DETECTIVE SENIOR CONSTABLE GRAY

Q1 This is an electronically recorded interview between Detective Senior Constable Stuart Gray and Mr Zane Boucher at Peter Johnson Ship Chandlers in Hobart on Saturday, the 25th of September, 1999. The time on my watch now is 2.20pm. Also present and seated to my right is Senior Constable David Upston from the New South Wales Water Police. For the purpose of the interview, Zane, could you please state your full name?

A My full name is Zane John Boucher.

Q2 And your date of birth?

A 20th of December, 1959.

Q3 And your current address?

A My current address is 200 Strickland Avenue, South Hobart.

Q4 And your occupation?

A I am a life raft surveyor.

Q5 O.K. As was explained to you prior to this interview, Senior Constable Upston and myself are making inquiries in relation to the 1998 Sydney to Hobart Yacht Race and part of our inquiries have taken us to life rafts and that's why we're speaking to you here today. If I could just start with your experience in the life raft industry so far as surveying?

A I've been servicing life rafts for 18 years in total.

Q6 And how long have you worked at this particular location for?

A I've been at Peter Johnson's for 23 years.

Q7 O.K. And what certification do you have so far as life raft surveying certification?

A Current certification, I hold certificates from R.F.D. I hold certificates from Viking, Safety Marine Australia. I also have approval to service Solus life rafts from those manufacturers from AMSA and CASA approval for aviation life rafts and life jackets.

Q8 O.K. Now in this particular life raft bay where we are at Peter Johnson Ship Chandlers you are the person in, in charge of the life rafts, so to speak?

A Yes, I am.

Q9 And you have a number of people working for you?

A I have one junior currently in training.

Q10 O.K. Now if I could, one of the issues we're particularly concerned about is an issue involving VC Stand Aside during the 1998 Sydney to Hobart Yacht Race in which the life raft was deployed but didn't inflate. From your experience, could you give us some information as to why this could have come about?

A The most obvious answer is that the gas cylinder was either empty - - -

Q11 Yeah.

A - - - or was not correctly connected or the firing head was not connected to the painter line of the life raft. They are usually the only things that can go wrong with a raft, especially a basic one. There are other things that can occur but they are the most likely scenarios.

Q12 O.K. I wonder if you could comment on a life raft which is in a valise and then is transferred into a hard case and in fact the hard case is not for that particular life raft? Would you be able to - - -

A Technically speaking, you should not do that unless it's from the same manufacturer, this comes down to a question of approvals from the manufacturer depending on whether it's a coast approved raft or whatever. Most manufacturers will say that you can only put their rafts in their containers because they have done drop testing on those and they know they'll come out the correct way. In reality, there is at least one manufacturer in Australia who has approved their rafts be fitted to a previous manufacturer's container and in reality if it's done correctly it shouldn't make any difference on a smaller raft because if the container is going to open for one type of raft of a similar size and type it should open for a different one. But for reasons of copyright and whatever, manufacturers do not allow their service depots to put their rafts in some other brand's container.

Q13 Right. O.K. Now I wonder if you could take us, lying out here in front of us there's a number of heads. I wonder, well, Senior Constable Upston is going to demonstrate, sorry, he's going to video while you demonstrate the working parts of these heads and you might like to explain them as you go along.

A O.K. What we have here are a selection of some of the operating heads currently used on life rafts in Australia. This one here - - -

SENIOR CONSTABLE UPSTON

Q14 Would you just, would you just repeat, would you just repeat what you've just said now?

A Yes. What I have here are a selection of five operating heads which are used in life rafts in Australia. This is not the full range that are used but are probably the most common ones at the moment. This particular unit here is from a Plastemo or R.F.D. Pacific life raft. It is a semi-automatic head and it's designed to be gas-assisted once it starts to work. This one is tied to the painter line of the life raft and when that is pulled out the head is operated by pulling this cord out. You'll notice this little plunger here comes out down the bottom and inside the cylinder is a small bursting disc which is cut by this and that allows the gas then to flow back up inside and out through the connection to the life raft.

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Q15 Just with that particular head, is there anything that you can see obvious that can go wrong?

A It's fairly straightforward. The only thing that could happen to this really is if this cord itself is damaged or breaks 'cause it's only a cord. As you might notice here we've already got a little bit of chafing around here, but that would normally be taken care of at

annual service. This particular firing cord will be replaced at this service this year so it would have to be left a fair while for that to cause a problem. Otherwise, the actual unit is fairly straightforward.

Q16 Right. O.K.

A It's like anything else, if it's done correctly it shouldn't fail.

Q17 O.K.

A This is a Thana DK operating head, Thana Mark 2, has a wire cable through here on what we call a quick start threaded pulley. Down in the base we have a pin which comes down when this is once again, I won't pull this one hard because it's a new head and I will wreck the seal if I pull it off directly so we'll just pull it out. That comes out, very short pull, plunger down the bottom. That is actually connected or is fitted onto a, a sharp pointy blade similar to that, which is spring loaded, that has inside its cylinder a similar disc to the one we've just seen and that is cut by the plunging knife and once again allows the gas to come out through the outlet into the raft. Similar style but an older design is the Kiddy Mark 1 operating head, the same sort of principle, once again, plunger. This particular unit does not have a bursting disc like these in the, right in the actual gas cylinder. It actually has a spring loaded plunger and a valve system. When this pin comes down and strikes the pin on top of the cylinder, that is depressed downwards and

allows the gas to come out and that pin stays in place once that's pulled. The difference between this type and in operation is that a knife assisted or cutting type arrangement, once the, the knife has actually cut the disk you can't stop it, it keeps coming. This particular one, if this is not properly pulled all the way out, you could have a very slow inflation, because you have got a spring loaded pin being depressed on top of the cylinder. I can show you that on a cylinder if you like after we're finished here. This is a fairly new type of head on the market in Australia. This is called a Leefield, it's an English head, it's a plastic type body, and a spring loaded cutting system. Now the firing of this one is on a short pull again. (DEMONSTRATES AUDIBLY) Spring loaded plunger, down inside here. Once that's pulled out the spring releases that unit, that actually has, if you would just bear with me a second, inside a cylinder this cutting unit, is fitted inside. The spring loaded plunger comes down, depresses that, and pushes that down onto a similar sort of disc once again. I can't get it out of the safety cap. There we go. That is fitted inside the actual cylinder. When that firing head goes off, that cutting edge comes down and cuts straight through that disc, and the gas is allowed to flow out once again into the raft. The last one I have here is a Zodiac operating head. This is also a spring loaded type. If you point a little plunger down there,

also a short cable throat - (DEMONSTRATES AUDIBLY) - pull the pin out, we have a very sharp pointed piece that comes down, and that also has a cutting disc type arrangement fitted inside the cylinder. Once that comes down it allows the gas to flow up around, and back out through the exit point. All fairly basic simple systems. The only one that could technically have a problem if it wasn't correctly pulled, is this older style system because it operators on a spring loaded plunger inside the cylinder, whereas these other systems I'm showing you here literally cut a disc inside the cylinder, so that once this disc is punctured it comes out. The other types that are on the market, the other two that I haven't got here, one is called a ..... DK88, it's a large white plastic unit, similar in principle to this one, and uses again a sharp pointy knife to cut down through, but the knife style is more like this than the cutting disc on the Leefield, and that's basically the ones I have at the moment, gentlemen.

Q18 O.K. Now so far as reloading these heads - - -

A Yes.

Q18 - - - and being fool proof.

A Yes.

Q19 Are you able to sort of expand on that so far as the little window in these Kiddies and this Thana.

A Yes, can do.

Q20 Yeah.

A Yes. All right. O.K. She's ..... we'll start off with the Thana one if you like. O.K. Actually, I'll, I'll start, I'll run along the line.

Q21 O.K.

A We'll go back through the same procedure. O.K. This is the Plastemo head I'm now going to open up and reload. If my fingers disguise anything please let me know, 'cause I don't want to drop anything here, that's all. I'm not used to doing this with someone filming it. I'm probably twice as slow as I should be.

Q22 Just while you're doing that, all these heads are approved?

A That's correct.

Q23 O.K.

A Yes. Inside this one we have a little pulley, spring, a left hand thread device, and that is the cutting head for that one. Now in a service situation you'll notice that all of these have O rings, here, here, there is an O ring on the actual cord, these are all seals, there is an O ring in there, and there is another O ring down inside the body here, inside the actual body of the unit, and there is an O ring in this one here. We are now currently replacing this particular O ring with a flat fibre washer, where it seals onto the body of a cylinder. All these O rings must be replaced at every service. I won't do that now, because we maybe firing this head again. If I have to refire the head I have to replace the cylinder ..... Now down in she goes,

I'll pop that in there, just to guide it in. Take that out, spring. Now there is a manual for this operating system, and it does have to go on correctly. If you put this on in the wrong spot you'll find that when you go to wind it all up this particular pin may not be in the right spot. We then introduce the end of the cable into there, just simply manually turned around, it's a little bit harder, that one, because of, it hasn't been lubricated. They have to line up in a certain spot by the way.

Q24 Is that indicated?

A In the manual it is - - -

Q25 In the manual?

A - - - yes.

Q26 O.K.

A It certainly is. If you want copies of that I can arrange that. Cap goes back on and the screws are put on and then this is simply pushed back into the correct position. Now where that sits in relation to the end of that is also in the, manual, but that's basically how it's reloaded. It's fairly straight forward, and if you've done them a few times the worse part about them's replacing the O ring inside here.

Q27 Right.

A It can be easy, sometimes it can be a sight.

Q28 Right. Now with this one here in this - - -

A Yes.

Q28 - - - where the rope, where the - - -

A Yes.

Q28 - - - spring comes out here, obviously this one's set so that it's pulled directly out - - -

A .....

Q28 - - - so it's not set in a, it can't be fired basically if it was bent. Is that correct?

A You could, if it was bent it would, it would - - -

Q29 ....

A - - - undoubtedly increase the effort, but it will come.

Q30 Right.

A All right? I'm not worried about damaging this one, but it will come. Having said that, it's, you can see it's slowly approaching - - -

Q31 Yes.

A - - - but it is certainly much better on a straight pull system. In this particular raft, when this head is set up, this will actually face towards - - -

Q32 Right.

A - - - the outlet, so the chances of getting - - -

Q33 Yes.

A - - - pulled in the wrong direction are fairly slim, because of the way it's set up.

Q34 Yes.

A It's not going to end up back here.

Q35 So certainly if that was placed as a valise into a hard, hard case and it wasn't the right hard case, and, and it made the - - -

A If it made the cord come at angles like this - - -

Q35 - - - there could be problems?

A - - - there, could be problems, it would greatly increase the effort required.

Q36 Right.

A No doubt about that.

Q37 O.K.

A This is designed to have the outlet of a painter line, fairly much in line with the operating head - - -

Q38 Right.

A - - - on this particular one. O.K. Put that one aside. Next one along is our Thana. Now you might notice the similarities between the Thana and the Kiddie and the actual way they're set up. They're very very similar inside. That one's a little bit tight. You're making me nervous with the camera, you see, it's all your fault. Right. We have a seal around the top of this one to keep the water out, and there is also a small O ring, which I've knocked out probably when I've pulled it off the head. There is a small O ring, it sits down on there as well. This one is simply reloaded, lubricated of course, as required. The cable's introduced back into here. We simply turn this around. This one is tight going on, 'cause it is a brand new head, and I've probably left the O ring in it. That's introduced back on, like so, O.K. See the pin is back on the base? A very simple system. There is a little detente, if you want to call it that, on a

spring loaded system here. We locate that in the hole in there.

Q39 Right.

A You see that? That is then lined up, locates in there. The holes are then lined up, and your screws are put back in, very simple system.

Q40 O.K.

SENIOR CONSTABLE UPSTON

Q41 And the window in the - - -

A The sorry, yes, the window. In the little window here you'll notice on here it's a little green dot. That tells us that the head is in the correct set position, and that nothing here has been pulled out and set in the wrong place. Very difficult to do, quite frankly. If it's wound in properly and the cable is located properly you've got to see that green light.

DETECTIVE SENIOR CONSTABLE GRAY

Q42 Right. So when she's fired in fact the light, the red will show through the window?

A The red will show through the window. Once it's fired, you probably can't see it very well, you're not going to see it very well on the camera. It's very difficult to see, but you can certainly see there's no green there - - -

Q43 Yes.

A - - - you're not going to pick this up on your camera.

Q44 Can you just hold it still for a minute?

A Certainly.

Q45 O.K.

A All right. And you're not going to pick it up on your camera, I don't think. Now the Kiddie is very similar.

Q46 Right.

A The Kiddie is simply an older design, and it's made in the UK by Kiddie, and it's the wrong screwdriver.

Q47 Just in relation to that pulling system here - - -

A Yes.

Q47 - - - obviously this mechanism could be pulled at a angle?

A It can be pulled at an angle, yes.

Q48 As well as straight?

A Yes.

Q49 That's what it's doing there?

A Yeah. Yeah. That's not a problem. This is very similar. In fact it has only the two screws instead of the three. This particular operating head has been around for a very long time. It's located in rafts, in various positions so that the angle of pull does vary. I've had them in life rafts with the angle of pull going this way.

Q50 Right.

A This way and that way. It will operate in any of those positions quite happily, not a problem. Once again, it's exactly the same reloading procedure. Once again we have a red centre with the green dot, reloading procedure is the same. We simply feed that in, bring that around, push on your sleeve, locate your piece in

the hole on the pulley, rotate that around, put your screws in and once again you should see your green dot in the window to say that it is in the correct position. They are basically a foolproof ..... operating head. To get it in the wrong position, right, to literally get this to show red, it's got to be out, and you can't have that, it's not going to, it's not going to reset.

Q51 Mmm.

A You can't without a lot of deliberate effort you can't accidentally reset it in the wrong place. Even if you do this, and just wind it up like that, and that's showing off, you can still see the green dot in the window.

Q52 Mmm.

A This particular head is very difficult to reset wrong. It'd take a deliberate effort to, to really do anything silly with it. This particular one here is a little bit different. And we now use a spring loaded - - -

Q53 And this head was called again?

A This is the Leefield head, made by Leefield in the UK. They make a variety of bits and pieces for life rafts, valves, operating head systems. This is a fairly new one to them on the market. You can never quite get that exactly where you want it. This, it's very tight.

Q54 So you need - - -

A ....

Q54 - - - the correct tools here, don't you?

A This one you need the correct tool. You cannot re, well you could reset it in a vice, but it's not going to be easy, and you'll see why in a second. This is a special clamping device to depress that spring loaded plunger inside the body here, and to do that we need to clamp it up quite tight and there's a bit of effort involved. To reintroduce this cable in here, push that in as far as it'll go, like so and then down through the top of the tool, you take a screwdriver and excuse me, I'm sorry, but I've got to be able to see down in. And we turn that to reset the cable in. As you can see the travel is very short.

Q55 Mmm.

A Very short indeed. And we now have a reset head. And on the, here, I'll turn it around so you can see it the right way. You might be able to see moulded into there, it says safe, and there is a little plastic dot there and a plastic mark there. That tells you that the actual operating head is in the safe position. If that screw slot is not lining up with this, then the head is not set correctly - - -

Q56 Mmm.

A - - - and consequently should ..... The other check for this head, is you look underneath, and the plunger system is obviously up against the base. Once again very short pull - (DEMONSTRATES AUDIBLY) - and down she comes, so it's a very short throw on that indeed. Once again difficult to reset incorrectly. The whole idea

of these systems is that they should not be reset incorrectly. The Zodiac one here, this by the way is a very old head, it's not an inservice head at all. We have a system which slides over that pin and is then screwed up against the body of the operating head, and we then depress the spring. This is a ball bearing type system inside here. This pin, when I slot it back in, will actually push some ball bearings out against the main body of the operating head into a slot, around the outside diameter of the actual head and that pin holds those ball bearings in place which in turn holds the spring loaded plunger in place. Now I haven't got the right tool on my desk, but I'll use this, I'll cheat. That pin's got to be pushed down correctly. If this pin is not pushed down correctly it will not reload.

Q57 60 seconds to go so - - -

A All right. I'll be quick as I can. Now you can see that I haven't pressed that pin in properly, the pin is in, but because I have not properly pushed that pin down in deep enough the head has not reset, even though it looks like it is there a physical check will soon tell you that that has not reset. So this is another one, once again, that's difficult to reset incorrectly.

Q58 Yeah.

A I actually have another tool, which I don't have on my desk, which depresses this pin in as I release this mechanism, so that pushes it into place and pushes out

the O rings, pushes out the ball bearings sorry. But if you don't do that obviously it won't reset.

Q59 Mmm.

A But I didn't bring that tool over with me, I'm sorry.

Q60 O.K. Is there anything else that you can comment about in relation to the heads before we move onto bottoms?

A Not really. Most of the heads are fairly straight forward. There's no, no real problems with them. Any of them can have corrosion problems, apart from the plastics, of course.

Q61 Yeah.

A If they get wet inside the rafts as far as that goes, that one I've seen probably more corrosion on these when they've been wet than I have the others, because of the metals used in the construction. The Zodiac one I've also seen suffering from corrosion, but they've usually been in cases where the raft has not been serviced on a regular basis. The plastic ones obviously are a little bit more fragile. You don't want to drop that.

Q62 Yeah.

A And they also have a life span. These have an indefinite life. This has a 15 years life span.

Q63 O.K.

A It's got a date on it. And in it 15th year we throw it away. That other one I showed you last time you were here, that white operating head, the Thana DK88, has a 10 year operating life span. That's also another nylon

based body of a very similar operating system to that, except that the cable comes out the top of the operating head instead of the side.

Q64 Right.

A But it's the same principle, a spring loaded plunger. But it comes out at this point up here, like that. That has a 10 year expiry date on it. That one's 15. Otherwise these can be serviced indefinitely, as long as they can be serviced. Repairs are not allowed on these heads. If the head is, is damaged in any way or has a problem it must be replaced. You cannot repair heads, you can replace cables, you can replace boots, you can replace screws, flared outlets, if they get damaged, which has never happened to me in 20 odd years. But any parts inside here, if it's damaged you replace the whole unit - - -

Q65 Mmm.

A - - - you don't fiddle around with the operating heads - - -

Q66 Right.

A - - - and that sort of stuff. Because these are basically disposable heads once again you don't take them apart, you don't fiddle with them. You reset it and put it back on. If it doesn't reset or it fails you replace it.

Q67 O.K. You got any questions on these, Dave?

SENIOR CONSTABLE UPSTON

No.

DETECTIVE SENIOR CONSTABLE GRAY

Q68 O.K. Zane, now what can you tell us about the actual bottles themselves, any problems that you've experience with the bottles, apart from no, no air?

A There are a variety, there's basically two types of cylinders, steel and aluminium. Aluminium were used and still are used on some brass but very rarely, mainly for their weight-saving characteristics. The biggest problem with aluminium is its corrosion factor. And I've got some condemned cylinders in there I'm quite happy to show you. Aluminium, if it gets wet and is left with water inside the container for any length of time will corrode, and you can have failure of the gas cylinder in service in that situation. Steel, whilst it's heavier, is probably a better metal to use in that whilst it will rust and corrode it doesn't tend to go as bad as aluminium as quickly. Also the newer cylinders these days you have spike or spun steel, which is not that much heavier than aluminium. And we also have now in new technology a new type of material coming on the market in cylinders, which will be seen around, I think they're a carbon type, a carbon fibre cylinder, to my knowledge. I'm not fully up to speed on those yet, but they are used by such people, some people overseas. And I believe our, our local manufacturer in Australian, Life Raft Systems Australia are looking at them for their big 100 person rafts.

Q69 Right.

A Instead of using the steel cylinders. Weight is obviously a big factor in those. But generally if a cylinder is maintained properly, and the raft is regularly serviced and the cylinder is kept coated, even an aluminium cylinder will last quite a long time. I've quite commonly seen lives of 15, 16 years out of cylinders and still going, of aluminium, and I've seen 20, 30 plus years out of steel.

Q70 Right.

A But if, if the cylinder is correctly weighed and correctly serviced, the only problem we've had that does crop up occasionally on some of the old Kiddie systems and can occur on these others, the cylinder goes to a refilling depot, and is retested and refilled, and either a new disc is put in, or in the case of the Kiddie systems it's simply refitted. You can possibly get leaks if these are not correctly torqued of if there is a bit of damage to these, or if there is some damage done to the firing pin system on the Kiddies, which can occur if the cylinder's been fired several times. You might get a bit of contamination underneath there. You will then get a leak, and it may not show up immediately. We chemically test all our cylinders here before they go back into the life rafts, the reason being that a, a cylinder should not go back into the life raft unless it's been on the shelf for 30 days. Now we all know for practical purposes when servicing a life raft that

is not possible, so we do have chemical tests where you can test a cylinder, to ensure that there are no leaks coming out, which may not be obvious. But having said all of that I have had cylinders come back to me 12 months after they've been refilled, and been chemically tested, and we've had a leak. It doesn't always show up that often. Sometimes a cylinder has only lost a small percentage of its gas, sometimes it has been completely empty, but that is rare, but it is not impossible.

Q71 Right. This chemical testing procedure, could you demonstrate that to us?

A Yes, can do. Yeah.

Q72 We might suspend the interview and, while we demonstrate that on the video.

A Yeah. Set that up.

Q73 The time on my watch is 2.48. This interview is temporarily suspended.

INTERVIEW SUSPENDED

INTERVIEW RESUMED

DETECTIVE SENIOR CONSTABLE GRAY

Q74 The time on my watch is not 3.01pm. This interview between Mr Boucher, and Detective Gray is, is recommenced. The demonstration you just gave us in relation to the chemical test, could you just for the purpose of the tape, for transcription, just explain that process to us again?

A Yes, certainly. The chemical is a sodium carbonate solution for a ..... indicator, and we take a measured amount and place it into a plastic bag, which is then taped around the opening of a gas cylinder. And that is taped off so it's air tight. We also do at least one other bag as a control sample for atmospheric conditions. That is simply sealed and put next to the gas cylinder that's being tested. That will be left there for 3 to 4 hours, that is for test duration time, and if there is a leak we get a colour change in that indicator fluid. It will start to go clear. So it's an immediate and obvious physical change in the actual colour of the bag, and because you have a control sample there, you can see whether or not it's an atmospheric problem, which you may have in that room if you've been discharging gas cylinders then most there will be some CO2 contamination there. Or if the actual cylinder itself has got a leak.

Q75 Right. Now this procedure that you have adopted, is that something that you created yourself, within your area?

A No, it's an actual procedure, it was laid down by some manufacturers in their manuals and is recommended by some to do so.

Q76 Right. So it's not compulsory as far as you're aware?

A I'd have to check my manuals to be honest, 'cause I've been doing it for so long that I consider it compulsory - - -

Q77 Right.

A - - - but I, I won't state here that, that is compulsory for all manufacturers. Some may say it is some may suggest it as a, a, an additional test.

Q78 Right.

A I would have to go through my manuals to answer that correctly.

Q79 Certainly. Now what other tests are available to test leaking cylinders that you're aware of?

A The other tests that are done with a, with a disc type bursting discs, you can put alcohol or methylated spirits if you like, but alcohol's what they say. You pour a small amount of that on top of a cylinder so it settles around the disc and you then look for any air bubbles coming out. You tape the cylinder to make sure you've disturbed any air bubbles that may be sitting on the actual disc itself, and you then physically look for any air bubbles coming up through the disc system. On the Kiddie style one you can dip them in water, and watch for any air or air bubbles coming out through the water that way. With these disc ones, most of the manufacturers that I'm aware of specifically state you shall not test these by dipping them in water, that it must be alcohol. The reason being of course if that remained damp and was fitted into a life raft it could create corrosion and you could have a failure of a disc, and an unnecessary inflation of a raft or just an escaping of the gas - - -

Q80 Right.

A - - - altogether. But that is in each particular manufacturer's manuals to what system they use.

Q81 O.K. Now so far as a new life raft which arrives here at your bay, from the manufacturer, what procedures do you adopt so far as checking that life raft?

A If a life raft has not been packed by the manufacturer and we are packing it here, we adopt a procedure that the raft is tested again before it is packed, regardless of what the factory has done or what the importer has done. If we are packing it here it is retested.

Q82 O.K. What about so far as a life raft which arrives in a valise, suppose a, a life raft arrived here in a valise and the customer requested that it be put into a hard case - - -

A If - - -

Q82 - - - what procedure would you adopt there?

A If it was permitted by the manufacturer or the manufacturer's representative in Australia that we could fit it to a hard container we would do so. If as I said the manufacturer permitted, if it was a brand of raft that said we only pack it in valises, then we would not pack it into a hard container.

Q83 Would you check that life raft before it goes into the container for taking A to B so to speak?

A Yes, if, if we open a raft up - - -

Q84 Yes.

A - - - and we had to physically take it out, I'm assuming that you're saying that it wasn't due for service?

Q85 Yes.

A If it was more than 3 months old, yes, yes. That's the general procedure. If it's more than 3 months old and we open it up we service it.

Q86 Right.

A And it's on that basis we do it. If it's less than 3 months old I'll probably let it go through, 'cause you're working on the principle that it's basically a brand new raft in that case.

Q87 Right.

SENIOR CONSTABLE UPSTON

Q88 Would it be the case thought that if, if you received a new raft and you've only had it within that 3 months and the owner of the new raft then decides I want to have this put in a, in a hard pack from a valise, should it not be the case that a, a, the raft is recertificated?

A Not necessarily. It's hard to state here. It's not, it's not something that occurs very often. I, I can only remember maybe half a dozen times I've had requests to, to do something like this, and generally it's happened when the raft is due for service, not before, so I mean I'm on ground here I haven't covered myself very much.

Q89 Mmm.

A But if, if, if a raft was less than 3 months old and the owner said I've bought this raft but I want to put it in a container, if we open that raft up under current certification and then put it into a hard container, if it's less than 3 months old I would simply let the, the current certificate run with a notation to say that it had been repacked into a hard container.

DETECTIVE SENIOR CONSTABLE GRAY

Q90 Right.

A Again if we opened it up and we found moisture inside or if there was anything there that caused us some concern then obviously would, we would test it. But it, it's, it's not what I'd call a common occurrence, not for me, it may be more prevalent on the mainland with bigger servicing depots, but it's, it's not a situation I've come across.

Q91 Right.

A Where I have been requested to repack a raft either A, into a valise from a container or from a valise, a container into a valise, it's usually occurred at time of service, because the owner doesn't want to spend any extra money, is the usual case. If they bring a raft into me they're going to be charged obviously to redo this, 'cause it's taking time.

Q92 Right.

A And you may use parts, etc. which will have to be allowed for. And I would say to the owner, look let's do it at this first service.

Q93 Mmm.

A I've never had a situation what you've just described, where the raft is 3 months old and they've brought it in and said pack it into a container.

Q94 Mmm.

A So to be honest I, I would probably ring up the manufacturer or the agent and say, what is your requirement.

Q95 Mmm.

A In that situation. Just to cover myself, and for a quality control side of things - - -

Q96 Mmm.

A - - - it's very unusual scenario for me.

Q97 O.K. So far as gas escaping in a packed life raft what would be the physics of that, so far as where it would go and what it would do to the case?

A It would depend upon the system involved. It's possible for the gas to escape around, if it's a very slow leak it could escape around the actual thread of the high pressure hose, 'cause it may, the pressure itself may not be sufficient enough to open the actual inflation valve of the raft, so it may just slowly escape around the, the hose connections or around the operating head connection, if it's leaking there and just dissipate out of the container. It's also

possible, and I know has happened on one occasion for a raft to be slowly inflated, so the container would start to pop, if the pressure, it was sufficient that the valves were opening up in the life raft and slowly inflating the raft. If, you know, if the cylinder wasn't leaking through a defect, and the cylinder was actually leaking around the inflation area.

Q98 So is it possible a leak could expand the life raft?

A Yes, yes.

Q99 So that it eventually broke out of it's case?

A Yes.

Q100 All right.

A Yes.

Q101 And that would be evident.

A That would be evident, yeah. I know of at least one occasion when that has occurred.

Q102 Right. O.K. Now is there a specified time in which the raft must inflate when it's fired?

A Most manufacturers say between 10 and 25 seconds, depending upon the size of the life raft.

Q103 Right.

A I'm not fully aware of what regulations are required, but I believe there is an inflation time required for those life raft, say under Coastal survey or Solus survey. There is a time limit, and that also comes under their cold and hot testing, when a life raft is certified, especially for Solus. It has to operate at a certain temperature range, so they'll stick it in a

freezer and bring the temperature down to about minus 30 degrees.

Q104 Mmm.

A And a life raft has to be able to inflate within a certain time limit. They'll also stick it into a heated room and bring it up to plus 60 degrees, I think it is, and the raft also has to operate within a certain timeframe there. I couldn't tell you right here and now what those timeframes are.

Q105 Right. Now the life rafts that are used in the Sydney to Hobart ordinarily come under a, an approved A.Y.F. setting, so to speak as posted?

A Technically, no, because the A.Y.F. per se doesn't approve anything. They'll lay down a set of guidelines - - -

Q106 Right.

A - - - and they say this is what it shall meet, but the A.Y.F. doesn't technically speaking, approve anything.

Q107 Right.

A So you can't say a life raft is A.Y.F. approved.

Q108 Right.

A Because it isn't. But it will meet the guidelines as laid down by the A.Y.F. rules. It doesn't mean anything else.

Q109 So what's the difference between Coastal and Solus life rafts?

A Solus life rafts are, are built to an international standard.

Q110 Right.

A Put down, laid down by the International Maritime Organisation, and the main difference between them physically is that generally Solus life rafts are a thicker material. They have a inflatable or insulated floor, they have a, a double canopy with a blue liner, the blue liner there is, is to, basically to take away that horrible orange colour which can send you very badly sea sick. They will have a different sea anchor, will have two sea anchors and their equipment requirements are much higher. Coastal life rafts is a lighter material, single skin floor, single skin canopy, though there is nothing to stop the owners from requesting a double canopy or double floor, and the sea anchor requirements are more basic. But once again an owner can request to have those upgraded, and I have done that for two or three owners over the years. Also Solus lays down requirements for the actual closure of the canopy, and that it has to withstand a certain amount of water at a certain time limit and still stay dry inside. There are no regulations of that for Coastal or A.Y.F. it just has to have a, a canopy with an entrance, with an automatic inflation system for Coastal - (Tape Beeping) - A.Y.F. doesn't call for that ....

Q111 So just before we change the tape - - -

A Mmm.

Q111 - - - how would you rate the two separate life rafts, so far as Solus and Coastal, as we use in Australia?

A Oh, Solus life rafts are by far in a way superior.

Q112 Right.

A Without a doubt. The biggest drawback is cost and size.

Q113 Right.

A Whilst the raft if the same physical size as a Coastal life raft they go into a much bigger container, because they contain a lot more equipment.

Q114 Yeah.

A And because it's also a thick, thicker material it takes up more pack space - - -

Q115 Right.

A - - - than a Coastal life raft. But performance wise, far superior.

Q116 Right. We'll just suspend the interview for a tape change. The time on my watch is now 3.13pm. This interview is suspended.

INTERVIEW SUSPENDED

INTERVIEW RESUMED

DETECTIVE SENIOR CONSTABLE GRAY

Q117 Interview between Detective Gray and Mr Zane Boucher is continued. The time on my watch now is 3.19pm. Just in relation to the shapes of life rafts, Zane, I've noticed some on the floor here, you've got round, octagonal and, and you've got square and rectangular. Are you able to, to give me some, some ideas or, or

explanations so far as, in your experience and in your opinion, why they have so many varying shapes and what's a good shape and what's a bad shape and - - -

A O.K. Shapewise, square and rectangular rafts really you can say in, in, in my experience and my opinion, that they're made that way 'cause they're cheap to make that way.

Q118 Right.

A It's much easier to make that shape raft with those shaped tubes than it is to make a round or octagonal raft. One of the reasons of course is that when you're making a round or octagonal raft, because you have to shape the panels you are cutting off a lot more material, there's more labour time involved, more construction time involved, whereas in a square or rectangular raft you've basically got four corners and a straight tube. So they are cheaper to produce. Which is the more efficient? I personally believe that the round or octagonal or hexagonal shapes are more efficient in the water. They tend to spin easier. They don't tend to trip over themselves like a rectangular raft does. They also, in my opinion, have a much more equalised stress zones because the stresses place on the raft are spread throughout the entire structure, whereas rectangular rafts and square rafts can twist, which puts a lot of strain, I believe on corners, and they tend to flex a lot more because of, especially the rectangular ones because of their shape.

If a, a round raft gets a bit soft, it tends to retain its shape, whereas a square or rectangular raft, if it gets a bit soft with the loss of gas, does tend to distort a lot more.

Q119 Mmm.

A That's been my personal experience. I mean I'm not qualified to give the technical reasons for it, but that has been my experience, based on interviews that I've had with people who have survived in life raft at sea, and material that I've read written by survivors, who've survived in life rafts at sea. And also based on some reading material I had many years ago of the original tests on life rafts done in the U.K. and in Iceland, going back to the early 80's, with Solus regulations, when they changed a lot of the regulations for sea anchors and raft shapes. So I personally prefer to sell and advise customers to buy a round or octagonal or hexagonal shape raft, because to my way of thinking it is a better sea unit.

Q120 So far as price is concerned, are you able to give me a sort of a difference?

A Yes, take a four person raft, your price range can be anything from $2500.00 up to about $3200.00 for a Coastal or A.Y.F. life raft, that is a broad base figure, but - - -

Q121 Right.

A - - - it is in that range. Unfortunately a lot of it is driven by the customers themselves. Most customers

will not come in and ask and say, what is the best life raft I can buy. They'll come in and say what is the cheapest life raft I can buy, which will comply to what I have to do, whether it be fishing or racing or whatever it may be. And of course if there are three life rafts on the market and one is $2500.00 and one is $2900.00 and one is $3100.00, the majority of sales on that basis will go to the $2500.00 raft, unless you have someone who says to the customer, no really, we do advise that you buy the better quality unit. But being sold on price only which a lot of them are, then the, the manufacturers of the other rafts are forced to come out with a raft which will compete pricewise to the cheapest unit.

Q122 Mmm.

A So you get a lessening of standards by, by force by degree from the customer.

Q123 Right. Now so far as integrity, integrity of the life rafts with the different shapes, if they were to lose their floors for one reason or another - - -

A A round raft - - -

Q123 - - - are you able to comment?

A Yeah, a round raft would certainly be better in that respect, 'cause it's already preshaped, the actual floor is in the structural member. Of the square and rectangular rafts, the square rafts would tend to lose their shape quicker, even those with say engineered or structures corners would tend to be, I think a little

bit more floppy, shall we say, in the water. A life raft which doesn't have engineered corners, which are simply bend around and the floor is part of the structural integrity, would have severe problems.

Q124 Right. Now so far as colours of life rafts, are you able to make comment in relation to that?

A Colours of life rafts, for many years have basically been a black tube with a bright orange canopy or a bright red canopy. We did have at one stage some bright orange tubes. In fact if you look on the floor there now you can see one which does have orange tubes. There are a variety of materials around. Some materials don't take well to having orange colours. And visibility wise, I mean I'd rely on feedback from people who go searching here, obviously the brighter the colour the better.

Q125 Mmm.

A I believe that one of the factors in the ferry disaster in Europe some years ago, where that roll on, roll off ferry sank, and I can't think of the name of it for the life of me, now, one of the factors that was mentioned by the search and rescuers, especially the helicopter pilots, was the difficulty of seeing the life rafts when they were upside down. Even though they do have a reflective tape cross on the bottom of the floor, because it was black on black in the sea at night time they have had great problems spotting them. A new Solus requirement now I believe is that the ballast

pockets be made of a bright orange or red, or highly visibly colour so that they are more readily spotted if they are upside down. Whether you could have the tubes the same orange colour, I don't know, but there is a problem in that that bright orange colour, when you're inside the life raft and you've got that real bright red or bright orange colour all around you, it can actually make you sea sick. It has an effect on the eyes and the brain and can literally make you sea sick more than anything else. It's one of the reasons why Solus life rafts have a double canopy, they have a blue lining, which is easier on the eyes. It also cuts down condensation problems as well.

Q126 Right. Now so far as assisting us with our inquiry in, in, in, in passing information onto the Coroner, do you have any views or any, any ideas which could make life rafts safer or, or - - -

A There certainly needs to be in my opinion, a decent set of standards for life rafts. I mean we have got a very good regulation system for the Solus life rafts, not just in Australia but worldwide, in most countries. The life rafts that can be sold to a private owner, anyone could import a, a life raft from China if they wanted to and sell it as a private life raft to a cruising customer, provided it met certain guidelines. I'm not talking about standards, I'm talking about guidelines, you could do that. It's only when it has to be approved say to Australian Coastal Regulations

that they have to go through a more rigorous testing procedure. There certainly needs to be in my opinion a much more rigorous requirement for life rafts used on both pleasure boats and others - - -

Q127 Right.

A - - - I think at, at the moment especially, the A.Y.F. system is, is way too loose.

Q128 Mmm.

A The requirements in that are very vague. Even as far as Coastal goes, I think some of the regulations should be tightened up on Coastal life rafts as well.

Q129 Mmm. So so far as Solus are concerned, is that more, more relative to commercial type vessels?

A Solus is more relative to commercial type vessels in many ways. Solus life rafts are the, the best you'll have on the market today - - -

Q130 Yes.

A - - - without a doubt. There's no question of that. The biggest problem with Solus is, from a private owner's point of view, is physical size and cost.

Q131 Right.

A You are looking at a unit which is substantially more expensive than a Coastal type raft. It's also much heavier and much bigger, for someone to stow. In fact some of the Solus life rafts you would have trouble stowing on a conventional yacht or pleasure boat these days, because of the physical size of them. As well as

their weight for people to manhandle and get past rigging and this sort of thing.

Q132 Mmm.

A Having said that, you can lay down specifications for life rafts, which would come very very close to the Solus Regulations. You may not have to go to the same weight of material - - -

Q133 Mmm.

A - - - but you can lay down specifications for, for canopy closures, for sea anchors, the strength of ..... for attachment points of painter lines and their strength, you can lay down requirements for the canopies, you can lay down requirements for their righting so that they can be easily righted, and must be demonstrates to be easily righted, the same as Solus, you have to be able to right any size Solus life raft with one person, and that includes anything from a six person way up to 120, which is what we're now using on some of the big ferries, 120 person life rafts. To get a Solus approval, one person must be able to right that. So you can lay down, there are, you could look at the Solus Regulations, and say well we'll use part, we'll use that part, O.K. the material may not have to be as heavy, we won't have to have as much equipment inside there, that can be decided by the relevant authorities. For instance, Australian Coastal Regulations are basically a downgraded version of a Solus pack. If you compare them side by side they're

very similar. A.Y.F. I mean basically was, was made up of the A.Y.F. people themselves, 'cause it's a little bit different to everything else.

Q134 Mmm.

A Though once again there are, there are now some similarities to the Australian Coastal pack. Over the years they have changed a few things. But there are certainly things that can be done and specific regulations could be laid down, and the Solus guidelines would be a damn good place to start.

Q135 Mmm.

A Even some of the existing rafts today, which would not come anywhere close to Solus Regulations, there are several life rafts on the market at the moment which could be inexpensively or easily upgraded to a reasonable standard. It would simply in some cases mean improving the canopy closure, maybe putting on a decent sea anchor and that in some cases will cover it. Or increasing the ballast pockets and their size. Most of the life rafts now do have good ballast pockets, but some of the older ones, going back to the early 80's, of which there are still quite a lot around - - -

Q136 Mmm.

A - - - do have minimal ballast pockets, with much smaller capacities. They can be upgraged, if people want to keep those and to keep using those rafts, there are things you can do without going to a huge expense. But certainly the current situation we have for life

rafts with A.Y.F. and with private pleasure use, really there are no real regulations per se.

Q137 Mmm. Do you, pardon me. Do you think that an upgraded, an upgraded A.Y.F. pack to, close to what we were talking about with the Solus life rafts, would still come within a weight criteria for a soft valise? Do you believe that you could manufacture a, a, a valise style life raft that is just slightly to a degree of a, of a Solus life raft, and can still be stowed safely below deck?

A You can't safely stow a life raft below deck, full stop.

Q138 Could you expand on that?

A The current, the current A.Y.F. regulations say that as long as you can get your life raft to the life lines I think within 15 seconds, and it must be stowed adjacent to the companion way, that's fine. Now anyone can do that in the marina. But let's see you do that out there in the open ocean, being tossed around, maybe you've been at sea for 2 days, everyone's tired, exhausted, and you've got to get your life rafts up from below deck. The current maximum weight is 40 kilos, now 40 kilos is a fair lump. If you're tired, boat's being tossed around, it's probably wet down below, it's messy, it takes a lot more than 15 seconds to get that life raft up to the deck by a single person. To my personal thinking stowage below decks of life rafts should be banned in racing situations. You

can't stop a private owner from putting it down below deck, but if you're going to put someone out in a yacht race, and expect them to go through some very harsh conditions, which is what yacht racing is about, let's face it, putting a life raft down below decks, in my mind is stupid, and really is only used by many people, I believe going sailing as a performance advantage, because where the life rafts end up is quite often on the foredeck on the windward side, sorry not on the foredeck, on the forepeg on the windward side, underneath the sail bags, and anywhere else it's convenient. And I, I have spoken to people over the years who have been sailing for many years, and they have told me point blank, that the life raft ends up in places where it simply would not be accessible. So, to my, to my way of thinking and my personal opinion, the first and immediate step which should be taken with A.Y.F. regulations is the banning of below deck stowage of life rafts, they should all be on, on the boat, somewhere accessible from deck level in a hard container that's water tight. Full stop. No exceptions.

Q139 O.K. I take, take on board what you're saying, but getting back to my question, could you put a, an upgraded A.Y.F. life raft in a valise to, to stay within that 40 kilo range?

A No. You'd have to make it out of a very lightweight material. To stay within say a similar requirement to

Solus, you'd have to have nice big ballast pockets, they'd have to be weighted so they'd fill quickly, which means probably at least a 500 gram weight on them. And no, I don't think you could. You could probably come up with the material that's very lightweight, but how, as to how reliable that material would be, and how rugged that material will be in a survival situation, I wouldn't like to say. I mean we can do wonderful things with technology and materials these days, but I don't know that I'd be too keen to step into a real lightweight life raft in the middle of Bass Strait.

Q140 What would that weight difference be, do you think?

A Oh, well there are rafts on the market currently, which I think you can pack to A.Y.F. regulations, for a six person. And please, I am guesstimating here.

Q141 Yes.

A For around about, a little over 32 kilos, I believe. I, I would have to go back and physically check, to be honest. And it is possible to pack a standard four person raft to just under the 40 kilo mark.

Q142 That's a Solus right?

A No, sorry, a standard yachting raft.

Q143 Right.

A A Solus life raft you'd never get under 40 kilos.

Q144 What would it be approximately, a four man just offhand? I mean is it - - -

A Offhand, you're probably looking at round about 60. Now, please, that's a guess.

Q145 Mmm. Certainly there is a fair different there.

A There's quite a difference. Bearing in mind a Solus life raft's got much thicker material.

Q146 Yes.

A Much thicker material. I mean I can show you a sample of Solus life raft material here and Coastal life raft material, and you'll see immediately what I mean.

Q147 Yeah. O.K. Anything else?

SENIOR CONSTABLE UPSTON

(NO AUDIBLE REPLY)

DETECTIVE SENIOR CONSTABLE GRAY

Q148 Is there anything else you'd like to add?

A Not that I can think of right now. We've covered it pretty well.

Q149 O.K. Time on my watch now is 3.34pm. This interview is now concluded.

INTERVIEW CONCLUDED