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1	Wednesday, 6 March 2013	1	manual, these are readily achievable. Is that really
2	(10.00 am)	2	the rationale for your drawing that distinction in this
3	CAPTAIN NIGEL ROBERT PRYKE (on former oath)	3	paragraph?
4	THE CHAIRMAN: Good morning, Captain Pryke.	4	A. Yes. I think I'm drawing the distinction between
5	A. Good morning, sir.	5	technical build matters and operational matters. And
6	THE CHAIRMAN: May I remind you that you continue to testify	6	operational matters, it seems to me, are relatively
7	according to your original oath.	7	easier to modernise. I mean, it's only the question of
8	A. Yes, sir.	8	having the manual printed; it's not very difficult.
9	THE CHAIRMAN: Mr Shieh?	9	THE CHAIRMAN: Could you help us as to what material one
10	MR SHIEH: Mr Chairman, just before we recommence Captain	10	would find in those various manuals, the operating
11	Pryke's evidence, could I just report on the latest	11	manual and the route operating manual? And applying it,
12	development about the inspection, the need of which has	12	say, particularly to the journeys that the Sea Smooth
13	evaporated because of some revelations last night, that	13	would have been involved in. We know it went to Peng
14	after all the wires had indeed been cut by Mardep after	14	Chau once and then it went to Lamma I think it was on
15	the collision. Initially, for some reason, it wasn't	15	its eighth trip to Yung Shue Wan.
16	spotted or was not on the record, but eventually Mardep	16	A. The operating manual would have basic information about
17	confirmed that for investigation purposes, the various	17	the equipment on the bridge, for example. Training
18	wires that were observed to be cut, as we saw yesterday,	18	manual speaks for itself, really.
19	had indeed been cut by them after the event.	19	THE CHAIRMAN: What about route operating manual?
20	THE CHAIRMAN: Very good.	20	A. Well, the route operating manual is I suppose the
21	Examination by MR SHIEH (continued)	21	simplest way to describe it is it makes the operator
22	MR SHIEH: Captain Pryke, we now come back to your written	22	think about the various parts of the route before the
23	report. Yesterday we stopped, I believe, at expert	23	coxswain is given charge. In other words, perhaps where
24	bundle 3, page 1130. You were commenting on the figures	24	the anchorages are, what you need to watch out for in
25	that had been made available to you as to fatalities in	25	the anchorages, various navigation lights along the
	Page 2		Page 4
1	marine accidents or collisions by MAISSPB. Do you	1	route, traffic you might find in particular places,
2	remember that?	2	et cetera. And very often reporting arrangements on the
3	A. Yes, I do.	3	radio.
4	Q. That is the last part of section C.5, where you set out	4	THE CHAIRMAN: Would it condescend to detail, for example,
5	your observations. May I now move on to part D, where	5	as to the recommended or suitable radar range to employ?
6	the suggested changes were discussed. The relevant part	6	A. Yes, it probably would. Yes.
7	is D.5, which is page 1142.	7	MR SHIEH: These manuals would obviously have to be
8	A. Yes.	8	tailor-made by the operator?
9	Q. D.5.1, "Requirements for High-speed Craft":	9	A. Yes, that's correct. The point about them is that
10	"Paragraph 25 above notes that also high-speed local	10	they're relevant to a particular craft on a particular
11	ferries are required to have an operating manual, route	11	route.
12	operating manual, training manual and maintenance	12	Q. Which obviously calls for thinking and planning on the
13	manual. I would suggest a review of the current	13	part of the operator?
14	situation which appears to exempt HSC built before 2007		A. Yes, planning. Yes.
15	from the new system of control in the 2006 Code.	15	Q. Coming back to the point which we touched upon earlier.
16	I fully understand why such vessels should be exempt	16	In terms of let's say radar and technical equipment on
17	from new structural requirements, but I completely fail	17	the bridge, very often they come with English manuals or
18	to understand why they would be exempt from the	18	manuals in German or wherever they come from. So your
19	requirement for an operating manual, route operating	19	suggestion of making these matters understandable to
20	manual and a training manual."	20	crew would again call for some work or planning or
21	A. Yes.	21	thinking on the part of the operator, because someone in
22	Q. That's your view. Is that dividing line because for	22	the office would then have to make an effort of turning
23	structural matters, you can't go back and redo the	23	these into understandable language for the crew?
24 25	vessel if it's been done pursuant to the rules in place	24	A. Absolutely right. I mean, the operating manual for
1/2	at that time, but for things such as having an operating	25	instance, if all of the crew were Chinese-speaking and

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1	-	1	The Code of the International Standards and
1 2	didn't speak English, then obviously they would have to provide the operating manual in Chinese.	1 2	Recommended Practices for a Safety Investigation into
	THE CHAIRMAN: Dealing with radar, and correct me if I'm	3	a Marine Casualty or Marine Incident (Casualty
3	wrong, but the radar on Lamma IV was Furuno, was it not,	4	Investigation Code) sets out the international
4	and there's an issue about that not being in Chinese;		standards and recommended practices for a safety
5	-	5	· · ·
6	only in English. But Furuno is a very big producer of	6	investigation into a marine casualty or marine incident.
7	radar, is it not?	7	Chapter 16 of the Casualty Investigation Code provides
8	A. Yes. It's a Japanese company and I would expect there to be a Chinese version.	8	that the investigator carrying out a marine safety investigation should have functional independence from
9		9	č
10	THE CHAIRMAN: If they're anything like Japanese camera	10	the parties involved in a marine incident and anyone who
11	companies, they produce their manuals in more or less	11	may take administrative or disciplinary action against
12	every known language, do they not?	12	an individual or organisation involved in a marine
13	A. Yes, indeed. I would fully expect a Furuno operating	13	casualty. This is strictly speaking not the case with
14	manual to be available in Chinese.	14	MAISSPB as they are a unit within Mardep. I note this
15	THE CHAIRMAN: Thank you.	15	was also observed in an IMO audit of Hong Kong, during
16	MR SHIEH: But sometimes these manuals come in the form of		which it was remarked that the 'degree of separation'
17	a book I mean, even sometimes we get tired of reading	17	between the MAISSPB and the prosecutions unit of Mardep
18	a camera manual. But you would actually urge the	18	'needs to be very carefully monitored to ensure
19	operator to put some effort into perhaps distilling	19 20	independence'."
20	relevant parts or salient parts and turning them into	20	Captain Pryke, perhaps you can develop this point
21	proper language, understandable language?	21	further about separation and independence between
22	A. Yes, absolutely. The point is	22	Mardep, the regulator, and the authority responsible for
23	Q. What I'm trying to get at is sometimes there may be	23	taking disciplinary action.
24	a mentality of, "Look, this is something that comes in a	24	A. Yes. I think it's well understood internationally that
25	box. I'll just dump it on the bridge and whoever wants	25	the investigation unit, its function is to investigate
	Page 6		Page 8
1	to read it, they read it. I've done my part. If you	1	without any sort of blame or prosecution or being on any
2	don't read it, it's your problem". There is this	2	particular side. It's supposed to be completely
3	mentality prevailing in many circles. You would	3	independent and come up with findings that are useful to
4	obviously not go along with that?	4	all sides, and findings that are aimed at increasing
5	A. This is the whole philosophy of the designated person.	5	safety for the future. I know very little about how
6	He is the man who is responsible for being the link	6	this works in Hong Kong. I just happen to notice that
7	between the stores office, the office generally, and the	7	it is within Mardep and that's not such a good idea.
8	bridge of the ship. He is the man who would go down and	8	What I found a little disappointing was it's not
9	say to the coxswain, "Look, have you got any problems	9	easy and I've been through the MAISSPB website on two
10	with this? Can you understand this?" And he would be	10	or three occasions to pull out really useful safety
11	the man to sort it out.	11	information and statistics, particularly on local craft.
12	THE CHAIRMAN: Would you expect the route operating manual,	12	It tends to be much more focused on bigger ships.
13	dealing now again specifically with Sea Smooth and its	13	Q. When you say "pull out useful safety information and
14	voyages to and from Yung Shue Wan, to have some	14	statistics", you mean from Mardep?
15	reference to the lights emanating from the Hongkong	15	A. No, from MAISSPB. In other words, what has been the
16	Electric typhoon shelter?	16	previous history of incidents of local passenger
17	A. Yes, I would. It's important to point out with all	17	vessels, can we extract any trends, et cetera. That's
18	these safety management systems, it's a two-way thing.	18	the purpose of MAISSPB as I understand it, to help
19	I mean, I would expect the coxswains to be delivering	19	everybody the operator, Mardep, the coxswain
20	information to the designated person in the same way	20	understand what is going wrong, if anything is going
21	that he delivers information to them. So he would very	21	wrong.
22	quickly pick up the idea that there was a problem, if	22	Q. Paragraph 85:
23	there was a problem, and it would go in the manual.	23	"My understanding currently is that internal
24	That's how it works.	24	investigation of accidents by the ferry operators is
25	MR SHIEH: "D.5.2. Marine investigation.	25	patchy. Also the MAISSPB as the official marine

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1	accident investigation branch is firmly established	1	other
2	within Mardep. In other administrations, the official	2	Mr Chairman, a quick look at the second supplemental
3	accident investigation branches are completely separated	3	doesn't appear to
4	from the safety administration department. In the UK,	4	THE CHAIRMAN: We can come back to this, if somebody could
5	for example, there is the Marine Accident Investigation	5	be looking through it to see if they can find it.
6	Branch. In Australia, it is the Australian Transport	6	MR SHIEH: If it's actually there.
7	Safety Bureau, which covers aviation, marine and rail	7	THE CHAIRMAN: Yes, if it is addressed.
8	accident investigation. In my view, consideration	8	MR SHIEH: If it's there, yes. Perhaps I'll move on with
9	should be given to how this might be achieved outside	9	"Enforcement" while Mr Mok and those acting for Mardep
10	the Mardep structure. It is important that such a body	10	look up whether or not there's anything there about the
11	is separate from the regulatory body."	11	MAISSPB.
12	Can you perhaps describe the manner in which these	12	Paragraph 86, under "Enforcement":
13	two examples work, to the best of your knowledge, let's	13	"I have seen a record of fines issued to coxswains
14	say from your home jurisdiction in the UK? The MAIB is	14	of local vessels for breaches of the COLREGs and/or
15	a separate government department or bureau?	15	local speed limits. My impression is that generally
16	A. Yes. The MCA, the Maritime and Coastguard Agency, which	16	these fines are quite low and I am unable to judge how
17	is, I suppose, the closest thing to Mardep, works as	17	effective the current system is."
18	a separate organisation under the Department of	18	But do you have any suggestion as to possible areas
19	Transport, and MAIB, the Marine Accident Investigation	19	of consideration in respect of enforcement or deterrents
20	Branch, also works as a separate undertaking, alongside	20	by way of fines and punishments?
21	MCA but with totally separate management. And they both	21	A. Yes. It's one thing to prosecute a coxswain for failure
22	report to the Shipping Minister.	22	to obey a speed limit. But I don't think that's really
23	Q. "Enforcement", D.5.3	23	the issue. If I may turn to what is tab 6 in my report,
24	THE CHAIRMAN: Before we move on, can you remind me, did	24	page 1223.
25	Mr Wong Wing-chuen address this issue at all in his	25	Q. Yes.
	Page 10		Page 12
1	various statements? Mr Mok?	1	A. This gives the details of merchant shipping, domestic
2	MR SHIEH: As to separation of roles?	2	passenger ships, safety management code regulations.
3	THE CHAIRMAN: Well, as to the current system, as to how	3	And this is admittedly UK regulations, but just for
4	this accident investigation unit is housed within Mardep	4	example, on page 4, item 9, "Enforcement":
5	and its relationship.	5	"An authorised person"
6	MR SHIEH: Could I just have one moment to check?	6	Which would obviously be a Mardep surveyor:
7	THE CHAIRMAN: Yes, please.	7	"(a) may inspect a safety management system on the
8	If you're able to assist, Mr Mok, please do.	8	basis of which a domestic ship safety management
9	MR MOK: I'm looking for the reference, Mr Chairman.	9	certificate has been issued,
10	MR SHIEH: It is in his second supplemental report, where he	10	(b) may inspect a ship for the purpose of seeing
11	set out an overview of the current regime. But can	11	that these regulations are complied with.
12	I just check?	12	(2) An authorised person exercising functions under
13	THE CHAIRMAN: Yes.	13	this regulation shall have the powers conferred on
14	MR SHIEH: Paragraph 51, for example, at page 4177. He	14	an inspector
15	refers to the prosecution unit. I wonder whether that	15	(3) Where an authorised person considers that
16	can be put on the screen for Captain Pryke to have	16	a ship, notwithstanding that a domestic ship safety
17	a look.	17	management certificate is in force in relation to that
18	THE CHAIRMAN: Yes. Page 4177.	18	ship, is unable to operate without creating a risk of
19	MR SHIEH: Paragraph 51. He refers to it as a prosecution	19	serious danger the Secretary of State may suspend
20	unit, which is probably the same as the MAISSPB.	20	the certificate of that ship until such time as any
21	A. With respect, no, it's not.	21	risk is removed."
22	THE CHAIRMAN: This will be criminal prosecutions as opposed		So my idea of enforcement is more that the inspector
23	to maring investigations of agaidants?	23	in effect ties the ship up until it's put right, rather
	to marine investigations of accidents?		
24 25	A. Yes, that's correct. MR SHIEH: Could I just check whether or not there is any	23 24 25	than all the time focusing on the coxswain's right or wrongs. It's about the whole management of that ship,

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1	and it is up to the authority, which in this case is	1	resulted in prosecutions. Perhaps they were egregious
2	Mardep, to check whether things are going well and	2	examples of breaches.
3	according to the safety management plan, and if not,	3	A. Yes.
4	that the safety management certificate would be	4	MR SHIEH: Can I now turn to part E, where you set out your
5	withdrawn and the ship is tied up. That's more my idea	5	conclusion and summary of opinions.
6	of enforcement than fining somebody \$2,000.	6	E.2, you would suggest that consideration be given
7	Q. Thank you. Captain Pryke, turning on to part E of your	7	to the following aspects, and you then set out
8	written report	8	14 points:
9	THE CHAIRMAN: Before we do that, could we just have a look	9	"(1) Whether safety legislation for ferries and
10	at the footnote reference 210, where these fines have	10	launches carrying more than 100 passengers is made
11	been set out. Looking at paragraph 86.	11	common.
12	MR SHIEH: Marine bundle 12, page 4636-19, which is	12	(2) Whether operators of ferries carrying more than
13	an email, at the bottom. I think the table is what we	13	100 passengers should be required to implement a safety
14	are really looking at. The table is actually	14	management system. It would be appropriate for Mardep
15	page 4636-21. There is a number of codes, offence code	15	to arrange or specify suitable training courses for
16	and vessel type and length and date of the relevant	16	owners and coxswains.
17	offences. But they're all pleaded guilty, and the	17	(3) Whether all ferries or launches carrying more
18	highest of them amounted to 15,000; the lowest of them	18	than 12 passengers should be fitted with VHF radio. All
19	was 1,000.	19	ferries or launches carrying more than 100 passengers
20	Is that the data you had in mind, Captain Pryke?	20	should be fitted with AIS, collision-avoidance radar,
21	A. Yes. Believe me, I'm not saying it's wrong to prosecute	21	and VHF radio.
22	somebody for blatant rule of the road offences. I'm not	22	(4) Whether serious consideration is given to the
23	saying that's wrong, but I'm saying that's not the only	23	provision of life raft capacity for all passengers [on
24 25	thing that ought to be considered in terms of enforcement.	24 25	board] on longer voyages outside the harbour. It may be considered that this could be implemented over several
23		23	
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1	THE CHAIRMAN: So that we can understand how these	1	years.
2	prosecutions come about, are we to understand the email	$\begin{vmatrix} 2 \\ 2 \end{vmatrix}$	(5) Whether sufficient children's life jackets are
3	at page 4636-19 to detail 11 cases of collision, 11 that	3	carried for every child on board, and whether the
4 5	involved high-speed craft, which cases had been	4	statutory requirement for children's life jackets should
6	investigated by the Marine Accident Investigation Section, and that then led in two of the cases that	5 6	be one life jacket for every child actually on board the vessel.
7	then led in four of the cases to prosecution. So it was	7	(6) Whether all coxswains of vessels carrying more
8	an accident investigation followed by a prosecution. So	8	than 100 passengers should have a basic medical
9	there is a link between the two bodies, it would appear?	9	examination and eyesight test at intervals not exceeding
10	A. Yes.	10	5 years, and whether all seamen required to keep
11	THE CHAIRMAN: So a collision triggers an investigation. In	11	a look-out should have an eyesight test.
12	some of the investigations, that then leads to	12	(7) Whether legislation should permit the harbour
13	a prosecution?	13	police to randomly test for drug and alcohol
14	A. Yes. That's quite logical in some cases. But what	14	consumption.
15	I was trying to get at was that the investigation is	15	(8) Whether all vessels carrying more than
16	supposed to be wider than just the offence of	16	100 passengers should have a look-out on the bridge in
17	an individual. I'm not saying it's wrong to prosecute	17	addition to the coxswain during the hours of darkness
18	somebody who offends, but there should be a greater	18	and in reduced visibility, and whether high-speed craft
19	degree of separation, in my view.	19	should have a look-out on the bridge at all times.
20	THE CHAIRMAN: Yes. Thank you.	20	(9) Whether all passenger vessels carrying more than
21	A. I think what I'm trying to say is that the MAISSPB	21	100 passengers should have a muster list so that every
22	accident report should not be purely a tool for the	22	member of the crew is aware of his duties in the event
23	prosecuting department.	23	of emergency.
24	THE CHAIRMAN: Well, on its face it doesn't look as though	24	(10) Whether a small adjustment should be made to
25	it is, because it's only four out of 11 that then	25	the VTS boundary between the channel 67 area and

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1	channel 14 area.	1	MR MOK: Mr Chairman, I don't think there is a specific
2	(11) Whether a new speed limit should be introduced	2	section in the witness statements dealing with the
3	in the approaches to Lamma Island. As there is no	3	investigation section. But my understanding is this,
4	specific port control for Lamma Island berths a speed	4	that usually the frontline people are the patrol
5	limit would be an improvement to the local safety	5	division of the police, the harbour patrol, and then if
6	regime. This would have a negligible effect on the	6	an accident is spotted or there is a report of it, then
7	passage time of Lamma Island ferries.	7	the marine investigation section would then be engaged
8	(12) Whether high-speed craft built before 2007	8	to investigate into the cause of the accident or
9	should be required to have a route operating manual and	9	incident, and a report would be provided. The report
10	a training manual, and whether Mardep should clarify the	10	will go to the relevant ranks within the Department for
11	issue regarding carriage of a quick flashing amber light	11	follow-up, to reassess whether or not any risk should be
12	by high-speed craft. Evidence has been given that Sea	12	addressed and any measure should be taken to improve
13	Smooth was not required to display this light, however	13	either the system or the procedures in the future, and
14	it would appear that there might be a general impression	14	then, in suitable cases, they will of course be referred
15	that having the light gives right of way over other	15	for prosecution.
16	vessels.	16	So that's the sort of process that I understand is
17	(13) Given the frequency of collisions in this very	17	in place. If, Mr Chairman, you need something in
18	busy harbour and the extreme hazard associated with	18	writing, we can follow up by a letter or an email to set
19	high-speed collisions, whether Mardep should consider	19	out
20	the mandating of a high-speed radar simulator course for	20	THE CHAIRMAN: I think it would help, for this reason, that
21	all coxswains of high-speed craft (built before and	21	Captain Pryke is recommending that this accident
22	after 2007).	22	investigation body should be independent from the Marine
23	(14) Whether consideration should be given to	23	Department.
24	removing MAISSPB from the Mardep organisation in	24	MR MOK: Right.
25	accordance with the Code of the International Standards	25	THE CHAIRMAN: I think it would help to have information
	Page 18		Page 20
1	and Recommended Practices"	1	from the Marine Department as to how it is currently
2	So these are the suggested areas for consideration,	2	constituted and what, if anything, the Marine Department
3	are they not, Captain Pryke?	3	has to say about the recommendation.
4	A. Yes, that's correct.	4	MR MOK: Then should I ask the Marine Department to follow
5	THE CHAIRMAN: That paragraph 12, there is an omission, is	5	up this matter by a letter setting out the procedure?
6	there not? You suggest there should be an operating	6	THE CHAIRMAN: Or a short statement from somebody.
7	manual as well as a route operating manual, together	7	MR MOK: Or a short statement.
8	with a training manual?	8	THE CHAIRMAN: Simply so that we have the information. For
9	MR SHIEH: Yes, three types of manuals instead of the two	9	example, we have no idea how many personnel are
10	mentioned there, Captain Pryke.	10	involved, what the rank structure is, how it does liaise
11	THE CHAIRMAN: I'm looking back at paragraph 83.	11	with the rest of the Marine Department.
12	A. Yes. The operating manual is more a technical thing	12	MR MOK: All right. Maybe a short statement about the
13	about the craft. I consider these two to be more	13	structure and the function of the marine investigation
14	important in an operational safety sense.	14	section.
15	THE CHAIRMAN: Yes, I follow that. But in our evidence that		THE CHAIRMAN: That would help, thank you.
16	we've received, we have indications of the absence of	16	MR SHIEH: I have no further questions for Captain Pryke.
17	understandable equipment operating manuals causing	17	THE CHAIRMAN: Thank you. Give me a moment, please.
18	a problem.	18	Mr McGowan, do you have an application?
19	A. Yes, I understand. Yes, I should have put that in.	19	MR McGOWAN: Yes, sir, I do. The questions I'd like to ask,
20	MR SHIEH: Mr Chairman, subject to what Mr Mok is about to	20	or the areas I'd like to cover are the actions of
21	clarify about whether any specific evidence has been	21	Coxswain Chow; the radar; the fourth crew member; and
22	given on behalf of Mardep on MAISSPB, I have no further	22	the organisation of the marine department or the marine
23	questions for Captain Pryke.	23	section of Hongkong Electric and its relationship with
24	THE CHAIRMAN: Thank you very much.	24	management.
25	Mr Mok?	25	THE CHAIRMAN: So Hongkong Electric's marine section and its

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1	link with management?	1	South China Morning Post this morning
2	MR McGOWAN: Yes.	2	THE CHAIRMAN: I'm not in the business of correcting
3	THE CHAIRMAN: Having regard to what he said about the	3	misleading press reports, Mr McGowan, and you've been
4	position that the marine officer occupied in the	4	long enough in this business to know that when one
5	hierarchy?	5	participates either as a barrister or as a judge, one
6	MR McGOWAN: That's correct.	6	often pinches oneself when one reads what the press has
7	THE CHAIRMAN: Yes, please do so.	7	written up as being the story.
8	MR McGOWAN: Thank you.	8	MR McGOWAN: Well, I know, sir, that's correct, but I just
9	Examination by MR McGOWAN	9	wanted to correct this.
10	MR McGOWAN: Perhaps before I deal with anything else,	10	THE CHAIRMAN: You better direct your attention to what we
11	Captain Pryke, I'd like to go back to something you said	11	form as our view. I have no doubt at all because
12	yesterday in the transcript, which appears on pages 53	12	Captain Pryke referred to Sea Smooth in terms when he
13	and 54. There seems to have been some confusion, when	13	read out paragraph 27.
14	you were dealing with what you'd said in paragraph 27 of	14	MR McGOWAN: Right, sir.
15	your initial report, as to which vessel you were	15	You also made mention of Coxswain Chow yesterday.
16	referring to. I refer particularly to the report in the	16	A. Yes.
17	South China Morning Post this morning which appeared to	17	Q. And you referred or you were asked about his use of
18	be referring to your comment which appears on page 54 at	18	radar which he had referred to in his evidence.
19	lines 6, 7 and 8. At that particular answer, you said:	19	A. Yes, correct.
20	"Well, I was tempted to say that I would change	20	Q. On his evidence, as I think he originally said to the
20	paragraph 27(d)"	20	police, he had his radar switched to the 1-mile range
21	That's of your original report; is that correct?	21	scale?
22	A. Bear with me.	22	A. Yes.
23	THE CHAIRMAN: Perhaps we ought to give Captain Pryke	23	Q. He was doing a speed of 11 or 12 knots?
24	a chance to look at his report.	24	A. Yes.
25	Page 22	25	Page 24
1	-	1	-
1	MR McGOWAN: Yes, certainly. That's in the expert bundle,	1	Q. Do you think that 1-mile range scale is a good range
2	page 11.	$\begin{vmatrix} 2 \\ 2 \end{vmatrix}$	scale in Hong Kong waters for the initial detection of
3	A. Right, yes. I have it.	3	targets or other vessels?
4	Q. Paragraph 27 in your original report refers to the	4	A. Yes, generally. The STCW rules would have you change up
5	actions or lack of actions of Sea Smooth; correct?	5	a range routinely to check what was coming ahead of you,
6	A. Correct.	6	and I agree with that. I think every five minutes or
7	Q. Yesterday, in the portion of the transcript that I've	7	so, you would go up to a 3-mile range to check what was
8	just taken you to, again, you were referring to the	8	happening a bit further away. But generally the 1-mile
9	actions of the Sea Smooth and Coxswain Lai; is that	9	range for him would be correct, I would think.
10	correct?	10	THE CHAIRMAN: Just give me a moment, please.
11	A. May I just read it?	11	The STCW rules you refer to, are you able to refer
12	Q. Yes, certainly.	12	us to them?
13	A. Yes. Referring to paragraph 27(d) obviously refers to	13	A. Yes, I am, sir. It might take a minute.
14	Coxswain Lai on the Sea Smooth.	14	THE CHAIRMAN: First of all, could you help us with the
15	Q. Right. So the reference that appears on page 54 of the	15	acronym STCW?
116	transcript of yesterday, where you said, "It wasn't	16	A. It's on page 1401. STCW is the standards of training,
16		17	certification and watchkeeping. THE CHAIRMAN: Yes. Thank you. Where is the
17	a practical collision-avoidance option; it was just	10	THE CHAIRMAN Veg Thank you Where is the
17 18	a last-minute panic", was referring to what Coxswain Lai	18	•
17 18 19	a last-minute panic", was referring to what Coxswain Lai did?	19	MR SHIEH: Paragraph 14 to this Code, Mr Chairman, at
17 18 19 20	a last-minute panic", was referring to what Coxswain Lai did? A. Correct.	19 20	MR SHIEH: Paragraph 14 to this Code, Mr Chairman, at page 1110. There's a reference in footnote 24 to the
17 18 19 20 21	a last-minute panic", was referring to what Coxswain Lai did?A. Correct.Q. Not Coxswain Chow?	19 20 21	MR SHIEH: Paragraph 14 to this Code, Mr Chairman, at page 1110. There's a reference in footnote 24 to the actual Convention.
17 18 19 20 21 22	a last-minute panic", was referring to what Coxswain Lai did?A. Correct.Q. Not Coxswain Chow?A. Correct.	19 20 21 22	MR SHIEH: Paragraph 14 to this Code, Mr Chairman, at page 1110. There's a reference in footnote 24 to the actual Convention.THE CHAIRMAN: Is there anything that condescends to this
 17 18 19 20 21 22 23 	a last-minute panic", was referring to what Coxswain Lai did?A. Correct.Q. Not Coxswain Chow?A. Correct.THE CHAIRMAN: That's made perfectly clear from page 50,	19 20 21 22 23	MR SHIEH: Paragraph 14 to this Code, Mr Chairman, at page 1110. There's a reference in footnote 24 to the actual Convention.THE CHAIRMAN: Is there anything that condescends to this particularity, that every five minutes you would go up
17 18 19 20 21 22	a last-minute panic", was referring to what Coxswain Lai did?A. Correct.Q. Not Coxswain Chow?A. Correct.	19 20 21 22 23 24	MR SHIEH: Paragraph 14 to this Code, Mr Chairman, at page 1110. There's a reference in footnote 24 to the actual Convention.THE CHAIRMAN: Is there anything that condescends to this

	Page 25		Page 27
1	THE CHAIRMAN: Yes. Where do we find that? Take your time.	1	Q. Indeed I think you very fairly changed your original
2	A. It's on page 1407, paragraph 38:	2	views with more experience of how these vessels operate
3	"The officer in charge of the navigational watch	3	in Hong Kong?
4	shall ensure that the range scales employed are changed	4	A. Yes.
5	at sufficiently frequent intervals so that echoes are	5	Q. In your note, when you came back on the second occasion?
6	detected as early as possible. It shall be borne in	6	A. I think sometimes the close proximity of incidents is
7	mind that small or poor echoes may escape detection."	7	what I would consider too close, but I understand that
	THE CHAIRMAN: And in the context of these waters, in		
8	particular no doubt the waters rather, whilst the	8 9	it happens a lot. But I take your point. I understand what you're saying.
9	vessels are plying between Lamma Island and Green Island		Q. Yes. And we know, of course, that Lamma IV was
10 11	and Sulphur Channel, a 1 nautical mile range you would	10 11	proceeding at a speed of 11 or 12 knots?
11	accept would be described as a good range, but with		A. Correct.
12	· · ·	12	
	changes every five minutes upwards to 3 nautical miles?	13	Q. Whereas Sea Smooth was operating on a 0.75 radar range
14	A. I mean, I shouldn't be specific in saying "five	14	and travelling about twice as fast? A. Yes, indeed.
15	minutes", but every so often they should go up to	15	,
16	a higher range to check what else is in the area. There is further reference in here on, for instance,	16	THE CHAIRMAN: What do you say about that? The question
17		17	that Mr McGowan asked you was was 1 nautical mile a good
18	page 1404, when the general requirements for	18	range for Lamma IV, travelling at her speed and where
19 20	a look-out you look at the traffic density, the	19 20	she was? What about a 0.75 nautical mile range on the
	proximity of dangers, et cetera. And clearly, the	20	radar for a vessel travelling at 24.5 knots?
21 22	presence of high-speed craft operating in the area would	21	A. I would say that was clearly inadequate. I would
	make you look a bit further ahead.	22	think Coxswain Lai did in his evidence say that he
23	THE CHAIRMAN: And in your initial evidence, you said that	23	manoeuvred through a fleet of small fishing boats when
24	Coxswain Chow, whilst in the typhoon shelter, should	24	he was coming through the anchorage, and I'm assuming he
25	have had a look at his radar on a 3 nautical mile range,	25	put it on the low range because he was doing some quite
	Page 26		Page 28
1	and if he'd done so he would have seen Sea Smooth at	1	difficult manoeuvring between small boats. In my view,
2	something like 20:16 as she was making her way south	2	when he completed that, he should have gone up a range.
3	from Sulphur Channel?	3	MR McGOWAN: I stand to be corrected: I don't believe he
4	A. Yes. In my view, it would have been best practice to	4	changed his range scale at all when the small vessels he
5	look at the radar before he actually left the berth.	5	encountered were coming through the Sulphur Channel.
6	MR McGOWAN: Which I think he said he did, but not at	6	THE CHAIRMAN: That's my understanding.
7	a 3-mile range scale.	7	A. Yes, quite possibly.
8	A. Yes.	8	THE CHAIRMAN: The range was set at 0.75 nautical miles.
9	Q. But in terms of any immediate dangers to his navigation,	9	MR McGOWAN: Throughout, and it stayed on that throughout.
10	a 1-mile range scale would give him that indication. Do	10	THE CHAIRMAN: Yes, because visibility was good.
11	you agree with that?	11	A. I think when we're talking about the ranges, it's
12	A. Yes. But of course you have to also bear in mind what	12	important to note and we discussed yesterday about
13	we've said on so many occasions: that 1-mile range scale	13	bridge design. If the radar screen is in front of the
14	at the speeds that we're talking about here would only	14	coxswain, not obviously interfering with his visibility,
15	cover something like a minute and a half ahead when two	15	but so that he can glance at it frequently all the time,
16	ships are approaching at these speeds.	16	then of course 1 mile is perfectly adequate because he
17	Q. Yes. I think, Captain, you're also aware of the	17	wouldn't miss anything. But if it's over here
18	evidence from the VTC operators and indeed the port	18	(indicates) and you have to lean over and make a special
19	control director, who you spoke to I think that's	19	effort to look at it, then it becomes a very different
20	Mr Cheung	20	situation.
21	A. Yes.	21	MR McGOWAN: Yes. I don't think anyone disputes that,
22	Q about the ranges at which people operate in Hong Kong	22	Captain.
23	and the times that they alter course with these small,	23	Really, it would appear that Coxswain Chow's failure
24	highly manoeuvrable vessels?	24	was not to not use the radar at all, but not to maintain
25	A. Yes, I'm aware of that.	25	a reasonably frequent update of the radar picture as he

	Dama 20		Dec. 21
	Page 29		Page 31
1	proceeded northwards?	1	A. Yes. I think distance is very often difficult to judge
2	A. That would be my understanding, yes.	$\begin{vmatrix} 2 \\ 2 \end{vmatrix}$	at sea.
3	THE CHAIRMAN: That's an issue for the Commission to	3	Q. So the estimates that you have used to describe the actions and the times in this case are based on
4	determine, whether or not radar was used.	4 5	
5	MR McGOWAN: Yes. I'm prefacing this that was his		estimates of distance at night made by Coxswain Chow, the engineer, and indeed later on Coxswain Lai?
6 7	evidence, that he used it. It's obviously a matter for you to decide whether he did, and whether he did it	6 7	A. I'm sorry, I'm not with you. Which estimates are you
8	sufficiently.	8	talking about?
8 9	But the radar would give you the initial sort of	9	Q. Well, for example, yesterday when you were describing
10	look-out warning which you could then look for the	10	your view of what happened and when it happened, you
11	contact in the direction which you expect it to come	11	were using Coxswain Chow's estimate of 3 cables when he
12	visually?	12	first saw Sea Smooth.
13	A. That's what I would expect to happen, yes.	13	A. If I could just absolutely clarify that. What I was
14	Q. And that shorter ranges of visual look-out are,	14	trying to do was to put down on a timeline what we had
15	I suggest, probably more accurate than a radar look-out,	15	heard in evidence.
16	in that you'd be aware of the changing aspects of lights	16	Q. Yes.
17	earlier, indicating a change or alteration of course or	17	A. I'm not saying that was my opinion of what happened.
18	indeed a steady bearing?	18	I was just trying to say that if you wanted a timeline
19	A. When you're navigating, particularly on a small ferry,	19	based on the evidence that had been heard by the
20	and you have a lot of echoes to deal with all at one	20	Commission, based on the distance travelled between
21	time, then the radar picture is very much easier to deal	21	various points that's all I was trying to do.
22	with than the visual picture.	22	Q. Yes. I think you were matching up your plot and the
23	Q. That wasn't the situation on the night of 1 October, was	23	times that could be discerned from the VTC information
24	it? Certainly as far as Lamma IV was concerned.	24	with various observations made by people on board the
25	A. Lamma IV had, as I recall, a number of echoes in the	25	vessels. Would that be a fair way of putting it?
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1	anchorage, together with obviously Sea Smooth, yes.	1	A. Don't forget this was in the context of the Chairman
2	Q. Yes. The echoes in the anchorage were a considerable	2	saying to me, "What do you now know that you didn't know
3	distance away, and they were obviously at anchor?	3	then from listening to the evidence of the two
4	A. Yes. I can't remember the exact distance, but well,	4	coxswains?" So it's in that context.
5	not very far away.	5	Q. Yes, that's right. But their estimates are difficult
6	Q. No, they were on his radar, but at anchor and off his	6	estimates, made at night, effectively on first sighting
7	track.	7	another vessel, calculations of distance.
8	A. Well, he would have had other echoes on his radar.	8	MR SHIEH: I don't mean to unnecessarily intervene, but very
9	That's all I'm saying.	9	often questions of this nature really verge on asking
10	Q. Yes. Now, would you agree with me that estimating	10	the witness to really comment on the veracity of the
11	distances at night at sea is difficult?	11	primary witnesses, whether they were actually giving
12	A. Well, again, that's where the radar comes in. It makes	12	THE CHAIRMAN: We have your point. Thank you. We have your
13	it very easy.	13	point.
14	Q. Yes. If you look away from what you've just seen and go		MR SHIEH: Not that these are submission points, but
15	to the radar and then try and find it on the radar.	15	THE CHAIRMAN: Well, it is a submission point, and the point
16	What I'm just saying is that an estimate of 3 cables, as	16	is going to be: 3 cables may not be accurate. Is that
17	we've had in this particular matter	17	what you're going to come to, really, at the end of the
18	THE CHAIRMAN: So you're describing a visual estimate?	18	day?
19	MR McGOWAN: A visual estimate, yes.	19	MR McGOWAN: Yes.
20	On first sight, it takes a little bit of time to	20	THE CHAIRMAN: All Captain Pryke can do is deal with the evidence as it was.
21	actually work out exactly what the lights are indicating	21	
22	to you?	22 23	MR McGOWAN: Yes, and I think he's very fairly conceded that 3 cables, 600, 700 yards, et cetera, or metres are all
23 24	A. Yes, indeed.Q. Particularly if you're trying to estimate distance.	25	approximately in the same area and they are based on
24 25	Q. Particularly if you're trying to estimate distance. That can be quite difficult?	24	estimates of distance.
23	That can be quite unificuit?	25	

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1	THE CHAIRMAN: Can I ask you, Captain forgive me for	1	you could just tell us what those reasons, that you
2	interrupting, but whilst I remember the point. If Sea	2	believe he altered before that, are.
3	Smooth had been spotted at 1 nautical mile by Coxswain	3	A. Well, I think in the timeline I put together yesterday,
4	Chow on his radar, how long would it take him identify	4	having looked at all the evidence, which is what I was
5	it as a high-speed craft?	5	asked to do, I concluded that the Coxswain Chow
6	A. It depends on a number of things. You mean purely from	6	alteration to starboard, the sort of hard to starboard,
7	the radar picture?	7	was about a quarter of a minute before the collision.
8	THE CHAIRMAN: Yes. Given that they were going head-on to	8	It would not have been I think one of the
9	one another.	9	reasons what you've driving at is that I have also
10		10	said in the past that the collision onto the port
11	the radar or whether you're just looking at it every two	11	quarter of Lamma IV would naturally force the bow round
12	minutes. I mean, if you just look at it and look away,	12	to port. But in actual fact, according to
13	you won't learn anything about its speed at all. But it	13	Dr Armstrong's calculations, the angle of the collision
14	you're truly monitoring it, you will see the echo move	14	was about 42 degrees. In order for that to happen,
15 16	very, very fast across the screen. Particularly if	15	Lamma IV would have had to have gone over, altered to
17	you're deploying your range rings, which on a 1-mile range you might have quarter-mile range rings, you would	16 17	starboard by some considerable amount. I think that's
17	see the echo cover a quarter of a mile very, very	17	what I was trying to put across. Q. Yes. So she came a long way round to starboard?
19	quickly.	10	A. Yes, indeed.
20	THE CHAIRMAN: Thank you.	20	Q. And that would take time? Although it's difficult
20	MR McGOWAN: But it was only the alteration to port by Sea	20	perhaps to be specific.
22	Smooth that brought her heading effectively directly	22	A. It's very difficult to be specific. Both of these
23	towards Lamma IV, wasn't it?	23	vessels I think would alter very quickly with
24	A. Yes. The whole incident, the two echoes would have	24	a hard-over manoeuvre. I wouldn't like to guess on how
25	caused a collision alert in the VTS for quite	25	many seconds that would be, but it could be quite quick,
	Page 34		Page 36
1	a considerable time. But what had actually happened at	1	I would think.
2	about half a mile apart, they were because of	2	Q. Were there any other reasons why you believe it was
3	Lamma IV's alteration to starboard, and before Sea	3	considerably more than 10 seconds before the collision?
4	Smooth then altered to port in fact not on	4	THE CHAIRMAN: Well, so that I can try and follow this
5	a collision course for a very brief period. And the	5	evidence, you call it "considerably more", but Captain
6	alteration to port brought them back on to a collision	6	Pryke has just said he concluded Coxswain Chow altered
7	course. That was, I think, the point I was trying to	7	course hard to starboard one-quarter minute before the
8	make.	8	collision.
9	Q. Yes. I think you described it as something like	9	MR SHIEH: About 15 seconds. So not a good deal more.
10	a "fatal alteration" yesterday.	10	THE CHAIRMAN: Yes. That's why I'm trying to understand the
11	A. Yes. I think when you're that close and you alter in	11	evidence.
12	towards another vessel, and particularly altering to	12	MR McGOWAN: I think the expression he actually used
13	port, because it is in most rule-of-the-road	13	THE CHAIRMAN: Let's deal with what he said today.
14		14	Today you've just told us, Captain Pryke, if my note
15	distance.	15	is right, you concluded that Coxswain Chow had altered
16		16 17	course hard to starboard one-quarter minute before the collision. Have I got your evidence correctly?
17 18	manoeuvre in this whole thing" yesterday. A. Yes.	17	A. That's indeed what I said, Chairman, but I think I might
18	A. res.Q. The proposition put to Coxswain Chow by Mr Sussex was	18	A. That's indeed what I said, Chairman, but I think I hight have made a mistake. What I had written down yesterday,
20	put to you yesterday, which is that his alteration to	20	and I think probably what I said in evidence yesterday,
20	starboard was done at the very last moment, no more than	20	was that Coxswain Chow altered course to starboard on
$\frac{21}{22}$	10 seconds before the collision. You disagreed with	22	his joystick at about 20:20:10. And the collision
23	•	23	was
24		24	MR SHIEH: 20:20:17.
25		25	A 20:20:17, so that would in fact be seven seconds.

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1	I mean, this is I have to say it's a bit arbitrary.	1	A. I think what I'm referring to is the efficacy of the
2	MR SHIEH: Yes, because I remember Captain Pryke saying it	2	look-out.
3	was 20:19:50, first sighting, 3 cables; and then	3	THE CHAIRMAN: Yes. That's obvious.
4	20:20:10, altered course to starboard. That was the	4	That was the topic being dealt with, Mr McGowan: the
5	exact note of the timeline yesterday, Mr Chairman.	5	look-out.
6	THE CHAIRMAN: Thank you.	6	MR McGOWAN: Yes. But he said that the sighting was a lot
7	MR McGOWAN: Perhaps if we're looking at what was said	7	more than 10 seconds.
8	yesterday, could we have a look at page 57 of the	8	THE CHAIRMAN: Yes.
9	transcript.	9	MR McGOWAN: I was just asking him to give any more reasons
10	THE CHAIRMAN: Could you read out passage you say is	10	he had.
11	relevant?	11	THE CHAIRMAN: Not the hard to starboard, but the look-out;
12	MR McGOWAN: Yes. The question was put by my learned friend		that's what the Captain was dealing with.
13	Mr Shieh at line 11:	13	A. The closing speed, if I can just remind you, of
14	"Therefore, if it had been 3 cables, then fine, it	14	36 knots, 1 cable is covered in 10 seconds. So assuming
15	may be slightly better. But if the finding is, no, it's	15	the 3 cables was correct, he would have had 30 seconds
16	actually about 10 seconds prior to the collision, then	16	in which to take avoiding action.
17	it perhaps casts more doubt on the adequacy of look-out.	17	MR McGOWAN: And the appropriate avoiding action was a hard
18	Answer: Yes. I mean, I couldn't agree with that.	18	alteration to starboard; correct?
19	I think it's got to be a lot more than 10 seconds	19	A. Yes.
20	Question: I know, I know.	20	Q. Which he did?
20	Answer: for all sorts of reasons."	20	A. Yes, but I don't think he did it at 3 cables.
21	THE CHAIRMAN: You haven't established what he's talking	21	THE CHAIRMAN: It's your evidence that you think he did it
22	about so I think you better go back to the bottom of	22	at 20:10?
23 24	page 56, please. Would you be kind enough to read that	23 24	
24 25		24 25	A. Indeed, sir. THE CHAIRMAN: Having spent 20 seconds assessing the
23	out.	23	
	Page 38		Page 40
1	MR McGOWAN: Yes. Line 25?	1	situation. That's what you told us yesterday.
2	THE CHAIRMAN: Yes.	2	A. Yes.
3	MR McGOWAN: Right.	3	MR McGOWAN: But you don't know how fast she turned?
4	I'm asked to put this in Captain Pryke. Mr Shieh's	4	A. I would imagine she turned very fast. If you on the
5	question starts at the bottom of page 56, line 25:	5	joystick the only doubt in my mind here is there was
6	"But, of course, depending on the Commission's	6	some evidence of a change in speed, and I really don't
7	factual finding as to at which point it was that he	7	know at what time that happened. So if he had slowed
8	first visually sighted the Sea Smooth, questions as to	8	down before he put the toggle over hard to starboard,
9	adequacy of look-out could well have to be modified;	9	then obviously it wouldn't have reacted as quickly as if
10	would you agree with that? Because, I mean, from my	10	he was going full speed. So the answer, in all honesty,
11	perspective it's really a commonsense question, because	11	is we don't know.
12	the later you are found to have first sighted the other	12	Q. If I can move on to the radar on board Lamma IV, which
13	vessel, the more problematic your look-out must have	13	you described yesterday as a complicated piece of kit.
14	been. Because otherwise you might have been able to see	14	A. Well, according to the very, very wordy manual, it
15	it earlier.	15	seemed quite complicated.
16	Answer: Oh, absolutely.	16	Q. Yes. It's got sort of bells and whistles attached to
17	Question: Therefore, if it had been 3 cables, then	17	it, really, hasn't it?
18	fine, it may be slightly better. But if the finding is,	18	A. Yes.
19	no, it's actually about 10 seconds prior to the	19	Q. It does all sorts of things.
20	collision, then it perhaps casts more doubt on the	20	A. Yes.
21	adequacy of look-out.	21	Q. But the basic principles and basic use for collision
22	Answer: Yes. I mean, I couldn't agree with that.	22	avoidance are not very complicated, are they?
		22	A. On most radar sets, you can use it in a basic form, yes.
23	I think it's got to be a lot more than 10 seconds	23	• •
	Question: I know, I know. Answer: for all sorts of reasons."	23 24	Q. And that's really all that was required for Coxswain Chow to know?

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1	A. It was required for him to know what the switches were,	1	Q. They, I would suggest, would have been people engaged in
2	that he could set it up to a picture that he could	2	any capacity on the business of the vessel which was
3	understand and he could use.	3	THE CHAIRMAN: Well, that's a matter for the Commission, it
4	Q. And he said that he was aware of how to use a radar for	4	being a matter of law, not for the witness.
5	collision avoidance?	5	MR McGOWAN: Right. Well, again, no doubt that will form
6	A. As I understand it, yes.	6	part of our submissions in due course.
7	Q. The fourth crew member, you were asked about yesterday.	7	THE CHAIRMAN: Yes.
8	That appears at page 95 of the transcript.	8	Have you ever encountered a definition in these
9	Are you aware, Captain Pryke, of the definition of	9	terms of crew on a vessel before?
10	a crew member for a local vessel in Hong Kong?	10	A. No, sir.
11	A. I have not read a definition of such, I don't believe.	11	THE CHAIRMAN: Mr Shieh, are you able to throw any light as
12	Q. Perhaps I could ask you to have a look, please, and	12 13	to the provenance of this provision in Hong Kong's legislation?
13 14	could we all have a look, at the Merchant Shipping		MR SHIEH: Mr Beresford has literally just been showing me
14	(Local Vessels) Ordinance Cap 548, which appears at tab 13 of the legislation bundle 3.	14 15	some case law on the issue of the meaning of the old
15 16	A. Yes, I see that.	16	Merchant Shipping Ordinance and what
17	Q. On the second page, in the definitions section, the	17	THE CHAIRMAN: Hong Kong case law?
18	definition of "crew" is give that's part of	18	MR SHIEH: English case law. But obviously these will form
19	section 2 as:	19	part of the submissions because these are research notes
20	" coxswain and any other person employed or	20	done over time. It's not intended that these matters be
21	engaged in any capacity on board a local vessel on the	21	debated with the maritime expert. These matters are
22	business of the vessel".	22	THE CHAIRMAN: No. I've indicated the Commission's position
23	A. Yes, I see that.	23	on that.
24	Q. So that's the only definition of a crew member that we	24	MR SHIEH: But there is actually some degree of learning as
25	can find in Hong Kong.	25	to the ambit of the
	Page 42		Page 44
1	A. Right.	1	THE CHAIRMAN: We look forward to hearing what it is.
2	Q. So that could be anybody from the ship's cook right up	2	Mr McGowan?
3	to anyone who isn't the coxswain?	3	MR McGOWAN: Of course, one of the matters you mentioned was
4	A. I understand.	4	discipline amongst the passengers.
5	Q. I believe you've discussed, during your visits here, the	5	A. Yes.
6	question of training and certification of crew members.	6	Q. Unless I'm stopped asking the question
7	A. Yes.	7	A. Sorry, I don't think I used the word "discipline".
8	Q. And there's no certificate required to be, if I can use	8	I think I used the words "crowd control".
9	the word generally, a sailor or a deckhand on board	9 10	Q. Well, yes, okay. The expression that's been used by people from Hongkong Electric who have given evidence is
10 11	a local vessel in Hong Kong? A. That's apparently true, yes.	11	talking about discipline of passengers, which is
11	Q. And no certification required?	12	essentially the same thing.
12	A. That's right.	12	THE CHAIRMAN: Well, let's deal with crowd control, since
14	Q. As I think from the legislation you provided, it's very	14	that's a more readily understandable term.
15	different in the UK where you have the concept of not		MR McGOWAN: Very well.
16	able seamen any more, but able crew members, whether		Having extra people on board, given the number of
17	they're engineers or deck personnel?	17	passengers on board, assisting crew extra people
18	A. Yes, that's right.	18	there as part of the organisation of the event, would
19	Q. And they are certified and they do have to do	19	assist with crowd control. Do you agree with that?
20	a qualifying period of training?	20	A. Well, yes. I think that the whole point about the crew
21	A. Yes.	21	exercising crowd control is that they are recognisable
22	Q. In the case of Lamma IV, our position is that on the	22	as part of the crew and under the orders of the captain.
23	night in question, there were a number of people on	23	Now, I would expect in such circumstances the crew to be
24	board who were acting as guides for the visitors.	24	wearing something that was recognisable so they were
25	A. I understand.	25	recognisable as a crew member. Otherwise their, let's

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1	say, ability to exercise crowd control is much more	1	matters there, Captain Pryke. We have a situation where
2	difficult.	2	the marine section, which has the marine officer, and,
3	Q. Yes. It would help in the exercise of crowd control?	3	you've looked at, is based at Lamma Island, at the power
4	A. Yes, indeed.	4	station there. And there is a man, Mr Cheng, who gave
5	Q. Do you have any suggestions as to how frequently crew	5	evidence, Francis Cheng, who is the general manager of
6	should be exercised in fires, emergency evacuations and	6	that power station.
7	so on?	7	Now, he's not on the board of directors but he is in
8	A. I think you have to say that depends on the vessel.	8	charge of the power station. Do you believe a direct
9	I would expect that the crew on a vessel like Lamma IV,	9	line to him would meet your views on the position of
10	they would at least discuss it at least once a week.	10	safety, particularly marine safety, within that
11	And whenever there's a crew change that's why we've	11	organisation?
12	had I think a lot of talk about muster lists. Whenever	12	A. Yes. I mean, obviously the Hongkong Electric Company is
13	there's a crew change, it's very important for the new	13	not a traditional shipowner in terms of its operations,
14	person to know where he fits in as far as all these	14	so it doesn't fit in perfectly with what you would
15	emergency duties are concerned.	15	normally expect. If I could just read what it is the
16	Q. Yes. I think the evidence has been that the crews	16	designated person is supposed to do:
17	employed by Hongkong Electric have been employed for		"A company shall in relation to each ship owned by
18	many years. They're not a new bunch of people joining	18	it or for which it has operational responsibility
19	an organisation, or a new individual joining	19	designate a person who shall be responsible for
20	an organisation; they're an organisation which has	20	monitoring the safe operation of the ship and, so far as
21	operated together on the same vessels for a very long	21	it may affect safety, the efficient operation of the
22	period of time.	22	ship.
23	A. Yes, I understand that. But, I mean, it's still	23	(2) In particular, the designated person shall
24	important to know which particular function you're	24	(a) take such steps as are necessary to ensure
25	expected to do in an emergency.	25	compliance with the safety management system on the
	Page 46		Page 48
1	Q. Yes. But if you have a three-man crew with a coxswain,	1	basis of which the domestic ship safety management
2	an engineer and a crewman or a deckhand, one of those	2	certificate was issued in relation to the ship, and
3	positions, you would know what your role is. Do you	3	(b) ensure that proper provision is made for the
4	agree with that, Captain?	4	ship to be adequately manned, equipped and maintained,
5	A. Generally, yes.	5	so that it is fit to operate in accordance with that
6	Q. And you wouldn't need to exercise quite as frequently as	6	system
7	you're suggesting?	7	(3) The company shall ensure that a designated
	A. Well, I would like to see exercises happening, if it was	8	person
9	my ship. I'm not quite sure what you're driving at.	9	(a) is provided with sufficient authority and
10	Q. Well, these evolutions were exercised once a month on	10	resources, and
11	board the Hongkong Electric vessels by crew experienced	11	(b) has appropriate knowledge and sufficient
12	in their roles.	12	experience of the operation of ships, to enable him to
13	A. Yes. I mean, if for example the same crew is operating	13	comply with his responsibilities"
14	throughout that month and they exercise once a month,	14	I mean, I think that's the key issue, isn't it?
15 16	I'm sure that's fine. But I would imagine that there	15	"The company shall ensure that a designated person is
16 17	are different personnel joining and leaving within that	16	provided with sufficient authority and resources", and
17 18	time. Q. Sorry, I'm corrected. They're actually exercised once	17	that he has in the main international ISM it says
18 19	a week.	18 19	that he shall have access to the highest level of
19 20	a week. THE CHAIRMAN: Then you're ad idem, are you not?	19 20	management. And I think the highest level of management at Lamma Island is perfectly satisfactory.
20 21	MR McGOWAN: Exactly.	20 21	MR McGOWAN: Thank you very much. I have no further
21 22	THE CHAIRMAN: Can we move to something where you're not?		questions.
22	MR McGOWAN: Certainly. I think the only other topic that	22 23	THE CHAIRMAN: Thank you.
23 24	I have to ask you about is the safety management	23 24	Do you have any questions on behalf of Hong Kong
24 25	organisation. Hongkong Electric are anxious to improve	24 25	& Kowloon Ferry?
25	organisation. Hongkong Electric are anxious to improve	25	& KOWIOOII I OII y :

12 (Pages 45 to 48)

	Page 49		Page 51
1	MR CHAN: No, sir. Thank you.	1	police bundle.
2	THE CHAIRMAN: Mr Mok?	2	A. Oh, right.
3	MR MOK: I have two minor matters of fact which I wish to	3	Q. So in the police radar system, there are some collision
4	invite Captain Pryke to consider correcting for the	4	alerts which may be shown, but on the VTS system,
5	record.	5	maintained by Mardep, those same collision alerts may
6	THE CHAIRMAN: Yes. They are in which area?	6	not be shown. So what I invite you to look at here is
7	MR MOK: They are in paragraph 1 of the expert report, and	7	Mr Chung Siu-man's statement where he says that the
8	also paragraph 38.	8	non-participating vessels and vessels less than
9	THE CHAIRMAN: That's the latest report?	9	35 metres in length would be filtered out of the VTS
10	MR MOK: Of the latest report. They are minor matters.	10	system. Could I invite you to look quickly at that.
11	THE CHAIRMAN: Yes, very well. Ask those questions.	11	This is Chung Siu-man's witness statement at marine
12	MR MOK: Thank you.	12	bundle 12, page 4621, please.
13	Examination by MR MOK	13	So you see in the first sentence, where he says:
14	MR MOK: Captain Pryke, can I invite you to the first	14	"In order to avoid generating excessive alerts
15	paragraph of your second expert report. The second	15	the VTS system is set to eliminate the generation of
16	sentence starts with:	16	collision alerts for non-participating vessels which are
17	"On any day there may be up to 130 ocean-going	17	less than 35 metres in length"
18	vessels and 150 river-trade vessels being monitored by	18	Which would include the Sea Smooth. Do you see
19	the VTC."	19	that?
20	The true situation, Captain Pryke, seems to be more	20	A. Yes, I do.
21	serious or busier than that. What I invite you to	21	Q. And also in your supplemental statements, where those
22	consider amending is replacing the words "On any day"	22	records from the Mardep VTS are produced, you will see
23	with the words "At any moment", and for that may	23	that they are a little bit different from the ones
24	I invite you to look at appendix V, which is what your	24	maintained by the police.
25	footnote refers to, page 1191.	25	THE CHAIRMAN: Just dealing with this particular point, the
	Page 50		Page 52
1	A. Yes.	1	effect of what I think Captain Pryke is agreeing with is
2	Q. At lines 17 to 19. That's a record of your interview of	2	this: no warning was issued to Sea Smooth by
3	Mr Chung Siu-man; correct?	3	VTS control, given that the system filtered out any
4	A. Yes, I'm very happy to change that. "On any day", that	4	collision alert for a vessel less than 35 metres?
5	was just a figure of speech, if you like.	5	MR MOK: Non-participating vessels, yes.
6	Q. Thank you. It's just that	6	THE CHAIRMAN: Yes.
7	A. It didn't mean a 24-hour day.	7	MR MOK: Yes.
8	Q. Rights. I understand.	8	Are you happy to accept that?
9	THE CHAIRMAN: So "At any moment"?	9	A. Yes, I am, indeed.
10	A. "At any moment", yes.	10	MR MOK: In that case, I don't need to refer to the records.
11	MR MOK: The second matter is paragraph 38 on page 1122,	11	Those are my only questions, Mr Chairman.
12	where you first of all refer to the control of marine	12	THE CHAIRMAN: Thank you.
13	traffic through the VTS system, and then you raise	13 14	Yes, Mr Shieh? MR SHIEH: Mr Chairman just to follow up on two questions
14	a number of points. It's the first one that I draw to	14 15	MR SHIEH: Mr Chairman, just to follow up on two questions about the radar.
15 16	your attention. You say: " no warning was issued to Sea Smooth by VTS	15 16	Further examination by MR SHIEH
10	control notwithstanding the collision alerts shown in	10 17	MR SHIEH: Captain Pryke, just now Mr Chairman asked you
17	the VTS system."	18	about the swiftness with which one could see from the
19	What I invite you to consider is to delete the words	19	radar if they were 1 nautical mile apart, which the
20	"notwithstanding the collision alerts shown in the VTS	20	observer would be able to identify Sea Smooth as
20	system". This is because, as you know, the VTC radar	20	a high-speed craft; do you remember that?
21	system is different from the one used by the police,	22	A. Yes.
23	which is tuned differently.	23	U. WII Chaiffian askeu vou now fong would it have taken for
23 24	which is tuned differently. A. Oh, right. Right.	23 24	Q. Mr Chairman asked you how long would it have taken for Coxswain Chow to identify Sea Smooth as a high-speed

	Page 53		Page 55
1	A. Yes.	1	quarters. No collision, but unacceptable.
2	Q. I think the answer you gave, again prefaced by whether	2	A. Yes.
3	or not you were monitoring the radar or whether you're	3	Q. And turning the clock back a bit, to the point in time
4	just looking at it every two minutes, but you said you	4	when they were spotted at 1 nautical mile apart, of
5	would see the echo cover a quarter of a mile very, very	5	course that was before Sea Smooth turned port; correct?
6	quickly?	6	A. Yes, indeed.
7	A. Yes.	7	Q. But the fact that had they remained on the same course
8	Q. Again, prefacing my question with the acknowledgment		there would not have been a collision doesn't actually
9	that it's very difficult to give estimates as to time,	9	turn a bad look-out into a good one; correct?
10	would it be in a matter of a few sweeps that would be	10	A. No. No, absolutely not.
11	able to identify Sea Smooth as a high-speed craft, at	11	Q. The point I want to get at is one has to look at the
12	the sort of speed that she is closing in?	12	matter in perspective. The fact that had there not been
13	A. Well, the closing speed, as I have mentioned before,	13	a turn to port, they would have missed each other in
14	would see 1 cable covered in 10 seconds.	14	an extremely hazardous situation doesn't actually
15	Q. 10 seconds, yes.	15	justify a pat on Coxswain Chow's shoulder, to say, "Nice
16	A. So a quarter of a mile would be 25 seconds. So you	16	try, not looking at the radar after you have first seen
17	would see it move through the quarter of a mile range	17	Sea Smooth at 1 mile away", putting it bluntly?
18	ring in a matter of 25 seconds.	18	A. No
19	Q. Less than half a minute?	19	Q. That's very blunt.
20	A. Less than half a minute.	20	A. No, that's correct.
21	Q. Yes. The second question is this. Mr McGowan asked	21	Q. Of course, whether he had indeed seen it on radar is
22	you this is about the effect of the turn to port on	22	something else. But even assuming that he saw the radar
23	the part of Sea Smooth and the effect of earlier radar	23	and assuming had the vessels continued on their courses
24	monitoring. Because after you had given the answer that	24	they would have missed each other doesn't turn a bad
25	you would see the echo cover a quarter of a mile very,	25	look-out into a good one; correct?
	Page 54		Page 56
1	very quickly, Mr McGowan reminded you of your evidence	1	A. No, that's correct.
2	that it was the alteration to port by Sea Smooth that	2	MR SHIEH: Thank you.
3	brought the two vessels directly towards each other, and	3	I have no further questions, Mr Chairman.
4	he reminded you of the evidence that you gave as to your	4	Questions by THE COMMISSION
5	description of a "fatal alteration" yesterday. Do you	5	THE CHAIRMAN: Given the sighting that Coxswain Chow has
6	remember that?	6	said that he had of Sea Smooth visually, on the basis
7	A. Yes, I do.	7	that it was at about 3 cables, and given the change of
8	Q. In fact, your notes you did previously at expert	8	course executed by Sea Smooth, was there any time at
9	bundle 1, page 361-54, you actually made more or less	9	which, in your opinion, Coxswain Chow ought to have
10	a similar point. That is paragraph 10:	10	given the five-short-blasts sound signal indicating he
11	"At 20:19 hours, Lamma IV alters course to starboard	11	was unaware of the intentions of the other vessel?
12	such that at 20:19:30 hours she is steering 000 degrees.	12	A. Yes, sir. I think in an ideal world, he would have done
13	This means that Sea Smooth is no longer on her starboard	13	that. I suspect he was we're only talking about
14	bow, but is in fact on her port bow. If both vessels	14	matters of very few seconds. I suspect he had other
15	remain on their current courses, there will be no	15	things on his mind. But, yes, he should have done,
16	collision. They will pass each other on reciprocal	16	really.
17	courses at a distance of just under 1 cable or 1/10th of	17	THE CHAIRMAN: And at what stage, on the basis that he's
18	a mile. This is an unacceptable close-quarters	18	observing the vessel at 3 cables apart?
19	situation, but there will be no collision."	19	A. Pretty much instantly.
20	Do you see that?	20	THE CHAIRMAN: Thank you, Captain Pryke, and thank you for
21	A. Yes.	21	returning to assist us with the matters arising in all
22	Q. You lead on to the effect of the Sea Smooth's alteration	22	three parts of our terms of reference. You've been of
23	to port. My question is this: obviously, looking at the	23	great assistance to us, and we thank you. But your
24	matter with hindsight, you would know, ah, had there not been a turn to port, they would pass at extremely close	24 25	evidence is now complete and you're free to leave the witness box.
25			

Commission of Inquiry into the Collision of Vessels near Lamma Island on 1 October 2012

	Page 57		Page 59
1	A. Thank you, sir.	1	THE CHAIRMAN: Thank you.
2	May I make a small correction to something I said	2	MR SHIEH: So this is the delineation between the two
3	yesterday at page 127, line 24?	3	reports.
4	THE CHAIRMAN: Just give us a moment to turn it up.	4	THE CHAIRMAN: We had asked for a calculation to be done to
5	Yes?	5	show us the distance between the two vessels at
6	A. Where I said:	6	different points in time. Can Dr Armstrong deal with
7	"And she's built like a high-speed craft. She's	7	that?
8	a lightweight catamaran build."	8	MR SHIEH: The calculations have been done, but it actually
9	THE CHAIRMAN: In the transcript, you were describing	9	hasn't been put into either one of these reports. But
10	Lamma IV?	9 10	if the Commission actually wishes to have, for example,
	A. That's correct. I should have said "a lightweight		
11	aluminium construction".	11	a table setting out the data as time went by, then
12		12	I think that could be dug up and put into a printed
13	THE CHAIRMAN: Because she's not a catamaran build?	13	form.
14	A. Exactly, yes.	14	THE CHAIRMAN: Yes. What we would like is the distance
15	(The witness withdrew)	15	between the two vessels.
16	THE CHAIRMAN: Mr Shieh, we'll take our break now but where		MR SHIEH: At various points in time?
17	do we go after our break?	17	THE CHAIRMAN: If possible at every position that is taken
18	MR SHIEH: Dr Armstrong is ready to start giving evidence,	18	on the radar, which is every three seconds.
19	and Mr Beresford will be taking Dr Armstrong's evidence.	19	MR SHIEH: I think the raw data has been done on a computer.
20	THE CHAIRMAN: And we have a report from him that's been	20	It's just a matter of printing it out and putting it
21	filed?	21	into the bundle. We will do that.
22	MR SHIEH: Yes, at the end of expert bundle 3, following	22	THE CHAIRMAN: Thank you very much.
23	Captain Pryke's report. It has recently been included,	23	We'll adjourn, then, for 20 minutes.
24	in fact just included this morning. It can be found as	24	(11.40 am)
25	the third supplemental report of Dr Armstrong, page 1619	25	(A short break)
	Page 58		Page 60
1	of expert bundle 3, and also page 1637, expert report	1	(12.00 pm)
2	part 2.	2	THE CHAIRMAN: Mr Beresford?
3	May I explain the significance of these reports.	3	MR BERESFORD: Mr Chairman, the next witness is
4	What's been called the third supplemental report that we	4	Dr Armstrong, who is being recalled.
5	can find at page 1619 is a report I'm sorry,	5	THE CHAIRMAN: Yes.
6	Mr Chairman	6	DR NEVILLE ANTHONY ARMSTRONG (sworn)
7	THE CHAIRMAN: I don't have page 1619.	7	Examination by MR BERESFORD
8	MR SHIEH: it may not have been inserted as yet.	8	MR BERESFORD: Good morning, Dr Armstrong.
9	THE CHAIRMAN: What does that report deal with?	9	A. Good morning.
10	MR SHIEH: Page 1619 is entitled "3rd supplemental expert	10	Q. I'm going to ask you today about two additional reports
11	report". It deals with Mr Wong Wing-chuen's fourth	11	that you've prepared, one called the 3rd supplemental
12	supplemental statement, where Mr Wong Wing-chuen	12	expert report, which is dated 3 March 2013 and which is
13	addressed various issues about watertight bulkheads.	13	to be found at page 1619 of expert bundle 3, and the
14	Mr Chairman might recall Mr Wong Wing-chuen taking issue		other being expert report part 2, dated 5 March 2013,
15	with Dr Armstrong's view as to what might constitute	15	which is to be found at page 1637 of expert bundle 3.
16	an aft peak bulkhead, and the examples that Mr Wong	16	Turning to page 1626. Do you recognise your name
17	Wing-chuen gave by way of numerous other vessels.	17	and signature there, Dr Armstrong?
18	THE CHAIRMAN: Yes.	18	A. Yes, sir, I do.
19	MR SHIEH: The third supplemental report at expert bundle 3,	19	Q. And similarly, if we turn to page 1676, do you also
20	page 1619, seeks to address the points made by Mr Wong	20	recognise your name and signature there?
21	Wing-chuen in his fourth supplemental statement.	21	A. Yes, sir, I do.
22	THE CHAIRMAN: Very well.	22	Q. Do you adopt these reports as your own?
23	MR SHIEH: And the expert report part 2, at page 1637, deals	22	A. I do adopt them as my own.
24	with what we call part 2 of the terms of reference	24	Q. Are they true, to the best of your information and
25	proper.	25	belief?
	propor.	25	

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1	A. They are true, to the best of my information and belief,	1	Q. And the point you wish to clarify is that there is no
2	apart from one error which I noticed this morning.	2	reference to 0.1L anywhere in this report, because this,
3	Q. Yes, please.	3	you say, was a straightforward calculation of flooding
4	A. It refers to page 1682; in the second report. In the	4	a space which was longer than 0.1L?
5	second line, there is a reference to a distance above	5	A. Correct. With the intention of showing what the results
6	the deck of 0.3 metres, and then a subscript "65" which	6	would be if that one compartment was flooded, with
7	refers to the code of practice.	7	a watertight door or without a watertight door in the
8	Q. Yes.	8	aft bulkhead.
9	A. Unfortunately this morning I noticed the code of	9	Q. So you go on to point out it wasn't intended to
10	practice refers to 0.3 of a metre above the seat, not	10	represent any regulatory requirement; just to illustrate
11	0.3 of a metre above the deck. So the 0.3 of a metre	11	the practical and, as you say, vital importance of the
12	above the deck should be corrected to a distance of	12	watertight door if Lamma IV had been in an accident in
13	0.9 metres, which results in the maximum moment of	13	which the tank room alone was flooded?
14	65 newton metres being corrected to 195 newton metres.	14	A. Correct.
15	Then on the fifth line, that figure of 65 newton	15	Q. Then in paragraph 3, you say:
16	metres, also corrected to 195 newton metres.	16	"The same calculation was repeated for both the tank
17	Q. Thank you.	17	room and engine room flooded, with the results shown at
18	A. I felt the value of 65 newton metres was very small this	18	the bottom of page 7 of my 2nd supplemental report,
19	morning when I read it, and then I realised what the	19	under the same conditions."
20	mistake had been. My apologies.	20	That should, I think, be at page 929 of expert
21	THE CHAIRMAN: Thank you.	21	bundle 2. We can see there "Engine room and tank room
22	MR BERESFORD: Dr Armstrong, taking first your third	22	flooded".
23	supplemental expert report at page 1620, you had stated	23	A. Yes.
24	that you had made this in response to observations made		Q. You say, again, this was not presented in a way that
25	in a fourth supplemental witness statement of Mr Wong	25	demonstrated anything to do with 0.1L, and nor was it
	Page 62		Page 64
1	Wing-chuen.	1	intended to imply any interpretation of the regulations.
2	A. Yes.	2	A. That was my intent, yes.
3	Q. You deal basically with two issues in this report: the	3	Q. You point to the final line on page 7 of your
4	question of the watertight bulkhead at frame 1/2, and	4	supplemental report, page 929 of the bundle, which you
5	the question of an aft peak bulkhead.	5	say:
6	In relation to the first issue, in paragraph 2, you	6	" reflects closely the situation in which
7	observe:	7	Lamma IV sank, and the previous line indicates that the
8	"In paragraphs 4 and 5 of Mr WC Wong's	8	vessel would not have sunk immediately if a watertight
9	4th supplemental witness statement, I believe that he	9	door had been fitted."
10	has misunderstood the line of questioning when referring	10	A. Correct.
11	to the transcript of Day 28, page 97."	11	Q. You point out these are not regulatory issues.
12	A. I did, yes.	12	A. Yes.
13 14	Q. You explain that you had been asked by Mr Mok about your		THE CHAIRMAN: Just before you move on.
14	second supplemental report, specifically the table at the lower part of page 6, which we can see in expert	14 15	You've qualified this by saying "would not have sunk immediately". By that do you mean it would have sunk,
15	bundle 2 at page 928.	15 16	but not as quickly as it did?
17	If we could just have that up on the screen for	10 17	A. Mr Chairman, the margin line, if you recall the
18	a moment, please.	17	definition of the margin line, was submerged in this
19	You say that this was a table of results of various	18 19	condition. So although the deck was not immersed, it
20	calculations that you did to determine where the final	20	was very close. So eventually the effect of waves and
20	waterline would be if the tank room was flooded in	20	wash from passing vessels and similar effects, and maybe
22	a hypothetical accident with the Lamma IV as it was,	22	even people standing on the side of the deck rather than
23	with a lightship weight in 1996, 1998 and 2005, and also	23	inside the cabin, would have caused the vessel to sink
24	if it had a watertight door or not?	24	eventually. Which is, of course, the purpose of the

	Page 65		Page 67
1	is why I used the words "sunk immediately". I think it	1	Can you please clarify that?
2	would have stayed afloat for quite some time, until	2	A. "Depth" is defined in SOLAS. It's something like the
3	eventually it was swamped.	3	vertical distance from the top of what is called the
4	THE CHAIRMAN: By a number of factors coming into play:	4	bulkhead deck that is, on Lamma IV, the main deck
5	passengers moving around on the vessel, perhaps to avoid	5	down to the top of what is called the rabbet, which is
6	what they thought was a danger in one place,	6	essentially where the shell plating meets the keel. It
7	congregating in another place, or by waves?	7	is essentially the bottom of the boat, a little bit
8	A. Or by waves, or a rescue boat coming alongside and	8	above it, in fact.
9	bumping into it. All sorts of external factors.	9	Q. I didn't quite catch that last term, and neither did the
10	THE CHAIRMAN: Thank you.	10	stenographer.
11	MR BERESFORD: But the important practical point is that if		A. "Rabbet", it is an technical naval architectural term.
12	the vessel would not have sunk immediately, there would	12	It has its origins in wooden technology where you would
13	have been some more time for evacuation?	13	rebate the wood to accept the shell plating coming into
14	A. Yes, correct.	14	it. It's essentially where the hull meets the centre of
15	Q. Then you go on to say in paragraph 4:	15	the ship.
16	"Paragraph 4 of Mr WC Wong's statement comments	16	Q. Thank you. You go on in paragraph 6. I'll just read
17	'that Mardep does not agree with Dr Armstrong's	17	this to clarify the definition that you gave:
18	interpretation'."	18	"The forward perpendicular is at the intersection of
19	You point out that you merely did an illustrative	19	this theoretical waterline and the stem of the vessel,
20	calculation which involved no interpretation?	20	and the after perpendicular is at the centreline of the
21	A. Yes.	21	rudder stock."
22	Q. We then come on to the issue of the aft peak bulkhead,	22	A. Yes. Perhaps "centreline" is not quite the right word.
23	and you note:	23	I think SOLAS says "axis", and "centre" perhaps would
24	"Mr WC Wong comments, in paragraph 6 of his 4th	24	have been better. My apologies for that.
25	supplemental statement, on my observations that the aft	25	Q. Thank you. Then you say:
	Page 66		Page 68
1	peak bulkhead was normally located at the after end of	1	"Alternatively, if 96% of the distance between the
2	the vessel and in my experience at about 10% or slightly	2	forward perpendicular and the extreme after end of the
3	less from the after end.	3	vessel on the same theoretical waterline is greater than
4	You wished to make further clarifications. You say:	4	the distance to the rudder stock, then this alternate
5	"Firstly, it should have been taken in the context	5	distance."
6	that we were discussing only passenger ships	6	A. Yes.
7	(class I)"	7	Q. You then give chapter and verse. You say:
8	A. Yes.	8	"This is the definition used in SOLAS"
9	Q. " as is implied by many if not all of the other	9	You have attached at appendix IV to your report,
10	regulations and calculations involved in this case.	10	which is at page 1628 of the bundle, a copy of the
11	Secondly, when quoting '10% of the length', I should	11	relevant amendment to the Convention.
12	perhaps have made it clear what the term 'length'	12	A. Correct. Definition of length is on page 1631.
13	referred to."	13	Q. Page 1631, item 5 at the top of the page?
14	A. Yes.	14	A. Correct.
15	Q. You say in paragraph 6:	15	Q. That refers to the International Convention on Load
16	"Most persons skilled in the art of naval	16	Lines?
17	architecture and specifically in the regulatory aspects	17	A. Yes.
18	would know that length is usually the distance from the	18	Q. I think we have that at page 1635, do we not?
19	forward perpendicular to the aft perpendicular on	19	A. Correct.
20	a theoretical waterline representing 85% of the Depth to	20	Q. So when my learned friend Mr Mok says there is no
21	the main deck of the vessel."	21	definition of length in SOLAS, you would respectfully
22	Dr Armstrong, I put that definition to Mr Wong and	22	disagree; is that right?
23	he accepted that it was a conventional measure of	23	A. With great respect, yes. There are of course many different lengths and different interpretations of them
24	length. The Chairman had a question as to what was	24	different lengths and different interpretations of them, but for the purposes of subdivision and watertightness
25	meant by "Depth", which you've capitalised there.	25	but for the purposes of subdivision and watertightness,

	Page 69		Page 71
1	that is the correct definition, I believe.	1	A. Correct.
2	Q. Thank you. Then you also refer to the definition of	2	THE CHAIRMAN: You can see the open sea?
3	length in part 1, section 2 of Cap 548G. That's in our	3	A. Correct.
4	legislation bundle at tab 15.	4	THE CHAIRMAN: There was water ingress into the second
5	A. Yes.	5	compartment?
6	Q. Unless anybody wants me to, I won't read it out, but you	6	A. The hull was opened, yes.
7	point out that it is essentially the same.	7	THE CHAIRMAN: And perhaps a little bit of water in the
8	So you say:	8	third compartment, as I recall the evidence?
9	"Therefore my distance of 10%L for the aft peak	9	A. That is, I believe, the case.
10	bulkhead was not intended to represent 10% of the	10	THE CHAIRMAN: But we're describing a vessel that has six
11	overall length of the vessel or some other length. With	11	watertight compartments in the port hull?
12	reference to the approximate location of the aft peak	12	A. Correct. I think the angle of heel on Sea Smooth was
13	bulkhead in my experience, it was a distance intended to	13	reported as something like 2 degrees after the
14	be measured forward of the centre of the rudder stock."	14	experiment, which is quite small.
15	A. That is was I was intending to refer to in my mind, but	15	MR BERESFORD: You then point out in addition:
16	of course this is not a regulatory requirement; it is	16	"On catamarans, there are two aft peak spaces, each
17	just an observation.	17	one being of considerably smaller size than the
18	Q. Then you also wished to clarify your observations in	18	equivalent monohull craft."
19 20	relation to multihull crafts and particularly	19	A. Yes.
20	catamarans, which you have set out in paragraph 7. You	20	Q. You say:
21	point to a number of distinguishing factors in relation	21 22	"Because of [this], I have observed that the aft
22 23	to catamarans that mean that they are not truly	22	peak bulkhead is often considerably further forward than
23 24	comparable to a monohull such as Lamma IV? A. Correct, yes.	23	on the equivalent monohull." A. Yes.
24	Q. You say:	24	Q. "In an accident, for example when the rudders go
25	Page 70	23	Page 72
1	"[They] have excellent stability characteristics and	1	aground, it is most unlikely that both aft peak spaces
2	have demonstrated an ability to survive severe damage	2	will be flooded."
3	from collisions and grounding."	3	Then you point out:
4	A. Yes.	4	"Lamma IV was not a catamaran, and my
5	Q. You give the example of the catamaran St Malo in 1997 in	5	observations about 10%L were not meant to include
6	which the entire length of one hull was opened up after	6	catamarans, just as they did not include sailing craft
7	striking rocks at 35 knots off the Channel Islands?	7	or other non-standard vessels that are fundamentally
8	A. Yes.	8	different to Lamma IV."
9	Q. And apparently it remained afloat on the remaining	9	A. Yes, sir.
10	undamaged hull and was eventually towed to harbour and	10	Q. You then comment on the examples of the location of the
11	repaired?	11	aft peak bulkhead that Mr Wong produced in WWC-25, where
12	A. It was.	12	he provided "15 examples of designs which purport to
13	Q. You point out that the survivability of catamarans when	13	show the location of the aft peak bulkhead at distances
14	open to the sea was also demonstrated in the present	14	in excess of 10%L".
15	case by Sea Smooth.	15	You refer first of all to the code of practice, the
16	A. I believe it was.	16	2006 code of practice which can be found in marine
17	THE CHAIRMAN: Just give me a moment, please.	17	bundle 11. The relevant page is 3461. This is in
18	As far as Sea Smooth was concerned, am I right in	18	chapter IIIA, entitled "Hull construction, machinery,
19	recalling that it was two of her six watertight	19	electrical installations and fittings category A
20	compartments on the port hull that were damaged, took in	20	vessel".
21	water?	21	In part 2, "Hull construction", paragraph 2,
22	A. There were certainly two, Mr Chairman. I'm not too sure	22	"Bulkheads", paragraph 2.1 says:
23	about the third compartment.	23	"Every launch or ferry vessel should be fitting with
24 25	THE CHAIRMAN: Yes. As I understood the evidence, the first		the following watertight bulkheads:
25	compartment is destroyed, in effect.	25	(a) collision bulkhead;

	Page 73		Page 75
1	(b) fore and after bulkhead of main engine space;	1	process of understanding the causes of Lamma IV incident
2	(c) when any compartment exceeds 2/5ths of the	2	are raised in part A of this report, together with
3	length, an additional bulkhead at any intermediate	3	comment on the current (2013) maritime safety
4	position unless it meets the relevant requirements;	4	requirements, and suggestions are made to ensure ongoing
5	(d) if the vessel exceeds 24 metres in length,	5	safety. These comments only apply to class I ferries
6	an aft peak bulkhead unless the engine room is situated	6	and launches.
7	at aft end of the vessel.	7	Part B of this report includes comment on issues not
8	2.2. In double-ended vessels, collision bulkheads	8	directly related to the Lamma IV incident but on other
9	should be fitted at both ends."	9	current (2013) requirements that have come to light
10	A. Correct, yes.	10	during the reading of the regulations and which are
11	Q. In paragraph 10, you set out in a table the examples	11	offered as suggestions to clarify the understanding of
12	given by Mr Wong, explaining why these, with the	12	maritime safety issues and to prevent similar incidents
13	exception of the Sakorn Wisai, are not comparable.	13	in the future."
14	A. I did, yes.	14	A. Yes.
15	Q. In fact I've been through all of these with Mr Wong, and	15	Q. So part B is not entirely irrelevant; it is directed to
16	he agreed when it was put to him that these were not	16	similar incidents.
17	comparable, for the reasons you've stated. So I'm not	17	A. Yes. It was aimed more at the third part of the
18	proposing to go through it again. The one exception is	18	Commission's terms of reference.
19	the Sakorn Wisai, which has a distance, you say, from	19	Q. Yes. Then part C is at page 1667, which is headed
20	the centre of the rudder stock to the aft peak bulkhead	20	"Potential Safety Issues for Vessels certified before
21	of about 7.8 metres on a stated length between	21	1 January 2007". And part D is headed "Future Safety
22	perpendiculars of 82 metres, which gives a distance of	22	Issues", commencing
23	9.5 per cent length, which, as you point out, is within	23	THE CHAIRMAN: What page is part C?
24	your arbitrary 10%L figure.	24	MR BERESFORD: Page 1667, Mr Chairman. And part D is
25	Mr Wong wouldn't agree to your measurements, but we	25	page 1672.
	$\mathbf{D}_{a} \sim 74$		
	Page 74		Page 76
1	didn't get any explanation of why.	1	Page 76 THE CHAIRMAN: Thank you.
1 2	-	1 2	
	didn't get any explanation of why.		THE CHAIRMAN: Thank you.
2	didn't get any explanation of why. Do you stand by your evidence on that, Dr Armstrong?	2	THE CHAIRMAN: Thank you. MR BERESFORD: Then we have a number of appendixes,
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	Page 77		Page 79
1	consequently there were few mandatory requirements. The	1	Q. So we heard evidence from Mr Wong Chi-kin as to the plan
2	surveyors and inspectors, and those carrying out the	2	approval, but completely different surveyors, a chain of
3	plan approval on local craft, in many cases learned the	3	surveyors, in fact, who went and surveyed the vessel at
4	requirements on the job from more senior people, and	4	various stages of its construction.
5	knowledge on maritime safety issues appears to have been	5	A. Right.
6	mainly passed on verbally."	6	Q. Then, of course, those surveyors were all different as
7	A. Yes.	7	well. So are you making the same point in relation to
8	Q. Then at paragraph 4, you say:	8	the surveyors that actually surveyed the vessel?
9	"Different persons appear to have been carrying out	9	A. I am, yes.
10	the plan approval to those carrying out the survey, and	10	Q. We heard from one surveyor at the beginning who said
11	there was a general 'disconnect' between these two	11	that he thought the watertight door could be fitted
12	phases of the safety checks, which led to errors in the	12	later, and another surveyor at the end who said that he
13	case of Lamma IV."	13	didn't realise it was an outstanding issue.
14	THE CHAIRMAN: Could I ask you to amplify what you mean by	14	A. I recall those witness statements, yes.
15	that observation?	15	Q. Yes. Then in paragraph 5, you say:
16	A. Yes, Mr Chairman. I was trying to cover the situation	16	"Ownership of fundamental safety issues such as ship
17	demonstrated by the fact the drawings showed watertight	17	stability was not taken by anyone, with documentation
18	doors required at frame $1/2$ watertight bulkheads,	18	being noted as 'seen' by the Marine Department, rather
19	sorry, to be fitted at frame $1/2$, and the survey of the	19	than being carefully assessed and approved."
20	vessel, probably checking the integrity of the	20	A. Yes.
21	watertight bulkheads, but not noting that there was no	21	Q. In paragraph 6, you say:
22	watertight integrity because the door was not fitted.	22	"The requirements of the Instructions in use"
23	THE CHAIRMAN: Because that is something that could be dealt	23	THE CHAIRMAN: When you say "ownership of fundamental safety
24	with later in the fitting-out of the vessel, that	24	issues", another way of describing that would be
25	approach?	25	"responsibility", would it not? No responsibility was
	Page 78		Page 80
1	A. Potentially, yes, sir. That could have been the case.	1	being taken, if you stamp a document "seen" and nothing
2	But made even worse by the fact that it was still not	2	else?
3	picked up by the people doing the design and the plan	3	A. Very much the case, yes, sir.
4	approval and reflected in the Stability Book, the Damage	4	MR BERESFORD: So when you use the term "ownership", does
5	Stability Book	5	that imply that if somebody were to stamp a document,
6	THE CHAIRMAN: Yes.	6	a drawing "approved", they would then have some sense of
7	A which occurs right at the end of the process. So	7	ownership of what they had approved and would have more
8	right through that process, there were many occasions in	8	incentive to follow it up and make sure that the drawing
9	which this issue could have been addressed, but it was	9	was complied with?
10	not.	10	A. Stamping a drawing or other document with "approved" or
11	THE CHAIRMAN: The starting point of addressing it would	11	"not approved" clearly demonstrates your authority and
12	have been when Cheoy Lee consulted Naval-Consult to	12	your responsibility or acceptance of your responsibility
13	establish that the door was not needed. But nothing was	13	to approve or not approve the safety demonstrated by
14	done about the drawings.	14	that plan or document. You're illustrating that you own
15	A. Yes, yes.	15	the safety embedded in that vessel, that you are
16	THE CHAIRMAN: So that the "watertight bulkhead" legend is	16	acknowledging your responsibility for all the persons on
17	left unchanged on the drawings?	17	board that vessel. I think it's a really fundamental
18	A. Yes. And with having more than one person involved, the	18	requirement that was not demonstrated by putting "seen"
19	subsequent people would not have been aware of that	19	on a drawing.
20	discussion.	20	Q. Well, we've heard from Mardep that they are abandoning
21	THE CHAIRMAN: Yes. Thank you.	21	the "seen" stamp.
22	MR BERESFORD: I think the point you are making here is also		A. I read that, yes.
23	addressed to the distinction between plan approval and	23	Q. But introducing a stamp saying "for record purposes
24	those carrying out the actual survey?	24	[only]".
25	A. That was the intention, yes.	25	A. I don't personally have an issue with that,

	Page 81		Page 83
1	Mr Beresford. If you were going to ask me that	1	Q. These instructions were originally based on
2	question. I'm sorry, I jumped in a little early.	2	UK instructions to surveyors, weren't they?
3	Q. Please do.	3	A. I don't have certain knowledge on that, I'm sorry.
4	A. Because there are some drawings for example, what is	4	I believe so.
5	called a lines plan. The lines plan is a drawing which	5	Q. But it's more a historical point at any rate now.
6	gives you the shape of the vessel. And the shape of the	6	You go on to observe in paragraph 7:
7	vessel is not really about the safety issues. But they	7	"This situation changed in 2006 with the gazetting
8	are drawings which are of value to have looked at and to	8	of the Merchant Shipping (Local Vessels) Ordinance
9	have formed an impression as to what the vessel actually	9	Cap 548."
10	looks like. The General Arrangement drawing and other	10	That, for the Commission's note, is in our
11	drawings give you some idea of the shape, but they don't	11	legislation bundle at tab 13.
12	give you, sometimes, adequate information. So something		You say:
13	like a lines plan can be useful for information and	13	"This provided the necessary legislative backing for
14	would not be approved, because it is a commercial choice	14	maritime safety to be properly addressed for local
15	to make something the shape it is. So personally,	15	craft. [It] was also supported by subsidiary
16	I don't have a difficulty with a stamp as you suggest,	16	legislation of the same year, specifically the Merchant
17	as long as it's not on a plan that is addressing	17	Shipping (Local Vessels)(Safety and Survey) Regulation
18	a safety issue.	18	Cap 548G."
19	As to the value of whether it's worthwhile putting	19	Which is at tab 15 of our legislation bundle.
20	anything on it or not, my own personal opinion is it	20	You observe that the Ordinance, Cap 548, authorises
21	probably is worthwhile stamping it because it shows that	21	the issue of a code of practice, and that a code of
22	you are being responsible and looking at all the	22	practice was issued in 2006 under the authority of
23 24	information available to you. Ω So the issue really is not in relation to the use of the	23	section 9. The code of practice is at marine bundle 11,
24 25	Q. So the issue really is not in relation to the use of the stamp or the word on the stamp, but what stamps were	24 25	page 3416, and a copy of it, with the same marine bundle 11 pagination, is in our legislation bundle at
25	Page 82	23	Page 84
1		1	
1	applied to what documents. And to be fair to the Marine	1	tab 4.
2	Department, they have also said that they would not be	2 3	THE CHAIRMAN: Thank you.
3	using the stamp "for record purposes [only]" on such	3 4	MR BERESFORD: You then say: "The comments that follow in this document [that is
45	a wide variety of documents as they had previously used it.	4 5	"The comments that follow in this document [that is to say, your report] are based upon my interpretation of
6	A. Right.	6	to say, your report] are based upon my interpretation of Cap 548, Cap 548G and the code of practice (2006).
7	Q. The important thing is that they should take ownership	7	I have no knowledge of alternative procedures that may
8	or responsibility in relation to safety documents?	8	have been developed within the Marine Department as
9	A. Yes. I see that as a prime function.	9	acceptable equivalents (as defined in code of practice
10	Q. In the Local Vessels Safety Section?	10	(2006))[in chapter I, section 8], or acceptable
11	A. In the Local Vessels yes.	11	exemptions (as defined in)[chapter I, section 7]."
12	Q. In paragraph 6, you say:	12	In paragraph 10, you make the following comment:
13	"The requirements of the Instructions in use in 1995	13	"At present I do not understand how the current
14	were basic, sometimes detailing quite trivial matters,	14	system of plan approval and ship survey and inspection
15	and at other times missing some fundamental issues. The		operates at a practical level. The code of practice
16	Instructions themselves were brief (the Blue Book	16	suggests that plan approval may be done by four
17	contained only 48 pages, the 1995 Instructions only	17	different bodies, namely the Marine Department,
18	62 pages)."	18	an authorised surveyor, an authorised organisation or
19	A. I'm not trying to imply that safety could be measured by	19	a recognised authority. Surveys may also be carried out
20	the number of pages, Mr Beresford, but I thought that	20	by these four bodies, subject to Mardep's agreement.
21	was an indication that it was quite brief. Just as	21	How this works in practices would require more detailed
22	an example, the instructions in Australia for damage	22	investigation within Mardep and observation of the
23	stability alone run to 121 pages. And that is the other	23	process, but there remains the potential problem of
24	extreme, of course. Somewhere in the middle there's	24	different persons doing the plan approval to those
25	a good compromise.	25	carrying out the survey."

	Page 85		Page 87
1	This is what you address in the following paragraphs	1	the drawings and carrying out the surveys, then there
2	of your report.	2	couldn't have been any disconnect, as you call it, in
3	A. Yes.	3	those processes, in that process?
4	Q. Paragraphs 11 and 12 we've already read. So then we	4	A. Yes, I agree.
5	come to	5	THE CHAIRMAN: And the technical skills required to do the
6	THE CHAIRMAN: Just pausing there, Mr Beresford. We have no	6	one enable one to do the other? So you can do plan
7	material, do we, that deals with plan approval and ship	7	approval and survey?
8	survey, other than by the Marine Department?	8	A. I believe so, yes, sir.
9	MR BERESFORD: That's correct, Mr Chairman. I venture to	9	THE CHAIRMAN: Yes. I'm stating the obvious, but I want
10	suggest that that's because this system originated in	10	that on the record.
11	2007 or 2006. It did not arise out of the Lamma	11	A. Yes. It suddenly dawned on me it may not be obvious.
12	collision.	12	But I've had the pleasure of being a surveyor and
13	THE CHAIRMAN: Yes.	13	certainly understanding plans is an essential part
14	MR BERESFORD: So what Dr Armstrong is focusing on is the	14	of it.
15	problem of different persons doing different aspects of	15	MR BERESFORD: Would the two processes not feed off one
16	the job, but not really getting into this aspect of the	16	another?
17	current system, which only came into place in 2007.	17	A. Yes.
18	THE CHAIRMAN: Thank you.	18	Q. So that your ability to approve plans would be enhanced
19	MR BERESFORD: We then come to part A of your report, and	19	by your experience of actual surveys?
20	under the heading, you set out a list of contents, of	20	A. Indeed.
21	the 13 issues that you address. In each one you	21	Q. And your ability to survey a vessel would be enhanced by
22	describe the issue and where appropriate, you say what	22	your ability to understand plans?
23	the current requirement is and then under bold type "For	23	A. And both of them require an understanding of the
24	consideration" and a number, you set out a possible	24	regulations as well.
25	recommendation that the Commission may wish to consider	25	THE CHAIRMAN: Would it not assist someone doing the survey
	Page 86		Page 88
1	making.	1	to have been involved in the process of approving the
2	A. Yes, sir.		
2	1. 105, 51.	2	plans from the outset, so that he'd become familiar with
2 3	Q. Issue (i) is headed "Potential for disconnect of design	2 3	
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1 THE CHARMAN: Marine Department. 1 When you say "such a system can be made to work", "such a system" being asystem or separate surveyors approach from other other work with other and the other oth		Page 89		Page 91
2 A. In one case. I can remember heyre taking about "Under 3 the terms of the contract, we are obliged to deliver the 4 ship on date X but we have not yet got approval from you 5 for drawings", and then a list of drawings. "such a system" heing a system of separate surveyors approving and surveying; is that right? 3 THE CHAIRMAN: That had been submitted much earlier? A. Thes Nate of Queensland decided to privately input ing the 6 for impression, as 1 said, that Marine Department were 9 under a lot of stress. A. Thes Nate of Queensland decided to privately input ing the 8 approval and safety inspections and the whole regime, to not be done by the government anymore and for the 9 not be done by the government anymore and for the 9 not be done by the government anymore and for the 9 not be done by the government anymore and so the 9 not be done by the government anymore and so the 9 not be done by the government anymore and for the 9 not be done by the government anymore and for the 9 not how the circumstances at the time. Was 10 consideration given to the fact that we would send our 11 most expenienced person to tick the boxes, if they can be taked? 11 11 seconsideration given to the fact that we would send our 11 most expenienced person anymever, of course, Surveying 12 is not a simple as that. 12 three CHAIRMAN: At all events, as 1 understand your opinion. 12 through to the final surveys of the vessel? 12 12 seems to work. However, there is one known 12 rest as work. However, there is sone known 13 states 1 doart that we the persons involved 14 is the approval he essent to take the surveys of the vessel? 14 A. Definitely beneficial. Mr Chairman, As an example, many 14 for a survey suffictory the wessel? 14 14 A. Definitely beneficial. Mr Chairman, As an example,	1	-	1	
3 heterns of the contract, we are obliged to deliver the ship of drawings", and hen a list of drawings. approving and surveying is that right? 4 A. Yes, Mr Beresford. Would you like me to explain a line further? 6 THE CHARMAN: That had been submitted much earlier? A. That had been submitted much earlier? 7 A. That had been submitted much earlier? A. Tesh does submitted at a given date. I formed the sufficient were under a lot of stress. 10 MR BERESFORD. But even if it be granted that the Marine Department were under a lot of stress. approval and safety inspections and the whole regime, to not stress of a lot of stress. 13 surveyor 2 to tick the boxes, if they can be tickel? 13 15-17 years ago. The way it works is that a designer with could send on the fact that we wold send on root experienced person to tick the boxes, as you say? 14 Hitt date responsibility for safety in puting the design together, and he's then required to have it consideration given to the bactes, as 1 understand your ophine is not a simple as that. 20 is not as simple as that. 10 The CHARMAN: At all events, as 1 understand your ophine is not a simple as that. 21 A. Definitely beneficial, Mr Chariman. As an example, may 10 10 becomes an unfortunate situation where the designer is trying to hide information, which of course is not a survey good ide.a. But I mentioned i there because peoplem my be aware that there is such a		<u>^</u>		
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25 Australian states." 25 society responsible for the design approval would accept	25	Australian states."	25	society responsible for the design approval would accept

23 (Pages 89 to 92)

	Page 93		Page 95
1	the change authorised by the surveyor on site."	1	A. Yes, indeed. It worries me, therefore, there are four
2	THE CHAIRMAN: Just dealing with that issue, that was the	2	organisations mentioned in the rules at the present
3	subject of a letter from Cheoy Lee to the Marine	3	time, and how they interact with one another.
4	Department, was it not, explaining that the plates had	4	MR BERESFORD: And that leads on to your first possible
5	been delivered as 0.19-inch thickness, which was	5	recommendation. You've noticed that:
6	MR BERESFORD: I think it was at page 206, if I remember	6	"The term 'authorised organisation' [which is one of
7	rightly.	7	those four organisations] is used throughout chapter II
8	THE CHAIRMAN: 4.83 mm. But there was never any response		section 3 of the code of practice as the persons who are
9	from the Marine Department, was there?	9	able to conduct surveys, but there is no definition of
10	MR BERESFORD: There's no formal approval. The letter is	10	what is an authorised organisation."
11	not marked "approved", there's no plan marked	11	A. Not that I can find.
12	"approved", there's nothing of that nature.	12	Q. You say:
12	THE CHAIRMAN: It was never adverted to in subsequent	12	" it is unclear whether this refers to
13	correspondence?	14	a classification society"
14	MR BERESFORD: I don't believe it was, Mr Chairman, no.	14	And we can look at the pages. Page 3434 in the code
16	Dr Armstrong, I think your evidence on a previous	16	of practice, which is the commencement of section 3. We
17	occasion was that 4.83 mm was within the tolerance of	17	can see that there's no definition of "authorised
18	5 mm. So it could have been regarded as within the	17	organisation", although there is a term "authorised
10	tolerance, without approving a formal change. But it	18	surveyor". "Classification societies" is also defined.
20	wasn't a change in itself.		-
	A. Yes, Mr Beresford. You make a valid point. However, as	20	So you've suggested that "authorisation" should be defined?
21 22	-	21	
	you probably recall, I'm under the opinion that the	22	A. Yes, sir. Some of my comments are perhaps a little
23 24	plating was actually less than 4.83, by some unknown	23	trivial, but I think they can be quite important.
	amount, and that the approved drawing at the present time for Lamma IV still shows "5".	24	Q. You've also suggested:
25		25	"Further clarification is needed to avoid the
	Page 94		Page 96
1	THE CHAIRMAN: The point really is this: if these kind of	1	potential for breaches of safety, particularly some
2	changes are to be made, and even if it was approved,	2	feedback on how this has worked over the past six
3	there should be some system of documenting it so that	3	years."
4	the plans reflect the change?	4	Can you just explain what you mean by that, please,
5	A. Yes.	5	Dr Armstrong?
6	MR BERESFORD: And when you come across a thickness of 4.5.	6	A. Yes. I'm sure that the Marine Department in their
7	the question of whether you're to judge whether it's	7	wisdom have made this system work since the new
8	within the tolerance of 5 mm or 4.83 mm should be clear?	8	regulations came into effect. But I'm not at the moment
9	A. Yes, and it gets back, Mr Beresford, to the issue of	9	privy to how they have made it work, which is why I'm
10	considering the design as a whole. It could well be you	10	suggesting some feedback would be useful.
11	can put forward adequate proof to the survey authority	11	MR BERESFORD: I note the time, Mr Chairman.
12	that 4.5 is adequate, but are there other factors that	12	THE CHAIRMAN: Yes.
13	you're not aware of that might require you to have	13	Dr Armstrong, we'll take our lunch break now and
14	a thicker plating? For example, the spacing of the	14	we'll resume at 2.30 this afternoon. If you'd be kind
15	stiffeners associated with the plating. They all have	15	enough to be back so that we can begin taking your
16	an impact. And it's not generally satisfactory for	16	evidence this afternoon at that time.
17	a survey authority to accept something without the	17	2.30.
18	people doing the plan approval being aware of that	18	(1.01 pm)
19	change, and why the change is necessary and how it will	19	(The luncheon adjournment)
20	impact on other aspects of safety.	20	(2.30 pm)
21	THE CHAIRMAN: And all of that is information that's	21	THE CHAIRMAN: Good afternoon, Dr Armstrong.
22	available if there is an audit trail created?	22	A. Good afternoon, sir.
22 23	available if there is an audit trail created? A. Yes.	23	THE CHAIRMAN: May I remind you that you continue to testify
	available if there is an audit trail created?		

	Page 97		Page 99
1	MR BERESFORD: Thank you, Mr Chairman.	1	Sections and Bulkheads drawing?
2	Good afternoon, Dr Armstrong. We had just got to	2	A. In theory, Mr Chairman, yes, but in practice I think it
3	the next item, the next issue under part A, issue (ii),	3	needs some skill and understanding of the watertightness
4	"Drawing Approval process", at paragraph A-15 of your	4	issue for that to happen.
5	report, page 1643.	5	THE CHAIRMAN: Very well.
6	You revert here to the issue of ownership of safety	6	A. I have some private doubts.
7	issues shown by drawings and documentation in 1995 which	7	THE CHAIRMAN: So of the long list of plans, as they're
8	you say were not taken by the survey authority, where	8	called, the General Arrangement is the only one that
9	they were marked as "seen" rather than "approved".	9	directly matches the plans we have, or is there
10	You've noted that under the current requirements,	10	something else?
11	Cap 548G requires that drawings and documentation are	11	A. "Structures and scantlings", Mr Chairman, would cover
12	marked as approved and identified by date and signature.	12	the construction drawings.
13	"Drawings are approved by a 'recognised authority'	13	THE CHAIRMAN: Can someone tell me what the reference is to
14	and copies of important documentation are provided to	14	that drawing?
15	Mardep."	15	A. 9(1)(c).
16	In your view, these current requirements appear to	16	THE CHAIRMAN: I see the provision here, but what of the
17	be satisfactory; is that right?	17	various drawings that we've got does that fall under?
18	A. Yes, sir.	18	MR BERESFORD: If you just bear with me a moment,
19	THE CHAIRMAN: Could you take us to the actual requirement	19	Mr Chairman.
20	in this case so we can have a look at it.	20	Mr Chairman, there isn't, I think, a plan referring
21	MR BERESFORD: It's Cap 548G, which is tab 15 in the	21	to scantling or scantlings. So it would have to be
22	legislation bundle. Part 3 begins at section 7.	22	a matter of interpretation as to which plans fell within
23	Section 7 deals with the application, which is basically	23	that section.
24	to a new vessel. I won't go through that in detail.	24	A. I think 203, 204, 205 would generally cover that.
25	Section 8 provides for:	25	MR BERESFORD: I think Dr Armstrong is referring to the
	Page 98		Page 100
1	" the director or a competent surveyor may, upon	1	plans in marine bundle 2. Page 204 is Profile and Deck;
2	application, approve plans relating to a local vessel in	2	205 is Sections and Bulkheads; 202 is Shell Expansion.
3	accordance with this part."	3	THE CHAIRMAN: You said 203, 204, 205?
4	Section 9 I think is the key section that's referred	4	A. There may be others as well on either side.
5	to in this part of the report of Dr Armstrong. It says:	5	THE CHAIRMAN: Very well. Thank you. But before we leave
6	"No certificate of inspection or certificate of	6	the legislation, that deals with "No certificate of
7	survey shall be issued in respect of a local vessel that	7	inspection or certificate of survey shall be issued"
8	falls within section 7(1)(a) or (b)(i) or (ii) unless	8	MR BERESFORD: Unless it's been approved. That's the point,
9	plans relating to the following parts or aspects of the	9	Mr Chairman.
10	vessel, in so far as they are applicable, have been	10	THE CHAIRMAN: Yes, I follow that. And there are other
11	approved under this part"	11	provisions at section 9(2), are there not, dealing with
12	Then it lists out various parts, for example,	12	different vessels?
13	"general arrangements", which will be familiar to this	13	MR BERESFORD: Well, that's a survey record of safety
14	Commission, "tonnage measurements and calculations";	14	equipment.
15	"structures and scantlings"; "freeboard calculations;	15	THE CHAIRMAN: Yes.
16	"arrangements relating to watertightness,	16	A. Section 10 covers the process itself.
17	weather-tightness, bulkheads"	17	THE CHAIRMAN: Yes.
18	THE CHAIRMAN: Just pausing there. Applying these	18	MR BERESFORD: So section 10(1) provides the director with
	provisions to the drawings we've been looking at, would	19	four options. He can approve the plan; approve it
19			
20	item (e) encompass the Sections and Bulkheads drawing?	20	subject to conditions; refuse to approve it; or
20 21	item (e) encompass the Sections and Bulkheads drawing? A. It's the only reference I can find, Mr Chairman, in the	21	temporarily withhold the approval. He may only approve
20 21 22	item (e) encompass the Sections and Bulkheads drawing?A. It's the only reference I can find, Mr Chairman, in the regulations that does mention watertightness and	21 22	temporarily withhold the approval. He may only approve it if he's satisfied that the local vessel concerned, or
20 21 22 23	item (e) encompass the Sections and Bulkheads drawing?A. It's the only reference I can find, Mr Chairman, in the regulations that does mention watertightness and bulkheads.	21 22 23	temporarily withhold the approval. He may only approve it if he's satisfied that the local vessel concerned, or the relevant part, is built or arranged in accordance
20 21 22	item (e) encompass the Sections and Bulkheads drawing?A. It's the only reference I can find, Mr Chairman, in the regulations that does mention watertightness and	21 22 23	temporarily withhold the approval. He may only approve it if he's satisfied that the local vessel concerned, or

1	Page 101		Page 103
1	endorse and sign upon every page, and, where it's	1	watertight subdivision had been calculated (by the
2	a booklet, a conspicuous part of the booklet.	2	addition of ballast and fendering and other items),
3	He's required to include the name of the public	3	resulting in a substantial decrease in freeboard to the
4	officer to whom the power to approve the plan is	4	margin line and which was not recognised."
5	delegated, rank and the date of approval.	5	A. Yes.
6	Then there's the provision for the retention and	6	Q. You've then turned to look at the current requirement in
7	dissemination of copies, and notice of refusal of	7	Cap 548G, and specifically
8	approval.	8	THE CHAIRMAN: Just pausing there.
9	THE CHAIRMAN: Yes. Thank you.	9	What you have in mind there are the changes that
10	MR BERESFORD: Then, returning to your report at	10	occurred from 1996, first of all in 1998 when
11	paragraph A-16, you identify as an issue this fact:	11	8.25 tonnes of lead ballast was added to the vessel, and
12	"Technical requirements were not mandatory in 1995."	12	then in 2005 when that same lead ballast was raised by
13	You note that under Cap 548, this authorises the	13	10 inches?
14	issues of codes of practice and makes such codes	14	A. More to do with the 1998 changes, Mr Chairman, when the
15	admissible in court, and also, in part IV, it requires	15	ballast weight was added, plus the weight of the
16	that all local vessels be certified and licensed.	16	fendering and I believe some other alterations which
17	In your view, those requirements are satisfactory;	17	resulted in a I remember it being a 15-tonne increase
18	they give sufficient statutory backing, in other words,	18	in weight, which is a substantial amount.
19	to the technical requirements?	19	THE CHAIRMAN: And only 8.25 was the lead?
20	A. Yes.	20	A. Only 8.25 was the lead.
21	THE CHAIRMAN: Presumably in 1995 there was a requirement	21	THE CHAIRMAN: Yes.
22	that local vessels be certified and licensed. We've	22	A. It was that alteration that was my major concern,
23	been looking at the certifications.	23	because that is not captured, other than in the intact
24	A. There was one for licences. I don't remember the one	24	stability. The changes with the lead being lifted up
25	for certification. You may well be right.	25	were captured for intact stability, and perhaps would
	Page 102		Page 104
1	MR BERESFORD: Mr Chairman, you will recall that the	1	not have made a large amount of difference to the
2	instructions for survey, both the Blue Book and the		
		2	watertight subdivision.
3	1995 Instructions, had no statutory underpinning.	2 3	watertight subdivision. THE CHAIRMAN: Yes.
3 4	1995 Instructions, had no statutory underpinning. THE CHAIRMAN: I understand that. But nevertheless, there		-
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4	THE CHAIRMAN: I understand that. But nevertheless, there	3 4	THE CHAIRMAN: Yes. A. So a difference between the 1995 as-built and the 1998
4 5	THE CHAIRMAN: I understand that. But nevertheless, there was a regime by which a licence or a certificate of	3 4 5	THE CHAIRMAN: Yes.A. So a difference between the 1995 as-built and the 1998 changes that I was trying to make sure were captured.
4 5 6	THE CHAIRMAN: I understand that. But nevertheless, there was a regime by which a licence or a certificate of survey was issued.	3 4 5 6	THE CHAIRMAN: Yes.A. So a difference between the 1995 as-built and the 1998 changes that I was trying to make sure were captured.THE CHAIRMAN: Yes. Thank you.
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4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22	 THE CHAIRMAN: I understand that. But nevertheless, there was a regime by which a licence or a certificate of survey was issued. MR BERESFORD: Yes. But I think Dr Armstrong's point is that the instructions for survey had no statutory backing. THE CHAIRMAN: No, I follow that. But presumably what happened was, in the exercise of their statutory discretion, if you didn't comply with the Blue Book in the way the Marine Department wanted, they wouldn't issue a certificate of survey. A. Presumably. THE CHAIRMAN: Yes. MR BERESFORD: But now under Cap 548, it's all done under the code of practice, which is issued under section 9 of Cap 548? A. Yes. Q. Then moving on to the next issue, issue (iii), "Alteration to local vessels", here you've noted: 	3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22	 THE CHAIRMAN: Yes. A. So a difference between the 1995 as-built and the 1998 changes that I was trying to make sure were captured. THE CHAIRMAN: Yes. Thank you. MR BERESFORD: Now, the current requirements are contained in Cap 548G of the regulations, at tab 15 of the legislation bundle. THE CHAIRMAN: Yes. MR BERESFORD: Section 7, Mr Chairman. Subsection (1) provides that this part, part 3, applies to a local vessel that is a new vessel, et cetera. Sorry, we've just looked at this. I'm just wondering if I'm looking at the right section. You say: "Cap 548G requires any modification to the vessel to be approved by Mardep" You've referred in your footnote to part 3. No, I'm looking at the wrong footnote. That's my confusion. It's my fault. It should be part 10. Section 75?

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1	catch-up, as no doubt everyone else is.	1	would you not?
2	MR BERESFORD: Indeed, Mr Chairman.	2	A. That was my proposal, yes. Or to insert in (A), where
3	THE CHAIRMAN: So I'm making a note about another matter at		it says "its length, breadth or depth", it's possible to
4	the moment.	4	include "or maximum draft", or we could consider "or
5	MR BERESFORD: I'll just pause for a moment, then.	5	freeboard".
6	THE CHAIRMAN: Which provision do you want us to look at?	6	Q. Let's just take the one that you've proposed in your
7	MR BERESFORD: Section 75 of Cap 548G, tab 15.	7	report to start with. A new (D) which would read:
8	THE CHAIRMAN: Dealing with modifications?	8	" alteration
9	MR BERESFORD: Yes. Part 10 is headed "Alteration to local	9	(i) of
10	vessels", section 75, "Application of part 10":	10	(D) its lightship weight, or its maximum draft, or
11	"This part applies to a local vessel	11	its freeboard, as appropriate, which would require
12	(a) in respect of which one or more of the following	12	recalculation of the watertight subdivision and
13	instruments is in force"	13	associated bulkhead locations and damage stability
14	It refers to "a certificate of inspection";	14	calculations."
15	"a certificate of survey"; and other instruments.	15	A. Yes.
16	Then:	16	Q. Perhaps the exact drafting we can lead to the
17	"(b) that it is to be altered	17	legislative draftsmen if they decide take it up.
18	(i) to an extent that will render the particulars	18	A. Indeed.
19	stated in any certificate, record or declaration	19	THE CHAIRMAN: So applying the existing provisions to the
20	referred to in paragraph (a) inaccurate; but	20	1998 adding of ballast to Lamma IV, there being no
21	(ii) not to the extent that will render the vessel	21	stipulation as to weight, there would be required no
22	a new vessel."	22	approval of the modification?
23	So, your point, Dr Armstrong, is that this requires	23	A. There was a requirement stated to reinvestigate the
24	any modification to the vessel to be approved, but only	24	intact stability, sir, and that was done. But there was
25	if the particulars stated on any certificate are	25	no appreciation that I can discover which showed they
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1	modified?	1	needed to redo the watertight subdivision. The intact
2	A. Yes.	2	stability and the damage stability were redone, but as
3	Q. And the trouble is that the certificate does not include	3	we know, the damage stability recalculation was
4	the details of the weight of the ship. So if there's	4	incorrect, because it assumed a watertight bulkhead on
5	any alteration in the weight, then that's not covered by	5	frame 1/2. But watertight subdivision was never looked
6	this requirement?	6	at. And yet the margin line was immersed.
7	A. That is my concern, yes.	7	THE CHAIRMAN: Thank you.
8	Q. And so you've suggested in your consideration 5,	8	MR BERESFORD: You have also suggested for consideration at
9	strongly suggested:	9	number 6, again strongly suggested that the certificate
10	" the definition of 'new vessel' be amended to	10	of survey I think you mean the instrument referred to
11	include a new item under the code of practice	11	in section 75(a)?
12	chapter I"	12	A. Yes.
13	Perhaps we can just turn that up, because it's	13	Q. " and the licence, record the vessel lightship
14	easier to understand it in context. It's page 3438 in	14	particulars as well as the other principal
15	the code of practice. The code of practice, page 3437	15	characteristics."
16	at the bottom:	16	A. Yes. It lists the main characteristics of the vessel,
17	"'new vessel' means	17	but not the weight, surprisingly.
18	(a) a local vessel	18	Q. That's surprising to you, is it, Dr Armstrong?
19	(i) that has never been licensed	19	A. Yes. It's an important characteristic of the vessel.
20	(b) a local vessel that does not fall within	20	Q. In other words, you would have expected to find it there
21	paragraph (a) and undergoes, on or after the	21	regardless of the Lamma IV incident?
22	commencement date of the survey regulation,	22	A. Well, the main reason for strongly suggesting it is that
23	alteration	23	it immediately picks up that if you make major changes
24	(i) of"	24	to the vessel, and an increase in weight of the vessel
25	Dr Armstrong, you would add a new paragraph, (D),	25	of 30 per cent is a very large change to the craft,

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1	under the old legislation, that would not have been	1	required to submit for approval."
2	picked up. But by putting it in the licence, it	2	And you suggest instead:
3	automatically, I would suggest, would get picked up.	3	"Estimates of the effects of the modification on
4	Q. And it was a curious feature of the evidence in this	4	intact stability, damage stability and watertight
5	case that nobody was able to offer any explanation for	5	subdivision should be submitted for approval."
6	the increase in weight over and above the added ballast.	6	Then you've also suggested an amendment to
7	A. I've not heard any good explanation.	7	paragraph 9.2, which I think starts off similar. The
8	Q. The shipbuilder was specifically asked.	8	existing version reads:
9	THE CHAIRMAN: Were we not told that there was fendering	9	"If the stability estimates show that the
10	added?	10	alterations will adversely affect the stability of the
11	A. I made a comment about fendering, yes.	11	vessel, a lightweight survey, or an inclining
12	MR BERESFORD: Fendering has been added, Mr Chairman, but		experiment, or a rolling period test, as appropriate,
13	that didn't account for the difference.	13	should be conducted."
14	THE CHAIRMAN: Didn't account for the whole of the	14	And you have suggested:
15	difference?	15	"If the stability estimates show that the
16	MR BERESFORD: No, not the whole of the difference.	16	alterations will adversely affect the intact or damage
17	THE CHAIRMAN: Yes. We've seen some correspondence about		stability of the vessel, an inclining experiment, or
18	fendering, have we not? With the Marine Department?	18	a lightweight survey or a rolling period test, as
19	Together with the information being given as to the	19	appropriate, should be conducted."
20	proposal to add lead ballast?	20	Then you've added this:
21	MR BERESFORD: If I remember rightly, Mr Chairman, the	21	"If the watertight subdivision estimates show that
22	fendering was added at a different time.	22	the alterations will adversely affect the flooding
23	A. Page 394 of marine bundle 2. Or 3, sorry.	23	capability of the vessel, additional buoyancy may be
24	Q. So that's a letter dated 26 March 1997, enclosing	24	necessary."
25	a drawing for the additional fender.	25	Now, in paragraph 9.1, it's fairly easy to see what
	Page 110		Page 112
1	A. (Witness nods).	1	you've suggested, that instead of stability estimates,
2	Q. Whereas the letter enclosing the revised stability book	2	you've spelt it out in terms of intact stability and
3	estimation was dated 10 March 1998	3	damage stability, and you've also added watertight
4	THE CHAIRMAN: Yes, you're quite right. But as you say, no	4	subdivision.
5	full explanation has been given for the increased	5	A. Yes.
6	overall weight.	6	Q. And similarly in paragraph 9.2, you've replaced the
7	MR BERESFORD: So what I'm asking you, Dr Armstrong, is	7	reference to "stability" with "intact or damage
8	whether this would have the effect of drawing people's	8	stability".
9	attention to the weight of the vessel so that if changes	9	A. I think "intact or damage" was in the original,
10	are made, then they have to note them and it would	10	Mr Beresford.
11	become apparent at least at the annual survey?	11	THE CHAIRMAN: Yes, it was.
12	A. That was the purpose of documenting this one. I felt	12	MR BERESFORD: In paragraph 9.2, it says:
13	that would provide that obvious notification to people	13	"If the stability estimates show that the
14	that it needed to be looked at.	14	alterations will adversely affect the stability of the
15	Q. Yes. Thirdly, you have suggested for consideration at	15	vessel"
16	number 7 further modification to the code of practice at	16	A. Ah, yes.
17	page 3487, which is paragraph 9 of chapter IV, headed	17	Q. And you've changed it to "adversely affect the intact or
18	"Freeboard and stability". We've got paragraph 9 on the	18	damage stability of the vessel."
19	screen. So the first sentence would remain the same:	19	A. Sorry, I was reading the wrong line.
20	"Before a vessel is to undergo any modifications,	20	THE CHAIRMAN: The wrong line was on the screen, that's why.
21	application should be submitted specifying the nature of	21	So was I.
22	the proposed alterations."	22	MR BERESFORD: You've changed the order a bit. In the
23	Then in the existing code of practice, the next	23	original it says:
24 25	sentence reads: "Stability estimates for the modifications may be	24 25	" a lightweight survey, or an inclining experiment, or a rolling period test, as appropriate,

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1	should be conducted."	1	MR MOK: Yes. I think it's a supplemental statement.
2	A. I don't think that was important. That was probably my	2	THE CHAIRMAN: Yes.
3	error. Could be the same words.	3	MR MOK: It's page 3953-5.
4	Q. So there's nothing in that?	4	THE CHAIRMAN: Thank you. But where is the reference, as is
5	A. In the order, no.	5	asserted in Dr Armstrong's report, to SOLAS: "other than
6	Q. Then the important amendment is the addition:	6	to state that life-saving appliances conforming to the
7	"If the watertight subdivision estimates show that	7	life-saving appliances code of SOLAS would be
8	the alterations will adversely affect the flooding	8	acceptable." Where is that stated?
9	capability of the vessel, additional buoyancy may be	9	MR BERESFORD: Mr Chairman, my understanding is that this is
10	necessary."	10	not in the legislation or regulations made under it, but
11	A. Yes.	11	that it's Marine Department policy. There's no
12	Q. Do you wish to expand upon that at all?	12	definition
13	A. We did have a discussion when I gave evidence previously	13	A. I believe it's in the code of practice in chapter VII.
14	that one way of if the problem had been identified,	14	MR BERESFORD: Yes. If we look at page 3507, in the
15	then it could have been solved by adding additional	15	definitions, we see a definition of "LSA Code", meaning:
16	buoyancy. That was one way of doing it. We did talk	16	" the International Life-Saving Appliance (LSA)
17	about some other methods. But this is the most	17	Code adopted by the Maritime Safety Committee of the
18	practical way of doing it.	18	Organisation by Resolution MSC.48(66)."
19	Q. So, in summary, three proposals relating to the	19	Also definitions of SOLAS pack life rafts. And 2.1:
20	alteration of local vessels: (1) the definition of "new	20	"Life-saving appliances should be of approved types.
21	vessel" be amended; (2) Cap 548G, section 75 be amended	21	Appliances which conform to the LSA Code are
22	to require the relevant instrument to record the	22	acceptable."
23	lightship particulars; and (3) these modifications be	23	Is that what you had in mind, Dr Armstrong?
24	made to paragraphs 9.1 and 9.2 of the code of practice?	24	A. It is, yes. I'm sorry, my reference in my report is
25	A. Yes, sir.	25	incorrect.
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1	Q. The next issue that you've identified in your report,	1	THE CHAIRMAN: Thank you.
2	(iv), is headed "Life-saving arrangements". You've	2	MR BERESFORD: As far as the legislation is concerned, and
3	noted:	3	the regulations made under it, it's dealt with in
4	"Cap 548 and its subsidiary legislation do not	4	Cap 548G, section 32, where there's no reference to
5	appear to have any definition of a life jacket, or the	5	SOLAS or any international convention. This provides in
6	expected performance characteristics of a life jacket,	6	general terms in subsection (1):
7	other than to state that life-saving appliances	7	"All life-saving appliances provided on board
8	conforming to the life-saving appliances code of SOLAS	8	a local vessel shall be
9	would be acceptable."	9	(a) sufficient to ensure the safety of persons on
10	You've also referred us to page 32 of your report,	10	board the vessel;
11	which is in section C, which we'll be coming to. But	11	(b) properly maintained;
12	for now, your proposal is that there be included in	12	(c) regularly inspected;
13	Cap 548, section 2 a definition of "life jacket". What	13	(d) fit for the function intended; and
14	you have suggested I'll just read it out:	14	(e) in good and serviceable condition."
15	" means a life jacket certified in accordance	15	Then in subsection (2), it has specific requirements
16	with ISO 12402-3:2006 (Personal Flotation Devices	16	by reference to the schedules, which we've seen and with
17	Part 3: Life jackets, performance level 150 Safety	17	which we're familiar.
18	requirements), or equivalent, to the satisfaction of the	18	THE CHAIRMAN: Yes.
19	Director."	19 20	MR BERESFORD: Just while we're here, can I ask you,
20	THE CHAIRMAN: Could you take us to the provision in Cap 548		Dr Armstrong, this provides:
21 22	that refers to life-saving appliances by reference to	21	"All life-saving appliances provided on board
	SOLAS? Mr Mok, I wonder if my memory is correct, that this	22 23	a local vessel shall be
22	INT MORE I WONDEL IT HIV METHODY IS CONECT. THAT THIS	23	(a) sufficient to ensure the safety of persons on
23		24	board the vessel "
23 24 25	was dealt with in one of the statements of Mr Wong Wing-chuen?	24 25	board the vessel" If there are small children on board a vessel, but

1 only adult life jackets, would they be sufficient to 1 Q. Three sizes of life jackets? 2 ensure the safety of such small children? 1 A. I would say not, M Beresford, because they would not fit. 4 fit. 1 1. do not have a copy of this ISO standard, unformation of a life rest. 5 THE CHAIRMAN: Just give me a moment, please. Thank you, is said by whom. I presume you mean just all life jacket is source for some sen is for mo not some. If is the standard that subpress in life jacket is designed to a standard that is during the international standard that is possible to a standard the full ramifications of the life jacket is designed to do a screttin and an ocen if jacket? 11 A. A the end of the day, somebody has to certify it as in the international standard that infine the international standard that international standard provide for a period by the Director as complying with ISO', at a costant international standard provide for 1 1 13 a. Yes, it could. 16 acostant induce above the water level. I think a costant life jacket stores? 14 A. I doos. That if sakes? 1 1. Foll if gickets with size on one. 14 A. I doos. That if sakes? 1 1. Foll if gickets with size on thore difficult to put a costant life jacket stores? 15 Q. So could the definition perhaps say? 11 1. Foll if gickets with size store stome stome stome		Page 117		Page 119
2 e-sure the safety of such small children? 2 A. I do not have a copy of this ISO standard. 3 A. I would say not, Mr Beresford, because they would not fit. 3 anormaticly, and I does include infants and children, but 4 fit. Clause they would not fix. ISO standard. 4 5 THE CHAIRMAN: Just give me a moment, please. Thank you, 5 Have not seen it so Im not sure. IS the standard 6 MR BERESFORD: You've suggested actified, but you haven't 7 particularly in Europe, for costal life jackets, and 7 said by whom. I presume you meng just a life jacket adsoin Australia. 7 9 hat compiles with the international standard that 9 THE CHAIRMAN: What then is the difference between a coastal 12 being built to that standard. I's all very well hawing 13 accrain number of faitness, including righting 13 an SIO standard, but somebody has to certify it ai 13 accrain number of bolding their 14 accrain number of faitness, including righting 14 accrain number of bolding their 14 accostal life jacket cand an cocastal life jacket sare also much more difficult to put 2 15 Q. And does	1	-	1	
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30 (Pages 117 to 120)

	Page 121		Page 123
1	with, table 1?	1	operating offshore, within a certain distance. And
2	A. The same as class I vessels.	2	somewhere in between. I cannot recall.
3	Q. Then in paragraph A-23, you raise the issue of the	3	THE CHAIRMAN: This is clearly an important issue, so may
4	origin of the requirements for 5 per cent life jackets	4	I ask you, if you could come back to us
5	for children. You say that you don't understand that.	5	A. I will do that.
6	You say:	6	THE CHAIRMAN: because it's always useful to compare the
7	"SOLAS requirements state 'a number of life jackets	7	regime operating in other well-regulated jurisdictions,
8	suitable for children equal to at least 10% of the	8	and Australia and the United Kingdom would fall into
9	number of passengers on board shall be provided or such	9	that category.
10	greater number as may be required to provide a life	10	A. I do have the documentation with me, so I could do that
11	jacket for each child'."	11	quite quickly.
12	A. Yes, and it's the final part of that that I think is	12	THE CHAIRMAN: Thank you very much.
13	important.	13	MR MOK: Mr Chairman, earlier you mentioned 43 kg.
14	Q. Yes.	14	THE CHAIRMAN: Yes.
15	THE CHAIRMAN: May we see the SOLAS requirement, please?	15	MR MOK: I think the reference you might have in mind is in
16	A. It's document A of my report.	16	one of the minutes of meetings between Mardep and the
17	MR BERESFORD: Document A begins at page 1683.	17	industry, which is exhibited in Mr Wong Wing-chuen's
18	THE CHAIRMAN: Yes.	18	statement. Can I refer you to that?
19	MR BERESFORD: Can you help us, please, Dr Armstrong?	19	THE CHAIRMAN: Yes. Page?
20	THE CHAIRMAN: Regulation 7, I think the footnote says.	20	MR MOK: Page 4609-3 in marine bundle 13.
21	A. It's page 1692.	21	THE CHAIRMAN: Yes. This is the paragraph that you
22	MR BERESFORD: Paragraph 2 to regulation 7?	22	corrected, did you not?
23	A. 2.1.	23	MR MOK: That's right. And the reference there is to the
24	Q. 2.1.1, in fact?	24	IMO Standard. So if it is helpful, we can supply a copy
25	A. Correct.	25	of that standard to the Commission.
	Page 122		Page 124
1	Q. "A life jacket complying with the requirements of	1	THE CHAIRMAN: Yes.
2	paragraph 2.2.1 or 2.2.2 of the code shall be provided	2	MR MOK: I understand that the definition of "infant" is the
3	for every person on board the ship and, in addition:	3	bit that I have crossed out, the 15 kg and 100 cm.
4	.1 a number of life jackets suitable for children	4	THE CHAIRMAN: You think, then, an infant is up to 15 kg
5	equal to at least 10% of the number of passengers on	5	MR MOK: That's right.
6	board shall be provided or such greater number as may be	6	THE CHAIRMAN: and a child from there up to 43?
7	required to provide a life jacket for each child".	7	MR MOK: Between there to 43. But we will double-check that
8	THE CHAIRMAN: What is the position in the United Kingdom or	8	and supply to you a copy of the IMO Standard.
9	Australia as to the provision of children's life	9	THE CHAIRMAN: Thank you very much.
10	jackets?	10	MR BERESFORD: I'm grateful to my learned friend.
11	A. In Australia, I know that the requirement is to have the	11	So, in your report, you have recommended for
12	greater number, to cover the number of children on	12	consideration at number 10:
13	board.	13	"delete '100%' from table 7 and replace with '100%
14	THE CHAIRMAN: So every child must be provided with a life	14	adult life jackets + 5% children life jacket or such
15	jacket?	15	greater number as may be required to provided a life
16	A. Correct. I don't know the position in the UK.	16	jacket for each child on board'."
17	THE CHAIRMAN: Is that in this recent federally made	17	A. Yes.
18	legislation?	18	Q. I think you mean table 1, don't you? Perhaps you mean
19	A. It certainly is in the federally made one. You'd have	19	table 7 as well, but
20	to look at each of the states' ones to see what they	20	A. I was referring under A-22 to table 7, so
21	have suggested, and I don't know.	21	Q. Table 7 looks as though it's been carried over from your
22	THE CHAIDMAN. As I to 1'should be a set of the state of t	22	previous issue and consideration.
22	THE CHAIRMAN: And to which categories of vessel does that		-
22	apply?	23	A. Possibly.
	-		-

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	Page 125		Page 127
1	more than 60 passengers and are not let for hire or	1	location of these photographs. There's another one
2	reward and operate within waters of Hong Kong."	2	where you can see the plastic bag more clearly at
3	A. I think I mean table 1.	3	page 324.
4	Q. So we're not really concerned with that in this Inquiry.	4	THE CHAIRMAN: I think we'd been referred to these
5	We're concerned with schedule 3, part 2, table 1, which	5	photographs so that we can read what is on the yellow
6	refers to class I vessels.	6	pouch, marked very clearly, at least in English, and
7	A. Thank you.	7	presumably in Chinese characters, "Life jacket".
8	Q. At A-24, we come to the next issue which relates to the	8	MR McGOWAN: You can actually also see inside the plastic
9	storage of life jackets in plastic bags. You say:	9	bag in these photographs the orange that you referred
10	"Many life jackets remaining on board Lamma IV were	10	to, sir.
11	stored in unmarked plastic bags held within the orange	11	THE CHAIRMAN: We have the point. Thank you.
12	bag under the seat, which meant that they were not	12	A. Then of course the point about the tapes of the life
13	immediately identified as life jackets. Furthermore it	13	jackets themselves being
14	is understood that some of the life jacket tapes were	14	MR BERESFORD: I'm coming to the tapes in a moment, yes.
15	tied together and the knots were difficult to untie."	15	Just focusing on the plastic bags for a moment.
16 17	You've noted in your recommendation for consideration at number 11 that:	16 17	So when you refer to the knot, you mean a knot in the plastic has?
17		17	the plastic bag?
18	"Plastic bags were easily ripped open, but in a panic situation it is suggested that they were not	10	A. A knot in the plastic bag. It did confuse me for a short period of time.
20	immediately identifiable as containing life jackets.	20	Q. And in answer to my question, the evidential foundation
20	The reason for the plastic bags is understood to be to	20	for this is your inspection, rather than any evidence
21	prevent attack by insects"	21	that's been recorded?
22	Correct me if I'm wrong, Dr Armstrong, or perhaps	23	A. Yes, correct.
23	somebody else will, but I'm not sure that anybody	24	Q. You've also said:
25	actually said that they had any difficulty identifying	25	" it is understood that some of the life jacket
25		20	it is understood that some of the fife jucket
	Page 126		Page 128
1	Page 126 life jackets as life jackets.	1	Page 128 tapes were tied together and the knots were difficult to
1 2	life jackets as life jackets.	1 2	Page 128 tapes were tied together and the knots were difficult to untie."
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16 be separate from the main power supply, to avoid loss of power in case of fire or flooding in the engine room." 16 batteries to be used for the emergency lighting be located? 17 power in case of fire or flooding in the engine room." 18 A. I can only refer to other designs, and that can be in an emergency battery locker behind the wheelhouse, somewhere in that region. 20 A. Yes, it is. 20 A. Yes, it is. 21 Q. Yow've referred us to the code of practice at page 3458. 20 somewhere in that region. 22 MR BERESFORD: The code of practice is in marine bundle 11. 23 generators or your engine? 24 A. I chairman. There's a copy in the legislation bundle. 25 THE CHAIRMAN: And in bundle 11, where do 1 find it? 26 The code of practice begins at page 3416, and 4 Tm referring, you, Mr Chairman, to page 3458. 1 7 This is a table in chapter II, which is headed 3 appears to be applicable only to category B vessels, a carording to the annotation at asterisk 9. 6 8 "Survey/Inspection Items and Survey/Inspection?". table 1, "Initial Survey"; table 2, "Final Inspection?", table 3, "Final Inspection?", table 4, "Periodical Survey"; table 3, "Final Inspection?", ta engarate sour		Page 129		Page 131
2 A. Or the generator that's in	1	Q. I think I referred to inadequacy of the inspection, and	1	the engine room?
3 which involves a survey by a Government surveyor, but 3 THE CHAIRMAN: Or the generator. 4 there's also a weakly inspection. 4 A, Pes, correct. 5 A. Ah. I'm sorry. I misunderstood. 5 THE CHAIRMAN: Or the generator. 6 TIH: CHAIRMAN: Perhaps it's at the end of each weakly 6 THE CHAIRMAN: - albeit in boxes of some degree of 7 A. Yes. 7 A. Yes. 8 MR BERESFORD: The vesting source of the energency electrical power'. 1 10 Commission will need to decide whether this plastic bag 1 12 Turning then to your nest head, the next issue, 1 1 13 issue (y), 'Redundancy of emergency electrical power should 1 1 14 The issue you's eidentified is this: 1 1 1 15 "The source of the emergency electrical power should 16 16 16 16 batteries to be used for the emergency lighting be 1 16 17 power in case of fire or flooding in the engine room." 1 1 1 18 at regenexis be thare	2		2	-
4 A. Yes, correct. 5 A. Ab. Tm sorry. 1 misunderstood. 6 THE CHAIRMAN: Perhaps ifs at the end of each weekly 7 inspection that they're neatly tied away. 8 THE CHAIRMAN: Perhaps ifs at the ending "For 9 Consideration 11", you've simply said that the 10 Commission will need to decide whether this plastic bag 11 Turning then to your next head, the next issue, 13 issue (v), "Redundancy of emergency electrical power should 16 be separate from the main power supply, to avoid loss of 17 power in case of fire or flooding in the engine room." 18 Is that right? 19 is that right? 19 Next it is. 21 O. You've referred us to the code of practice at page 3458. 21 THE CHAIRMAN: Main bundle? 22 THE CHAIRMAN: Yes. 23 M R BERESFORD: The code of practice is in marine bundle 11. 24 Mr Chairman. There's a copy in the legislation bundle. 25 THE CHAIRMAN: And in bundle 11, where do 1 find i? 3 MR BERESFORD: The code of practice is in marine bundle 11. 24 Mr Chairman. There's a cop			3	
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6 THE CHAIRMAN: Perhaps it's at the end of each weekly 7 anspection that they're nearly tied away. 7 inspection that they're nearly tied away. 6 engine moon 8 MR BERESFORD: Anyway, under the heading "For 7 A. Yes. 9 Consideration 11", you've simply said that the 10 A. Yes. 12 Turning then to your next head, the next issue, 13 the waterline as well? 13 issue (v)', "Redundancy of emergency electrical power? 14 A. It did. 14 The issue you've identified is this: 14 A. It did. 15 "The source of the emigren yelectrical power should 15 THE CHAIRMAN: Anon a vessel like Lamma IV, where might 16 be separate from the main power supply, to avoid loss of 17 located? 17 is that right? 18 A. I can only refer to other designs, and that can be in 17 is that right? 18 A. I can only refer to other designs, and that can be in 18 A. Tedit. 12 Somewhere in that region. 12 19 is that right? 18 A. I can't believe so. It's a length of cable. 17 19 is	5	• •	5	
7 A. Yes. 8 MR BERESFORD: Anyway, under the heading "For 5 9 Constission will need to decide whether this plastic bag 1 10 Commission will need to decide whether this plastic bag 1 11 Turning then to your next head, the next issue, 1 12 Turning then to your next head, the next issue, 1 13 issue (v), "Redundancy of emergency electrical power". 14 14 The issues you've identified is this: 14 15 "The cource of the emergency electrical power should 15 16 bestarate from the main power supply, to avoid loos in an emergency battery locker behind the wheelhouse, 20 A. Yes, it is. 19 a memergency battery locker behind the wheelhouse, 21 O. You've referred us to the code of practice is a page 3458. 11 HE CHAIRMAN: Yes. Des that create any problems for 21 O. You've referred us to the code of practice is a maine bundle 11. 23 generators or your engine? 23 MR DERESFORD: The code of practice heights a fugge 3416, and 14 14 14 24 Mr Chairman, Dage 3458. 14 14 14 14 14 14		•	6	-
8 MR BERESFORD: Anyway, under the heading "For 8 THE CHAIRMAN: - albeit in boxes of some degree of 9 Consideration 11, 'you've simply said that the 8 THE CHAIRMAN: - albeit in boxes of some degree of 9 Consideration 11, 'you've simply said that the 9 1 10 Commission will need to decide whether this plastic bag 1 A. Yes. And also the engine room is the greatest source of 11 The issue you've identified is this: 1 1 A. Yes. And also the engine room is the greatest source of 13 The issue you've identified is this: 1 1 1 1 14 The issue you've identified is this: 1 1 1 1 14 The issue you've identified is this: 1 <			7	-
9 Consideration 11", you've simply said that the Commission 11", you've simply said that the solution is an acceptable solution. 9 tighness, or not? 10 Commission 11", you've simply said that the solution is an acceptable solution. 10 A. Yes. And also the engine room is the greatest source of fire on board a vessel. 12 Turning then to your next head, the next issue, 11 11 fire on board a vessel. 13 issue (v), "Redundancy of emergency electrical power's. 12 THE CHAIRMAN: And of course, that placed them well belo the waterline as well? 14 The issue you've identified is this: 14 A. I dot A. I dot 15 THE CHAIRMAN: Mark and of course, that placed them well belo to somewhere in that right? 18 A. I con 16 be separate from the main power supply, to avoid loss of 17 16 batteries to be used for the emergency lighting be 10 17 17 rist hat separation that you mean by 'redundancy'; 18 18 A. I can only refer to other designs, and that can be in 18 18 12 A. Yes, it is. 10 11 12 20 somewhere in that region. 12 THE CHAIRMAN: Which bundle? 12 11 11 23 11 24 Mr C			8	
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12 Turning then to your next head, the next issue, 12 THE CHAIRMAN: And of course, that placed them well belo 13 issue (v), "Redundancy of emergency electrical power". 13 the waterline as well? 14 The issue you's identified is this: 14 A. It did. 15 "The source of the emergency electrical power should 16 bateries to be used for the emergency lighting be 16 bateries to be used for the emergency lighting be located? 17 Ris that separation that you mean by "redundancy"; 18 A. I can only refer to other designs, and that can be in 18 A. Is did. 19 an emergency battery locker behind the wheelhouse, 20 Q. You've referred us to the code of practice is in marine bundle! 11 RERESFORD: The code of practice is in marine bundle! 12 21 MR DERESFORD: The code of practice bis in a regular 25 THE CHAIRMAN: Yes. 24 23 THE CHAIRMAN: And in bundle 11, where do I find it? 3 MR BERESFORD: The code of practice big ins at page 3416, and 4 appears to be applicable only to category B vessels, 5 THE CHAIRMAN: Thank you. 1 MR BERESFORD: Rages 3438 and 3459. 1 MR BERESFORD: Rages 3438 and 3459. 1	11	· · ·	11	
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21 Q. You've referred us to the code of practice at page 3458. 21 THE CHAIRMAN: Which bundle? 23 MR BERESFORD: The code of practice is in marine bundle 11. 22 charging the batteries from the distance from your generators or your engine? 24 Mr Chairman. There's a copy in the legislation bundle. 24 A. I don't believe so. It's a length of cable. 25 Tim not sure which copy you're referring to on a regular 24 A. I don't believe so. It's a length of cable. 26 Tim chairman. There's a copy in the legislation bundle. 24 A. I don't believe so. It's a length of cable. 25 Tim not sure which copy you're referring to on a regular 25 THE CHAIRMAN: Yes. 21 Dasis. 1 MR BERESFORD: The code of practice begins at page 3416, and 4 apperosal's of plans and data. It 4 I'm referring, you, Mr Chairman, to page 3458. 5 according to the annotation at asterisk 9. 6 6 THE CHAIRMAN: Is nable in chapter II, which is headed 8 THE CHAIRMAN: What is a category B vessel? 7 7 This is a table in chapter II, which is headed 8 THE CHAIRMAN: What is a category B vessel? 7 8 "Survey/Inspection Items and Survey/Inspection". 10 MR	19	is that right?	19	an emergency battery locker behind the wheelhouse,
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23 MR BERESFORD: The code of practice is in marine bundle 11. 23 generators or your engine? 24 Mr Chairman. There's a copy in the legislation bundle. 24 A. I don't believe so. It's a length of cable. 25 I'm not sure which copy you're referring to on a regular 25 THE CHAIRMAN: Yes. Page 130 1 basis. Page 130 2 THE CHAIRMAN: And in bundle 11, where do I find it? 3 3 MR BERESFORD: The code of practice begins at page 3416, and 1 MR BERESFORD: Pages 3458 and 3459. 5 THE CHAIRMAN: Thank you. 3 according to the annotation at asterisk 9. 6 MR BERESFORD: Pages 3458 and 3459. 6 THE CHAIRMAN: Category what vessel? 7 This is a table in chapter II, which is headed 8 "Survey/Inspection Items and Survey/Inspection 11 Pregrammes". There are three tables set out in 11 Vessel". "Launch" and "Ferry Vessel" are both 12 section 7: table 1, "Initial Survey"; table 3, "Final Inspection". 13 Then there's also provision, just about where you're 14 Table 3, "Final inspection", is at pages 3458 to 14 putting your proposed amendment, at paragraph 21.5, 15	21	Q. You've referred us to the code of practice at page 3458.	21	THE CHAIRMAN: Yes. Does that create any problems for
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3MR BERESFORD: The code of practice begins at page 3416, and 43dealing with the submission of plans and data. It4I'm referring, you, Mr Chairman, to page 3458.3dealing with the submission of plans and data. It4I'm referring, you, Mr Chairman, to page 3458.4appears to be applicable only to category B vessels,5THE CHAIRMAN: Thank you.5according to the annotation at asterisk 9.6MR BERESFORD: Pages 3458 and 3459.6THE CHAIRMAN: Category what vessel?7This is a table in chapter II, which is headed7MR BERESFORD: B.8"Survey/Inspection, Issuance of Certificate and Plan8THE CHAIRMAN: What is a category B vessel?9Approval", and it's in section 7, which is headed9A. It's a cargo vessel.10"Survey/Inspection Items and Survey/Inspection10MR BERESFORD: It's chapter I, section 5, "Category of11Programmes". There are three tables set out in11Vessel". "Launch" and "Ferry Vessel" are both12section 7: table 1, "Initial Survey"; table 2,13Then there's also provision, just about where you're14Table 3, "Final inspection", is at pages 3458 to14putting your proposed amendment, at paragraph 21.5,153459. You note that this does not have a requirement16"The vessel's emergency lighting, navigation lights17a separate source of power supply.17for vessels of length exceeding 24 metres, fixed fire18THE CHAIRMAN: Thank you.20So it seems that there's a provision requiring <t< td=""><td>1</td><td>basis.</td><td>1</td><td>MR BERESFORD: There is a reference to an emergency power</td></t<>	1	basis.	1	MR BERESFORD: There is a reference to an emergency power
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23 there is a provision that requires an emergency power 23 THE CHAIRMAN: Was the location of the auxiliary batteric	23	there is a provision that requires an emergency power	23	THE CHAIRMAN: Was the location of the auxiliary batteries
24 source, it doesn't provide that it should be kept 24 dealt with in plans that we've looked at? I know you				•
25 separate from the batteries, which are likely to be in 25 tried to help us with the circuit diagram. But was that				

	Page 133		Page 135
1	a plan that the Marine Department would have seen?	1	A. Thank you.
2	A. It was a plan that was submitted to the Marine	2	Q. But perhaps consideration 13 would suggest "the
3	Department. I cannot recall if that particular one was	3	emergency source of power shall not be located below the
4	marked "approved" or "seen", but I think it was	4	deepest load waterline or in the machinery space"?
5	approved, sir.	5	A. Yes.
6	THE CHAIRMAN: Can you remember the title of the plan?	6	THE CHAIRMAN: As you state, the obvious place in Lamma IV
7	A. It's at page 317 in marine bundle 2, sir.	7	would have been in the wheelhouse?
8	THE CHAIRMAN: Yes.	8	A. Well, I'm not sure in the wheelhouse is the right place,
9	A. This is not an approved copy, I'm sorry. They are	9	sir.
10	shown, if you would like me to position the cursor	10	THE CHAIRMAN: Because of the fire danger there?
11	but this is only a schematic, and this isn't necessarily	11	A. Because of the fact there is a fire danger, and
12	the exact location.	12	batteries of this type usually give off hydrogen, which
13	THE CHAIRMAN: I recall you took us to this on the last	13	can be or is a flammable gas. So they have to be vented
14	occasion.	14	to atmosphere.
15	A. I did, sir, yes.	15	THE CHAIRMAN: Yes. As it was in the engine room?
16	THE CHAIRMAN: And it was your opinion that they were the	16	A. As it was in the engine room.
17	ones on the port side of the vessel.	17	MR BERESFORD: We've jumped a bit, because we've jumped the
18	A. Yes. Just below the cursor there.	18	issue at paragraph A-28 in your report, but I'll come to
19	MR BERESFORD: The point is that they were located in the	19	that. Can I just read your consideration 12 into the
20	engine room; isn't that right?	20	record, and that was:
21	A. Yes.	21	"Add an additional item to the code of practice
22	THE CHAIRMAN: So in a place where fire was a possibility	22	chapter II section 7 table 3, C&D: [after item] 9
23	MR BERESFORD: Or flooding.	23	'Location of emergency source of electrical power should
24	THE CHAIRMAN: and below the waterline?	24	be outside machinery space and above
25	A. Correct.	25	waterline-verification'."
	Page 134		Page 136
1	MR BERESFORD: When you say that the code of practice does	1	A. Yes.
2	not have a requirement for redundancy of emergency	2	Q. I just wanted to ask you, as far as positioning it above
3	electrical power, it's probably not quite accurate	3	the waterline, how would that assist in the present
4	because it does provide for emergency electrical power,	4	case?
5	which must be something different from the standard	5	A. In the case of Lamma IV?
6	electrical power.	6	Q. Yes.
7	A. I understand, yes. Redundancy of location, perhaps.	7	A. It depends how high above the waterline, of course, it
8	Q. But what it doesn't provide for is that the source of	8	had been located. But if it had been above the main
9	the emergency electrical power should be in a different	9	deck, then the batteries would not have been swamped.
10	location.	10	But of course we don't know that the batteries were
11	THE CHAIRMAN: I think we're all at one about that.	11	swamped immediately on Lamma IV.
12	A. Yes.	12	Q. They would only not have been swamped if they had been
13	THE CHAIRMAN: It's the use of the word "redundant" you're	13	positioned in the bow, wouldn't they?
14	taking issue with.	14	THE CHAIRMAN: I think what you mean by that is whether they
15	A. The words are wrong, yes.	15	carried on functioning.
16	MR BERESFORD: Well, it's the location we're talking about?	16	A. Whether they carried on functioning; whether they were
17	A. It's the location.	17	filled with water, which would stop them working.
18	Q. So your recommendation 12 for consideration is that	18	MR BERESFORD: Even if they had been positioned above the
19	there should be an addition to table 3 at page 3	19	waterline, unless they were in the bow, because Lamma IV
20	page 3459, after item 9.	20	stank stern-first
21	A. Yes. I think now you've pointed it out to me, it would	21	A. But they seemed to have continued to operate for some
22	be also advisable to put it on page 3473, after	22	period of time, even though the vessel was partly
23	paragraph 21.5.	23	underwater.
	Q. Well, in fact you have dealt with that in your	24	Q. That may be less due to the fact that they were above
24 25	consideration 13.	25	the waterline. In fact, they weren't; they were in the

	Page 137		Page 139
1	engine room.	1	You refer to the current requirement, which is in
2	A. On the floor of the engine room, so a long way down.	2	the code of practice at page 3473, section 21. We've
3	Q. Yes. But perhaps they were in sealed boxes; I don't	3	referred to that already.
4	know.	4	Then consideration 13, which we've already
5	A. They were in fibreglass boxes. I'm not 100 per cent	5	discussed, you suggest adding a new paragraph
6	certain that the watertight integrity of those boxes was	6	after 21.5:
7	maintained, because they were very close to the damage	7	"The emergency source of power shall not be located
8	on the vessel and it would be rather surprising if they	8	below the deepest load waterline."
9	were not damaged, particularly the vent up through the	9	And I think we've agreed you've suggested adding
10	deck. But I have no evidence one way or the other,	10	"for the machinery space", or "in the machine space"?
11	because when I saw the vessel, it had been tidied up and	11	A. Yes. Probably better to say "in the same space as the
12	a lot of the debris taken away.	12	source of electrical power", or "normal source of
13	Q. But my question is, how does it assist in the present	13	electrical power".
14	case on the facts of the present case, how would it	14	THE CHAIRMAN: Is there anything in Australian or
15	have assisted to have had the source of the emergency	15	UK legislation about the location of emergency sources
16	power supply above the waterline?	16	of power, the batteries that will provide emergency
17	A. Well, my belief is in the present case, if they'd been	17	power?
18	above the waterline they would have continued operating	18	A. I can forward a copy of the documents to you,
19	until such time as the vessel sank.	19	Mr Chairman.
20	THE CHAIRMAN: And the water reached where they were?	20	THE CHAIRMAN: Thank you.
21	A. Yes.	21	MR BERESFORD: Then we come on to your next issue, headed
22	MR BERESFORD: Yes. Well, if they were in the stern above	22	"Damage stability", issue (vi). You note that there are
23	the waterline, that would have been immediately.	23	references in annex F to the expression "margin line",
24	THE CHAIRMAN: I think we've got the point, Mr Beresford.	24	but there is no definition of that term "margin line"
25	MR BERESFORD: I don't wish to test the Commission's	25	either within the code of practice or Cap 548 or
	Page 138		Page 140
1	patience, but what I want to ask is whether it might be	1	Cap 548G. And you've proposed that a definition be
2	an alternative to place them in waterproof boxes vented	2	added to the code of practice
3	to the deck in, say, the crew space or the void further	3	THE CHAIRMAN: Before we get to that, could I see the
4	forward, but still below the waterline?	4	reference to "margin line" in annex F? Which page is
5	A. I understand. My problem with a waterproof box,	5	that?
6	Mr Beresford, is that they may be waterproof at the time	6	MR BERESFORD: The first one is page 3544, Mr Chairman.
7	of construction and at the time of survey, but are they	7	THE CHAIRMAN: Thank you.
8	maintained watertight? Batteries are an item that needs	8	MR BERESFORD: We see under part 2, paragraph (3)(d):
9	constant maintenance and that requires a crew to make	9	"no partial subdivision above margin line is
10	sure that at all times they are put back in the way	10	provided"
11	which they were originally, which I think is asking for	11	And page 3546, paragraph (9)(b):
12	potential for disaster, anyway.	12	"in no case should the margin line be submerged in
13	THE CHAIRMAN: Were these batteries marine deep-cycle	13	the intermediate stages or final stage of flooding."
14	batteries?	14	The Commission will recall that that (9)(b) is
15	A. My understanding is that's the case, yes.	15	a similar condition to that which we discussed in the
16	THE CHAIRMAN: So, sealed?	16	course of taking evidence in the 1994 appendix.
17	A. Sealed batteries, yes. Sealed but	17	The cross-reference is the fax dated 1 August 1994
18	MR BERESFORD: That explained the ability to carry on	18	at marine bundle 8, page 2081. The Commission will
19	functioning for some time after submersion?	19	perhaps recall my questioning a number of surveyors
20	A. Possibly, yes.	20	about the requirement at page 2085, the twin requirement
21	Q. Then in paragraph A-28, you deal with this specifically.	21	"at the final stage of flooding the margin line shall
22	You say:	22	not be submerged", alongside the requirement for
23	"The source of the emergency electrical power should	23	"a positive residual metacentric height of at least
24	be located above the deepest load waterline, to minimise	24	50 mm".
25	swamping in case of flooding of the engine room."	25	THE CHAIRMAN: Was "margin line" defined here?

35 (Pages 137 to 140)

	Page 141		Page 143
1		1	-
1 2	MR BERESFORD: It was defined, as I recall I have to check, but I think it was defined as either 3 inches	1	 A. Correct. MR BERESFORD: That's because we can calculate it with
2 3		2 3	
	OF	-	computers rather than by old manual methods; is that
4	THE CHAIRMAN: We know what it is, but was it defined as	4	right?
5	such? We're told it was 3 inches and was converted from	5	A. It used to be a terrible calculation to do, taking many,
6	the imperial to metric.	6	many hours. Now you can do it in probably 10 seconds or
7	Is that your understanding?	7	something like that. Because computers allow you to do
8	A. It is defined in 348, was it?	8	a lot of iterative routines, the method of doing it has
9	MR SHIEH: I have to dig it up.	9	changed considerably.
10	THE CHAIRMAN: So there is a definition of "margin line"?	10	Q. So it's sufficient, in your view, for the condition of
11	MR BERESFORD: Mr Chairman, my learned leader refers to	11	the vessel after damage to be stated to be that there
12	a statute but it has to be borne in mind that no statute	12	should be a positive residual GM of at least 50 mm?
13	was applicable to local vessels.	13	A. Yes, I would say so. My difficulty is if this is left
14	THE CHAIRMAN: Yes.	14	in, then it would actually prevent you from using many
15	MR BERESFORD: What they were doing was adopting a sketch	15	of the computer methods in use today.
16	applicable to ocean-going vessels and using it for	16	Q. Yes, I see.
17	guidance.	17	The next section is section (vii), headed
18	THE CHAIRMAN: Thereby adopting, for guidance, as you say,	18	"Watertight subdivision".
19	that provision?	19	Mr Chairman, this is quite a substantial section and
20	MR BERESFORD: Yes. And the provision is reflected in	20	it's perhaps one of the most important parts of this
21	Cap 369AM, which is at legislation bundle tab 11. Yes,	21	report, so if that would be a convenient moment to take
22	"margin line" is defined as meaning:	22	a break?
23	" a line drawn at least 76 millimetres below the	23	THE CHAIRMAN: Yes. We'll certainly take an afternoon
24	upper surface of the bulkhead deck at the side of the	24	break. We'll take a break for 15 minutes.
25	ship".	25	(3.59 pm)
	Page 142		Page 144
1	In fact, that's referred to by Dr Armstrong in his	1	(A short break)
2	consideration number 14, because his proposal is that	2	(4.14 pm)
3	a definition be added to the code of practice	3	THE CHAIRMAN: Just give me a moment, please, Mr Beresford
4	"consistent with SOLAS (or as in Cap 369AM)."	4	MR BERESFORD: Certainly, Mr Chairman.
5	Is that right, Dr Armstrong?	5	THE CHAIRMAN: Thank you. Yes.
6	A. It's not quite consistent with Cap 369AM, because I've	6	MR BERESFORD: Dr Armstrong, we were just coming to your
7	suggested 75 mm. I believe Cap 369AM says 76 mm. But	7	next issue, which is "Watertight subdivision";
8	it is consistent with SOLAS.	8	issue (vii) in your report, at page 1648. You've
9	Q. Which is consistent with SOLAS?	9	noticed that:
10	A. 75. It used to be 3 inches, which was 76. But SOLAS is	10	"At the time of construction of Lamma IV, (1995)
11	now 75.	11	watertight subdivision was a requirement included in the
11	Q. These issues are in the nature of tidying up the code of	12	Instructions in force at the time, with detailed
12	practice, and in fact you've set out the definition at	13	legislation provided by schedule 1 of Cap 369AM."
13	the top of page 1648 of your report.	14	As we were just discussing before the break,
14	A. Yes.	15	Cap 369AM did not apply to what we now call local
16	Q. This being the SOLAS definition?	16	vessels, at least by legislation, but it was adopted in
10	A. Being the SOLAS definition.	17	part as a matter of practice by the Marine Department.
	Q. Another issue of the same nature, paragraph (9)(a) of	17	A. Yes. Referred to in the letter you put up recently at
18		18 19	page 2081, I think.
19 20	annex F, page 3546, refers to a calculation by the		Q. The letter of 1 August 1994
20	constant displacement method. In consideration 15, you	20 21	Q. The letter of 1 August 1994 A. Yes.
21	suggest that this be deleted on the grounds that this is		
22	obsolete.	22	Q stating:
23	A. Correct. I think there are easier ways of doing it. THE CHAIRMAN: So you suggest simply deleting but not	23 24	"For every vessel carrying more than 100 passengers, the watertight subdivision (one-compartment flooding)
1 / 1 /	THE FEAR WAN' NO YOU suggest simply deleting but not	14	the waterned subdivision (one-compartment flooding)
24 25	deleting and adding something else?	25	requirements are to be complied with. (see attached

Commission of Inquiry into the Collision of Vessels near Lamma Island on 1 October 2012

	Page 145		Page 147
1	copies, schedules 1 and 3)."	1	to limitation on the size of the hole in the ship. By
2	Which were effectively schedules 1 and 3 of	2	limiting the size of any internal compartment of the
3	Cap 369AM?	3	ship and surrounding it by watertight bulkheads,
4	A. Yes.	4	sufficient buoyancy can be provided by all of the
5	Q. You've said:	5	remaining compartments that are not damaged so that the
6	"Damage stability requirements were given in	6	vessel continues to float. The size of each compartment
7	schedule 3 of Cap 369AM, but these were not mandated	7	is usually determined by the volume necessary for the
8	under the Instructions in force at the time.	8	waterline of the damaged craft to remain below the main
9	Nevertheless, the builder of Lamma IV did investigate	9	deck, by a nominal distance of 75 mm. The location of
10	the damage stability and stated the damaged GMT value as		75 mm below the deck is usually called the margin line.
11	well as the watertight subdivision calculation."	11	(b) Stability of a ship is a measure of the ability
12	When you say "the builder", are you referring there	12	of the craft to return to the upright position if
13	to the damage stability calculations, the booklets	13	displaced to one side by some external force, such as
14	provided by Cheoy Lee?	14	the wind or weather or other forces such as passengers
15	A. Yes.	15	crowding on one side or cargo shifting to one side.
16	Q. Not the Damage Stability Booklet provided by the naval	16	Stability is only referenced to the transverse
17	architect upon completion of the vessel?	17	direction, and usually associated with a roll or heel
18	A. I was referring to the ones done by Cheoy Lee.	18	angle.
19	Q. Yes. You are aware of the one provided by	19	(c) Damage stability refers to the ability of the
20	Naval-Consult, are you?	20	vessel to return to an upright position if displaced to
21	A. I am, yes.	21	one side by an external force, when the watertight
22	Q. Miscellaneous bundle, page 111. They treated the	22	integrity of the craft is breached and water has entered
23	steering compartment and the tank room as one, for the	23	the vessel."
24	purposes of their calculation.	24	Then you say in paragraph A-36:
25	A. May I have a look at that? Thank you.	25	"If sufficient water enters a vessel, then it will
	Page 146		Page 148
	-		1 450 140
1	Q. Miscellaneous bundle, page 111.	1	either capsize by rolling over owing to insufficient
1 2	Q. Miscellaneous bundle, page 111.A. Yes. Thank you. I have seen it before.	1 2	
			either capsize by rolling over owing to insufficient
2	A. Yes. Thank you. I have seen it before.	2	either capsize by rolling over owing to insufficient damage stability (but not necessarily sink) or it will
2 3	A. Yes. Thank you. I have seen it before.Q. They start with a section on intact stability. The	2 3	either capsize by rolling over owing to insufficient damage stability (but not necessarily sink) or it will founder (sink) in the upright condition or with
2 3 4	A. Yes. Thank you. I have seen it before.Q. They start with a section on intact stability. The damage stability starts at page 140.	2 3 4	either capsize by rolling over owing to insufficient damage stability (but not necessarily sink) or it will founder (sink) in the upright condition or with excessive trim, owing to insufficient watertight
2 3 4 5	A. Yes. Thank you. I have seen it before.Q. They start with a section on intact stability. The damage stability starts at page 140. At page 141, we see the steering and tank room	2 3 4 5	either capsize by rolling over owing to insufficient damage stability (but not necessarily sink) or it will founder (sink) in the upright condition or with excessive trim, owing to insufficient watertight subdivision. A good example of a vessel foundering
2 3 4 5 6	 A. Yes. Thank you. I have seen it before. Q. They start with a section on intact stability. The damage stability starts at page 140. At page 141, we see the steering and tank room damage taken together. A. (Witness nods). Q. And at page 142. There's a graph at page 143, "Steering 	2 3 4 5 6	either capsize by rolling over owing to insufficient damage stability (but not necessarily sink) or it will founder (sink) in the upright condition or with excessive trim, owing to insufficient watertight subdivision. A good example of a vessel foundering owing to inadequate subdivision, but having adequate
2 3 4 5 6 7	A. Yes. Thank you. I have seen it before.Q. They start with a section on intact stability. The damage stability starts at page 140. At page 141, we see the steering and tank room damage taken together.A. (Witness nods).	2 3 4 5 6 7	either capsize by rolling over owing to insufficient damage stability (but not necessarily sink) or it will founder (sink) in the upright condition or with excessive trim, owing to insufficient watertight subdivision. A good example of a vessel foundering owing to inadequate subdivision, but having adequate damage stability is the Titanic, about which many learned papers have been written on its stability and watertight integrity. The Titanic sank by the stern,
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2 3 4 5 6 7 8 9 10 11	 A. Yes. Thank you. I have seen it before. Q. They start with a section on intact stability. The damage stability starts at page 140. At page 141, we see the steering and tank room damage taken together. A. (Witness nods). Q. And at page 142. There's a graph at page 143, "Steering & Tank Room Damage". This goes on through page 146. At page 147, they deal with engine room and so on. A. I think you're right, Mr Beresford, to imply that my 	2 3 4 5 6 7 8 9 10 11	either capsize by rolling over owing to insufficient damage stability (but not necessarily sink) or it will founder (sink) in the upright condition or with excessive trim, owing to insufficient watertight subdivision. A good example of a vessel foundering owing to inadequate subdivision, but having adequate damage stability is the Titanic, about which many learned papers have been written on its stability and watertight integrity. The Titanic sank by the stern, and indeed broke in half whilst remaining 'upright' and did not capsize to one side. In my opinion, the sinking
2 3 4 5 6 7 8 9 10 11 12	 A. Yes. Thank you. I have seen it before. Q. They start with a section on intact stability. The damage stability starts at page 140. At page 141, we see the steering and tank room damage taken together. A. (Witness nods). Q. And at page 142. There's a graph at page 143, "Steering & Tank Room Damage". This goes on through page 146. At page 147, they deal with engine room and so on. A. I think you're right, Mr Beresford, to imply that my wording is a little loose. Maybe it should say "the 	2 3 4 5 6 7 8 9 10 11 12	either capsize by rolling over owing to insufficient damage stability (but not necessarily sink) or it will founder (sink) in the upright condition or with excessive trim, owing to insufficient watertight subdivision. A good example of a vessel foundering owing to inadequate subdivision, but having adequate damage stability is the Titanic, about which many learned papers have been written on its stability and watertight integrity. The Titanic sank by the stern, and indeed broke in half whilst remaining 'upright' and did not capsize to one side. In my opinion, the sinking of Lamma IV was also a case where the craft sank but had
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2 3 4 5 6 7 8 9 10 11 12 13 14 15 16	 A. Yes. Thank you. I have seen it before. Q. They start with a section on intact stability. The damage stability starts at page 140. At page 141, we see the steering and tank room damage taken together. A. (Witness nods). Q. And at page 142. There's a graph at page 143, "Steering & Tank Room Damage". This goes on through page 146. At page 147, they deal with engine room and so on. A. I think you're right, Mr Beresford, to imply that my wording is a little loose. Maybe it should say "the designer and builder of Lamma IV did investigate the damage stability". This is paragraph A-34. Q. Yes. Then you say: "It is necessary to explain the terms 'watertight 	2 3 4 5 6 7 8 9 10 11 12 13 14 15 16	either capsize by rolling over owing to insufficient damage stability (but not necessarily sink) or it will founder (sink) in the upright condition or with excessive trim, owing to insufficient watertight subdivision. A good example of a vessel foundering owing to inadequate subdivision, but having adequate damage stability is the Titanic, about which many learned papers have been written on its stability and watertight integrity. The Titanic sank by the stern, and indeed broke in half whilst remaining 'upright' and did not capsize to one side. In my opinion, the sinking of Lamma IV was also a case where the craft sank but had adequate damage stability, as the craft foundered by the stern without rolling over and capsizing to one side." You then make the point: "Watertight subdivision is a quite separate item
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2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22	 A. Yes. Thank you. I have seen it before. Q. They start with a section on intact stability. The damage stability starts at page 140. At page 141, we see the steering and tank room damage taken together. A. (Witness nods). Q. And at page 142. There's a graph at page 143, "Steering & Tank Room Damage". This goes on through page 146. At page 147, they deal with engine room and so on. A. I think you're right, Mr Beresford, to imply that my wording is a little loose. Maybe it should say "the designer and builder of Lamma IV did investigate the damage stability". This is paragraph A-34. Q. Yes. Then you say: "It is necessary to explain the terms 'watertight subdivision' and 'damage stability'." In paragraphs (a), (b) and (c) you explain watertight subdivision, stability and damage stability respectively. I'm just going to read those out: "(a) Watertight subdivision is the process by which 	2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22	 either capsize by rolling over owing to insufficient damage stability (but not necessarily sink) or it will founder (sink) in the upright condition or with excessive trim, owing to insufficient watertight subdivision. A good example of a vessel foundering owing to inadequate subdivision, but having adequate damage stability is the Titanic, about which many learned papers have been written on its stability and watertight integrity. The Titanic sank by the stern, and indeed broke in half whilst remaining 'upright' and did not capsize to one side. In my opinion, the sinking of Lamma IV was also a case where the craft sank but had adequate damage stability, as the craft foundered by the stern without rolling over and capsizing to one side." You then make the point: "Watertight subdivision is a quite separate item from damage stability and the characteristics of one cannot be easily determined from the characteristics of the other." A. Yes. Q. You go on to illustrate this. You say: "Lamma IV had excellent subdivision when constructed
2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23	 A. Yes. Thank you. I have seen it before. Q. They start with a section on intact stability. The damage stability starts at page 140. At page 141, we see the steering and tank room damage taken together. A. (Witness nods). Q. And at page 142. There's a graph at page 143, "Steering & Tank Room Damage". This goes on through page 146. At page 147, they deal with engine room and so on. A. I think you're right, Mr Beresford, to imply that my wording is a little loose. Maybe it should say "the designer and builder of Lamma IV did investigate the damage stability". This is paragraph A-34. Q. Yes. Then you say: "It is necessary to explain the terms 'watertight subdivision' and 'damage stability'." In paragraphs (a), (b) and (c) you explain watertight subdivision, stability and damage stability respectively. I'm just going to read those out: "(a) Watertight subdivision is the process by which a vessel may be prevented from foundering (sinking) 	2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23	 either capsize by rolling over owing to insufficient damage stability (but not necessarily sink) or it will founder (sink) in the upright condition or with excessive trim, owing to insufficient watertight subdivision. A good example of a vessel foundering owing to inadequate subdivision, but having adequate damage stability is the Titanic, about which many learned papers have been written on its stability and watertight integrity. The Titanic sank by the stern, and indeed broke in half whilst remaining 'upright' and did not capsize to one side. In my opinion, the sinking of Lamma IV was also a case where the craft sank but had adequate damage stability, as the craft foundered by the stern without rolling over and capsizing to one side." You then make the point: "Watertight subdivision is a quite separate item from damage stability and the characteristics of one cannot be easily determined from the characteristics of the other." A. Yes. Q. You go on to illustrate this. You say: "Lamma IV had excellent subdivision when constructed in 1995 and had adequate damage stability. In fact the
2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22	 A. Yes. Thank you. I have seen it before. Q. They start with a section on intact stability. The damage stability starts at page 140. At page 141, we see the steering and tank room damage taken together. A. (Witness nods). Q. And at page 142. There's a graph at page 143, "Steering & Tank Room Damage". This goes on through page 146. At page 147, they deal with engine room and so on. A. I think you're right, Mr Beresford, to imply that my wording is a little loose. Maybe it should say "the designer and builder of Lamma IV did investigate the damage stability". This is paragraph A-34. Q. Yes. Then you say: "It is necessary to explain the terms 'watertight subdivision' and 'damage stability'." In paragraphs (a), (b) and (c) you explain watertight subdivision, stability and damage stability respectively. I'm just going to read those out: "(a) Watertight subdivision is the process by which 	2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22	 either capsize by rolling over owing to insufficient damage stability (but not necessarily sink) or it will founder (sink) in the upright condition or with excessive trim, owing to insufficient watertight subdivision. A good example of a vessel foundering owing to inadequate subdivision, but having adequate damage stability is the Titanic, about which many learned papers have been written on its stability and watertight integrity. The Titanic sank by the stern, and indeed broke in half whilst remaining 'upright' and did not capsize to one side. In my opinion, the sinking of Lamma IV was also a case where the craft sank but had adequate damage stability, as the craft foundered by the stern without rolling over and capsizing to one side." You then make the point: "Watertight subdivision is a quite separate item from damage stability and the characteristics of one cannot be easily determined from the characteristics of the other." A. Yes. Q. You go on to illustrate this. You say: "Lamma IV had excellent subdivision when constructed

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1 the margin line with any two compartments flooded, 2 1 Yes, the rule is very important when you're thinking of 3 2 dithough the regulations only required one-compartment 3 standard). 4 THE CHARMAN: To whose calculations are you referring 5 ther? 6 A. I was referring to my own calculations, Mr Chairman, 7 Q. But if yis torn etsi, is you and for peak 6 Q. But if yis torn etsi, is you and for peak 7 7 HE CHARMAN: That when I state "two 6 Compartments', I was assuming there was a waterlight 7 O. But if yis torn etsi, is you and for peak 7 1 MR BRENSFORD: Are those the calculations we looked at this 7 The CHARMAN: So when you say "Lamma IV had excellent 7 A. Yes. 1 THE CHARMAN: So when you say "Lamma IV had excellent 7 A. Yes. A. Ves. 1 THE CHARMAN: Yes and estance was really to 7 A. Yes. A. With regard to the waterlight bulkhead 1 A. Yes. 1 THE CHARMAN: Yes and the state renor ewas really to 7 This A. With regard to the waterlight bulkhead 1 A. Yes. 2 A. Yes. This also the Pelinitry To There are of the requirements why the 15 3 A. With regard to the waterlight bulkhead 1 A. Yes. 4		Page 149		Page 151
2 (although the regulations only required one-compartment of standard)." 2 the steering gear compartment indik room is flooded, but not so important when the tunk room is flooded because the damage is less than 0.1L in length. 3 THE CHAIRMAN: To whose calculations are you referring a A. Iwas referring to my own calculations, Mr Chairman. 5 0. But it's just one test, isn't it' There are other compartments in provide buoyancy, regardless of the 0.1L is buildead a frame 1/2. 4 THE CHAIRMAN: Thank you. 5 0. But it's just one test, isn't it' There are other compartments in provide buoyancy, regardless of the 0.1L is buildead a frame 1/2. 10 buildead a frame 1/2. 0. Correct. 11 MR BERESTORD. Are those the calculations we looked at this is subdivision when constructed', would it perhaps be more for subdiright on the ossigned, but not constructed as relations when designed, but not constructed as relations we looked at this is subdivision when constructed', would it perhaps be more for designed'? 1 A. Yes. 18 A. With regard to the waterlight bublikhead rys, sir, but my aim of that sentence was really to the original lightship weight. 18 Q. Thank you. Then you go on to sol? 21 Inhick also the Pelininary Damage Stability Book the two referred to five with waterlight subliking test with the reger flooded. It was not recognised at the time that the Page 150 22 Yes. So, in other words, even if you disregard the voold still meet the tw	1	the margin line with any two compartments flooded,	1	Yes, the rule is very important when you're thinking of
 stundard)." important "when the funk room is flooded because the damage is less than 0.1L in length. U. But it's just one test, isn't it? There are other considerations. So one might need an after peak construction of the out and the set is of the 0.1L in length. Q. But it's just one test, isn't it? There are other considerations. So one might need an after peak construction of the out and the set is of the 0.1L in length. A. And I would just like to confirm that when I state "two compartments." Lvas assuming there was a watertight would at frame 1/2. MR BERESFORD: Are those the calculations we looked at this 1 THE CHAIRMAN: So when you say "Lamma IV had excellent a for of the out and the set of the designed?" A. Yes. A. Yes. THE CHAIRMAN: Yes. THE Yes as the statist and the the orgen of the two statist and the addition of weight. The offer a frame of the two scell as a the statist and the		- · ·		
4 HE CHARMAN: To whose calculations are you referring ber? 4 damage is less than 0.1L in length. 6 A. I was referring to my own calculations, Mr Chairman. C. But it's just one text, inn' it? There are other 7 THE CHARMAN: Thank you. compartments', I was assuming there was a wateright buiktead at frame 1/2. 9 compartments', I was assuming there was a wateright buiktead at frame 1/2. A. A dro buiktead at frame 1/2. 10 A. And the purpose of the 0.1L rule is to cater for the possibility that a hole might be made at the buikkead its subdivision when constructed at accurate to say "when designed, but not constructed as refer to a say "when designed, but not constructed as refer to a few maintight subdivision. 10 Q. And the purpose of the 0.1L rule is to cater for the possibility that a hole might be made at the buikkead its aubrivision. 11 THE CHAIRMAN: So when you say "Lamma IV had excellent is subdivision when constructed ", would i perhaps be more submerged when the weight of the vessel was increased in 1998 by the addition of solid ballast and intractering to any aim of that sentence was really to it moriginal lightship weight. 10 Q. Thank you. Then you go on to say: increased in 1998 by the addition of solid ballast and increase of over 30%, the subdivision standard was substantially reduced, allowing the margin line to be boung and the preliminary Damage Stability Book the woight all mergen in the tow aft compartments weight of the wore maines again the stability reference for A. Yes. 9 Q. Yes. So, in ot				
5 A. Iwas referring to my own calculations, Mr Chairman. 7 THE CHAIRMAN: Thank you. 6 8 A. And I would just like to confirm that when I state "two 6 9 compartments", I was subming there was a watertight 7 10 bulkhead at frame 1/2. 7 11 MR BERESFORD: Are those the calculations we looked at this 7 12 morning in relation to your third supplemental report? 1 13 A. Yes. 10 14 THE CHAIRMAN: So when you say "Lamma IV had excellent 11 15 subdivision when constructed a signed, but not constructed a subdivision when constructed a subdivision when constructed a subdivision when constructed a subdivision of sol that sentence was really to 1 imply the weight of the vessel as it was built in 1995. 10 16 the original lightsip weight. 11 10 20 - yes, si, but my aim of that sentence was really to 2 imply the weight of the vessel as it was built in 1995. 21 funk as othe Preliminary Damage Stability Book 2 weight increased of u Poguireental the wood still meands in the vessel, the damage at the weight of the vessel was 2 22 funk ink as the Preliminary Damage Stability Book 2 a weight increased of use 2006, the subdivision st				1
6 A. I was referring to my own calculations, Mr Chairman, T THE CHAIRMAN: Thank you. 6 considerations. So one might need an after peak compartment to provide buoyancy, regardless of the 0.1L rule? 8 A. And I would just like to confirm that when I state "two 9 6 A. And Ho purpose of the 0.1L rule is to cater for the 10 02. And the purpose of the 0.1L rule is to cater for the 10 02. And the purpose of the 0.1L rule is to cater for the 10 02. And the purpose of the 0.1L rule is to cater for the 11 10 02. And the purpose of the 0.1L rule is to cater for the 12 10 02. And the purpose of the 0.1L rule is to cater for the 12 10 02. And the purpose of the 0.1L rule is to cater for the 12 10 02. And the purpose of the 0.1L rule is to cater for the 12 10 02. And the purpose of the 0.1L rule is to cater for the 12 10 02. And the purpose of the 0.1L rule is to cater for the 12 10 02. And the purpose of the 0.1L rule is to cater for the 12 10 02. And the purpose of the 0.1L rule is to cater for the 12 10 02. And the purpose of the 0.1L rule is to cater for the 12 10				
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9 compartments ² , I was assuming there was a waterlight bulkhead at frame 1/2. 9 A. Correct. 10 Q. And the purpose of the 0.1L rule is to cater for the possibility that a hole might be made at the bulkhead 12 morning in relation to your third supplemental report? 12 A. Yes. 14 THE CHAIRMAN: So when you say "Lamma IV had excellent 15 3. Q · of a small compartment? 14 THE CHAIRMAN: So when you say "Lamma IV had excellent 16 4. Yes. 17 designed"? 14 A. Yes. 18 Q. Hank pount on the year on the waterlight bulkhead 18 Q. Thank you. Then you go no to say: 19 THE CHAIRMAN: Yes. 19 "Unfortunately when the weight of the vessel as it was built in 1995, 11 in inply the weight of the vessel as it was built in 1995, 14 Findering and possibly some other items, amouning to a weight increase of over 30%, the subdivision standard 20 12 A. Yes. 12 A. Yes. 13 21 A. Yes. 16 was substantially reduced, allowing the margin line to bulkhead at frame 1/2 as directed by the 0.1L rule, it was our equiptione of the stability increased." Page 152 14 A. Yes. 6 9. Yes. 16 A. Yes.	8	•		
10 bulkhead at frame 1/2. 10 Q. And the purpose of the 0.1L rule is to cater for the 11 MR BERESFORD: Are those the calculations we looked at this 11 possibility that a hole might be made at the bulkhead 13 A. Yes. 13 A. Yes. 14 THE CHAIRMAN: So when you say "Lamma IV had excellent 14 A. Yes. 15 subdivision when constructed", would it perhaps be more 13 Q of a small compartment? 15 subdivision when constructed", would it perhaps be more 16 accurate to say "when designed, but not constructed as 16 accurate to say "when designed, but not constructed as 17 wateright subdivision. 18 A. With regard to the wateright bulkhead - 18 Q. Thank you. Then you go no to say: 19 THE CHAIRMAN: Yes. 19 "Unfortunately when the weight of the vessel was increased in 1998 by the addition of solid ballast and fendering and possibily some other items, amounting to use that you referred to a few minutes ago, Mr BeresFord 20 24 that you referred to a few minutes ago, Mr Beresford 21 mount of weight. 2 yuss. Sublistic standard as being met. 2 1 watertight subdivision had been compromised by the 2 Q.			9	A. Correct.
11 MR BERESFORD: Are those the calculations we looked at this 1 1 possibility that a hole might be made at the bulkhead 12 A. Yes. 12 A. Yes. 14 TIE CHAIRMAN: So when you say "Lamma IV had excellent 14 A. Yes. 13 Q of a small compartment? 14 TIE CHAIRMAN: So when you say "Lamma IV had excellent 14 A. Yes. 14 A. Yes. 17 designed? C. Thick you the designed, but not constructed as 1 forefathers, whoever they were, originally legislated 16 accurate to say "when designed, but not constructed as 1 forefathers, whoever they were, originally legislated 17 designed? 18 Q. Thank you. Then you go on to say: 19 TIE CHAIRMAN: Yes. 19 "Unfortunately when the weight of the vessel was astimitar and increase of lower 30%, the subdivision standard 21 20 a. yes, sit, but ny aim of that sentence was really to a substantial and persector to a few minutes ago. Mr Beresford 24 Was substantially reduced, allowing the margin line to become submerged when the two aft compartments were flooded. It was not recognised at the time that the 2 Q. Yes. So, in other words, even if you disregard the 3 4 watertight subdivision had been compartined subility increased." 4 Q.	10		10	Q. And the purpose of the 0.1L rule is to cater for the
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 13 A. Yes. 14 THE CHAIRMAN: So when you say "Lamma IV had excellent subjuicts on each the requirements why the fors districts, whoever they were, originally legislated the deasigned, but not constructed as if designed?" 14 A. Yes. I believe that's one of the requirements why the fors districts, whoever they were, originally legislated the deasigned. Just not constructed as if was built in 1995, and the the weight of the vessel as it was built in 1995, and the third of the vessel as it was built in 1995, and the distribution of solid ballast and increase of over 30%, the subdivision standard was substantially reduced, allowing the margin line to a weight increase of over 30%, the subdivision standard was substantially reduced, allowing the margin line to a weight increase of over 30%, the subdivision standard was substantially reduced, allowing the margin line to a weight increase of over 30%, the subdivision standard was substantially reduced, allowing the margin line to 24 theat you referred to a few minutes ago, Mr Beresford 24 that you referred to a few minutes ago, Mr Beresford 25 MR BERESFORD: Miscellaneous bundle, page 111. Page 150 Page 150 Page 150 Page 150 Page 150 Page 150 Page 152 Page 150 Page 152 Page 150 Page 152 Page 152<!--</td--><td>12</td><td>morning in relation to your third supplemental report?</td><td>12</td><td></td>	12	morning in relation to your third supplemental report?	12	
14 THE CHAIRMAN: So when you say "Lamma IV had excellent 14 A. Yes. Ibelieve that's one of the requirements why the 15 subdivision when constructed", would it perhaps be more forefathers, whoever they were, originally legislated 16 accurate to say "when designed, but not constructed as forefathers, whoever they were, originally legislated 17 designed"? 18 A: With regard to the watertight bulkhead 19 19 THE CHAIRMAN: Yes. 19 That chains and the sentence was really to 20 21 in mply the weight of the vessel as it was built in 1995, 19 Think also the Preliminary Damage Stability Book 21 a weight increase of over 30%, the subdivision standard 23 that you referred to a few minutes ago, Mr Beresford 25 flooded. It was not recognised at the time that the 20 Yes. O, in other words, even if you disregard the 1 watertight subdivision had been compromised by the 2 3 bulkhead a frame 1/2 as directed by the 0.1L rule, it 3 However at the same time, by adding a substantial 4 would still meet the two-compartment standard 5 S S 5 A. Yes. 6 By that you're referring to a consideration <t< td=""><td>13</td><td></td><td>13</td><td>Q of a small compartment?</td></t<>	13		13	Q of a small compartment?
15 subdivision when constructed", would it perhaps be more decimate to say "when designed, but not constructed as decimate to say "when designed, but not constructed as decimate to say "when designed, but not constructed as decimate to say "when designed, but not constructed as decimate to say "when designed, but not constructed as decimate to say "when designed." 15 forefathers, whoever they were, originally legislated the idea of max how are they additivision. 18 A. With regard to the watertight bulkhead 18 Q. Thank you. Then you go on to say: 19 THE CHAIRMAN: Yes. 19 "Unfortunately when the weight of the vessel as it was built in 1995, 21 the original lightship weight. 20 a weight increase of over 30%, the subdivision standard to a few minutes ago, MF Beresford 23 MR BERESFORD: Miscellaneous bundle, page 111. 25 4 become submerged when the two aft compartments were foroignised at the time that the 24 ves. So, in other words, cven if you disregard the addition of weight. 1 watertight subdivision had been compromised by the addition of weight. 3 of damage condition with flooding of the testering and of damage condition with flooding of the testering and that remoir? 3 However at the same time, by adding a substantial amount of weight low down in the vessel, the damage stability capability increased." 4 N Yes. 6 By that you're referring to a consideration?	14	THE CHAIRMAN: So when you say "Lamma IV had excellent	14	
16accurate to say "when designed, but not constructed as designed"?16the idea of an aft peak bulkhead, quite separate from watertight subdivision.17designed"?the idea of an aft peak bulkhead, quite separate from watertight subdivision.1718A. With regard to the watertight bulkhead imply the weight of the vessel as it was built in 1995, the original lightship weight.Q. Thank you. Then you go on to say: "Unfortunately when the weight of the vessel was increased in 1998 by the addition of solid ballast and fendering and possibly some other items, amounting to a weight increase of over 30%, the subdivision standard was substantially reduced, allowing the margin line to become submerged when the two aft compartments were flooded. It was not recognised at the time that the20A vels.Page 150Page 1521A also shows two-compartment standard as being met. bulkhead at frame 1/2 as directed by the 0.1L rule, it would still meet the two-compartment standard - 51Watertight subdivision had been compromised by the addition of weight.3However at the same time, by adding a substantial amount of weight low down in the vessel, the damage stability capability increased."14would still meet the two-compartment standard - 56By that you're referring to a consideration 907A. Yes.6By that you're referring to a consideration 99Q. You say:10tank room?11A. Yes, correct.11Was not required to meet a standard to survive with two compartments damage stability are not the same and are not connected. Improving one does not imply<	15	subdivision when constructed", would it perhaps be more	15	
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19 THE CHAIRMAN: Yes. 19 "Unfortunately when the weight of the vessel was 20 A yes, sir, but my aim of that sentence was really to 20 21 imply the weight of the vessel as it was built in 1995, 20 22 the original lightship weight. 20 23 I think also the Preliminary Damage Stability Book 21 24 that you referred to a few minutes ago, Mr Beresford 24 25 MR BERESFORD: Miscellaneous bundle, page 111. Page 150 26 Page 150 27 A also shows two-compartment standard as being met. 2 3 bulkhead at frame 1/2 as directed by the 0.1L rule, it 4 4 would still meet the two-compartment standard 5 5 A. Yes. 6 By that you're referring to a consideration 9 of damage condition with flooding of the steering and 10 "Thie charange the tash woom and as one, would it 11 A. Yes. 9 Q. You say: 10 12 A. Yes, correct. 11 was not required to meet a standard to survive with two 12 MR BERESFORD: With its original weight, if you treat the after end of the vessel, regardless	17	designed"?	17	watertight subdivision.
20A yes, sir, but my aim of that sentence was really to imply the weight of the vessel as it was built in 1995, the weight of the vessel as it was built in 1995, the weight of the vessel as it was built in 1995, the subdivision standard 22 2320increased in 1998 by the addition of solid ballast and fendering and possibly some other items, amounting to a weight increase of over 30%, the subdivision standard that you referred to a few minutes ago, Mr Beresford 24 that you referred to a few minutes ago, Mr Beresford 2520increased in 1998 by the addition of solid ballast and fendering and possibly some other items, amounting to a weight increase of over 30%, the subdivision standard the was not recognised at the time that the Page 1527A also shows two-compartment standard as being met. 2 Q. Yes. So, in other words, even if you disregard the would still meet the two-compartment standard 5 A. Yes.1watertight subdivision had been compromised by the addition of weight.81watertight subdivision had been compromised by the addition of weight low down in the vessel, the damage stability capability increased."90 with its original weight?6By that you're referring to the stability reference to the transverse direction?90. damage condition with flooding of the steering and tank room?9Q. You say:10tank room?10Was not required to meet a standard to survive with two compartment adhe tank room as one, would it the harder end of the vessel, negardless of the care of the vessel ad adquate damage stability are not the same and a subdivision and damage stability are not the same and subdivision and damage stability are not	18	A. With regard to the watertight bulkhead	18	Q. Thank you. Then you go on to say:
21 imply the weight of the vessel as it was built in 1995, 21 fendering and possibly some other items, amounting to 22 the original lightship weight. 22 a weight increase of over 30%, the subdivision standard? 23 1 think also the Preliminary Damage Stability Book 23 was substantially reduced, allowing the margin line to 24 the original lightship weight. 23 was substantially reduced, allowing the margin line to 25 MR BERESFORD: Miscellaneous bundle, page 111. 25 flooded. It was not recognised at the time that the 2 Q. Yes. So, in other words, even if you disregard the 1 watertight subdivision had been compromised by the 3 bulkhead at frame 1/2 as directed by the 0.1L rule, it 3 However at the same time, by adding a substantial 4 would still meet the two-compartment standard 4 addition of weight low down in the vessel, the damage 5 A. Yes. 6 By that you're referring to a consideration 9 9 of damage condition with flooding of the steering and 10 "This example may be theoretical, because Lamma IV 11 A. Yes. 9 Q. you say: 10 "This example may be theoretical, because Lamma IV 12	19	THE CHAIRMAN: Yes.	19	"Unfortunately when the weight of the vessel was
22 the original lightship weight. 22 a weight increase of over 30%, the subdivision standard was substantially reduced, allowing the margin line to 23 23 that you referred to a few minutes ago, Mr Breesford 25 MR BERESFORD: Miscellaneous bundle, page 111. 24 that you referred to a few minutes ago, Mr Breesford 25 MR BERESFORD: Miscellaneous bundle, page 111. 25 Page 150 Page 150 1 A also shows two-compartment standard as being met. 1 watertight subdivision had been compromised by the addition of weight. 2 Q. Yes. So, in other words, even if you disregard the would still meet the two-compartment standard 5 1 However at the same time, by adding a substantial amount of weight would on in the vessel, the damage stability capability increased." 6 Q with its original weight? 6 By that you're referring to the stability reference 7 7 A. Yes. 6 By that you're referring to the stability reference 7 7 A. Yes. 9 Q. You say: 10 tank room? 11 Nest regurded meet a standard to survive with two 11 A. Yes. 9 Q. You say: 12 compartments damaged, but it does demonstrate that subdivision and damage stability are not the same and are not connected. Improving one d	20	A yes, sir, but my aim of that sentence was really to	20	increased in 1998 by the addition of solid ballast and
23I think also the Preliminary Damage Stability Book that you referred to a few minutes ago, Mr Beresford 2423was substantially reduced, allowing the margin line to become submerged when the two aft compartments were 2524that you referred to a few minutes ago, Mr Beresford 2524was substantially reduced, allowing the margin line to become submerged when the two aft compartments were 2525MB EERESFORD: Miscellaneous bundle, page 111.Page 150Page 15220Yes. So, in other words, even if you disregard the 3ustertight subdivision had been compromised by the addition of weight.3bulkhead at frame 1/2 as directed by the 0.1L rule, it 4would still meet the two-compartment standard 5However at the same time, by adding a substantial addition of weight.4would still meet the two-compartment standard 5A. Yes.By that you're referring to a consideration 77A. Yes.By that you're referring to a consideration 9By that you're referring to the stability reference 77A. Yes.9Q. You say:10tank room?10"This example may be theoretical, because Lamma IV was not required to meet a standard to survive with two 1214have remained afloat with that one plus the engine room 1516A. Yes.15A. Joh I don't believe so, because there was no buoyancy at the after end of the vessel at all in that case. 191619buoyancy at the after end of the vessel, regardless of the 0.1L rule?1610A. Yes, exactly. The 0.1L rule is just a theoretical<	21	imply the weight of the vessel as it was built in 1995,	21	fendering and possibly some other items, amounting to
24 that you referred to a few minutes ago, Mr Beresford 24 become submerged when the two aft compartments were flooded. It was not recognised at the time that the 25 MR BERESFORD: Miscellaneous bundle, page 111. Page 150 Page 152 1 A also shows two-compartment standard as being met. Page 150 Page 152 2 Q. Yes. So, in other words, even if you disregard the 3 bulkhead at frame 1/2 as directed by the 0.1L rule, it 3 3 bulkhead at frame 1/2 as directed by the 0.1L rule, it 3 However at the same time, by adding a substantial amount of weight low down in the vessel, the damage 5 A. Yes. 5 stability capability increased." 6 6 Q with its original weight? 7 to the transverse direction? 8 7 A. Yes. 7 to the transverse direction? 8 9 of damage condition with flooding of the steering and 9 Q. You say: 10 11 A. Yes. 10 "The scample may be theoretical, because Lamma IV 13 steering compartment and the tank room as one, would it 13 subdivision and damage stability are not the same and 14 have remained afloat with that one plus the engine room	22	the original lightship weight.	22	a weight increase of over 30%, the subdivision standard
25 MR BERESFORD: Miscellaneous bundle, page 111. 25 flooded. It was not recognised at the time that the Page 150 Page 152 1 A also shows two-compartment standard as being met. 2 2 Q. Yes. So, in other words, even if you disregard the watertight subdivision had been compromised by the 3 bulkhead at frame 1/2 as directed by the 0.1L rule, it addition of weight. 4 would still meet the two-compartment standard 5 5 A. Yes. 5 6 Q with its original weight? 6 7 A. Yes. 6 9 of damage condition with flooding of the steering and 9 10 This example may be theoretical, because Lamma IV 11 A. Yes, correct. 11 12 MR BERESFORD: With its original weight, if you treat the 13 13 steering compartment and the tank room as one, would it 14 14 have remained afloat with that one plus the engine room 14 15 flooded? 16 16 A. No, I don't believe so, because there was no buoyancy at the after end of the vessel, regardless of 19 19	23		23	was substantially reduced, allowing the margin line to
Page 150Page 150Page 1521A also shows two-compartment standard as being met.1watertight subdivision had been compromised by the2Q. Yes. So, in other words, even if you disregard theaddition of weight.3bulkhead at frame 1/2 as directed by the 0.1L rule, itaddition of weight.4would still meet the two-compartment standard55A. Yes.56Q with its original weight?67A. Yes.69of damage condition with flooding of the steering and910tak room?1011A. Yes, correct.712MR BERESFORD: With its original weight, if you treat the1314have remained afloat with that one plus the engine room1016A. No, I don't believe so, because there was no buoyancy at the after end of the vessel, at all in that case.1718Q. Does that illustrate the importance of having some1819buoyancy at the after end of the vessel, regardless of1920the 0.1L rule?2021A. Yes, exactly. The 0.1L rule is just a theoretical2122exercise, of course. It's what I was trying to say when2323I was in my first report, when I was talking about2324the 0.1L biegit thought of from the perspective of either2424the 0.1L biegit thought of from the perspective of either2424the 0.1L biegit thought of from the perspective of either2424<	24			
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15 same question. Because if the inclining experiment data 15 adequately covered in the current regulations and co				
		•		· · ·
T TO IS NOT ACCUTATE. It will affect both the infact 1 to a situation nappen again to a new vessel similar to t	16	is not accurate, it will affect both the intact	16	a situation happen again to a new vessel similar to that
17 stability and damage stability." 17 of Lamma IV, where the weight increased and the				
				watertight subdivision requirements were not met, or
				a watertight bulkhead was certified even though it was
20 Longitudinal stability would imply some degree of 20 not watertight.				
21 watertight subdivision, but it's the wrong terminology, 21 Watertight subdivision is a fundamental				
22 because longitudinally it would have no propensity to 22 characteristic of ship design. It is calculated at		· · · ·		
				a very early stage and before the hull shape and layout
				of the vessel is finalised, and sometimes it determines
25 upright. So the term "longitudinal stability" I think 25 the principal characteristics of the craft, such as				

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	Page 157		Page 159
1	length or beam or depth. There is no specific	1	subdivision."
2	requirement on Cap 548G concerning the requirements of		A. Yes.
3	watertight subdivision, nor of damage stability, except	3	Q. Annex F, then, at page 3544, is titled "Damaged
4	for a broad requirement in section 9 that plans relating	4	Stability Requirements for Launches, Ferry Vessels".
5	to '(e) arrangements relating to watertightness	5	"In part 1, Damaged Stability Requirements, there is
6	bulkheads' and' (f) stability' should be approved."	6	reference to the vessel being 'subdivided by bulkheads,
7	You then refer to the 2006 code of practice at	7	which should be watertight up to the bulkhead deck, into
8	page 3447. Chapter II, section 5. Chapter II is headed	8	compartments the maximum length of which should not
9	"Survey/Inspection, Issuance of Certificate and Plan	9	exceed the length permitted by the required freeboard
10	Approval"; section 5 is concerned with "Plans and Data	10	and intact stability as calculated in accordance with
11	required to be submitted".	11	parts 2 and 3 of this annex."
12	You say:	12	You then say:
13	"[This] requires that estimated damage stability	13	"This might appear to refer to watertight
14	information is submitted at an early stage, and a final	14	subdivision, but it makes little technical sense to me."
15	damage stability calculation is provided after the	15	You give three reasons. You say:
16	vessel is complete."	16	"The length of a compartment cannot have any
17	So we see the estimated damage stability information	17	relationship with a vessel freeboard, and in any case
18	referred to in the table under number 5, item (A)(6),	18	there is no reference to freeboard in parts 2 or 3 of
19	"Estimated Damage Stability Information".	19	the annex. Furthermore, there can be no relationship
20	Where do we get the requirement, please, for a final	20	between intact stability and the length of a damaged
21 22	damage stability calculation after the vessel is	21 22	compartment, as intact stability by definition refers to a vessel without damage."
22	complete? A. Number (9).	22	You conclude:
23 24	Q. After the inclining experiment. And both	23	"This whole section appears to have been written by
24	cross-referenced to chapter IV, section 2?	24	someone who did not understand the concept of watertight
		20	someone who are not anderstand the concept of wateringin
	Page 158		Page 160
1	Page 158	1	Page 160
1	A. Yes.	1	subdivision."
2	A. Yes.Q. Chapter IV, section 2 is at page 3485, headed "Damage	2	subdivision." A. Yes, I did.
2 3	A. Yes.Q. Chapter IV, section 2 is at page 3485, headed "Damage Stability":	2 3	subdivision." A. Yes, I did. Q. Then in relation to part 2, headed "Assumptions on which
2 3 4	 A. Yes. Q. Chapter IV, section 2 is at page 3485, headed "Damage Stability": "Every launch and ferry vessel designed to carry 	2 3 4	subdivision."A. Yes, I did.Q. Then in relation to part 2, headed "Assumptions on which calculations are to be based", which reads:
2 3 4 5	 A. Yes. Q. Chapter IV, section 2 is at page 3485, headed "Damage Stability": "Every launch and ferry vessel designed to carry more than 100 passengers should meet a damaged stability 	2 3	subdivision."A. Yes, I did.Q. Then in relation to part 2, headed "Assumptions on which calculations are to be based", which reads:"The stability of every vessel should be determined
2 3 4	 A. Yes. Q. Chapter IV, section 2 is at page 3485, headed "Damage Stability": "Every launch and ferry vessel designed to carry 	2 3 4 5	subdivision."A. Yes, I did.Q. Then in relation to part 2, headed "Assumptions on which calculations are to be based", which reads:
2 3 4 5 6	 A. Yes. Q. Chapter IV, section 2 is at page 3485, headed "Damage Stability": "Every launch and ferry vessel designed to carry more than 100 passengers should meet a damaged stability standard as prescribed in annex F of this Code." 	2 3 4 5 6	 subdivision." A. Yes, I did. Q. Then in relation to part 2, headed "Assumptions on which calculations are to be based", which reads: "The stability of every vessel should be determined by calculation in accordance with the following
2 3 4 5 6 7	 A. Yes. Q. Chapter IV, section 2 is at page 3485, headed "Damage Stability": "Every launch and ferry vessel designed to carry more than 100 passengers should meet a damaged stability standard as prescribed in annex F of this Code." Annex F we've already looked at in a preliminary way 	2 3 4 5 6 7	 subdivision." A. Yes, I did. Q. Then in relation to part 2, headed "Assumptions on which calculations are to be based", which reads: "The stability of every vessel should be determined by calculation in accordance with the following conditions and assumptions"
2 3 4 5 6 7 8	 A. Yes. Q. Chapter IV, section 2 is at page 3485, headed "Damage Stability": "Every launch and ferry vessel designed to carry more than 100 passengers should meet a damaged stability standard as prescribed in annex F of this Code." Annex F we've already looked at in a preliminary way in relation to the definitions of "margin line" and what have you. I think we'll be looking at that in more detail as we work our way through your report. 	2 3 4 5 6 7 8	 subdivision." A. Yes, I did. Q. Then in relation to part 2, headed "Assumptions on which calculations are to be based", which reads: "The stability of every vessel should be determined by calculation in accordance with the following conditions and assumptions" You say: "It might reasonably be assumed that the first sentence should read 'The damage stability of every
2 3 4 5 6 7 8 9 10 11	 A. Yes. Q. Chapter IV, section 2 is at page 3485, headed "Damage Stability": "Every launch and ferry vessel designed to carry more than 100 passengers should meet a damaged stability standard as prescribed in annex F of this Code." Annex F we've already looked at in a preliminary way in relation to the definitions of "margin line" and what have you. I think we'll be looking at that in more detail as we work our way through your report. In relation to section 5 and the table we saw there, 	2 3 4 5 6 7 8 9 10 11	 subdivision." A. Yes, I did. Q. Then in relation to part 2, headed "Assumptions on which calculations are to be based", which reads: "The stability of every vessel should be determined by calculation in accordance with the following conditions and assumptions" You say: "It might reasonably be assumed that the first sentence should read "The damage stability of every vessel' rather than "The stability of every
2 3 4 5 6 7 8 9 10 11 12	 A. Yes. Q. Chapter IV, section 2 is at page 3485, headed "Damage Stability": "Every launch and ferry vessel designed to carry more than 100 passengers should meet a damaged stability standard as prescribed in annex F of this Code." Annex F we've already looked at in a preliminary way in relation to the definitions of "margin line" and what have you. I think we'll be looking at that in more detail as we work our way through your report. In relation to section 5 and the table we saw there, you point out that there is no reference to the location 	2 3 4 5 6 7 8 9 10 11 12	 subdivision." A. Yes, I did. Q. Then in relation to part 2, headed "Assumptions on which calculations are to be based", which reads: "The stability of every vessel should be determined by calculation in accordance with the following conditions and assumptions" You say: "It might reasonably be assumed that the first sentence should read 'The damage stability of every vessel' rather than 'The stability of every vessel'"
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2 3 4 5 6 7 8 9 10 11 12 13 14	 A. Yes. Q. Chapter IV, section 2 is at page 3485, headed "Damage Stability": "Every launch and ferry vessel designed to carry more than 100 passengers should meet a damaged stability standard as prescribed in annex F of this Code." Annex F we've already looked at in a preliminary way in relation to the definitions of "margin line" and what have you. I think we'll be looking at that in more detail as we work our way through your report. In relation to section 5 and the table we saw there, you point out that there is no reference to the location of bulkheads or to watertight subdivision in that section. 	2 3 4 5 6 7 8 9 10 11 12 13 14	 subdivision." A. Yes, I did. Q. Then in relation to part 2, headed "Assumptions on which calculations are to be based", which reads: "The stability of every vessel should be determined by calculation in accordance with the following conditions and assumptions" You say: "It might reasonably be assumed that the first sentence should read 'The damage stability of every vessel'" You've already pointed out that paragraph (3)(d) on that page refers to a margin line, but there's no
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2 3 4 5 6 7 8 9 10 11 12 13 14 15 16	 A. Yes. Q. Chapter IV, section 2 is at page 3485, headed "Damage Stability": "Every launch and ferry vessel designed to carry more than 100 passengers should meet a damaged stability standard as prescribed in annex F of this Code." Annex F we've already looked at in a preliminary way in relation to the definitions of "margin line" and what have you. I think we'll be looking at that in more detail as we work our way through your report. In relation to section 5 and the table we saw there, you point out that there is no reference to the location of bulkheads or to watertight subdivision in that section. A. Correct. Although to do damage stability calculations, you would need to know where the bulkheads were located. 	2 3 4 5 6 7 8 9 10 11 12 13 14 15 16	subdivision." A. Yes, I did. Q. Then in relation to part 2, headed "Assumptions on which calculations are to be based", which reads: "The stability of every vessel should be determined by calculation in accordance with the following conditions and assumptions" You say: "It might reasonably be assumed that the first sentence should read "The damage stability of every vessel" You've already pointed out that paragraph (3)(d) on that page refers to a margin line, but there's no definition of a margin line. In part 2, section (6) on page 3545, you say that
2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17	 A. Yes. Q. Chapter IV, section 2 is at page 3485, headed "Damage Stability": "Every launch and ferry vessel designed to carry more than 100 passengers should meet a damaged stability standard as prescribed in annex F of this Code." Annex F we've already looked at in a preliminary way in relation to the definitions of "margin line" and what have you. I think we'll be looking at that in more detail as we work our way through your report. In relation to section 5 and the table we saw there, you point out that there is no reference to the location of bulkheads or to watertight subdivision in that section. A. Correct. Although to do damage stability calculations, you would need to know where the bulkheads were located. Q. Yes. Then you refer to the code of practice, 	2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17	 subdivision." A. Yes, I did. Q. Then in relation to part 2, headed "Assumptions on which calculations are to be based", which reads: "The stability of every vessel should be determined by calculation in accordance with the following conditions and assumptions" You say: "It might reasonably be assumed that the first sentence should read 'The damage stability of every vessel' rather than 'The stability of every vessel'' You've already pointed out that paragraph (3)(d) on that page refers to a margin line, but there's no definition of a margin line. In part 2, section (6) on page 3545, you say that this refers to the extent of damage, but "there is no
2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18	 A. Yes. Q. Chapter IV, section 2 is at page 3485, headed "Damage Stability": "Every launch and ferry vessel designed to carry more than 100 passengers should meet a damaged stability standard as prescribed in annex F of this Code." Annex F we've already looked at in a preliminary way in relation to the definitions of "margin line" and what have you. I think we'll be looking at that in more detail as we work our way through your report. In relation to section 5 and the table we saw there, you point out that there is no reference to the location of bulkheads or to watertight subdivision in that section. A. Correct. Although to do damage stability calculations, you would need to know where the bulkheads were located. Q. Yes. Then you refer to the code of practice, chapter IV, titled "Freeboard and Stability". That 	2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18	 subdivision." A. Yes, I did. Q. Then in relation to part 2, headed "Assumptions on which calculations are to be based", which reads: "The stability of every vessel should be determined by calculation in accordance with the following conditions and assumptions" You say: "It might reasonably be assumed that the first sentence should read "The damage stability of every vessel'" You've already pointed out that paragraph (3)(d) on that page refers to a margin line, but there's no definition of a margin line. In part 2, section (6) on page 3545, you say that this refers to the extent of damage, but "there is no reference to whether this is limited to one-compartment
2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19	 A. Yes. Q. Chapter IV, section 2 is at page 3485, headed "Damage Stability": "Every launch and ferry vessel designed to carry more than 100 passengers should meet a damaged stability standard as prescribed in annex F of this Code." Annex F we've already looked at in a preliminary way in relation to the definitions of "margin line" and what have you. I think we'll be looking at that in more detail as we work our way through your report. In relation to section 5 and the table we saw there, you point out that there is no reference to the location of bulkheads or to watertight subdivision in that section. A. Correct. Although to do damage stability calculations, you would need to know where the bulkheads were located. Q. Yes. Then you refer to the code of practice, chapter IV, titled "Freeboard and Stability". That commences at page 3480. You refer to section 2, which 	2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19	 subdivision." A. Yes, I did. Q. Then in relation to part 2, headed "Assumptions on which calculations are to be based", which reads: "The stability of every vessel should be determined by calculation in accordance with the following conditions and assumptions" You say: "It might reasonably be assumed that the first sentence should read "The damage stability of every vessel" You've already pointed out that paragraph (3)(d) on that page refers to a margin line, but there's no definition of a margin line. In part 2, section (6) on page 3545, you say that this refers to the extent of damage, but "there is no reference to whether this is limited to one-compartment damage, and without such a reference it can only be
2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20	 A. Yes. Q. Chapter IV, section 2 is at page 3485, headed "Damage Stability": "Every launch and ferry vessel designed to carry more than 100 passengers should meet a damaged stability standard as prescribed in annex F of this Code." Annex F we've already looked at in a preliminary way in relation to the definitions of "margin line" and what have you. I think we'll be looking at that in more detail as we work our way through your report. In relation to section 5 and the table we saw there, you point out that there is no reference to the location of bulkheads or to watertight subdivision in that section. A. Correct. Although to do damage stability calculations, you would need to know where the bulkheads were located. Q. Yes. Then you refer to the code of practice, chapter IV, titled "Freeboard and Stability". That commences at page 3480. You refer to section 2, which I've just read, page 3485; referring to annex F, which 	2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20	 subdivision." A. Yes, I did. Q. Then in relation to part 2, headed "Assumptions on which calculations are to be based", which reads: "The stability of every vessel should be determined by calculation in accordance with the following conditions and assumptions" You say: "It might reasonably be assumed that the first sentence should read "The damage stability of every vessel" You've already pointed out that paragraph (3)(d) on that page refers to a margin line, but there's no definition of a margin line. In part 2, section (6) on page 3545, you say that this refers to the extent of damage, but "there is no reference to whether this is limited to one-compartment damage, and without such a reference it can only be assumed that the extent of the damage quoted can be
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	Page 161		Page 163
1	"This may well be the intention of the writer, and	1	to consider at further length?
2	I have no difficulty with this, except to note that it	2	A. I think it could be quite a simple and easily understood
3	is a higher standard than would be applied in most other	3	section, unlike its predecessor, which was difficult
4	countries. In Australia for example, passenger vessels	4	even for me. And I don't think it's difficult to write.
5	have to meet a one-compartment standard for passenger	5	The main difficulty might be more in your area of
6	numbers up to 399, and only above 400 is there	6	getting it accepted into legislation.
7	a two-compartment standard."	7	Q. But can you give us an idea of the outcomes that you
8	A. Yes.	8	consider need to be achieved by watertight subdivision?
9	Q. Do you know what the situation is in the UK?	9	A. By all means. Clearly state what the criteria are; that
10	A. I do not, Mr Beresford, no.	10	is, the margin line, fundamentally the margin line; and
11	Q. Then part 3 on that page "commences with the words 'the		to calculate where the bulkheads are, such that if the
12	intact stability of the vessel should be deemed to be	12	extent of flooding is and then give an extent of
13	sufficient if after the assumed damage', which	13	flooding which could be the same as already contained
14	is difficult to understand because after damage there is	14	in annex F and probably should be, because it's the same
15	no relevance of intact stability. I suggest that the	15	as SOLAS. And then quote where the damage occurs, which
16	word 'intact' should be replaced by 'damaged'."	16	I would suggest would be one-compartment standard. And
17	A. It was the only logical interpretation I could put	17	then a simple phrase saying "In case of damage to any
18	on it.	18	one compartment, the margin line should not be
19	Q. Then you go on to comment:	19	submerged". I think it's really quite simple.
20	"The whole of annex F gives the impression that	20	Q. Yes.
21	individual phrases have been borrowed from various IMO	21	A. How that is done does not need to be defined; it can be
22	publications and previous Hong Kong regulations without	22	done by a number of different softwares which are
23	proper consideration of the whole meaning."	23	readily available.
24	A. Yes.	24	Q. When you say "calculate where the bulkheads are", is
25	Q. "In summary, in annex F there is no clearly defined	25	that where you would include instructions such as the
	Page 162		Page 164
1	requirement for watertight subdivision, no defined	1	0.1L rule?
2	criteria against which to judge the adequacy of	2	A. I would not refer to the 0.1L rule, other than as
3	watertight subdivision, and no guidance on the	3	a footnote. I think the Australian regulation is quite
4	procedures to be adopted to calculate it."	4	good. It basically shows a diagram with a bulkhead
5	A. Yes.	5	which is smaller a compartment that's less than 0.1L,
6	Q. You say:	6	and it has a damage overlaid a big red blob overlaid
7	"There is damage stability criteria but no clear	7	over it and says, "In this case, the bulkhead is
8	definition of the standard of the assumed damage."	8	a non-conforming bulkhead", or uses some such
9	A. Correct.	9	terminology, indicating the bulkhead is not assumed to
10	Q. And you make this point:	10	be watertight in that location.
11	"I am unable to judge whether the Chinese version is	11	Q. But would you make it clear or not that where you have
12	correctly written and that the English version might	12	such a non-conforming bulkhead or a bulkhead which is
13	have been poorly translated."	13	assumed not to be watertight, that is not to affect any
14	So your consideration 16 is:	14	other requirement for a watertight bulkhead in that
15	"That the whole of annex F is carefully rewritten.	15	position?
16	It should not contain the complicated formulations	16	A. Yes. Thank you. That will be essential.
17	contained in schedule 1 of Cap 369AM, originally copied	17	Q. Moving on to your next section, the next issue, issue
18	from 1974 SOLAS (and SOLAS has since been rewritten and	18	(viii), "Seats and seat attachment". At paragraph A-57,
19	does not contain these same calculations any more)."	19	you say:
20	A. Correct.	20	"Seats were poorly attached to the deck of composite
21	Q. "Modern computer software has made the calculation of	21	sandwich construction on Lamma IV, and became loose over
22	watertight subdivision a simple process. What is needed	22	time."
23	in annex F is a concise summary of the outcomes to be	23	At A-58 you identify the current requirements in the
24	achieved by watertight subdivision."	24	code of practice, at page 3490. Paragraph 3.5:
24	I take it that that's something that you would want	25	"The form, design and attachments to the deck of

	Page 165		Page 167
1	passenger seats should be adequate for the intended	1	the 1995 Instructions at page 1835, which is
2	service."	2	chapter III, paragraph 4.1:
3	You say:	3	"Where seats are provided for passengers, their
4	"This is reflected in the operating licence and the	4	form, design and attachments to the deck should be
5	certification on installation suitable for 'combined	5	adequate for the intended service."
6	coxswain' operation of a class I vessel"	6	THE CHAIRMAN: Yes. Thank you.
7	THE CHAIRMAN: Remind me, if you would, Mr Beresford, of the	: 7	MR BERESFORD: Just for your note, Mr Chairman,
8	provision that obtained when Lamma IV was built.	8	Mr Commissioner, the reference in Dr Armstrong's first
9	MR BERESFORD: Yes, Mr Chairman.	9	report to these provisions is at page 422 of expert
10	THE CHAIRMAN: A similar bland description, was it not?	10	bundle 1.
11	MR BERESFORD: It was very similar. It was:	11	THE CHAIRMAN: Thank you.
12	" all seats are properly secured in position"	12	MR BERESFORD: So we see the 1995 language has come in to
13	That was marine bundle 2, page 384.	13	the code of practice, "adequate for the intended
14	THE CHAIRMAN: Is that the Blue Book provision?	14	service".
15	MR BERESFORD: No, that's the certificate of survey. The	15	Dr Armstrong, you point out:
16	certificate of survey was defined in its form under the	16	"This is reflected in the operating licence and the
17	Shipping and Port Control Ordinance (1978) at that time.	17	certification on installation"
18	THE CHAIRMAN: Sorry, which is the provision that deals with	18	And you've given us a reference there: page 3627,
19	seats? It's on the screen.	19	which is an annex to the code of practice.
20	MR BERESFORD: It's item (9).	20	We see at paragraph 1(b) this is described as:
21	THE CHAIRMAN: " all seats are properly secured in	21	"Determination of maximum number of persons to be
21	position"	21	carried and/or Survey Certification on installation
23	MR BERESFORD: Yes.	23	suitable for 'combined coxswain' operation of a class I
23	THE CHAIRMAN: But was there not a provision in the Blue	23	or II vessel."
25	Book?	25	At 1(b) it says:
25	Page 166	25	Page 168
1	MR BERESFORD: No, I don't believe there was?	1	"The form, design and attachments to the deck of
2	A. I believe so.	2	passenger seats should be adequate for the intended
3	MR MOK: Page 1773.	3	service. The seating construction"
4	MR BERESFORD: I'm grateful to my learned friend Mr McGowan	-	THE CHAIRMAN: Yes. Thank you.
5	Chapter 3, 4.1:	5	MR BERESFORD: You point out that it's not clear what is
6	"Where seats are provided for passengers"	6	an "adequate attachment".
7	THE CHAIRMAN: Page?	7	A. Yes.
8	MR BERESFORD: Let me just turn it up, Mr Chairman.	8	Q. So at consideration 17, you have suggested:
9	THE CHAIRMAN: Yes. As Mr Mok pointed out, paragraph 26	9	" some realistic value against which the
10	provides:	10	attachment of seats might be judged [should be set].
11	"Seats should always be properly secured."	11	This value will need to allow for the constant changes
12	MR BERESFORD: Yes. I'm sorry to have taken some time	12	in loads owing to operation of the vessel in waves and
12	coming to that. I was just tracking it through.	12	causing the attachments to work loose over time."
13	Mr Chairman, you're absolutely right, it's	14	You have suggested a methodology at appendix IV to
14	paragraph 26 on page 1773, in the Blue Book. That	14	the report, which is page 1681. You say:
15	language, "properly secured", reflects the certificate	16	" [this] is based on the assumption that
	of survey.	17	an adequate attachment is one that remains intact during
1.1.7		17	operation of the vessel during its normal operation in
17	THE CHAIRMAN. Remind me of the reference for that?	10	
18	THE CHAIRMAN: Remind me of the reference for that?		its intended service for the entire period of time
18 19	MR BERESFORD: Page 1773, marine bundle 8.	19	its intended service for the entire period of time
18 19 20	MR BERESFORD: Page 1773, marine bundle 8. THE CHAIRMAN: No, that's Blue Book. What is the	19 20	between annual surveys."
18 19 20 21	MR BERESFORD: Page 1773, marine bundle 8. THE CHAIRMAN: No, that's Blue Book. What is the certificate of survey?	19 20 21	between annual surveys." Turning to appendix IV at page
18 19 20 21 22	MR BERESFORD: Page 1773, marine bundle 8.THE CHAIRMAN: No, that's Blue Book. What is the certificate of survey?MR BERESFORD: The certificate of survey is marine bundle 2,	19 20 21 22	between annual surveys." Turning to appendix IV at page THE CHAIRMAN: Before we get there, do the Australians have
 18 19 20 21 22 23 	MR BERESFORD: Page 1773, marine bundle 8.THE CHAIRMAN: No, that's Blue Book. What is the certificate of survey?MR BERESFORD: The certificate of survey is marine bundle 2, page 384.	19 20 21 22 23	between annual surveys." Turning to appendix IV at page THE CHAIRMAN: Before we get there, do the Australians have legislation that condescends to this detail, as to
18 19 20 21 22	MR BERESFORD: Page 1773, marine bundle 8.THE CHAIRMAN: No, that's Blue Book. What is the certificate of survey?MR BERESFORD: The certificate of survey is marine bundle 2,	19 20 21 22	between annual surveys." Turning to appendix IV at page THE CHAIRMAN: Before we get there, do the Australians have

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	Page 169		Page 171
1	A. No, Mr Chairman, they do not.	1	A. Basically a measure of the acceleration owing to gravity
2	THE CHAIRMAN: Is there such a requirement in the United	2	and equal to 9.81 metres per second squared.
3	Kingdom?	3	THE CHAIRMAN: 32 feet per second; is that it?
4	A. I do not know.	4	A. 32.2, yes.
5	THE CHAIRMAN: Not federally or in any of the states in	5	THE CHAIRMAN: Thank you.
6	Australia do they condescend to this kind of	6	A. That, of course, is not a constant figure because the
7	particularity?	7	vessel is moving in waves. It's a variable value, and
8	A. I will have to find out for you, Mr Chairman.	8	the value given there is the maximum value over
9	THE CHAIRMAN: So, annex IV?	9	a 5-minute period.
10	MR BERESFORD: If I can just follow on from that,	10	MR BERESFORD: Yes, I see. And against the comment "The
11	Mr Chairman.	11	average seated person will start to struggle to keep
12	Dr Armstrong, there are provisions of this nature,	12	balance whilst holding", you've given the value as
13	are there not, in the High-Speed Code?	13	"0.25 G".
14	A. In the High-Speed Craft Code, there are indeed. I think	14	A. Correct.
15	one of the difficulties there is in Australia,	15	Q. And against the comment "Persons will fall out of seats
16	Mr Chairman, is that we're talking here about	16	without seat belts", you've given the value as 0.45 G.
17	foam-sandwich construction decks, and most passenger	17	A. Correct. These are taken straight out of the HSC Code.
18	vessels would not allow, in Australia, foam-sandwich	18	Q. Then you've said:
19	construction because of the fire risk. So it's somewhat	19	"It is suggested from inspection of the above table
20	unusual for seats to be fitted in this sort of	20	that a suitable design value for an adequate attachment
21	situation. Which is why I don't know the answer to the	21	of seats might be 0.20 G (1-in-100 occurrences)."
22	question.	22	A. That's 1-in-100 waves, if you like; 1-in-100
23	THE CHAIRMAN: Yes. What about New Zealand; do you know th	23	oscillations of the vessel from side to side.
24	position there?	24	Q. You then tell us:
25	A. I do not.	25	"The acceleration value of 0.2 G is the maximum
	Page 170		Page 172
1	THE CHAIRMAN: Because it's in New Zealand that the	1	value recorded in any 5-minute period. If it is assumed
2	superstructure was made.	2	that the average wave period in the waters of Hong Kong
3	A. And New Zealand has quite a good reputation for building	3	is 3 seconds, then there are 100 wave encounters on
4	GRP structures.	4	average in every 5-minute period, ignoring the effect of
5	THE CHAIRMAN: Yes, it certainly does.	5	ship speed and heading relative to the waves. If
6	A. I can find out.	6	a vessel is to operate for 4 hours every day, for
7	THE CHAIRMAN: Yes, Mr Beresford.	7	360 days a year, then there will be 17,280 periods of
8	MR BERESFORD: Thank you, Mr Chairman.	8	5-minutes duration in between annual surveys, or
9	Appendix IV is headed "Potential seat foundation	9	1,728,000 wave encounters."
10	design criteria".	10	Without going through all the details of the
11	You say:	11	calculation, which, if this page can be scrolled down,
12	"Hoberock published values in 1977 of horizontal	12	we can see on the screen, you calculate that the most
13	acceleration values at which passengers became	13	probable peak value of acceleration owing to waves in
14	uncomfortable when seated. These values are given in	14	one year of operation would be is that 3 metres
15	the 2000 HSC Code in annex 3 and reproduced in the	15	per
16	following table."	16	A. 3 metres per second squared.
17	We can see the table on the screen. The comment	17	Q. 3 metres per second squared.
18	says:	18	"If [you apply] that to the standard mass of
19	"A seated person will start to hold on to keep	19	a passenger (75 kg) applied at a distance above the deck
20	balance: Peak value horizontal acceleration: 0.15	20	of 0.9 metres", as amended.
21	[grams]."	21	A. Correct.
22	Is that right?	22	Q. " then the seat attachment should be designed for
23	A. 0.15 G, the acceleration of gravity.	23	a maximum moment of 195 newton metres."
24	Q. I'm sorry. Go on, please. You were going to explain	24	A. Correct.
25	the measurement "G"?	25	Q. "This attachment of the seat [therefore] may be checked

	Page 173		Page 175
1	by a physical test on the seat by applying a moment of	1	form. The requirements would say something like "apply
2	195 newton metres to the seat, which represents the	2	a force of 20 kg horizontally to the seat", which is not
3	highest anticipated load during normal operation in	3	dissimilar to what was done by Dr Cheng, I think, the
4	12 months."	4	forensic scientist, on his tests on board Lamma IV.
5	A. To understand perhaps in more everyday language, that's	5	THE CHAIRMAN: Yes.
6	equivalent to about 19 kg at 1 metre above the deck.	6	MR BERESFORD: Thank you.
7	Q. So how is that normally done in practice? We heard from	7	So, leaving seats and moving on to "Structural
8	the ship surveyors that they would sort of go along and	8	issues", issue (ix) in your report.
9	wobble the seat, if they could.	9	There are two structural issues you refer to,
10	A. Well, 19 kg is a rather light bag that you're taking it	10	plating thickness and corrosion. Dealing first with
11	you onto an airline. So that's the sort of mass	11	plating thickness. The issue you've identified is:
12	involved, the force involved. It's not particularly	12	"Lamma IV was manufactured with hull plating of less
13	large.	13	than the thicknesses shown on the approved drawings."
14	Q. How do they test it on high-speed craft, for example,	14	The current requirement you've identified in the
15	subject to the High-Speed Craft Code?	15	code of practice in chapter III, part 1, page 3461.
16	A. Oh, that's very detailed. You have to apply	16	Is what you're referring to, Dr Armstrong, the first
17	a considerable number of different loadings and	17	part of part 1, item (1):
18	accelerations at different locations on the seat.	18	"Except as otherwise specified, every vessel should
19	Q. But do they do it in situ, on the vessel?	19	be designed and built to the requirements of rules and
20	A. In a laboratory.	20	regulations of a classification society as listed at
21	Q. It's done in a laboratory?	21	annex A"
22	A. Mm. In a testing facility, anyway.	22	A. Yes, correct.
23	I'm not suggesting they should test every seat,	23	Q. " having regard [to] the size, construction material,
24 25	Mr Beresford. I just think one typical or maybe one on each deck or something like that could be very easily	24 25	and operational services of the vessel." So you point out:
23	Page 174	23	Page 176
1		1	-
1	tested just by applying of horizontal force.	1	" structure is designed in accordance with the
2 3	Q. But you're talking about an in situ test rather than a laboratory test?	2 3	requirements of a classification society. It further states that the classification society rules and
4	A. I am talking about a practical test.	4	regulations are to be complied with in their entirety."
5	Q. Yes.	5	A. I think that's an important sentence.
6	A. Because you couldn't really do this in a laboratory.	6	Q. Yes. And it's the second sentence which I didn't read
7	You'd need to recreate the exact same deck construction,	7	out. Then you say:
8	and that's, I don't believe, necessary. Although the	8	"However it is not clear to me from reading the code
9	disadvantage here is that the vessel would have been	9	of practice whether the minimum scantlings shown on the
10	built before you did the testing, and if it failed, then	10	drawings might be liberally interpreted by the person
11	the shipyard would have to think of some way of getting	11	surveying the ship, as detailed in paragraph A-14 of
12			
	around that problem, which may include through-bolting	12	this report."
	around that problem, which may include through-bolting or it's not impossible.	12 13	this report." In paragraph A-14, of course, you use the case of
13 14	or it's not impossible.		this report." In paragraph A-14, of course, you use the case of the changes to Lamma IV as an example that if the
13		13	In paragraph A-14, of course, you use the case of
13 14	or it's not impossible. Q. But I suppose the long and the short of it is that this	13 14	In paragraph A-14, of course, you use the case of the changes to Lamma IV as an example that if the
13 14 15	or it's not impossible.Q. But I suppose the long and the short of it is that this detailed mathematical calculation gives some indication	13 14 15	In paragraph A-14, of course, you use the case of the changes to Lamma IV as an example that if the approved drawing shows 5 mm plating and the surveyor
13 14 15 16 17 18	or it's not impossible.Q. But I suppose the long and the short of it is that this detailed mathematical calculation gives some indication of the force that needs to be applied in order properly to test the seat attachment?A. That was the intention of it. The statistical	13 14 15 16	In paragraph A-14, of course, you use the case of the changes to Lamma IV as an example that if the approved drawing shows 5 mm plating and the surveyor accepts overall plate at 4.83 mm, then it's unclear how that should be recorded in the as-built plans. A. It's potentially worse under the current regulations,
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13 14 15 16 17 18 19 20 21 22 23	 or it's not impossible. Q. But I suppose the long and the short of it is that this detailed mathematical calculation gives some indication of the force that needs to be applied in order properly to test the seat attachment? A. That was the intention of it. The statistical mathematics are quite well proven and well understood. There's nothing that a mathematician would not understand in the calculation. Q. No, but my question is, how is your practical naval surveyor or ship surveyor going to apply this to a seat 	 13 14 15 16 17 18 19 20 21 22 23 	In paragraph A-14, of course, you use the case of the changes to Lamma IV as an example that if the approved drawing shows 5 mm plating and the surveyor accepts overall plate at 4.83 mm, then it's unclear how that should be recorded in the as-built plans.A. It's potentially worse under the current regulations, because it may be just quite a different company or organisation doing the plan approval to that one doing the survey. They're not even in the same building. As I understand the current system.Q. Well, you've got drawings specifying 5 mm, 5 mm plate.
13 14 15 16 17 18 19 20 21 22	 or it's not impossible. Q. But I suppose the long and the short of it is that this detailed mathematical calculation gives some indication of the force that needs to be applied in order properly to test the seat attachment? A. That was the intention of it. The statistical mathematics are quite well proven and well understood. There's nothing that a mathematician would not understand in the calculation. Q. No, but my question is, how is your practical naval 	13 14 15 16 17 18 19 20 21 22	In paragraph A-14, of course, you use the case of the changes to Lamma IV as an example that if the approved drawing shows 5 mm plating and the surveyor accepts overall plate at 4.83 mm, then it's unclear how that should be recorded in the as-built plans.A. It's potentially worse under the current regulations, because it may be just quite a different company or organisation doing the plan approval to that one doing the survey. They're not even in the same building. As I understand the current system.

	Page 177		Page 179
1		1	Q. It is that further clarification is needed, and some
1	you, you're saying that the code of practice does not	1 2	-
2	offer any solution as to how to deal with that problem. A. I don't think it does offer any solutions. It does	2	feedback on how this has worked over the past six years
3	permit different authorities to have different	3 4	since the code of practice has been in operation. A. Yes.
4	functions, and if one of those authorities is approving	4 5	
5	5 and then the question comes to the surveying		Q. The second structural issue is "Corrosion", and you've
6		6 7	noted the issue as being: "Disconservation the correction properties of
7	authority, "We've used this plate, it's only 4.83, is		"Disagreement on the corrosion properties of different materials."
8	that okay?", how does the message get from the one authority to the other? How does the person doing the	8	
9 10	plan approval know that it's being built out of	9 10	You've identified the current requirements as you
10	different-thickness plate? I accept it's only a small	10	say: "Correction is extensively severed for steel items in
	amount, but what are the tolerances of the particular		"Corrosion is extensively covered for steel items in
12	•	12 13	the code of practice annex M. Corrosion is also covered
13 14	classification society? We've seen that they vary, and	13 14	by the rules and regulations of the classification society" we've seen some examples of those in the
	they vary with different years of publication.	14	
15 16	Q. But if the vessel is designed and built to the rules and regulations of one particular classification society,	15 16	course of the hearing "and is generally embedded within their formulations for scantlings."
17	the fact that another classification society is doing	17	You've proposed for consideration at 18:
17	the survey shouldn't make any difference to that, should	17	"That reference is made in annex M that the
10	it? They would have to look at the first classification	10 19	information relates only to steel material."
20	society's rules, wouldn't they?	20	A. Yes.
20	A. I'm not sure it's as simple as that, because I don't	20	Q. We then come to issue (x), "Watertight bulkheads and
21	think the classification societies have the same	21	access openings", and you identify the issue as:
22	philosophy behind how they design their scantlings. The		"Access openings , and you identify the issue as."
23	formulations, for example, can be different between the	23 24	You identify the current requirements as being the
24	societies.	2 4 25	hull construction requirements in the code of practice,
23	Page 178	20	Page 180
1	Q. That may be true, but if one is surveying a vessel	1	chapter IIIA, part 2, section 2, at page 3461.
1 2	designed to another's specifications, they couldn't just	1 2	That section we've already looked at, in relation to
3	superimpose their own rules, could they?	3	your comments on the aft peak bulkhead. We'll just look
4	A. I don't know. But I think the possibility could arise,	4	at it again generally in relation to watertight
5	and this is why I wanted to alert the Commission to this	5	bulkheads. Because, unlike the Blue Book, this makes
6	problem, as I saw it. The survey authority can be	6	clear it says:
7	a private person appointed by the director. Would	7	"Every launch or ferry vessel should be fitted with
8	a private person appointed by the director. Would a private individual interact with a classification	8	the following watertight bulkheads"
9	society in such a way? There's nothing to require him	9	A. Yes.
10	to do so in the regulations.	10	Q. "(a) collision bulkhead", which we've seen.
11	Q. Is there not, Dr Armstrong? If the code of practice	11	"(b) fore and after bulkhead of main engine space".
12	requires the vessel to be designed and built to the	12	(c) deal with compartments exceeding 2/5ths of the
13	requirements of rules and regulations of a particular	13	length.
14	classification society, is not any subsequent surveyor,	14	"(d) if the vessel exceeds 24 metres in length,
15	regardless of which society he may belong to, or whether		an aft peak bulkhead unless the engine room is situated
16	he's private or public or whatever is he not bound by	16	at aft end of the vessel."
17	that? I'm just wondering if this is a real problem.	17	A. Yes.
18	A. It may not be a real problem. I've merely raised the	18	Q. So quite plainly, under the code of practice, an aft
19	issue and drawn it to the attention of the Commission.	19	peak bulkhead must be watertight and couldn't be the aft
20	I think it could be a problem. It's part of	20	engine room bulkhead.
21	understanding better how the current system is actually	21	A. Unless the engine room is at the after end of the
22	operating practically.	22	vessel, I guess.
23	Q. And that leads us to your consideration number 2,	23	Q. Unless the engine room is at the after end, yes.
24	because you refer us back to that.	24	In addition, you point out that section 2.5 says

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1	provides:	1	A. The words used to be "This door to be kept closed at sea
2	"Access openings fitted in watertight bulkheads	2	at all times", and maybe that would be better than "and
3	should be equipped with effective watertight closing	3	secured".
4	appliances."	4	THE CHAIRMAN: You're contrasting here a hinged watertight
5	A. Correct.	5	door with a sliding one, are you?
6	Q. So I just pose hypothetically that if Lamma IV had been	6	A. No, I'm not suggesting sliding doors at all. Sliding
7	constructed under the code of practice, the bulkhead	7	doors are wonderful things, Mr Chairman, and they can
8	between the steering compartment and the tank room would		operate with the vessel heeled over to one side, and
9	have been required to be watertight, unambiguously so?	9	they can operate with a force of water behind the door,
10	A. Yes.	10	trying to open a hinged door. But they are very
11	Q. And even though it had an access opening, it would	11	cumbersome and very expensive and take up a lot of room.
12	unambiguously have been required to have been fitted	12	So I think on a local craft, it's probably a bit of
13	with an effective watertight closing appliance?	13	overkill.
14	A. Yes, that's how I read it.	14	Australia, I know, allows hinged watertight doors in
15	Q. You make the comment that under paragraph 2.1(d), which	15	some situations, one of which is partially smooth
16	says "an aft peak bulkhead unless the engine room is	16	waters, which I believe covers most of Hong Kong waters.
17	situated at aft end of the vessel' clearly indicates	17	So the requirements you see here are actually copied
18	that the aft peak bulkhead is expected to be located in	18	from the Australian regulations for hinged watertight
19	the after part of the vessel."	19	doors.
20	A. Yes.	20	Q. In your last sentence in that subparagraph (a), where
21	Q. One might think that that was indicated by the words	21	you're talking about the direction in which doors should
22	"aft" and "peak" as well.	22	open, you say you make an exception for doors to the aft
23	A. It has been queried, Mr Beresford.	23	peak and other high-flooding-risk spaces. So does that
24	Q. So you suggest for consideration at number 19:	24	imply that in your opinion, the aft peak is
25	"Current requirements appear to cover the need for	25	a high-flooding-risk space?
	Page 182		Page 184
1	watertight doors, both at the design approval stage, and	1	A. Certainly, yes.
2	at the survey stage."	2	Q. Could you just clarify why that is, please?
3	A. Yes.	3	A. This is because there are hull penetrations often in
4	Q. But you nevertheless go on to make two suggestions. You	4	an aft peak space, such as a propeller shaft or a rudder
5	say:	5	shaft.
6	"(a) It is suggested that hinged watertight doors	6	Q. Yes.
7	have a maximum permitted width of 800 millimetres with	7	A. And being penetrations, there is always the risk of
8	a sill no more than 2.5 m below the freeboard deck and	8	leakage. In the case of rudders and propellers, there's
9	marked on each side of the boundary in bold and	9	also the risk of them hitting the bottom and being
10	permanent lettering 'This door to be kept closed and	10	forced up into the hull, which is an obvious flooding
11	secured'. Only one hinged watertight door should be	11	risk. And the purpose of hinging into that direction is
12	permitted within any hull (ie maximum of one in each	12	of course such that any water coming into the space
13	hull of a catamaran). Hinged watertight doors should be	13	would force the door even tighter on to its coaming.
14	arranged to generally open forward (or outboard) except	14	Q. Might this be the reason for requiring an aft peak
15 16	doors to the aft peak and other high flooding risk	15 16	bulkhead, watertight bulkhead, in every launch or ferry
10	spaces should open into the space." A. Correct, Mr Beresford. I have one small suggestion to	16 17	vessel exceeding 24 metres in length? A. I believe that is one of the reasons for that, yes.
17	amend this though.	17 18	A. I believe that is one of the reasons for that, yes.Q. And might it have been a reason for requiring an aft
18 19	Q. Yes?	18 19	Q. And might it have been a reason for requiring an art peak bulkhead in the Blue Book as well?
20	A. As you were reading it out, I suddenly became concerned	19 20	A. It could well have been.
20	about the word "secured" and how that might be	20	Q. Then at (b), you say:
21	translated. It is not intended to indicate it should be	21	"It is suggested that a hinged watertight door
22	locked, because that could be disastrous. So maybe we	22	should be fitted with catches and other quick-action
23	should lose the words "and secured".	23	closing devices capable of being operated from each side
25	Q. Yes, I see.	25	of the bulkhead in which the door is fitted. The speed

	Page 185		Page 187
1	of complete closure of the door (including securing)	1	Dr Armstrong's day for tomorrow?
2	should not exceed 90 seconds with the vessel in the	2	MR SHIEH: Well, subject to completing Professor Ho's
3	upright position. All hinged watertight doors should be	3	evidence really on the electrical wiring, we interpose
4	provided with a means of indication at the operating	4	Professor Ho and then continue with Dr Armstrong.
5	compartment (eg the wheelhouse) to show whether the door	5	THE CHAIRMAN: Very well. Has any counsel got any
6	is open or closed. An audible alarm should be provided	6	submission on that suggestion? I see people shaking
7	at each side of the opening."	7	their heads.
8	A. I did suggest that, yes.	8	MR McGOWAN: It sounds very sensible to me.
9	MR BERESFORD: Mr Chairman, I note the time.	9	THE CHAIRMAN: Dr Armstrong, if you can accommodate us,
10	THE CHAIRMAN: Yes. Just looking ahead at the next item,	10	that's what we'll do. We'll take Professor Ho, who has
11	the drawing as-fitted, or "Built in accordance with the	11	other commitments on Friday. If you would be on
12	approved plans", remind me, if you would, as to the	12	standby, as it were, we'll come back to you when we've
13	evidence we've received from Hongkong Electric as to the	13	dealt with Professor Ho.
14	provision of any drawing or any is it a letter that	14	A. Yes, of course, Mr Chairman.
15	says it was built as-fitted?	15	THE CHAIRMAN: Thank you for accommodating us.
16	Mr McGowan?	16	MR McGOWAN: Perhaps I can just ask one thing. You'll
17	MR McGOWAN: It was a very long time ago, Mr Chairman.	17	recollect perhaps when Dr Armstrong was giving evidence
18	I can't remember. We'll try and find that out as	18	in January, at the end of January, that Mr Grossman gave
19	quickly as possible.	19	him a diagram showing various authorities who dealt with
20	THE CHAIRMAN: Do you remember, Mr Beresford?	20	the Lamma IV at stages of design and build, and asked
21	MR BERESFORD: We have been provided with as-fitted drawings		him to comment on that. It was agreed that would be
22	and there was a requirement in the contract that such	22	done as part of the second part of this proceeding.
23	drawings be provided.	23	I just wondered whether perhaps
24	THE CHAIRMAN: I'm aware of the contractual requirement.	24	THE CHAIRMAN: Is this the document to which you referred
25	MR McGOWAN: My recollection was there was a letter covering	25	recently?
	Page 186		Page 188
1	some documents.	1	MR McGOWAN: No, this was a document that had been produced
		1	with webb wary. The, this was a document that had been produced
2	THE CHAIRMAN: Very well. But Mr Beresford thinks there was		
2 3	THE CHAIRMAN: Very well. But Mr Beresford thinks there was a drawing.	1 2 3	by our instructing solicitors which showed the various
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	Page 189		Page 191
1	would be understandable for Hongkong Electric as a lay	1	I N D E X
2	client to accept it without further enquiry themselves.	2	CAPTAIN NIGEL ROBERT PRYKE (on former oath)1
3	THE CHAIRMAN: Very well.	3	Examination by MR SHIEH (continued)1
4	That's the question, Dr Armstrong. I don't think	4	Examination by MR McGOWAN21
5	that will keep you up late at night.	5	Examination by MR MOK49
6	MR McGOWAN: I'm sure it won't. It's probably delaying us	6	Further examination by MR SHIEH52
7	now, Mr Chairman.	7	Questions by THE COMMISSION56
8	THE CHAIRMAN: Yes.	8	(The witness withdrew)57
9	MR McGOWAN: But I just raise it so the Doctor has a chance	9	DR NEVILLE ANTHONY ARMSTRONG (sworn)60
10	to think about it.	10	Examination by MR BERESFORD60
11	THE CHAIRMAN: Would someone provide Dr Armstrong with	11	
12	a copy of that, and perhaps the page from the	12	
13	transcript, so that he can be reminded of the issue.	13	
14	MR McGOWAN: Certainly. Thank you.	14	
15	THE CHAIRMAN: Thank you.	15	
16	Mr Shieh, have we contacted Mr Dominic Yeung as to	16	
17	the position of the China Classification Society?	17	
18	MR SHIEH: Could I just take instructions.	18	
19	An email has been sent notifying those instructing	19	
20	Mr Yeung, I believe, but no response has yet been	20	
21	received.	21	
22	THE CHAIRMAN: Thank you. Perhaps in anticipation of this	22	
23	issue arising, you could find the page reference for the	23	
24	witness statement	24	
25	MR SHIEH: Of the China Classification Society witness?	25	
	Page 190		
1	THE CHAIRMAN: Yes, that's it. No need to find it now. So		
2	that we can lay our hands on it. Because one way of		
3	dealing with that issue may simply be to read out that		
4	statement.		
5	MR SHIEH: Yes. We'll locate that and perhaps we'll deal		
6	with it first thing tomorrow morning, depending on		
7	whether there is a response.		
8	THE CHAIRMAN: Thank you very much. There was another		
9	matter about recalling a witness for cross-examination.		
10	We indicated that we were not favourably disposed to		
11	that application. But that's another matter that is		
12	outstanding. That's all.		
13	MR SHIEH: Yes.		
14	THE CHAIRMAN: So we'll adjourn now until 10 o'clock		
15	tomorrow.		
16	(5.35 pm) (The hearing a diagonal and it 10 are on the following day)		
17	(The hearing adjourned until 10 am on the following day)		
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