if so how often do you do it? I think that may be in the training section.

Q. All right. We will catch up with that when we go on through but that was part of this survey as well?
A. That's correct, it was part of the survey.

Q. If I could take you back then to page 27 and you have certain recommendations there relating to life rafts,

stowage and access. For instance, where life rafts are stowed below deck, then rule 419 etcetera of the racing rules should be enforced with respect to location adjacent to the companionway and security of stowage and this is because people have been moving them round and using them or putting them wherever they would fit, as it were, with the result if you do have an overturn of the vessel it can end up anywhere. Is that basically what you are saying?
A. Yeah, that's what I'm saying because, yes, some of the crew members said, this is where we stow our raft and it was no-where near the companionway. It was three, four metres away in some cases.

Q. It should be securely lashed into that position?
A. Absolutely.

Q. Where they are stowed on deck, they should be properly lashed and not simply have a little weak link that's held on with some small diameter string?
A. Yes, that's absolutely true. They should be lashed down in a seamanship like manner, realising how powerful the sea can be.

Q. You also recommend there that the crews should receive an on board familiarisation training relating to the lashing and release system and use of the life raft on their vessel?
A. Yeah, that's correct. It's very important that everyone on board a vessel knows what the arrangement is - where is it stowed, how is it accessed? There was a lot of variation in the way that the rafts were actually secured. On page 26 there's a summary. I mean, over half the vessels, 52 per cent just use a direct lashing. There was no manual quick release that involved using a sharp knife to cut the lashings. The knife was lashed to the raft and was stowed and with the idea that everybody on board knew how to release the raft and given the environment of a racing yacht, there's plenty of people to be able to unlash the raft by cutting it and I have been assured there are plenty of knives on board a racing yacht. So, that shouldn't be a problem. Only about 34 per cent - only 34 per cent of the surveyed vessels used a manual quick release mechanism, such as a pelican clip or a Senhouse slip. I think there was a bit of distrust of those. People believe that they might accidentally release the raft if they are hit by a wave and that's fair enough. I don't have any, you know, firm views on whether it should have that or not. I think I personally would have a manual quick release if it was my boat and I would just make sure it was tensioned correctly so it couldn't come undone accidentally. Some of the vessels reported using a special set of webbing straps and that's all they had. There was no intermediate lashings, that the straps were designed so that they slipped over the raft and to remove the straps you just had to grab them and pull them off and apparently that particular system is very effective and one of the respondents just said, "Look this was great. We went through all these big seas and our raft stayed on the deck using this system." I haven't - I don't know the proprietary name of the system but it is certainly one

probably worth investigating further. The ones which concerned me were the ones who basically didn't secure their rafts, even like with the on-deck system where the raft is stowed in a pre-constructed little hatch. I believe in the Fastnet race, one of the problems they had there people thought, oh great, we'll put our rafts in there, we will put the lid on but they didn't actually lash the raft in the hatch and when the hatch lids came off the raft fell out when the vessel's inverted and so that was a problem in itself. So, no matter where the raft is stowed, it should be secured firmly in place I believe.

Q. We are now going to look at the life raft operation itself and this was the trials and the aim of the trial was to look at the SOLAS or the life rafts that were used on board the Winston Churchill and see what would happen to them, is that right?
A. Yeah, it was the aim to - looking at the Pro Šaver rafts specifically and seeing - yeah, observing how easy it was to use, what damage it would be sustaining during the trials, yes.

Q. I think what you did you took Tasmanian yachtsmen, some of whom had previously undertaken, I think, a course or a day in survival techniques, is that right?
A. Yeah, what I did for this I decided that to be worthwhile just seeing if there was a difference made by training, so it was a small study we conducted in conjunction with the actual trialing of the raft. We invited offshore racing yachtsmen from the Tamar Yacht Club and also from Port Dalrymple Yacht Club to come in. We got 15 people to come in initially a fortnight before the trials and the college provided a one day survival course for them, which is based on a commercial survival course that, say, someone working on a fishing vessel would have to do, which was suitably modified to suit AYF gear. So, we ran that for them. Then, they came back a fortnight later to do the trials and as well as the 15 trained volunteers, we also got another group of volunteers who had not been trained and one of the prerequisites was that they had not undertaken any formal training in survival or life raft use and they came along and then what we did during the course of the day, we ran through a series of exercises. First of all, unbeknown to the trained guys, they walked into the building, we hit them with a written exam, which was only a short one - the questions are in an appendix in the report - just to see what they recalled without having had a chance to study and what they recalled after two weeks and I marked that and then the guys who were untrained we hit with the same exam to see what their general knowledge was, how they scored. So, there's a comparison of the results there and that basically we were able to prove to 95 per cent probability level that the guys who were trained did perform better than the others. It wasn't just a chance occurrence and then we went through a series of practically oriented exercises in the pool, of which we do have some video footage but I can summarise that later on or I can do that now, where they basically had to swim 50 metres, board one raft by a

boarding ramp, board another raft. They were capsized in that raft. They then had to right the raft. They had to throw a quoit and line, rescue a person, pull them into the raft. They had a whole range of exercises they had to work through and what we essentially did, one of our - my colleagues was given a descriptive rating scale to score each participant from a rating from one to five and - based on their performance - and then we looked at the results just to see if there was a difference between - and we made notes about what happened to people. If someone got tangled up and needed assistance from a police diver, then we made a note of that and recorded how many people got into trouble out of the trained group and the untrained group and that's all reported on here and basically we didn't have enough people to make it statistically - to prove a significance but just looking at the results tends to give one a very strong indication that the training - the trained volunteers performed much more competently than the untrained volunteers.

Q. First of all, I think there's something you want to show us about when you unwrapped one of the rafts, is this correct?
A. Yeah, that's correct. The first thing we did when we started the trial was to inflate the Pro Saver life raft in our training area just to see how it would go and what the raft would look like and we recorded that on video tape.

VIDEO TAPE SHOWN

HILL: Q. If I could just stop that there. The situation is that that is the Pro Saver?
A. Yes.

Q. Similar to the one off the Winston Churchill?
A. Yes.

Q. What's happened here is that it hasn't quite inflated and I think later on you found out a reason for that and what was that?
A. There's a T-piece - an external alloy connection which you have a line comes from the cylinder to this T-piece which then goes into the two buoyancy chambers on the raft and that - it looked like as if the fittings had not been tightened sufficiently and wasn't sealed and all the gas you saw escaping was gas that should have been gone into inflating that life raft. Now that life raft - was that came of Yendys? Yendys, yes. I mean, that was in service on that yacht. If they had to use that raft that's what they would have ended up with.

Q. Presumably if you can survive and get into that, then the hand pump or foot pump becomes a--
A. Yes.

Q. An absolute necessity in regards to that. What would cause that to happen? Simply wasn't tightened up properly by the service people or what?

A. It appeared that the - yeah, the connection had not been adequately tightened and we rectified that situation shortly after that once we identified where the leak was from. Initially we thought it might have been a ruptured hose or a loose hose and we managed to get that raft serviceable for the rest of the tests.

Q. The people who actually service these life rafts, they are qualified to service them, that's correct?
A. Yes, yes, they are.

Q. Who qualifies them to do that?
A. They are actually certified by the life raft manufacturers.

Q. So there's no outside training for such people. They are taught by the life raft manufacturers themselves?
A. Yes, and they have to renew their qualifications on a regular basis. Our technician he's Viking - certified as a Viking life raft packer. He has to go to Perth I think once every three years to be re-certified on the latest trends. I might point out with that particular raft that was a new raft. It had been 14 months since it was purchased and it had not had its annual survey, so that raft was as was packed when it was new is my understanding.

CORONER: Q. Which would have been just before the 1998 race?
A. Yes, so that's factory - appears to be a factory problem in that particular case.

HILL: Q. Just so I understand, these are manufactured in Germany?
A. That's correct.

Q. Then they are imported into Australia?
A. Yes.

Q. Perhaps if we could then move on to the demonstration in the pool so that we would understand what was being done?
A. Okay.

VIDEO TAPE SHOWN

CORONER: Q. How deep is the water?
A. It's 4 metres, 4.2 metres at that end.

VIDEO TAPE SHOWN

WITNESS: This was conducted in the dark, that's why it's--

VIDEO TAPE SHOWN

HILL: Q. The reason I have stopped it is that this raft is a different style. It's also got a boarding ramp to it, is that correct?
A. That's correct.

Q. I think you found that there was a huge difference with people's ability to get aboard these life rafts if they had a boarding ramp to them, is that right?
A. Yes, we found that both the trained and untrained volunteers were observed to board the raft with greater ease and when they reported on which raft they found was easier to board, the majority of them reported that the raft with the boarding ramp was easier to board. The exact numbers are in the report, yes.

VIDEO TAPE SHOWN

WITNESS: What he is doing there he's using a line with a rescue quoit. He's gone out and just been towing an unconscious or injured casualty back to the raft and they are going to try and get the person on board.

VIDEO TAPE SHOWN

HILL: Q. Were these the trained or the untrained group?
A. This was the trained group. This is one of the instances where the trained group got the technique wrong. They didn't all get it right but most of them did. That technique is grabbing a life jacket like that. It does work but is a bit hard on the person who is actually being pulled in but that was a police diver we were pulling in. They were briefed that they might cop a bit of rough treatment and just to take it if they could.

Q. Now the person with the snorkel is the rescue diver I take it?
A. That's correct, that's a rescue diver. This person's boarding via a boarding ramp and it's giving him that foot hold so they can get a leg up and straight in.

VIDEO TAPE SHOWN

WITNESS: Perhaps if we probably fast forwarded it a bit further through and see a Pro Saver being righted. Have a look at that.

VIDEO TAPE SHOWN

WITNESS: That's the Pro Saver. Now that's why the stitching was tending to tear. See how they are grabbing it, the entrance.

HILL: Q. That's because they have to balance on that little ladder?
A. Yes, there were hand holds but they were difficult to reach.

VIDEO TAPE SHOWN

CORONER: You just have major fun just getting into it. That's what John Gibson said.

HILL: I'm sorry?

CORONER: That's what Gibson said, he had a lot of trouble getting into it. He couldn't get into it.

HILL: Yes, whereas the people with the ramp, the inflated ramp, they seemed to be able to cope with it fairly well.

VIDEO TAPE PLAYED

A. They just say his hood is full of water, it's going to make it harder for him, he's got a bit of dead weight. He's pretty exhausted. We found a number of the - particularly the untrained guys had to remove their lifejacket before they could board, and we had one person could not board that raft. Now he's taken the lifejacket off. It's not a good practice because if you lose contact with the raft you're in trouble, but - so he's eventually in. If you take that back to that round raft though, the same guy's getting in, you'll see - yeah. No, we missed him.

HILL: Q. So the same person boarding the other raft could do it reasonably easily?
A. Yeah. We saw him do it while there was a conversation going on and he was in before anyone noticed that it was in. He got - he climbed straight in. Ideally you shouldn't have to enter a raft from the water. The idea is to step in from the vessel, but in some cases that's not always achievable.

CORONER: Q. I imagine a female crew would have trouble with some of these too.
A. Yeah, we've actually - we had one female volunteer in amongst the group here. I think they're at the end of this. Okay, there's the righting one.

HILL: Q. This is the helicopter simulation is it?
A. Yes, this is the helicopter strop donning and lifting. We broke - we had two cameras filming different areas so when we edited we had the boarding bit, then we had the righting, egressing, righting and then donning your helicopter strop so it's - you will get to see that. And once again this was done in almost total darkness as well so we've opened up, made the light a bit stronger here for them.

Q. Do I take it that all of the occupants had to be out of the rafts for these to be righted or--
A. That's standard practice for a liferaft is - raft is invited(?) with all occupants having exited the raft and they would maintain contact - maintain contact by holding on to the quoit on line or by grabbing hold of the drogue line so they don't lose contact with the raft while it is righted, though we did some experiments with righting it with people in the raft and we found it was possible to right the raft with up to five people in, if you knew what you were doing. But you know, in a huge sea where there's risk of people being separated from a raft, that may prove to be the better option, and I believe that's what Mr Winning ended up doing on the Winston Churchill number one raft.

CORONER: That's right.

HILL: Q. What were the difficulties with the righting of the raft?
A. The difficulties we found were that initially people just getting the right leverage, the foot placement initially so that they had the life raft cylinder at their feet. To attempt to right the raft the other way round means that when the raft does come down, if you don't put your hands up to protect your head you can get smashed across the head by the actual gas cylinder, which would do you - may render you unconscious or cause you to have a severe laceration or concussion. The other things people were doing was physically just not even recognising what the righting strap was or what it was for. That took some doing in some cases. In fact that occurred with the SOLAS raft. People were actually trying to right the raft at the end where the boarding ramp was and couldn't work out why they couldn't get the leverage they needed, and gave up in the end because they just had no idea. It's also placing yourself on the down wind end of the raft so the wind assists in the actual righting process, remembering to try and keep clear as the raft comes over, if it does land on you to stay on your back, not to turn onto your stomach so that you don't get pinned underneath the raft with the friction from your lifejacket making it difficult to escape, and trying to avoid becoming entangled in the lines from the raft, as often happens during training.

CORONER: Q. What about the difficulty of getting down the escape hatch or the entrance of an inverted raft with a lifejacket on?
A. That - if it's done incorrectly people can become pinned. If they try and - if the raft is inverted like that, this is floating level with the water. If people try and duck dive out and underneath with a lifejacket they - we find they get pinned here like this with their back arched and their head still under the water, and they have a lot of trouble getting out. What we tend to do is we get them to come out feet first, pushing with their hands here so they push the raft up above themselves, and they go down, out and pop up like that, and that's the technique we got the training guys to do and those volunteers managed to get out pretty well. In fact I think we just saw someone escaping then, David, you might want to just take that back.

Q. Mr Winning said he had to take his off to get out.
A. Yeah. It depends on - yeah. We found it's possible to do it with it on. There's someone doing it with their lifejacket on now, in calm conditions I must admit, but he's out. He was entangled slightly but managed to escape. Further down the track you'll see people coming out head first. They were the ones who got into trouble. In fact, a few people had to be rescued by the police divers, they were that badly entangled there. It looks like we're going to see the correct technique here. This is the correct technique for righting a larger raft, he's pulling on the righting strap. A much more substantial righting strap, a

lot more stable.

HILL: Q. That's the boarding ramp we can see stuck in the air is it?
A. That's correct. So what happened there, that person lost their footing and - that was our female participant. She was pretty exhausted at this stage. She knew what to do, didn't have the strength, so she then instructed one of the police divers as to what he should do and they managed to get the raft over.

Q. I see that the righting strap has more like a ladder type effect up it.
A. So you can claw your way up.

Q. Pull your way up it, I see.
A. Yeah.

Q. And this of course is the Uniform Shipping Laws or SOLAS?
A. Yes, that was a SOLAS raft you were looking at - here's some more egressing - but some of the SOLAS rafts just have a grab handle on the smaller rafts, and you'll see that in later video footage, and the handle's quite effective in itself, but this is more egressing. I think we've got some underwater footage of people egressing as well further down the track.

SPEAKER: I think that may be on another video.

WITNESS: Right. Yeah, it's on another video, yeah.

HILL: Q. As far as the training was concerned, what were your findings in the sense of did training make any difference to the people in this as opposed to the untrained?
A. In my opinion it did, and that's supported statistically from the theoretical side of things by observation for the practical. To give an idea for those who have a copy of the report, if you have a look on page 61 you'll see there's a graph there which shows the scores attained by the two groups of subject.

CORONER: Q. What page is that?
A. That's on page 61, your Worship.

HILL: Q. I think they can be basically summed up that the scores, the average score for the untrained was 45 per cent and for the trained was 77 per cent?
A. That's correct.

Q. And that was just one day's training?
A. Yeah.

Q. Of approximately how many hours?
A. Six hours of which that was both four hours theory, two hours practical. And then that - you compare the - over the page on page 62 you can see that the dot bulleted list

there, this is some of the stuff that happened to the untrained subjects. One untrained subject failed to board the Pro Saver raft, three untrained subjects failed to right the 10 person Beaufort raft, four untrained subjects became entangled in lines or in the canopy hatch during underwater escape and required assistance from the safety diver to get free. Nine untrained subjects failed to don the helicopter strop in a manner that would not result in injury or falling from the strop compared to only one trained subject, so one trained subject did get that wrong. Nine untrained subjects failed to make contact with the raft via the rescue quoit on line when they were going to rescue a casualty. They saw someone in trouble, their immediate reaction was to dive out of the raft and swim to them. They didn't know that there was a rescue quoit and 30 metres of line there that they should take with them so they don't lose contact. So that's some of the observations that we made and that made it fairly clear to me that the training does have an impact.

Q. How many were there untrained, 15 of each?

CORONER: Fifteen of each.

A. I started out with 15 of each. We had one non-show out of the untrained subjects and one - at one stage I had one of the other subjects had an injury and couldn't partake in the practical work, so for the practical we had 14 and 14 I think it was and we had--

HILL: Q. I'm just looking at that last-but-one bullet point. Nine untrained subjects failed to don the helicopter strop. That seems a huge proportion considering that if you are in trouble as a yachtsman, it's probably going to be a helicopter that's going to get you out.
A. Yes. In fact that was one of the findings I think in the Sydney Hobart yacht race review, was that a lot of the people had no idea about helicopter rescue operations, and this was immediately obvious, that the untrained subjects had no idea as how that strop should be on and what it should look, which is fine if you're getting a military helicopter with a diver in attendance who enters the water or comes onto the yacht to assist or into the survival craft, but if there's no assistance and they're meant to put that on by themselves, then they run the risk of being in all sorts of trouble. Add to that 70 knots of road awash at the surface or you can't see because your eyes are stinging so much, the huge seas, injuries, everything else, it's yeah, a pretty scary thing really that you've got that many people got no idea how to do it.

Q. Just so that I do understand, if I could just continue on with the training. It's not just the Maritime College in Launceston that provides this facility is it?
A. No. This module of training is one module of a course which used to be called an Elements of Shipboard Safety Training Course for anyone who was - it was a pre-requisite for a certificate of competency say as a Master Class 5 or Skipper 3 on a small - for a 20-metre fishing boat, the

skipper of that has to have undertaken this training and that includes first aid, fire fighting, occupational health and safety, and survival training. We just took the survival training day and gave them that training. That can be delivered - that was delivered in accordance with the Australian National Training Authority module AB511 which is - it's an approved module. We have accredited TAFE colleges, we've got the Maritime College, all around. Every State in Australia are accredited to deliver this course and it's just a case of - yeah, it's easy to access, it's relatively cheap to do. You'd be looking commercially at probably at $100 per person for that training. That may even be able to be reduced, depending on what the overheads are, and you've got a nationally accredited and recognised qualification.

Q. So if a person wanted to do that particular course, he could ring up presumably the local TAFEs in whatever State he is and then they would guide him as to which TAFE college actually did it and he could book himself in?
A. Yes.

Q. He or she?
A. That's correct.

Q. Sorry, you were going to show us something else. I think this is underneath is it?
A. Yeah, we've got - is that the towing or - no, we've got some underwater egress footage here, just so you can see how that - some of the problems associated with that. It's probably worth viewing.

VIDEO TAPE PLAYED

A. That's us getting into the raft. I must also point out that we had to be very careful with this. We were monitoring the atmosphere inside the upturned raft for CO2 build-up and oxygen depletion. We literally had about three or four minutes before we exceeded occupational health and safety limits, so we couldn't muck about too long and we--

Q. Perhaps if I just stop you there because I think that that might be of interest at this point. You say that when the raft was upturned, and this is the SOLAS raft, the same as the Winston Churchill, is that right?
A. Not SOLAS, the aircraft, yeah.

Q. Sorry, the--
A. The Pro Saver?

Q. Pro Saver liferaft.
A. Yeah.

Q. How much oxygen did you have in it?
A. Well I had someone from the University of Tasmania prepare a separate report on that but basically we found - and I think that will be tabled. I wasn't - didn't come prepared to speak about that specifically. But we had about

three or four minutes of operating time with five of us in that raft before oxygen levels were getting down to about 19 per cent and CO2 was getting up to .5 or 1 per cent - we were actually - .5 per cent I think. That's when it was alarming, we had to get out, and basically yeah, just to remain in that environment would eventually have been fatal to stay in there for a sufficiently long time. There's no gas exchange that we could detect going on during the trials that we were doing.

HILL: Yes, thank you.

VIDEO TAPE PLAYED

A. Yeah, that's the divers. That's the only footage we've got. Now at this stage we've still got - the canopy is tied back so the egress is relatively easy. Soon after that we untied it so that the tunnel was protruding and we--

SPEAKER: That's the end of the tape.

WITNESS: Is it? All right, well it must be on the next one. But I can demonstrate on this anyway. But we found the divers and the instructors, we had no trouble egressing whatsoever because we got ourselves organised, and we had people holding it open and we had a system developed for escaping. The trouble is, the people who aren't cool, calm and collected in that sort of environment who aren't trained as to think logically about what they're trying to overcome, tend to just want to duck dive out. Now with an arrangement like this where you've got a tunnel which you can just barely fit through, it's very easy to become entangled, and a lot of the straps and things hung down below this level, and it was very easy for people to become trapped and panic. And that's what we found, that it was quite an awesome - sorry, not awesome, but - what's the word - challenging experience for some of these people and particularly if they become entangled. They do not like it. The other trouble they had was when this was actually secured, and this thing was secured using rope of about this diameter, when it was secured and tied, depending on how they tied it, whether they tied a knot that could be easily undone, with wet, cold slippery fingers it became very difficult to undo it so that they could egress, so that that was another problem as well that was experienced. We experienced it ourselves when we went out into Bass Strait and did some trials there, that just handling the lines - the sea temperature was eight degrees when we were out there and it was - because we were out of the mouth of the Tamar River and it was very cold, and we found that hand use went very quickly and we lost the use of our fingers and anything fiddly was very difficult to do.

Q. I intend moving to a distinctly separate subject now, about the liferaft that you actually tested in Bass Strait. Is there anything further you'd like to add at this stage about what we've just covered that I may have missed?
A. I think the important thing that I would like to add

about the training side of things is that it's very important that people get to do the task, that they get to climb on board a liferaft themselves in their yachting gear, to feel what it's like. They get to right a raft, they get to escape from an inverted raft. They get to don a helicopter strop and get lifted clear of the water via a winch or a block and tackle or something. You don't need high tech gear to do this. And yeah, just so that they have done it, because once you've done it you've got that confidence that you can do it a second time, it's not new. It's also important I believe as part of on-board training that when a raft goes in for its annual survey that the owner of the vessel says to the crew, right, this is going to be opened up for inspection at the survey establishment on Wednesday evening, it will be inflated, you know, would you like to come in and have a look. Let's have a look at our raft, let's look at the fittings on it, let's look at the equipment and the way we do things on this raft. How you close the canopy, for instance, where is the equipment pack, is it packed in something like this or something different? Have a look, get familiar with it.

Q. Tell me, if a crew member went along to such a demonstration as you've just pointed out, is there anything preventing the skipper or the crew saying well look, why don't we put a few more of those in that, whatever those things may be?
A. Yeah, there is - there is - there is a reason why that's not always possible. It's possible to add a limited amount of equipment like for example sarlin(?) lights. They are easily added because they don't take up much volume. The rafts are packed in fairly small containers as you saw on that earlier video. They cannot put too much stuff in because the raft physically will not fit back into the container, but what people are encouraged to do is to have - and Paynes Wessex, I saw they actually manufacture one now. They've actually - it's called a ready grab bag or an emergency bag and it's just a bag which you have located just inside the companionway or just inside the wheelhouse of a small commercial vessel, and that's where you put your additional pyrotechnics, your additional water, your additional torch, your EIPRB, your other equipment that you'd like to take along with you, so that when you do have to abandon you've got equipment already in the raft, but you grab your grab bag and the first thing that goes in the raft is your grab bag followed by your crew, and that's the way that you get around having a limited amount of space for packing additional items.

Q. So you have a grab bag right next to the liferaft itself?
A. Yeah. Well according to the ORC rules we were talking about this morning, that's effectively what they do. The raft is packed, they have a separate equipment bag - this is my understanding - which they have to put into the raft once they inflate the raft.

Q. Under the ORC rules?

A. Yeah, yeah. That's where the Australian - in the blue book, the rules for racing, that's where the AYF standard or the Australian standard varies from the overseas standard, is that Australia says no, we don't want all of our equipment outside the raft, we want the equipment packed inside the raft.

Q. But if you've got - just so I understand this. The ORC says yes, have a grab bag and that's part of the rules, and the AYF says no, it's all got to be inside there, inside the liferaft itself?
A. The minimum equipment has to be inside, yeah, but anything extra you can have a grab bag for. Anyone can make up a grab bag.

Q. But there's no regulation or requirement for a grab bag?
A. No, no, that's just what I would call prudent seamanship, to have a grab bag.

Q. Is there anything in addition at this stage before I move on to that other subject?
A. No, I don't think so.

LUNCHEON ADJOURNMENT

HILL: Q. Sir, you were speaking before lunch about the training and you said that it was available in each State at the TAFE colleges. Do you recall that?
A. Yes.

Q. And I took you through that. What accreditation do those particular people at the TAFE colleges have?
A. Well the training and survival that's currently conducted in the TAFE colleges and maritime related colleges is currently based on this, the ANTA module AB511, which is aimed for small commercial vessels. That's what the training is aimed at. Part of the accreditation process to deliver that training requires that the college has access to appropriate training facilities, has suitably qualified trainers with respect to teaching qualifications, and experience, so that they are getting the right training.

Q. What I want to - I want to concentrate on the teachers. You say that they've got to have suitable experience and qualifications. What are they?
A. Qualifications generally range from having a certificate of competency, a second mate or master, having had sea experience and ship - have teacher qualification and also have experience in training in that field, which can be gained by working in the institution.

Q. So we're talking about deck officers of ocean going vessels?
A. Yes, that's correct, or ex-naval personnel.

Q. Or ex-Royal--
A. Yes, Royal Australian Navy.

Q. --Australian Navy?
A. Yes.

Q. The AYF, Australian Yachting Federation, also accredits people, gives accreditation to people. What--
A. Yes. My understanding is that the AYF, for someone to meet the requirements for entry into a particular category of race, that the AYF has their own syllabus which they will accredit training institutions to provide that particular training and once the AYF is happy with the training provided, then they will accept the qualification granted by that training establishment. AYF training - sorry, the assessment, the learning outcomes and assessment criteria are not necessarily those which are delivered for commercial - small commercial vessel crews.

Q. The people that give that training, the AYF accredited people, what sort of qualifications do they have?
A. I believe that the qualifications that most of them have is their experience at sailing. Some of them who run training schools, some of the establishments, would have - would have teaching qualifications as well. But that's about as much as I know about the AYF system. I know it's - yes, it's parallel to the small commercial vessel system, it's aside from that.

Q. Is there anything else you want to say about that?
A. The only thing I think is important with training is the training as I said before in survival should be - it should be in my view a separate module from any other training that yachtsmen undertake and it should be similar if not the same as what we - as what is received in the way of survival training by people who work on commercial vessels, small commercial vessels. I don't see why it should be different. The only difference in the use of liferafts and search and rescue, electronic aids to detection is basically the fact that you've got a slightly different equipment pack for the rafts and the rafts are manufactured to a slightly different standard, but that's easy to cover those differences. And if you had a commercial training course set of learning outcomes and assessment criteria, then you've got a standard which is easy for institutions to meet, you've got a

guaranteed standard of delivery and it would, yes, pretty well standardise it across the country for all yachtsmen.

Q. When you say the disparity between the different types of liferafts, if in fact they all came up to be equivalent to the uniform shipping laws or the SOLAS, that then would - there would be no difference?
A. No, there would be no difference whatsoever. Literally it's no trouble to go through an AYF equipment pack rather than a coastal equipment pack and it takes only a few minutes to show the difference between the two while you're doing that.

Q. We're going to move on from there and take you then to the Pro Saver that you tested I think in the - off the coast was it, at the mouth of the Derwent?

CORONER: Mouth of the Tamar.

A. The River Tamar.

HILL: Q. Tamar?
A. Yes.

Q. Wrong city? I see. Now you actually cut the bottom of this vessel, this raft?
A. Yes. We actually consulted with the survivors of that - of the Pro Saver liferaft who they're observing and they showed us where the incision was made and after running some other trials we actually made an incision in the floor of the raft in the same location and then applied some stress to the raft floor. It'll be shown in a video shortly. We didn't have the big seas, we didn't have 10 metre breaking waves, we only had one to one and a half metre seas and they were moderating as the day went by so we improvised but the floor did eventually tear. But the sea trials were also aimed at just seeing if it made any difference being in a swell, being in cold water with respect to liferaft operation with things like righting the rafts. And we also were able to generate what we estimate to be about two metre breaking foam waves by running our support vessel by the raft at a reasonable speed and that generated a big stern wash which was able to hit the raft to see what effect that would have on the occupants on the raft, particularly once the canopy and the floor had been destroyed. That in itself is well worth everyone having a look at because it's quite awesome.

Q. We will go through the video and at any stage I'd like you to stop and tell us what it is you want to bring out but my understanding is that once the floor in the canopy had gone, basically the tubes simply formed sometimes a diamond pattern, sometimes side by side and there was great difficulty in holding onto this, is that correct?
A. Yes. The Pro Saver raft was constructed in such a manner that the - it's a square raft and the corners of the raft, they're not engineered out of patches, they're actually just bent around to make a square. And what holds

the square shape together is the floor and the canopy. Once the integrity of the floor was breached, we found that the floor actually tore away. The glue pulled away from the bottom of the canopy for a significant length and there was no more support and as a result the raft was free to go into a diamond shape which was quite tight which made it very difficult to hold it open and maintain any sort of security during - when we were being hit by the waves. But I might also point out that we also did this with the Petrel raft, which was a circular raft in shape. It maintained its shape but we found that when it was getting hit by the waves it was rolling over and we were still having trouble staying inside the raft, we were getting thrown everywhere.

HILL: Perhaps if we show that video now.

CORONER: Yes.

VIDEO TAPE PLAYED

WITNESS: That is an easy raft to egress from because the canopy opening is quite large, it doesn't have the tunnel.

HILL: Q. Which one is that?
A. That's the Petrel we're looking at there.

CORONER: Q. Is that canopy all ripped at that stage?
A. Yes. That particular raft was the one that was donated to the study by some fishermen, that had just been condemned. You can see the white marks on the floor of the raft. In places you could see the light of day through it, it'd got like a mould into the rubber material. But we thought well even though it had been condemned we'd see what it would withstand given it was no longer able to used on board a commercial vessel. The interesting thing was that raft, even as a condemned raft, stood up to a lot more punishment than the lighter weight raft as you'll see as we go through.

Q. How does it fit into this scheme of things you've spoken about earlier in your paper, the US standard, what's it called?
A. USL code.

Q. USL and--
A. That is a coastal standard raft.

Q. Right, so it's the same type--

HILL: Q. That complies?

CORONER: Q. Same standard as the one off the Winston Churchill?
A. No, that's beyond that, this is the coastal standard. That raft, if it hadn't been condemned, would have been allowed to be used on board a small commercial vessel.

CORONER: Right, I've got you.

HILL: Q. Now if I can just maintain it as stopped. The pockets that I can see and you were saying about this model you had in front of you, that if they were proportional like that, that is like the model, you'd have a lot more stability. Those pockets on the top are the actual sizes of these things?
A. Yes. They're the water stabilising pockets. Now that raft that you're looking at I believe was in the order of 15 - 13 to 15 years old, so that's an old raft. They are putting bigger pockets on rafts these days but that's typical of an older raft.

CORONER: Q. Was the damage to the canopy you saw earlier, was it - that happened since it was put in the water? Was it like that when you first took delivery of it, first given this?
A. No, the damage - the damage - sorry, this raft?

Q. Yes.
A. Yes, no, that's how it was when we received it but--

Q. It had a damaged canopy?
A. Yes but it must be borne in mind that's why we got the raft because--

Q. I know that.
A. --it was no longer acceptable for use on a vessel, yes.

VIDEO TAPE PLAYED

WITNESS: So that's a standard egress method, push up, move across, hop up. So there's two people inside that raft now being righted. That was after that righting that we had 40 centimetres of water left in the raft. So there's now three occupants inside the raft. You'll note there's not a righting strap, that's just got a righting handle.

CORONER: Yes.

WITNESS: Probably fast forward that bit if you like, got the idea. We worked up to having five people in the raft and righting it.

CORONER: Q. You were able to do it?
A. Yes. If you let it run you'll see. As we got more weight in the raft it took more coordination and more effort but if you had a wind and you were facing into the wind, the wind would have blown it over by now. This is where it's suffering from not having a strap but that's with five people.

HILL: Q. That was with five people on board?
A. The problem we struck with that though with five bodies in there in a small space is when the rough came over we were rolled and there's a tangle of arms and legs and there is a hazard associated with that if someone get pinned with their face under the water.

Q. This is a pro saver?
A. Yes and that's one of the survivors showing us where they made the incision and the length of the incision just there. We made that incision later on in the exercise.

Q. So that's where it was cut?
A. Yes. I might point out the people in the water, there's myself, there's Detective Grey and the rest were Tasmanian police divers involved in this. The guy with the snorkel is our safety diver and you can see that people know what they're doing even encumbered with those May West style life jackets and the gear we've got didn't have any trouble getting in and out of the raft.

HILL: Q. They're trained police divers are they?
A. Trained police divers, myself yeah. This is just attempting to close up the canopy. That's the canopy closed. The bit problem is if you don't tie a knot that's easy to undo with the drawstring when the time comes to get out you've got a few problems.

CORONER: Q. So what are you doing here?
A. We're going through the same exercise now with the Pro Saver with riding a raft progressively putting more people in the raft each time we right it. I think that's with two people in the raft at that stage, we were just trying to hurry things along a bit. And one of the things we found with this raft it tended to bend across the diagonal, see that, which made it very awkward. But I must also point out that riding a raft with people inside is not - we were actually going against the manufacturer's recommendations in trialing this. That's the riding line parting from the raft there. So with the people then you can see we've having a lot more trouble getting that raft over. This is just shot inside the raft as it was being righted so you can see how confusing it actually is as it rolls over. We're all starting to get a bit tired by this stage as well. So if anyone was trying to imagine what it's like inside an inverted raft, that's what it's like, very claustrophobic.

HILL: Q. During the period that it was upside down like that what was the air?
A. We were pushing limits a bit there but it was half coming up, we were getting occasional gusts of fresh air come in but it was - we were getting to the stage where we were about to pull out and ventilate the raft and start again when the raft actually did go over. This is the stage now where we decided to incise the floor of the raft.

Q. Incidentally, did that allow air to come in?
A. Yes it did. You can see we're poring at it because we

all wanted to get that air, there was something psychological about it. We weren't happy with the water pouring in. Whether or not that would have allowed sufficient gas exchange is another matter. I doubt it would have, I think there still would have been problems further down the track but unless we did some research specifically on that we wouldn't know. So to try and put some load on the raft we then righted the raft with everyone still in it to see if that would have any effect seeing we were lugging big seas. That was me riding the raft in that instance That raft started flooding through that hole at that stage and the water was getting up to around about 40 centimetres deep and then we were just stomping around to try and apply some load to the floor to see what would happen with the split. The floor was torn at this stage.

Q. Is that the hole in the floor?
A. Yes. It tore across then all of a sudden it fell away from the bottom of the raft very quickly. We were quite distressed at that stage because it's not nice having water underneath you and we were all madly just trying to get perches on the side. That's the resulting damage and that was without being hit by 10-metre breaking waves, that was just us jumping around in the raft that did that.

Q. I take it now you're using it with the canopy on the bottom you'd all stand in that is it?
A. Yes we're going to climb in now and put our weight on the canopy. Prior to that Rod briefed everybody not to put their weight on the canopy because we didn't want it to be damaged prematurely so in this case we all deliberately stand on it. So once again it didn't take much in this case and the canopy went. It started at the lookout port and ripped across and we all sort of fell through the bottom and the hydraulic action from a wave breaking inside that would probably burst the canopy as well if it broke on top while the raft was upside down like that.

Q. It still seems to be maintaining its square or rectangle shape?
A. Yes because we've got our weight on the canopy, the whole thing at that point is maintaining fairly well and we also found that the corners of where the floor were I think at least two of the corners were still intact so that was providing like a gusset effect and still holding it. It was after that finally tore off that it started to fold up on us. Once the canopy started to go, you can see the canopy has gone now, you can see the water there, the raft is starting to get a bit unstable and that's the first of the runs. The guy on the camera missed it, he got a bad thing, so that's the sort of weight that we were throwing up at the raft and you'll see some actual footage of the rest. You can see at the end of the raft had been folded into that diamond pattern and - so it's not a particularly big wave that one but look at the effect it's having on the raft and the people trying to cling to it. You can imagine what that would be like getting struck every three or four minute by just the top of a breaking large swell. You can see the

raft there had actually folded up, there it is there, that's folded into the diamond shape there and I think two people manage to stay in contact with the raft, everyone else was washed away. So you can see there's not much room to hang on, nothing to brace yourself on and the boat ran past, it's going to look closer than it actually was, ran past at about three metres and then we copped the stern wash. So we've got lines everywhere, we've got people everywhere and what we're trying to do at this stage is ascertain everyone is okay. I think this next one is the last one for this particular raft. Once again the raft had just folded up on us. We move to the petrol raft next and that's the state of the raft after the exercise, might be worth looking at that.

Q. This is the raft that complies with the uniform shipping laws and SOLAS?
A. Yes in respect to the 30-day durability yes.

Q. So we can take it that the materials for the canopy and floor are stronger?
A. Yes they are a thicker gauge material and we found that we did get the floor to tear as you'll see shortly but it didn't tear to the same extent, took longer to make it tear and the canopy, we could not get the canopy to detach at all, we actually had to cut the canopy off later on in the exercise. We actually had to work pretty hard to make the damage spread.

Q. So your opinion is it's a much more durable raft?
A. Yes it certainly appeared to be more durable with the damage. That's the damage that we ended up with which take over about a third of the floor of the raft. It does extend across that way and it was difficult to get it to spread more than that.

Q. So they couldn't make the canopy come away?
A. No we couldn't get it to come away or tear so they hit us with a few waves to see if that would do it and then we got tired so we got a knife and cut the canopy off. That's some stills from some of the waves. You'll see we still had the same problem trying to make contact with the raft but once we got back to it it was easier to - you could actually get in it. Even though it didn't have a floor you could get back inside relatively easily. This is probably one of the biggest waves that was generated during the afternoon.

Q. I also note from that video that they seem to be wearing a collared-type life jacket rather than just the buoyancy part in the front and the back, is that--
A. Those particular jackets from memory were a coastal standard life jacket. They had the buoyant part at the front and a buoyant collar behind the head which were pretty well a standard bottom of the market coastal approved personal flotation device type one. They're very awkward those things, they tend to ride up off the back of your head and to ride up over your chest. They don't have any sort of a crutch strap arrangement. But we found we could operate with them but they were very ordinary yes. We got a lot

chafing under the chin as well. So that's the canopy being removed now and I think this is about the last run. By this stage - that was to see what would happen without the canopy. The raft didn't fold up, it remained in its circular shape. We were pretty exhausted by this stage so we were having a lot of trouble maintaining contact. That's essentially it.

Q. At page 46 of your report you make recommendations relating to life raft riding and incising a life raft floor. What you say is life raft manufacturers should be encouraged to use life raft floor materials which display strong resistance to tearing in the event of the floor becoming accidentally cut, chaffed or torn. Other people have talked of some sort of valve system, is that a possibility?
A. Yes the mention of having a valve system I believe came about as a result of people saying well what do you do if you are trapped in an inverted life raft and you need to get some fresh air so that you don't succumb from lack of oxygen or from carbon dioxide poisoning. Now that in itself is a relevant statement but when the raft is upside down the weight of the occupants are going to - if it's a lightweight raft we found that the weight of the occupants is going to damage the canopy and then you won't have a canopy. You have the risk of hypothermia through immersion in the cold water as well and a life raft was not designed to provide a lifesaving environment when it's inverted. The thing that needs to be done is to make sure people are adequately trained to right a life raft and do it quickly, efficiently and confidently when the time comes, to know the fittings that are there so that they have confidence they can do it and have the technique right As far as the tearing of that goes yes, it is possible for a raft to be accidentally damaged and if it - as the Pro Saver raft demonstrated to us with the very lightweight material, it did not take much effort to get that damage that was done, that incision to spread very rapidly. Once it started to spread, it just fell away. If a raft floor was accidentally damaged in an abandonment on another vessel then the people would probably lose the floor very quickly.

Q. Whilst we're still on that subject I understand that there is technology overseas where life rafts are actually built to self-right and there's various form of this. One of them is that the ceiling or the canopy if you like, is exactly the same as the floor and it doesn't matter whether it's the fop or the bottom as it were but they're for very large situations, is that right?
A. Yes manufacturers have been forced to develop commercial products for the merchant vessel industry particularly for roll on/roll off passenger vessels. This is post Estonia which I think in 1994 I think she went down with the loss of nearly 900 lives. One of the problems was rafts which floated free from the sinking vessel came up but when they came to the surface they were inverted. Passengers had no idea how to right a life raft. They climbed on top of the raft and the cold water temperature and the wind chill factor resulted in a lot of them dying of hypothermia. So

that was a big problem. So the International Maritime Organisation has recently put our - or 1996 put out some amendments to the Safety of Life at Sea Convention which is basically saying that life rafts on these ships must be automatically self righting when they're deployed so they come up the right way or if they can't achieve that then the raft has to be either way up and to achieve that what they do is instead of the water pockets they have a mirror image of the canopy underneath. So if the raft is this way up the canopy fills with water which acts as a bit of a water stabilising pocket and if the raft does capsize the people just egress the raft and climb into the canopy on the top. There's no need to right the raft. The only problem with this arrangement is they do have to egress the raft and climb back in. There is a risk they could lose contact with the raft during that procedure. Other manufacturers are producing rafts which they claim will help prevent the raft from capsizing in the first place by putting appendages on the outside of the raft to create a righting moment so that as the raft goes over, a right moment i created which prevent it going any further but more work needs to be done to evaluate these rafts to find out how effective they are and whether or not people would be prepared to substitute their old rafts for the new technology.

Q. The other method that appears to be being used is that where you have those tubes down the bottom, in fact at the top they have the same tubes so the floor becomes the top and the top becomes the floor dependent on which way it's rolled over. But I understand therefore a great many survivors are not--
A. Yes there is a system, it's called an ark or arks(?) system which is being developed for use on passenger vessels and that's currently there for putting in excess of 100 people on at a time via a chute down off the vessel. That technology, yes instead of having a canopy as such you have more than four tubes, you have a wall of tubes and you have an entry hole. Once you're inside if the thing turn over yes, what was the canopy now becomes the floor and what was the floor now becomes the canopy. So it's like being rolled along in a barrel so to speak and that's one way that one manufacturer has got around the problem of having a raft which is useable no matter which way up it is.

Q. The Coroner has received in fact a submission from Holonomic(?) International Technology Incorporated and they're a Melbourne based firm and the Coroner has passed that on to you because this firm claims that they make in Australia self righting rafts and I understand you've discussed that with them?
A. Yes I've spoken with a representative from this company just to find out to what extent this particular design was self righting and I was informed that with this design the raft is self righting on inflation, it will certainly self right if there was no one in it if it capsized but I was also told that if this particular raft did totally invert with people in it, it should still self right provided the people on board know what to do. They are basically

bringing some rafts for evaluation shortly and they have got some trials gong on at Monash University at the end of this week and there will be some more trialing going on with this particular design in the near future.

Q. In fact as I understand they've asked you to test these rafts within the next month or so, is that correct?
A. Yes they're trying to get type approval for the rafts for self righting on inflation and they're asking the Maritime College to do some float free testing where they strap the raft in a cradle, submerge it to a depth of four metres, release it an observe the inflation process in two metre seas to see whether or not the raft does in fact inflate the right way up.

Q. And it's my understanding having spoken to you this morning that you will probably have a supplementary report on this particular aspect for the Coroner by July when we resume the inquest again, is that correct?
A. Yes that's subject to that particular trialing taking place but it's looking as if it will take place and I'm sure if it takes place at another institution that the manufacturer would give us that information for the Coroner.

Q. In fact you've been in touch with them this morning and they are sending up a video tape which is presumably some sort of advertising tape for their particular life rafts, is that correct?
A. Yes that's correct. They said they would courier one up for review.

Q. You then go on - I'm still at page 46 and I'll go over to page 47 of your report. You say that race participants should be made aware of the dangers associated with remaining inside an inverted life raft for too long, one being prolonged immersion in cold water resulting in possible hypothermia, problems associated with the oxygen depletion and the rapid build-up of carbon dioxide and high probability of the occupants' weight damaging the canopy particularly in rafts constructed from light materials. One of the problems I presume with the damage to the canopy is that if it does come back up, right up, you then have a chill factor with any wind on you and hypothermia can set in?
A. That's correct. Once the canopy has gone there's no protection from the wind or spray and wind chill factor is lethal for anyone in a survival situation.

Q. And you say that all sea survival training courses required for Sydney to Hobart yacht race participants should include practical training in life raft righting techniques. In other words it's not good enough in your opinion to simply stand and watch a demonstration, you should really participate in it?
A. Yes and it's a case of if I was to take people from this courtroom and put them in a pool and say right, now right a raft, you've seen the video, I don't think that the outcome would be all that good. I think there would be a

significant proportion of people who wouldn't be able to do it. You learn by doing and gaining that confidence.

Q. And I think that in fact your tests with the two groups of people have simply proved again the old adage of practice makes perfect?
A. Yes I believe so. Having done it, people recall doing it, they know they can - they've got the confidence to go through with the procedures they need to perform.

Q. At page 55 and through are the various results of the tests that you conducted and--
A. Yes actually at page 56 from early this morning I was looking for that area. You asked the question about the type of on-board training conducted with respect to locating life rafts. That table 6.1 is the result there. Out of 612 vessels only 27 vessels did on-board training where they showed the crews where the rafts were and they practise accessing and moving them to the launch position and only 19 of the 61 vessels practised launching and abandonment procedures as part of their normal operation.

Q. I suppose the position is that once - let's take a yachtsman, once he inflates his lift raft of course it's got to be off somewhere else fo re-packing and that, is that the situation?
A. That's correct and by launching and abandonment procedures I'm not talking about physically inflating a raft, I'm just talking about okay here's the raft, this is a painter, this is where our preferred launching position is but if we don't launch here we'll have to move it elsewhere. There are eight metres of painter that you would pull out once the raft is inflated, this is what we do, this is the next procedure, just going through the steps without physically inflating the raft. That's a very expensive option to actually inflate it.

Q. To actually inflate because then of course it has to be re-packed etcetera?
A. Yes.

Q. You spoke to - had discussions with Mr Davis Lawson of the CYCA, the safety officer, and he pointed out that there was difficulty to enforce the rule under existing pre race inspection procedures and that was made because it's mainly focused on the safety equipment itself?
A. Yes that's correct. Mr Lawson was saying that the pre race inspection is a case of the equipment is lined up, people come along and inspect to make sure they have the right items of equipment but at this point there's no one actually will ask a crew member for example what is this, could you demonstrate to me how you would operate - that's bad terminology, could you describe how you would operate this piece of equipment or show me - can you interpret the instructions for me. That would actually get around a lot of problems, where is your lift raft located, how do you release the lashings, can you show me that. So that would establish whether or not people have been getting on-board

training or whether the training they have received is actually getting through to people.

Q. What is suggested then is not only do you inspect the equipment but you ask individual members of the crew at random as to, "Well how does it work, where is it?" et cetera?
A. Yeah. Sorry, that's current practice on merchant vessels which comply with SOLAS convention during port state control inspections. The surveyor will ask crew members, "What is this, explain how you'd use it?"

Q. Over the next page, paragraph 6.1.2 Post Incidents. The CYC Recommendations and this was the recommendations made by the CYC race committee, the review committee, is that correct?
A. That's correct yes.

Q. The Notice of Race for the 1999 Sydney-Hobart Yacht Race was reviewed to determine which recommendations relating to train have been implemented for the next event and under provision 6.2.1 of the Notice of Race for Telstra Sydney-Hobart Yacht Race, it states at least 30 percent of the crew on a yacht must have completed a CYCA safety seminar, or AYF Yacht Safety and Survival Course, or a CYCA approved equivalent. Now you say this requirement is consistent with the compulsory requirement for 30 percent of the crew members undertaking such training as described in recommendation B2, however the recommendation for 100 percent of the crew members to attend a safety seminar which as at page 156 and for 50 percent of the crew to have undertaken a survival at sea marine survival course et cetera has not been implemented for the 1999 race. Do you know of any reason wy the CYC's recommendation was not adopted for the race?
A. The only reason that I'm aware of is that there was still a process of determining exactly what would constitute an appropriate sea survival training course. That's the only thing that I'm aware of.

Q. I think at page 63 are the recommendations relating to sea survival training and you there talk about the 50 percent of a yacht crew to undertake a survival at sea or a marine survival course should be implemented as a minimum requirement. So we're not talking bringing it down to 30. You say it should be 50 percent of the crew as a minimum requirement, is that right?
A. Yeah, not just a safety seminar but a full one day sea survival course.

Q. So a safety seminar is what?
A. My understanding of a safety seminar is where a group of people gather at a location and they are shown a lot of procedures. They stand and observe them. They might get to fire off a pyrotechnic but things like life raft righting, they observe someone else do it. Things like donning a helicopter strop, they observe someone else do it. They don't actually get in and escape from an inverted life raft. They don't get to climb into a life raft. They don't get to right it and that's just - my observations are based on discussions I had with David Lawson. They were in August

when he was talking about the safety seminars they run, and are relatively short in duration. Don't get me wrong. That's information. People are getting information but my view, as a survival training instructor, is that people should get in there, get wet and learn that way.

Q. So the seminars have their uses but the reality is that the training itself is a necessary part for 50 percent of crew as far as you're concerned?
A. Absolutely. I could have easily made that 100 percent of crew but the logistics of implementing that might be a bit difficult, so I think 50 percent is fairly realistic and that way at least half the people you've got do have that training and they can instruct the others on board the vessel in an emergency.

Q. So basically 100 percent trained would to counsel perfection whereas 50 percent is a realistic figure so far as you're concerned?
A. Yes I believe so.

Q. In paragraph 2 you actually set out what it is that should be done in such a course, a survival course, is that right?
A. Yes that's correct.

Q. Now there's only one further aspect of this, that apart from self righting life rafts, there's a type of life raft that instead of the pockets that have on the bottom there, those sort of pockets, it has a skirt all around it and I think you have a photograph of one of those, is that correct?
A. That is - this is a Swidlick raft, it's an American manufactured raft. This particular one is an aviation raft dropped to people during search and rescue operations. What you don't see underneath that, is there a toroidal skirt, a doughnut shaped skirt underneath that which extends down to about probably 90 centimetres below the water level and it probably holds in the order of a cubic metre of water, give or take.

Q. So that's about a tonne?
A. Yeah, an extremely stable life raft. They are almost impossible to capsize. The canopy on this particular raft is folded down. It does fold up over. That's because this is an aviation raft and that's for ease boarding, for people it's being dropped to if they're in the water. These Swidlick rafts have been around for a long time. They're a very expensive life raft. That's why people aren't intending to use them but they are extremely stable rafts and the risk of capsize with a raft like this is much less than with a standard raft with small water pockets. That's, I guess, an alternative if you didn't have the self righting technology or the ability to use a raft either way up.

Q. Is there anything further that you want to bring to the Coroner's attention that I may have missed?
A. No I think not. I think it's been gone through the

report fairly thoroughly. I think that the area on board, or the area that should be really considered is on board training by crews. It's their boat, it's their environment, it's their survival craft and their life saving appliances. If they know where it's stowed, what it's use is, what its limitations are, how it's operated, what the emergency procedures are on board their vessel. If they have been to have a look at their raft when it's being surveyed. It's not a problem to get access. Most or all of the life raft packers in Tasmania I've spoken to them and said, "How do you feel about a yacht crew coming to have a look at the raft when it's on the floor and opened?" and they say, "We wish they would come." They are more than happy to have people come and have a look. That's got to be more valuable than a lot of survival training, just knowing what it is you're dealing with but for specific techniques like particularly escaping a raft, righting a raft, putting on a helicopter strop, those sorts of things must be done practically, that's a must and otherwise people will forget. They won't have the necessary skills to stay alive.

Q. The other thing I suppose that at each survey it is inflated isn't it?
A. That's correct. They inflate the raft, not using the gas cylinder, they actually just fill it up with compressed air and then monitor the pressure over a fixed period to look for a pressure drop.

Q. So that would be an ideal time for the crew to walk around, get inside it, look at it, examine it?
A. Yeah, it would take all of about 20 minutes to do that, to go and have a look, have a talk. Once again the Tasmanian Life Raft Packers said they would more than happy to talk to the crew and actually explain what the gear is for and how it's used.

HARRIS: Q. Mr Boyle, could I take you back to page 7 of you report please. You appreciate here that we're dealing with small vessels at sea?
A. Yes.

Q. Could you tell the Court anything about the relative sizes, and I don't want to look at the Pro Saver at all but the relative size of the USL approved raft compared to the SOLAS raft in it's packed form?
A. Yes certainly, in it's packed form yeah. We saw on some of the videos the size of the Pro Saver, the 28 kilogram raft, the soft valise, in the packed form the larger rafts they are this long--

Q. Sorry to interrupt you, that's the USL raft?
A. Yeah the USL. In fact the dimensions packed are on the brochure. I can give you the exact dimensions if I can find my brochure. The six person Pacific, the container is 80 centimetres by 49 by 32. The valise for the same raft, the soft valise is 75 by 49 by 32, so there's
5 centimetres difference there. Now the Pro Saver is a six person raft, valise only is 68 centimetres by 36 by 30.

Q. I don't think any of us are too interested in the Pro Saver?
A. No and as compared to a Sea Saver Plus which is a SOLAS raft, six person, 76 by 49 by 33.

Q. So the Sea Saver Plus is SOLAS is it?
A. I tell a lie, no I was thinking of the - Sea Saver is not SOLAS, the Sea Saver is only coastal. So that's a coastal raft--

Q. There's no mystery Mr Boyle. All I'm trying to 2 determine for the assistance of the Court whether the USL standard in your opinion would be sufficient and practical or whether to go to SOLAS really puts it into a different category with consideration of size and weight and handling on a small vessel?
A. I think to be consistent with what is in the USL code, I mean in an ideal world a SOLAS standard raft is the go and any yachts person who rings me up saying we are going cruising around the Pacific, what life raft would you recommend we had, I would say go for a SOLAS life raft because that's it for you. Right if you're in trouble and you're out there, help is a long way off. If you're in an organised event, what you want is a raft that's robust enough to survive until help arrives and the coastal standard rafts are a good raft, they do lack some features such as an insulated floor but that, in my opinion, would be adequate for a category 1 race.

<WITNESS RETIRED AND EXCUSED

EXHIBIT #28 SURVIVAL KIT TENDERED, ADMITTED WITHOUT OBJECTION

SHORT ADJOURNMENT

CORONER: It's been requested by particularly the electronic media for some of the CD Rom that we've been showing up here, it's just too difficult to organise at this stage. I've given consent however to the media being able to take excerpts from the video we just saw, which I think it probably may work out better. Channel 7 I think have agreed to distribute it to the other electronic media outlets. I don't know whether the written press can do anything about all that as far as pictures but I'm sure if they can I've got no objection to them doing the same thing. That's the Herald and the Tele and whatever other press there is here.

MR ELSWORTH ANNOUNCED HIS APPEARANCE

CORONER: Thanks Mr Elsworth, welcome to my bar table.

<ANTHONY JOSEPH MOONEY
SWORN AND EXAMINED(3.15PM)

HILL: Q. Sir, would you state your full name please?
A. Anthony Joseph Mooney.

Q. Your address?
A. 10 Davidson Avenue, Forestville, New South Wales.

Q. You occupation?
A. Technical manager of Australian Yachting Federation.

Q. And that's commonly called the AYF?
A. Owners of the blue book I think.

Q. Sir what qualifications do you have?
A. None, particularly. I've just been a yachting administrator since 1969 on a full time basis.

Q. But you've administered what in that time?
A. Yachting Association of New South Wales, I was secretary and then executive director from 1969 to 1980. I went to the Australian Yachting Federation in November 1980 as executive director and four years ago that was changed to technical manager when we appointed a chief executive officer and I've continued in an technical role more than an overall administration of the sport.

Q. Now you've heard the evidence of Mr Boyle with regards life rafts and it's about that that I want to ask you some questions. The organisation itself, the AYF it has bodies under it does it?
A. Our members basically are the six states and two territories of Australia. Like most sporting organisations it's organised on that federal basis and the representation is built up accordingly from the states and territories.

CORONER: Q. I see, so there's a New South Wales Yachting Federation is there?
A. Yes the titles vary from state to territory but it's the Yachting Association of New South Wales, the Victorian Yachting Counsel, Yachting South Australia. Each of the states have their own.

HILL: Q. I take it that the sailing clubs within New South Wales belong to the New South Yachting Federation?
A. Correct.

CORONER: Q. Yachting Association of New South Wales. So the CYCA for example belong to that?
A. Correct.

Q. The Royal Prince Alfred Yacht Club?
A. Correct.

Q. What's the other one?
A. The Royal Sydney--

Q. Royal Sydney--
A. --Middle Harbour Yacht Club. They're all members of the State Yachting Association.

HILL: Q. And the AYF belongs to an international body, is that right?

A. Yes the main international body is the International Sailing Federation. It used to be called the International Yacht Racing Union but it changed its title three years ago and there's a second level to that. There is also an offshore racing counsel with the ORC.

CORONER: Q. How does the ORC fit in with the International Sailing Federation?
A. For years we've been trying to get them together and that's only recently being progressed a bit further to the extent that in the last 18 months they're both in the same office which is helpful. The ORC grew traditionally from the Cruising Club of America and Royal Ocean Racing Club in the United Kingdom and those two organisations prior to 1967 or thereabouts had separate rating rules under which they conducted their offshore racing and as a result of that when a boat went from England to America or the other way around there had to be re-rating and changes to the configuration of boats to meet the other standards, and then in 1968 the Offshore Racing Counsel came out with an international rule that the world could go and play with and that was a first, so that's how the ORC developed from those two basic clubs.

Q. When was that, 1968?
A. '68 or thereabouts.

HILL: Q. But they appear to be the people who set the standards for life rafts and that's what we're interested in at this particular juncture?
A. Correct. After the 1979 Fastnet race it was observed that there was no international standard for yachtsmen, either safety harnesses or life rafts and as a result of that two committees were formed of the ORC to come up with international standards for each of those two items. The safety harness one has been taken over recently by an EN standard and the ORC standard for life rafts is still valid now and is published in the ORC booklet and we reproduced it in our own AYF safety requirements.

Q. So the ORC sets the standard and then you pass the standard on to the New South Wales--
A. Yachting Association.

Q. Who in turn pass it on to the CYC?
A. It's through regulation, yes.

CORONER: Q. But I imagine the ORC passes it first to the International Sailing Federation does it, or not?
A. No, so far the ORC has been an independent body set up completely independent of the ISF, although they're a cross representation on each body. The plan in future is to make it a committee of the International Sailing Federation but still maintain its independence in areas--

Q. So what Mr Hill says is right, the edict comes down from the ORC to the Australian Yachting Federation in effect?
A. Correct.

HILL: Q. And then it's passed on down the track?
A. And they produce an Offshore Racing Counsel Special Regulations booklet which contains life rafts and other issues which we reprint and amend according to, as necessary, in our own blue book.

Q. Now the Australian Yachting Federation is aware of the SOLAS convention, the safety of lives at sea?
A. Yes.

Q. And you're also aware , and that's an international convention?
A. Correct.

Q. Now you're also aware of the uniform shipping laws?
A. Correct.

Q. Now the international organisations would not be because that's purely an Australian law passed by the Commonwealth?
A. Correct.

Q. Now as I understand it, having spoken to you about this matter over some time, as far as the AYF is concerned, you are willing to take to the Offshore Racing Counsel the standards for the uniform shipping laws but the difficulty is they won't really understand what you're saying because they don't understand what the shipping laws are, is that right?
A. We have provision that we can make submissions to the ORC on any item and in fact as a result of the Sydney-Hobart review, we did that for its last November conference. Some of those have already been implemented.

Q. What were some of those?
A. For example the valises that we've been talking about, stowing them below decks. As of the six months in 2001 that will be prevented from any new boats built after that time, so they will have to make the on deck provision or on deck stowage provision for - and we have to internationally allow time for designers and builders of either stock boats or run off boats to make that into their production. So we've already taken steps to say hey this is the first time since 1979 that we've really had a big experience in ocean safety. We're trying to take those matters on board and address them internationally because the market place is not big enough just for an Australian market to have a life raft produced for itself, for example, we need to have an international standard so that boats that both come here and go overseas don't have to keep changing life rafts every time they cross a border. So they're steps that we're quite happy to take forward. The ORC is welcoming and waiting for the information that's being tabled here at this inquiry so that it too can look at the safety matters on a world wide basis and hopefully accommodate all the recommendations and good ideas that we think are coming forward.

CORONER: Q. So you've heard the evidence of the last witness and he seems to be saying that the big difference

between what is presently being the requirement through the AYF, differs - is inadequate because it doesn't have this 30 day requirement whereas the Uniform Shipping Laws require that, so a likely recommendation surely will be that the AYF complies with the Uniform Shipping Laws?
A. Surely. The question I have is that whilst the AYF or the ORC regulations didn't require a 30 day test, whether or not the 30 day test was in fact carried out on that product, that's something that hasn't been revealed that I'm aware of and if you read the brochures that Pro Saver have indicated it says that indeed it has been satisfactory for coastal waters. It would be, I think, pretty dangerous of a manufacturer to put something like that on a brochure in a market place if indeed it hadn't been tested for the 30 days.

Q. Yes but is the Bass Strait a coastal water, or for example Lord Howe Island, a race to Lord Howe Island. We're dealing with something other than coastal water aren't we?
A. Mm, but so too is the US yacht code. There's varying levels of what, as I understand, what the US yacht code is and whilst it's suppose to be uniform, it's not always around Australia. Some states are still not fully implementing all of the US yacht codes.

HILL: Q. So what is it that you would actually need. Would you need, rather than a compliance with the Uniform Shipping Laws, would you actually require a gauge of the material in this sort of thing?
A. I think the issues are the strength of the material and one way of testing that is the 30 day throw it in the ocean trick. That certainly is something that we would need to look at as to how we implement that, whether or not it needs to be minimum material strengths and whether that's included in the USL code specification. They are the things that we need to look at until we get hold of the USL code and see what in fact it says and to see what of that we need, or how is the best way to submit that information to become an international standard.

Q. I see your problem because what you're saying is it's very easy within Australia to say you will comply, a life raft will comply with the USL code but of course if you then go overseas they don't know what you're actually saying?
A. That's right, or Sayonara comes to compete in a Hobart race or Nokia comes to compete in a Hobart race.

CORONER: Q. That's more it. If you go overseas you're likely to comply with whatever is overseas surely, because the USL seems to be of a higher standard generally?
A. In a yachting sense, in yachting sports sense, then the ORC standard is the one that the sail boats around the world are currently complying with.

Q. And that's the problem and the boats like Sayonara come here, they won't comply probably because they'll be on the ORC level?
A. That's why we need an international standard for the

sport and if that international standard for the sport is based on an Australian-US yacht code, then so be it.

Q. But you won't attract some entrants probably?
A. No, we may not but if it's the world standard.

Q. Well that's long term?
A. Sure.

Q. I imagine you're not going to do this overnight?
A. It won't be fixed - can't be fixed overnight.

Q. But I've got to think about the 2000 race and I would at this stage like to see an upping of the standard, or recommend an upping of the standard for this year?
A. Just a counsel? That might indeed be difficult in itself because the market place needs to have provision.

Q. I understand that too--
A. --got to be available--

HILL: Q. So you need something specific to take to the international body?
A. And I'm hoping that we can have extracts from the CD for example to be able to give this report, the life raft - Tony's excellent report to our ORC people, the safety harness standards to our ORC.

CORONER: The Uniform Shipping Laws, they don't set out in regulation form, do they, the standards of material and things like that. Do they get into that detail?

HILL: I might ask Mr Boyle. I've got a feeling that it's just testing rather than sort of gauge of material. I think that it must pass this test.

CORONER: Which means that if you're going to influence the ORC they're going to have to look at things the same way.

HILL: Sure, sure.

WITNESS: And the ORC is receptive to that in that the current regulations which have just been published, we say in there that indeed as of June of this year there may be changes to the life raft standard because the world is waiting for your Worship's pronouncements.

HILL: Q. I think that in fact you've already taken a step towards this by, for instance, recommending that proper paddles be used?
A. Yes.

Q. In life rafts rather than these hand ones that have been described this morning?

CORONER: Mittens.

WITNESS: What we tried to do was look at the CYCA report

and extract what information we could from there to make pertinent and proper submissions to the Offshore Racing Counsel. Some of those were adopted, some of those have been put on hold pending further reports and further information. So the Offshore Racing Counsel invited the Commodore of the CYC for example to address it at its annual meeting last November to try and show the world that yes we are trying to do something to help the world of yachting. If we can learn from tragedy, then hopefully we can help solve future ones.

HILL: I don't have any further questions at this stage Mr Coroner. There is the position of the Post Naiad but that's in the next--

CORONER: You know what we're going to do, we're leaving that until the next session in July. We're just not going to get to the Post Naiad until then. Mr Harris.

HARRIS: No questions your Worship.

CORONER: I think I'm clear on it, are you clear on it?

HILL: Yes I'm clear on what's required.

CORONER: Q. Where are these places based, in England I suppose are they?
A. Yeah it's strange. The International Sailing Federation and the Offshore Racing Counsel are now in an office in Southhamptom in London and the constituency and member national authorities from around the world similar to Australian Yachting Federation, Yachting New Zealand and so on.

Q. A bit like the International Rugby Board?
A. Exactly, only with more countries.

CORONER: Mr Elsworth, do you have any questions?

ELSWORTH: I don't have any questions thanks.

CORONER: Thanks for that Mr Mooney. I was a bit confused about the set up and also the particular problem but it's more a problem of Sayonara coming here than one of our boats going there isn't it?

WITNESS: Yes and no. We had a problem for example when the American Bureau of Shipping Construction Standards for boats was introduced and the Fastnet race is a category 2 event and there were structural standards that were required for Cat. 1 for our Sydney Harbour Race that wouldn't have applied for Fastnet. That would have disadvantaged any competitor from Australia competing in that international event and that's where we've got a team going to the Kenwood Cup in July, in July-August in Hawaii, and again unless we are playing on the same playing field as the rest of the--

CORONER: Q. So it does cut both ways?

A. It has to.

<WITNESS RETIRED

HILL: We've got four witnesses tomorrow. There's Mr Bruce Gould from the Winston Churchill, Dr Young who talks about the lack of oxygen within an upturned raft, Mr Chris Turner from WorkCover who speaks about harnesses and then Associate Professor Rod Cross and he deals with the situation of Mr Charles and the harness that he had on when that vessel overturned and what the likelihoods were. Those are the four for tomorrow.

ADJOURNED PART HEARD TO TUESDAY 4 APRIL 2000

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CERTIFICATION OF TRANSCRIPT

We, the undersigned, being Sound Reporters, do hereby certify that the within transcript is a correct transcript of the depositions sound recorded at the State Coroner's Court, Glebe in the matter of 5/98 Event of the 1998 Sydney to Hobard Yacht Race on Monday 3 April 2000

Dated at Goodsell Building
this day of 2000

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