

EXPERT REPORT

PREPARED BY

CAPTAIN NIGEL R PRYKE

Expert Witness appointed by the Commission of Inquiry
into the Collision of Vessels
near Lamma Island on 1 October 2012

4 December 2012

Captain Nigel R Pryke
Master Mariner and Elder Brother of Trinity House, Tower Hill, London, United Kingdom.

Specialist Field : see Appendix I

Appointed on behalf of : The Commission of Inquiry into the Collision of Vessels near Lamma Island on 1 October 2012 (the "Commission")

Prepared for : The Commission

On instructions of : Messrs. Lo & Lo, solicitors for the Commission ("Lo & Lo")

Subject matter / Scope of engagement: : To assist the Commission in discharging its duties under the Terms of Reference and by acting as an expert witness in the inquiry hearings.

Documents reviewed : See Appendix II

Documents referred to in this Report : See Appendix III

Date of Inspection of the 2 vessels involved in the collision (Lamma IV and Sea Smooth) : 27 November 2012

Inquire into the facts and circumstances leading to and surrounding the collision of the two vessels that took place near Lamma Island, Hong Kong on 1 October 2012:
(a) ascertain the causes of the incident and make appropriate findings thereof;

The Terms of Reference of the Commission are as follows:

- (b) consider and evaluate the general conditions of maritime safety concerning passenger vessels in Hong Kong and the adequacy or otherwise of the present system of control; and
- (c) make recommendations on measures, if any, required for the prevention of the recurrence of similar incidents in the future.

Instructions

I have been instructed to give my opinion on the matters under the Terms of Reference and this Expert Report represents Part 1 of my opinion which seeks to address the causes of the incident, with the view to assisting the Commission in making appropriate findings (Item (a) of the Terms of Reference).

In providing my opinion, I have also been instructed to consider the following areas and undertake the following tasks:

1. The characteristics and features of the 2 vessels involved in the incident.
2. The navigation equipment on board the 2 vessels and how it might or might not have been used in the course of navigation and what effect (if any) it might have on the cause of collision.
3. Whether the 2 vessels had been navigated in accordance with the applicable laws and regulations.
4. Review and examine the available forensic evidence to assess whether it is consistent with the available factual evidence.

Introduction

1. I, Captain Nigel Robert Pryke, an Elder Brother of Trinity House in London, have been appointed as the Commission's expert to assist the Commission in determining the matters under the Terms of Reference. In this Report, I seek to address only the causes of the incident (Item (a) in the Terms of Reference). The causes of the collision are, under its Terms of Reference, a matter for the Commission after hearing all of the evidence. The opinion and conclusions which are set out in this Report were formed on the basis of the evidence that I have seen. I appear as an independent expert for the Commission unrelated to my work for Trinity House.

2. A collision between a high speed passenger ferry "Sea Smooth" and a company passenger launch "Lamma IV" has resulted in the death of 39 passengers travelling on the launch. The Commission has been set up on 22 October 2012 and is now inquiring into the facts leading up to the collision. The first part of the Inquiry requires the Commission to ascertain the causes of the incident and make appropriate findings.

Background of the Incident

3. At about 20:20 hrs on 1 October 2012 off Shek Kok Tsui, northwest of Lamma Island, a ferry "Sea Smooth" (owned by Islands Ferry Company Limited, a subsidiary of Hong Kong & Kowloon Ferry Holdings Limited) carrying 4 crew and at least 62 passengers on passage from Central to Yung Shue Wan, Lamma Island collided with "Lamma IV", a launch owned and operated by The Hongkong Electric Company Limited. The latter vessel was carrying 127 passengers including 3 crew members and was leaving Lamma Island and heading towards the Victoria Harbour in order to watch the National Day fireworks display. Passengers would finally disembark at Central. After the collision, the ferry "Sea Smooth" remained afloat while the launch Lamma IV sank stern first within a few minutes. The vessel came to rest almost vertically with its bow and forward section protruding above the water. Many persons on board "Lamma IV" fell into the sea or were trapped inside the vessel.

Description of the Vessels

“Sea Smooth”

4. “Sea Smooth” is a high speed passenger catamaran restricted by her licence¹ to “Ply within the waters of Hong Kong”.

Class	1
Type	Ferry Vessel
Length	28.02 metres
Breadth	8.00 metres
Depth	3.10 metres
Tonnage	274 gross tons
Material of hull	G.R.P.
Minimum crew	4
No. of passengers permitted to carry	381

5. The vessel is required to be fitted with radar and the radar operator is required to complete a radar training course approved by the Director of Marine.² Sea Smooth is fitted with radar, V.H.F. Radio and A.I.S. (as evidenced by the Vessel Traffic System records provided by the Marine Department).

“Lamma IV”

6. “Lamma IV” is a passenger launch restricted by her licence³ to “ply within the waters of Hong Kong”.

Class	1
Type	Launch
Length	27.21 metres
Breadth	6.81 metres
Depth	2.08 metres
Tonnage	184.07 gross tons
Material of hull	Aluminium
Minimum crew	4
No. of passengers permitted to carry	224

7. The vessel is fitted with radar but not fitted with V.H.F. radio⁴ or A.I.S.

¹ Vessel Licence of Sea Smooth (validity from 02.12.2011 to 30.11.2012)

² Certificate of Survey (Sea Smooth) issued on 02.12.2011 (valid until 30.11.2012)

³ Vessel Licence of Lamma IV (validity from 08.07.2012 to 07.07.2013)

⁴ Notes of Interview (by the Marine Department) of Chow Chi Wai, coxswain of Lamma IV dated 07.11.2012 (English translation)

8. There is no requirement from the Hong Kong Marine Department for this vessel to carry radar or a V.H.F. radio⁵.

Weather and tidal conditions

9. The wind direction off Lamma Island at 20:00 hrs on 1 October 2012 was easterly at 9 km/hr. At 21:00 hrs, it was north easterly at 14 km/hr⁶.

10. The hourly visibility observed at the Hong Kong Observatory Headquarters (Tsim Sha Tsui) was 10 km at 20:00 hrs and 10 km at 21:00 hrs. The visibility at Waglan Island was 12 km at 20:00 hrs and also 12 km at 21:00 hrs⁷.

11. High water at Hong Kong on 1 October 2012 was at 22:10 hours⁸. According to the tidal stream atlas produced by the Hydrographic Department, Taunton, the tidal stream would have been in a north westerly direction in the East Lamma Channel and northerly to the West of Lamma Island⁹.

12. According to the evidence available, neither the weather nor the tide has any material effect on the navigation of the two vessels prior to the collision.

Radar

13. Both vessels were fitted with radar. According to Mr Larry W.O. Cheung, the Operations Executive for Hong Kong and Kowloon Ferry Holdings Limited, there was no instruction from the company to turn on the radar¹⁰. According to Mr Lam Hoi, the Chief Coxswain in the same company, crew members had been notified verbally to turn on the radar before sailing. On 1 October 2012, subsequent to the collision, Mr Lam went onto Sea Smooth and noticed that the radar was turned on but he did not know whether the radar was on at the time of the collision. ¹¹

14. I have not seen evidence as to whether the radar on Sea Smooth was in use before the collision.

⁵ Certificate of Survey (Lamma IV) issued on 08.05.2012 (valid until 07.07.2013) and Instructions for the survey of launches and ferry vessels (1983 and 1995 versions)

⁶ Weather Report provided by the Hong Kong Observatory on 22 November 2012.

⁷ Weather Report provided by the Hong Kong Observatory on 22 November 2012.

⁸ Hong Kong Observatory Calendar with Tide Tables for October 2012.

⁹ Tidal Stream Atlas, Hong Kong (NP217, Edition 1-1975).

¹⁰ Notes of Interview (by the Marine Department) of Larry W. O. Cheung dated 12.10.2012 (English translation)

¹¹ Notes of Interview (by the Marine Department) of Lam Hoi dated 12.10.2012 (English translation)

15. The coxswain of Lamma IV, Mr. Chow Chi Wai, gave evidence that the radar on the bridge of Lamma IV was switched on before leaving the pier and that it was common practice among coxswains to turn on the radar when steering at night¹².

16. My conclusion is that both vessels were fitted with radar and in both cases the radar was operational. This is significant because the collision regulations state clearly at Rule 7(b) that¹³:

"Proper use shall be made of radar equipment if fitted and operational, including long range scanning to obtain early warning of risk of collision and radar plotting or equivalent systematic observation of detected objects".

Lookout

17. Mr Wong Yung-shing, sailor on the Sea Smooth stated in his statement given to the Police that the sailors would go to the wheelhouse to "take a break". When asked if the Captain instructed anyone to keep a lookout, he said "No". Wong also stated that the Captain (Lai Sai-ming) was alone in the wheelhouse at the time of the collision¹⁴.

18. On Lamma IV, Sailor Leung Tai-yau said he sometimes keeps a lookout when not performing other duties¹⁵. Coxswain Chow Chi Wai stated to Hong Kong Police that he saw a vessel approach at high speed at a distance of 500-600 metres right ahead. This was "2 or 3 minutes" after leaving the typhoon shelter¹⁶.

Navigation Lights

¹² Notes of Interview (by the Marine Department) of Chow Chi Wai, coxswain of Lamma IV dated 07.11.2012 (English translation)

¹³ International Regulations for Preventing Collisions at Sea 1972 (Rule 7(b)) as applicable by virtue of the Merchant Shipping (Safety) (Signals of Distress and Prevention of Collisions) Regulations Cap 369N and/or section 27 of the Merchant Shipping (Local Vessels) Ordinance (Cap.548).

¹⁴ Statement of Wong Yung-shing (sailor of Sea Smooth) given to the Police on 2 October 2012 (English Translation)

¹⁵ Notes of Interview (by the Marine Department) of Leung Tai-yau (sailor of Lamma IV) dated 01.11.2012 (English translation)

¹⁶ Statement of Chow Chi Wai (Captain of Lamma IV) given under caution to the Police on 2 October 2012 (English translation)

19. There is evidence that both vessels had their navigation lights on¹⁷. There is no evidence that I have seen that this was not the case. Sea Smooth was showing a flashing yellow light at the mast head¹⁸. Rule 23(b) of the collision regulations states that such a light shall be exhibited by "air-cushion" vessels¹⁹.

Whistle / Horn

20. During my inspection of both vessels on 27 November 2012, I was able to see that both vessels were fitted with a whistle. I am not able to say whether either whistle was working effectively on the night of 1 October 2012. Coxswain Chow Chi Wai has stated that he gave one short blast on his whistle and altered course to starboard²⁰. I have no verified evidence on this point. My best estimate is that this might have taken place at 20:20 hrs. I am not aware whether this signal was heard on the bridge of Sea Smooth where the wheelhouse doors were probably closed. In any event, I do not believe that, at this late stage, the sound signal of one short blast would have had any effect on preventing the collision.

Action to avoid collision

21. There is some evidence that at about 20:20 hrs, Lamma IV altered course a few degrees to starboard²¹. Coxswain Chow also stated that he reduced speed and stopped Lamma IV²². There is no engine recorder to verify this and there is no track report to support this. The digital radar track records show that the speed of Lamma IV reduced from 12 knots at 20:20:31 hrs to 3 knots at 20:20:37 hrs. (ie. 20 seconds after the collision)²³. I believe the collision occurred at 20:20:17 hrs²⁴. There is no evidence that Sea Smooth reduced speed until after the collision. The

¹⁷ Notes of Interview (by the Marine Department) of Leung Tai-yau (sailor of Lamma IV) dated 01.11.2012 and his Statement given to the police on 02.10.2012. Statement of Chow Chi Wai (Captain of Lamma IV) given under caution to the Police on 2 October 2012. Notes of Interview (by the Marine Department) of Chow Chi Wai dated 07.11.2012 (English translations).

¹⁸ Notes of Interview (by the Marine Department) of Chow Chi Wai dated 07.11.2012 (English translation).

¹⁹ International Regulations for Preventing Collisions at Sea 1972 (Rule 23(b)) as applicable by virtue of the Merchant Shipping (Safety) (Signals of Distress and Prevention of Collisions) Regulations Cap 369N and/or section 27 of the Merchant Shipping (Local Vessels) Ordinance (Cap.548).

²⁰ Notes of Interview (by the Marine Department) of Chow Chi Wai dated 07.11.2012 (English translation) and Statement of Chow Chi Wai (Captain of Lamma IV) given under caution to the Police on 2 October 2012 (English translations).

²¹ Hong Kong Marine Police Track Reports (between 20:20:01 to 20:20:28 hrs, the course was altered by 6 degrees to starboard).

²² Notes of Interview (by the Marine Department) of Chow Chi Wai dated 07.11.2012 (English Translation) and Statement of Chow Chi Wai (Captain of Lamma IV) given under caution to the Police on 2 October 2012 (English translation)

²³ Hong Kong Marine Police Track Reports (between 20:20:31 [12 knots] to 20:20:37 hrs [3 knots])

²⁴ Chart Plot prepared by Captain Pryke on the basis of the information in the Track reports of the Hong Kong Marine Police.

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near Lamma Island on 01.10.2012

digital radar track records indicate that Sea Smooth altered course to port at 20:19:29 hrs which is a serious contravention of Rule 14(a) of the Collision Regulations²⁵.

The Enquiry

22. My enquiry into the events of 1 October 2012 consisted of reviewing the evidence from the Marine Department and the Police together with additional information on the weather and tides provided by the Hong Kong Observatory. I also visited the Marine Department Vessel Traffic Centre and Search and Rescue Centre, the Local Vessels Section of the Marine Department and the Marine Police Headquarters (Regional Command and Control Centre) where the digital radar tracking information was collected. On the evening of 29 November 2012, I was shown a reconstruction of the passage of Sea Smooth aboard one of the police launches. We stopped at the collision site at dusk and I was able to watch a sister ferry vessel complete its passage into the ferry pier at Yung Shue Wan. I have plotted as accurately as possible the tracks of Sea Smooth and Lamma IV on Chart HK 1501 using Digital Radar Track information provided by the Marine Police from its Digital Radar Surveillance System ("DRSS")²⁶. It is worth pointing out that the raw radar data used by the Marine Department Vessel Traffic Centre and the Marine Police Radar Centre is the same derivation.

Assumption, opinion and conclusions

23. In reconstructing the events leading up to the collision between Lamma IV and Sea Smooth on 1 October 2012 at 20:20 hours, I have relied heavily on the track data supplied by the Marine Police which is the most accurate forensic evidence available. The Merchant Shipping (Safety) (Signals of Distress and Prevention of Collisions) Regulations (Cap 369N) apply to both vessels when under way. No local rules in Hong Kong harbour override these regulations. However it appears that by custom and practice local fast ferries other than air cushion vessels exhibit an all-round flashing yellow light. During my trip on the police launch, I was informed that such

²⁵ International Regulations for Preventing Collisions at Sea 1972 (Rule 14(a)) as applicable by virtue of the Merchant Shipping (Safety) (Signals of Distress and Prevention of Collisions) Regulations Cap 369N and/or section 27 of the Merchant Shipping (Local Vessels) Ordinance (Cap.548).
²⁶ Chart Plot prepared by Captain Pryke on the basis of the information in the Track reports of the Hong Kong Marine Police.

vessels by agreement with the Marine Department receive exemption from certain harbour speed restrictions.

24. When Lamma IV had cleared the berth in the typhoon shelter at 20:16 hrs she was

clearly seen by each other on radar and visually at about two miles distant²⁷. Coxswain Chow on Lamma IV states that the lights of vessels at anchor affected his ability to observe the approach of Sea Smooth²⁸. I have reviewed the information supplied by the Marine Department on the positions of the anchored vessels in North Lamma Anchorage²⁹. In my opinion, the lights exhibited by the three vessels in the North Lamma Anchorage would have appeared behind the lights of Sea Smooth between 20:18 hrs and 20:20 hrs and may well have caused a slight delay in the sighting of Sea Smooth. Nevertheless the fast approach of Sea Smooth and in particular the flashing yellow light at her masthead would have made her approach very clear. The radar picture would have given a very clear indication of Sea Smooth from around 20:15 hrs. I do not consider that the presence of the anchored vessels should have contributed to the collision. A hazardous close quarters situation developed primarily because neither vessel was fully aware of the other's intentions, and the combined speed of approach allowed little time for appraisal and to take action. The closing speed was around 36 knots (Sea Smooth : 24.30 knots and Lamma IV : 11:50 knots). At this speed, one cable (a tenth of a nautical mile or 608 feet) is covered in 10 seconds.

25. Turning to Rule 2(a) of the Collision Regulations:

Responsibility

"Nothing in these Rules shall exonerate any vessel, or the owner, master or crew thereof, from the consequences of any neglect to comply with these Rules or of the neglect of any precaution which may be required by the ordinary practice of seamen, or by the special circumstances of the case."

²⁷ Chart Plot prepared by Captain Pryke on the basis of the information in the Track reports of the Hong Kong Marine Police.

²⁸ Notes of Interview (by the Marine Department) of Chow Chi Wai dated 07.11.2012 (English translation). Information on vessels anchored in the vicinity of Lamma Channel during 19:00 hrs to 21:00 hrs on 1 October 2012 provided by the Marine Department on 30 November 2012

26. It could be argued that the owners of both vessels could have done more to encourage the proper use of radar and were therefore in breach of Rule 2(a). Without access to the documented safety policies and safety management systems of the two companies and without interviewing the relevant ship and shore staff, I cannot be more definite on this point.

27. Turning to the Steering and Sailing Rules, Part B of the Collision Regulations³⁰, from the evidence available, Sea Smooth

(a) did not keep a proper look-out (Rule 5)

(b) did not proceed at a safe speed (Rule 6)

(c) apparently did not make proper use of her radar (Rule 7(b))

(d) did not take action to avoid collision (Rule 8)

(e) did not alter course to starboard (Rule 14)

(f) did not make any warning signals (Rules 34 & 36)

28. From the evidence available, Lamma IV did not take positive action in ample time (Rule 8) and did not alter her course sufficiently to starboard (Rule 14). However, it must be borne in mind that her proximity to the rocks off Shek Kok Tsui would have been a factor in both cases. Lamma IV also did not use warning signals in compliance with Rule 34(d) and Rule 36.

29. In my opinion the Sea Smooth, in colliding with the port quarter of Lamma IV at a speed in excess of 20 knots was primarily responsible for the collision. The alteration of course to port at 20:19:29 hrs was very significant. Even at the very last moment she could have very easily avoided contact with a small alteration of course to starboard. When the two vessels were one mile apart just before 20:19 hrs, there was a very clear Rule 14 "Head-on" situation requiring both vessels to alter course to starboard. Between 20:19 hrs and the point of impact at 20:20:17 hrs, according to the digital track reports, Lamma IV had altered her course 13 degrees to starboard. On the other hand, Sea Smooth had altered her course 16 degrees to

³⁰ Part B, Steering and Sailing Rules under the International Regulations for Preventing Collisions at Sea 1972 as applicable by virtue of the Merchant Shipping (Safety) (Signals of Distress and Prevention of Collisions) Regulations (Cap 369N and/or section 27 of the Merchant Shipping (Local Vessels) Ordinance (Cap.548).

port (in flagrant breach of Rule 14) in an apparent attempt to cross ahead of Lamma IV. Evidence from the sailor on board Sea Smooth indicates that the coxswain was alone on the bridge³¹. I think it is very likely that this could be a contributory factor to the collision. I therefore conclude that the most significant cause of the collision was poor navigation by the coxswain of Sea Smooth. There were also contributory failings by the coxswain of Lamma IV.

30. In this report which only seeks to advise on the direct causes of the collision, I have not commented on the safety management and training environment in respect of the crews of these vessels. There may be failings in the support system ashore which have contributed to the "human error" which undoubtedly was responsible for the accident.

31. Whilst this Report does not seek to advise the Commission in respect of Items (b) and (c) of its Terms of Reference, it is already very clear that the definition of Lamma IV as a "Class I Launch" and not a "Class I Ferry Vessel" makes a big difference to the safety inspection regime for such vessels. In my opinion, a vessel permitted to carry more than two hundred people should be considered a "high risk" vessel regardless of whether those people are "fare paying" passengers. The fitting of modern radar equipment and the implementation of formal crew radar training for all passenger vessels classed as launches should be an immediate priority.

Expert's Declaration

I, CAPTAIN NIGEL R PRYKE, DECLARE THAT:

1. I declare and confirm that I have read the Code of Conduct for Expert Witnesses as set out in Appendix D to the Rules of High Court, Cap. 4A and agree to be bound by it. I understand that my duty in providing this written report and giving evidence is to assist the Commission. I confirm that I have complied and will continue to comply with my duty.

2. I know of no conflict of interests of any kind, other than any which I have disclosed in my report.

3. I do not consider that any interest which I have disclosed affects my suitability as an expert witness on any issues on which I have given evidence.

4. I will advise the Commission if, between the date of my report and the hearing of the Commission, there is any change in circumstances which affect my opinion above.

5. I have been shown the sources of all information I have used in Appendix II.

6. I have exercised reasonable care and skill in order to be accurate and complete in preparing this report.

7. I have endeavoured to include in my report those matters, of which I have knowledge or of which I have been made aware, that might adversely affect the validity of my opinion. I have clearly stated any qualifications to my opinion.

8. I have not, without forming an independent view, included or excluded anything which has been suggested to me by others, including my instructing solicitors.

9. I will notify those instructing me immediately and confirm in writing if, for any reason, my existing report requires any correction or qualification.

10. I understand that:

(a) my report will form the evidence to be given under oath or affirmation;

(b) questions may be put to me in writing for the purposes of clarifying my report and that my answers shall be treated as part of my report and covered by my statement of truth;

(c) the Commission may at any stage direct a discussion to take place between the experts for the purpose of identifying and discussing the issues to be investigated under the Terms of Reference, where possible reaching an agreed opinion on those issues and identifying what action, if any, may be taken to resolve any of the outstanding issues between the parties;

(d) the Commission may direct that following a discussion between the experts that a statement should be prepared showing those issues which are agreed, and those issues which are not agreed, together with a summary of the reasons for disagreeing;

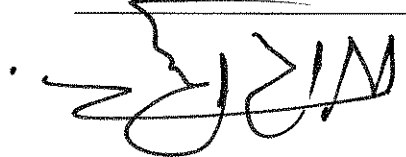
(e) I may be required to attend the hearing of the Commission to be cross-examined on my report by Counsel of other party/parties;

(f) I am likely to be the subject of public adverse criticism by the Chairman and Commissioners of the Commission if the Commission concludes that I have not taken reasonable care in trying to meet the standards set out above.

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Statement of Truth

I confirm that I have made clear which facts and matters referred to in this report are within my own knowledge and which are not. Those that are within my own knowledge I confirm to be true. I believe that the opinions expressed in this report are honestly held.



Captain Nigel R Pryke
4th December 2012