

DETECTIVE SENIOR CONSTABLE GRAY

Q1 This is an electronically recorded interview between Detective Senior Constable Stuart Gray and Mr John Anderson at the Pymont Police Station on Wednesday, the 8th of December, 1999. Also present, seated to my right, is Senior Constable Upston from the New South Wales Water Police. The time on my watch is now 11.10am. For the purpose of the record, John, could you please state your full name?

A John Edward Anderson.

Q2 Your date of birth?

A 24th of the 7th, '39.

Q3 Your current address?

A 11 Vista Avenue, Bayview.

Q4 And your occupation?

A State coaching director for the Yachting Association of New South Wales.

Q5 Would you mind expanding on the coaching side of - - -

A Well, I look after all their coaching and training management and I also look after all their technical work too. The measuring and things like this is a separate, I do that separately for the Yachting Association but I manage all their certificates and things like this, all the administration of their, of measuring and technical work, yeah.

Q6 O.K. Do you hold any professional qualifications?

A No, not really, no.

Q7 O.K. Now if I could take you back to Wednesday, the 1st of December, we assembled at the Royal Prince Alfred Yacht Club at Newport. Do you recall that?

A That's right, yeah.

Q8 And on that day we also had in our company Mr Richard Fisher

A That's right, yeah.

Q9 Now in the first stage of that day you performed a number of tests on the boat known as Nadia 4, which was moored at that location.

A Yes, I performed four different flotation measurements on Nadia 4 in different

Q10 Right. And at the end of your particular testing, Mr Fisher likewise did the same thing?

A That's correct, yeah.

Q11 O.K. What I have here in front of you is a video and during those, those tests that we conducted at Newport a video was made, and what I'd like to do is just to replay this video to you and you might explain to us exactly what you were doing in relation to a particular experiment.

A O.K. That's no problem. (VIDEO TAPE PLAYED) At that point there I'm measuring the forward freeboards on the boat to work out the displacement of the yacht. That's measuring from the surface of the water up to predetermined points on the boat which are marked in the computer, in a set of lines plans that appear in the computer so the points are exactly the same. I

measure on either side just in case the boat has any list and you average the freeboard measurements to come up with the forward freeboards for the displacement of the vessel.

Q12 Now at the bottom of that tape measure there's just a weight.

A There's a - - -

Q13 Is that correct?

A There's a weight to hold it level, hold it down onto the water surface and we start it early in the morning, like at 5 O.K. in the morning so that we could get extremely calm conditions because the calmer the conditions the more accurate the measurement, and especially with freeboards because you've got, you'll see there the water is very still in the morning, there's no traffic around to generate any waves.

Q14 Now what is it that you do with the figures from those measurements?

A I record those forward freeboards and then I'll go down to the stern of the vessel and I'll do exactly the same down at the stern of the vessel, I'll measure the freeboards down there, and if you measure the freeboards at either end of the vessel, when you feed that information to the computer that can work out the displacement, in other words, how much the boat displaces so that, it's the weight of the boat really. That's moving down to the stern and I have measurement points down there where I measure the freeboards down

at the end of the vessel. And the same here, I'll measure on either side because the stern dimensions are further apart than the bow dimensions and you'll find you get your greatest variation if there's any list in the boat at all, and by averaging them it'll come up with a pretty good answer really as far as, especially if the conditions are like they show, are there, in very calm conditions you'll get the accuracy.

Q15 Now that particular tape measure is just an ordinary tape, tape measure?

A It's, yeah, it's a, it's a metric tape measure that I'm using and it has a weight on the end of it to pull it, hold it down and I'm measuring from the surface of the water so I'm measuring with a tape measure all the way, sort of, right, so it's a metal tape - - -

Q16 O.K.

A - - - for accuracy, so. Now here we're setting up to do the other test which is going to work out the righting moment of the vessel in kilograms per metre, and to do this we have to use two spinnaker poles to use as lever arms. It just saves us using enormous weights but this is the method which is recommended by the O.R.C, Offshore Racing Council, and for measuring for I.M.S. and has been adopted for years. I put pads against the side of the hull and we connect a line up forward and a line up aft to hold the poles out at right angles to the vessel, and a halyard on the pole to hold it up out of the water, hold it up horizontal.

See here, we push it out. One of the poles was slightly longer, this particular pole was slightly longer than the other pole, and you'll see there there's a hook dangling about a foot in from the end of the pole and that is at the same length as the, as the pole which will push out on the opposite side, so this gives us equal arm lengths so that, it just, it doesn't really matter but the whole thing is, is it does help with the accuracy.

Q17 Now the conditions of the water there, is that the ideal conditions to conduct the measurement?

A Perfect, perfect conditions, yeah. Push the pole out on the other side and set it up exactly the same so that we've got it sitting out at right angles. Now those poles are centred at the maximum beam point on the vessel. We have a measurement point back to that particular point which we checked beforehand and those poles are sitting in pads right against the maximum beam point of the vessel. We set the height of the pole up such that when we put the weights on they'll be clear of the water, the weights. Now I'm setting what they call a manometer up, which is a, which uses a bottle which is, has a, is a square bottle which has a constant surface area so we keep the fluid down to the level of where the bottle is parallel for constant surface area, and that runs across in a tube across to a, to a scale on the other side. The distance between the centre of the bottle and the centre of the tube is

2.060 millimetres, it has to be over 2 metres in length. Now they're hooking the weights on the pole, I hooked four weights onto one side of the pole, onto one of the poles on the end, and this is where we start off with our zero, we put four weights on now, and these weights were 21 kilos in each container, they were weighed up, the containers, and they were double checked the total weight as, as they went onto the scales so that we finished up with a total weight of, like, 84 kilos. Now you'll see, see the weights on the pole, and then what I have to do is just steady the boat and, and read on the manometer, you may have seen on the manometer that there was a tap on the manometer which I've got my hand on now, which I can dampen the flow of water through the tube so that if there's any at all rock it'll dampen the manometer, but in these conditions I would have had it reasonably open so that, and I'm pointing there to the reading on the scale because it, it's only water in that tube and it's a little hard to see so you'll see the reading there, I'm pointing right to that particular reading there.

Q18 John, if you want me to pause the, the video tape at the moment, if you want to expand on a point, just let me know and I'll, I'll do so.

A No, it's O.K. Now once I've taken a reading there, that's my zero, and then what I'll have them take, one weight around to the other side, take it off the pole and around to the other side, and I should get

approximately equal readings because I'm moving exactly the same amount of weight from one side to the other and you'll find the vessel will incline evenly. And the reason for doing this is just to check the whole system out, that as I do it one at a time you can, if you don't get even readings you could have a bubble or something like that in the tube that would cause unequal readings, or if it was windy the boat may not be sitting directly head to wind. Now you can see there that they're putting the weights on the, on the pole there. Now I'll take another reading. I was reading approximately 59 millimetres in each reading, and then once I've taken that reading they'll get them to take another weight around, and you'll notice here that the weight on one side is on the hook, the hook that I mentioned that evens the poles up in length so that they're moving them equal distances. When we get this weight on I'll take the, another reading and I should get another 59 millimetres, I think that's what I was reading around about the time. If you get a millimetre, you can find sometimes that you may get 1 millimetre out but you pick it up on the overall - - -

Q19 Does the millimetre equate to anything? Does it equate to a kilo

A Oh, no, it doesn't but the, you've got a formula for working out the righting moment. If it was, the tipping of the boat is, with these weights, if I got a higher reading than that, would mean that it would be,

have a less righting moment, the vessel would tip over easier. You'll notice here now that once I've got equal weights on either side I have a tape which is fixed at one end to the end of the opposite pole and they're measuring out to the distance that we actual move the weights, so when I say that we work the righting moment out in kilogram metres, you can see there that we've got kilograms and we're measuring the distance that we move them, and so that will give us the righting moment in kilogram metres. This is not working out the, the limit of positive stability because the computer will work out the limit of positive stability for us because it has to take into account the, the buoyancy in the hull and the shape of the hull above the water line. So they'll put a third weight on here, bring a third weight around and then I'll take another reading and I should read an equal reading again of, say around 59 millimetres. See here I've got the water level there, you can actually see the water level at that point, and I'm reading that, and I subtract the, to get the differences, and each time I, I usually subtract it beforehand so that I can see approximately what I should be reading so that you know that the system, there's no bubbles or anything in the tube. And when we've got the four weights around, that's, we've moved up all the weights from one side to the other, we've got the whole 84 kilos sitting on one side, that will, I'll take another reading. The reason

for using that amount of weight is that we have a limit which we have to work between, arrange, and we have to pull the boat to approximately 2 degrees, so that works out the, I've worked that out prior to the, to this measurement, I work it out with the righting moment of the vessel and the length of the arms. See there that I've, reading again here on the tube, just checking it, you can see how steady it is there, how the conditions are pretty ideal if it's as steady as that. There's just no wind, so perfect. Now once I've got all the readings on that side, you'll see I'm taking a bit of time on this, on this side, just double checking it to, to see that it's definitely accurate, I'll move all the weights back from that side to the other side at one time, to work out the, to, to check the accuracy. When I measure the distance between the arms you'll notice that I have two weights on either side so that the whole system is under tension, so that there's, if there's any stretch in the halyard or any stretch in the system, it's even. Now I move all the weights back to this side again and that's what we, they recommend, so we do this just to check that, that it comes back, the whole system will come back to where I started from. If it doesn't, well, there's got to be something wrong with the, with the manometer, it's got to be a bubble or something like that in the tube line or the water level or something, you've accidentally bumped the manometer. It's tied securely to the bow, you'll

notice there it was tied to the of the boat there. Here I'll be looking for a reading which I started with just to check the accuracy my, my, at the end of my test there and that's the, from that I can, I have a formula which I can work out the righting moment of the vessel. I don't have to work it out, the, the, the computer does, will work it out, but I do work it out myself just to check the accuracy as I'm going so I know what I'm doing. Here I'm taking a sample of the water, about 18 inches down, in a bottle, which I'll take away and I'll put a hydrometer in that to work out the specific gravity of the water, because as you can imagine that will change the flotation of the boat, and from the freeboards that we measured earlier at the first part, that will give us the accurate displacement of the vessel. That's a, a photo of my manometer. They're, they look crude but they're very accurate, it's surprising how accurate it is because we have to be able to duplicate any system that you can duplicate has, is, is accurate. I think I'm pointing to the vessel, to the bottle there, which is a reservoir with a constant surface area and the tube at the other end, which is a constant surface area, and the pressure on, exerted on the different surface areas reduces your manometer arm down fractionally. I think it's by about 6 millimetres, that's the, that's from, from the centre of the bottle to the centre of the tube is 260 millimetres and you'll see there the tap which

I moved to restrict the flow to dampen it down if the conditions aren't ideal. And the scale there is, is calibrated in millimetres there, it's a scale You need about three or four, about 300 millimetres of scale for a reading on, when you're reading about 2 degrees on, on vessels, you usually fall somewhere between about 220 and about 270.

Q20 O.K. Now is there anything further you'd like to say about your procedures?

A No, it, I think when they analyse them, I did it four times with no weight in, no extra ballast in, then with 200 kilos in it, and I measured the freeboards and inclined the vessel and worked out the righting moment for them, then I, they put another 200 in which made it 400, we did exactly the same, and then we also did it with 600, and from that Andy was able to run that, compare that, run that through his computer where he had the lines plans in there, and produced a I.M.S. certificate which would give him the limit of positive stability, and with the four limits of positive stability he plotted his curve and he was quite satisfied with the results.

Q21 O.K. Now shortly after you completed your test, Mr Fisher did a, did a similar test and I think there's two inclinations.

A Yes, yeah.

Q22 Now were you able, did you observe his, his, his technique, his method?

A

Yes, I did, I observed, I, one of the, the, one of the inclines and that I did. I, I went away at the other, time of the other one, I had to get some other things, but yes, I observed his technique, and he moved the manometer to the stern of the vessel and put it on the stern of the vessel. It's just a matter of where you want it as long as you have it firmly fixed to the vessel, because as you could imagine that the vessel's not going to bend, sort of, right, so it can be placed anywhere on the vessel and then once it's, once you set it up with your zero, you're only looking at, when you move the weights, the change from that to the other, so, no, he, he did it in, in that fashion, and he read, he, he, he used his tapes for taking the freeboards but that's personal, it's up to an individual to use the, your own tapes, so he preferred to use that. He had a, a little bit of breeze had come, had come up by the time he was doing his, it was later in the morning, it was about 8 o'clock or so, and the north-easter had just started to fill in, which made it a little more difficult for him because he had to make sure that the boat was head to wind, when I was doing it the water was absolutely calm, and the accuracy that he got was, was only fractionally different to what I got, as you could well imagine, like measuring down to the surface of the water once there are a few little ripples, he got a couple of millimetres different to what I got in freeboards and his righting moment was so close it

didn't really matter. So the system is pretty accurate if you, if you follow it properly there's no problem with getting accuracy in the system.

Q23 So as a coach and as a technical adviser to the Yachting Association of New South Wales, you would be satisfied with his technique and the way in which he conducted himself with those tests?

A Yeah, I think so. The only one, the only thing that I felt that he should have done when he measured his arm length, and I think this is where the accuracy in his righting moment came, is that he should have measured the arm length with two weights on either side, sort of, right, you know, and then, I always prefer what they, what they say is to take the weights back to check your zero. He didn't do that but you don't have to, but it is, it is the best way. I use that practice all the time just to double check everything that I do, but no, he, his was, like, as I said, like, the, there was, I think I came out with, like, 270 or something like that, righting moment, that was when it had all the weight in, the 600 kilos in, and he came out with, like, 271 or something like that, so it was 1 kilogram metre which is practically negligible, very difficult to, to - - -

Q24 So, John, how many yachts have you inclined in your career, approximately?

A I'd hate to think, sort of, right, it'd be hundreds I'd say.

Q25 O.K. And would that sort of give you expert status as far as yacht measurements is concerned, would you consider?

A Yeah, I've, I've been measuring yachts since the early '70's, I was competitive myself in those days and I used it to check measures, first of all, I, I, I used to check measures on behalf of owners, and being competitive I wanted to win and I won a couple of Hobart races and I sailed in, did four Admirals Cups, in fact the boats that in consulted in one year won every division in the Hobart race, but the thing is, is that I'm, I like to do things right and when you're competing you've got to look at every avenue, so I, I, I've researched things myself. I was a technical instructor in Telecom and a technical writer and, so I was used to researching things myself and I researched it all and then I, and most of the designers overseas would always contact me to have me measure their boats and things like that, and I am the class measurer for the Admirals Cup 40's which are built by Bashfords, and also the Farr 41 designs for Farr, and they're class measurers, but, and it's just been that I've, that I, in, it wasn't until around about the early 80's that the Yachting Association asked me would I be a measurer for them up on Pittwater and, and then I've been doing that ever since, and with the inclinings I practically do nearly all of them in New South Wales. And it's really good in New South Wales, in Sydney, because we

have good locations to do them in behind hills and things like that, whereas in Melbourne and places, in Perth and places like that it's very flat the country, and it's very difficult to get places without, get out of the wind or out of the conditions, to get calm conditions, but that's why we do most of it in Sydney.

Q26 Are you satisfied with this technique to discover the limit of positive stability?

A Oh, yeah. It's, it's, yes, it's accurate, it's accurate in that system. I, I presented a, a paper to the Waterways Authority for commercial sailing school vessels, which we have under an exemption order with them, and we demonstrated the system to them to, for them to look at because we wanted to be able to use these vessels for teaching people, teaching them on the types of vessels they were most likely to sail, which are recreation type vessels, and we came up with the, using the I.M.S. stability, they would accept the I.M.S. stability because it was quite a, a good and severe sort of test for the vessel. We do adopt, for Cat 1 we do adopt 115 degrees, we don't have any tolerance other than that, and if it's a Cat 2 situation, which is a coastal situation, we adopt the 110 which is recommended by the I.M.S. rule.

Q27 Now as a result of what occurred last Wednesday, Mr Devell came to some conclusion in relation to the I.M.S. certificate in the Business Post Niad which was the certificate on which the boat sailed on to Hobart

was in fact 104.7. Are you able to sort of enlighten me, or do you agree with what Mr Devell did and, and the result that he found?

A Well, he, he found that it couldn't have been 104.7. He did apply it with all of the Farr 40's that he had all over Australia where you'll get some variation on quite a few boats, I can't say exactly, he would be able to tell you that, but there were quite a number of vessels and he did apply it, and a graph, and the, the others, all the vessels were so close together it didn't really matter on that line of that graph, but the Business Post Niad was way out, right, and it was quite obvious that there was something wrong and he was trying to evaluate whether there was an error there or, or how the error occurred, and he came up with an assumption on that particular thing after talking with Richard.

Q28 Yes. And I think we concluded at the end of that day that in fact Mr Fisher's measurements on the first occasion - - -

A Yeah.

Q28 - - - were correct

A Yeah, that, that's right. He, he, when he measured the vessel first off and he, he measured the freeboards on the vessel which is, was the contentious point, he measured the freeboards and he came up with a, it appeared that it appeared correct with what he got, because you've got to check the, the vessel out inside

to see that, what gear is in the vessel because you're only allowed a certain amount of equipment on board the vessel, no sails, no tanks full or anything like this, because they can add to the stability of the vessel in different locations, so they have to be all empty, there's no sails, there's very little gear on the boat, no life rafts on board, just a small amount of safety gear with your anchors and things like that in their normal location, and the, so, so that the vessel is set up to do the inclining, there is a specified set up for the vessel, and this is recorded, all what's in the vessel, the ballast and everything like that, the position of the anchors, the weight of the anchors, the weight of the batteries and other gear in the boat is all recorded on a measurement inventory form which forms part of the certificate and that can outline there what's, what's aboard when the, when the test is done.

Q29 So it was the case that Mr Fisher in fact had to remeasure the vessel?

A Yeah, he, he went back, he, he, for some reason he found that there was, there was a, a query on his, on the freeboards of the vessel. I don't know how that came about but anyway he he would be best to say that, enlighten you on that, but he found that, that he needed to go back to double check the freeboards, and when he went back to double check the freeboards he just went out to the vessel after it had completed a

race and it was on a mooring. He didn't go on the vessel to see what was on the vessel. I imagine that there would have been sails on the vessel, which would change the displacement of the vessel, and if the vessel becomes heavier in displacement it means it goes further down in the water, and you'll see, from, by Andy Devell's graph, as we increase the weight in the boat you'll find there that the, the righting moment should increase, but all he did was check the freeboards, right, and by checking the freeboards he found that the vessel was heavier, appeared heavier, and, but he didn't incline the vessel to work out the righting moment, so by using the same righting moment where the vessel was floating higher, as you can imagine, like a cork, it floats higher up, it's going to tip further, but he didn't re-incline the vessel. He, if he'd have re-inclined the vessel you'd have found that the vessel would have been much stiffer because it's lower in the water and it's got much more wetted surface area, much more form stability, so therefore the vessel would appear stiffer, but if you don't do that, you don't change the righting moment, you leave that constant and you increase the displacement, as you could imagine there that the vessel would have to, you'd lose your limit of positive stability, that's when the positive stability falls away, because it just says that the vessel is not as

stiff and the boat's deeper in the water, so therefore it's much tippier - - -

Q30 Mmm.

A - - - and doesn't have the limit of positive stability and that's how they came up with the, that it would have been 104 instead of what they felt that it should have been on the first measure which he did was about 109 or something like that.

Q31 O.K. So once the measurements were all recorded, that data is then sent on a form to Tony Mooney at the Australian Yachting Federation?

A Yes, it is, it's sent to the Australian Yachting Federation where they have the computer program for the whole of Australia. They're the national body and the issue certificates, they produce the certificates. You fill it out onto a data sheet, an input sheet, you sign it, you sign the declaration with regard to what's in the vessel, that's all signed by the measurer and the owner, and that data is then sent on to the A.Y.F. and the A.Y.F. will then issue a certificate through Tony Mooney.

Q32 So as a measurer it's not your concern about the Limited Positive Stability?

A You don't see that, you don't have any idea of what the limit of positive stability is going to be unless you've got a previous certificate or something like that to go by. You, but even then you can't work it out. The computer works it out and it tells you the

answer of what the limit of positive stability is. The certificate usually comes back, in, in my case in New South Wales, being the technical person there, as a certificate comes back to the Yachting Association I, I check everything that it has been keyed into the computer right from the A.Y.F, I check it all out and then, but the, a certificate can be issued as long as the, the limit of positive stability is over, I think it's about 103 degrees, that's a valid certificate because you can use a 103 degrees certificate to sail in 30 milers offshore and things like that but, or club races, so, so it's, if it's under that it will print out that it's, it can't print out the certificate because it invalidates the certificate, so, yeah, so you check it out that way.

Q33 So ordinarily if, if the measurer made a mistake would it be the case that the A.Y.F. would, would in fact contact that measurer if they were concerned that the certificate didn't register?

A Oh, if, if it run through the computer - - -

Q34 Yes.

A - - - yes, they'll let you know.

Q35 All right.

A They're not, they are not there to, if there's, you know, marginal errors or things like this, or if the certificate runs O.K, they can only work off the data that you supply them.

Q36 Right. So they would let you know if there was something wrong?

A If there was something - - -

Q37 Obvious.

A If there was something obviously wrong where it wouldn't run - - -

Q38 Yes.

A - - - through the computer they'll let you know, but if it, if it runs they'll send that, that back to you and then it's up to you as the measurer to, or the State Yachting Association to, to, to come back to them if you find an error in their report data.

Q39 Mmm. John, is there anything else you'd like to add in relation to the I.M.S. measuring system and inclination of boats and freeboards?

A I've been measuring, inclining boats for years. We've had several different methods and this system that we use now is extremely accurate, I can assure you on that, because, like, as we were saying there, we were changing the displacement of the vessel 200 kilos at a time and we were registering that in a vessel which weighs around about 6 tonne, so you can see there that we're registering differences in trim and things like this when we're changing only 200 kilos on a vessel. I have measured vessels where they, of similar size where they change only 100 kilos and you can still pick it up, providing conditions are accurate - - -

Q40 That's all.

A - - - you know, we've got good conditions.

Q41 Yeah. Now I'll just ask you a question which you don't have to answer of course, is there, is there a situation that can exist with measuring with, that can, is there a cheating process so far as measuring of boats, for advantages?

A Well, yes, you can. You, you know, some people could, can, I've had people try me on, sort of, right, yeah, have put, placed items in the boat in hidden places - - -

Q42 Yes.

A - - - but as for measuring, you usually go through and check all the vessel out and check it out, but it, it is up to the owner to fill that declaration out - - -

Q43 Yes.

A - - - because if they have ballast in the bilge, like lead, which was in Nadia 4, for example, there was, there'd be a couple of tonne of lead in her, you have to work off what the owner signs - - -

Q44 Mmm.

A - - - down as, as being the ballast because it was all glassed into the boat - - -

Q45 Mmm.

A - - - so you have no way of accurately measuring, pulling all that lead out to, to weigh it all up, so you do rely on the owner, that's why the owner signs a declaration to say what that is there, so the measurer

has to take his word for it in those, but I have had people, yeah, try to do things, yes.

Q46 So what's the advantage of somebody trying to do that to you? Is the end result a better rating for racing?

A Yeah, it's a sad thing with the rule, that's a, that is one of the things just that they're plugging a loophole in the rule there, that if the boat is shown as being tippier it does improve the rating - - -

Q47 Right.

A - - - and that was one thing which was being pursued last season. They've halved the advantage this season and they'll even cut it further back next year.

Q48 So that can be the difference between winning and losing?

A Oh, it could - - -

Q49 Is that correct?

A Yes, it can enhance the boat's performance, yeah, in a certain division, you give it a, give it a better handicap, yeah, that's what they'll do, mmm.

Q50 O.K. Is there anything further you'd like to say?

A No, I don't think so.

Q51 O.K. The time on my watch is now 11.48. This interview is concluded.

INTERVIEW CONCLUDED