

SHERIFFDOM OF GRAMPIAN HIGHLANDS AND ISLANDS AT KIRKWALL

B47/09

INQUIRY HELD UNDER THE FATAL ACCIDENTS AND SUDDEN DEATHS
INQUIRY (SCOTLAND) ACT 1976, SECTION 1(1)(b)

DETERMINATION

By

SHERIFF VALERIE JOHNSTON

Following an Inquiry held at Kirkwall Sheriff Court on 20 to 24 September
2010, 28,29, 30 March, and 9 May 2011.

Into the Death of

ALEXANDER JOHN MOAR

KIRKWALL June 2011

The sheriff, having resumed consideration of the evidence, productions and
the submissions thereon,

FINDS AND DETERMINES

Under and in terms of section 6(1) of the Fatal Accidents and Sudden Deaths
Inquiry (Scotland) Act 1976, that:

- a) Alexander John Moar, who was born on 26 November 1983, and who resided at 6 Springfield Crescent, Stromness, Orkney died in Hoy Sound on 16 June 2007 between approximately 00:30 and 00:45 hours British Summer Time;
- b) The cause of his death was drowning by sudden immersion in cold water; the cause of the accident resulting in the death was the unexpected failure of the pin in the bow roller of the Dory boat, then being used by the now deceased to hold the anchor rope, which led to the inundation of the boat by water and its sudden capsize;
- c) The taking of the following steps by the now deceased would have been reasonable precautions whereby his death might have been avoided, viz: -
 - (1) Notifying the Coastguard when he embarked on the voyage
 - (2) Carrying and wearing a lifejacket
 - (3) Carrying and wearing a survival suit
 - (4) Carrying a VHF radio

- (5) Ensuring the adequacy of the fuel supply connected to the main engine for the trip embarked upon
 - (6) Installing a secondary means of propulsion with an independent fuel supply.
- (e) The following facts are relevant to the circumstances of the death, viz:-
- (1) The now deceased was an experienced sailor and knew the waters in the area.
 - (2) He chose to sail alone across the Hoy Sound in the hours of darkness without first notifying the Coastguard.
 - (3) He neither carried nor wore a lifejacket.
 - (4) He neither carried nor wore a survival suit.
 - (5) There was no VHF radio on the boat.
 - (6) There was insufficient fuel in the tank connected to the main engine.
 - (7) There was no secondary means of propulsion, meaning that the fuel supply had to be changed while anchored at sea.
 - (8) The now deceased had spent the evening prior to his voyage consuming a significant quantity of alcohol.
 - (9) When his boat got into difficulties the now deceased fired a red parachute flare which was seen by a resident on a neighbouring island, and reported to the coastguard at about 00:30:31 BST on 16 June 2007. Neither the deceased himself, nor his boat, could be seen at that time.
 - (10) The Coastguard Acting Watch Manager responded in accordance with prescribed procedures and protocols.
 - (11) By 00:49:20 BST Coastguards on call had been instructed to make visual checks from the shoreline.
 - (12) The Lifeboat was called at 00:57:12 BST and launched at 01:05:36 BST. A search by the Lifeboat crew discovered the upturned boat belonging to the now deceased at 01:16:33 BST. A search and rescue helicopter was also deployed. There was no sign of the deceased. His body was not recovered until 16 July 2007.
 - (13) At the date of the incident the water temperature was between 10 and 11 degrees Celsius and there was an ebb tide running westerly at between 5 and 6 knots.

NOTE:

[1] This fatal accident inquiry ("the Inquiry") has been convened to inquire into the death of Alexander John Moar ("Mr Moar") which occurred on 16 June 2007 in the stretch of water between the Orkney Mainland and the Island of Hoy. That area of water is known as Hoy Sound. He was then 23 years of age

having been born on 26 November 1983. He latterly resided at 6 Springfield Crescent, Stromness, Orkney.

[2] The Crown applied to the Court for the holding of the Inquiry because at the time of his death Mr Moar was at sea alone in a pleasure craft, had fired a red distress flare for immediate assistance when he was within a short distance from the Stromness RNLi lifeboat station and the Lord Advocate considered it expedient in the public interest to hold it. It has therefore proceeded under section 1(1)(b) of the Fatal Accidents and Sudden Deaths Inquiry (Scotland) Act 1976 ("the Act").

[3] This Inquiry has concerned itself with the events of 15 June 2007 leading up to the disappearance of Mr Moar, the actions of the emergency services following a 999 call, the search undertaken thereafter on 16 June and the recovery of his body from the shoreline of the Island of Calf of Flotta, Orkney on 18 July 2007. A subsequent post mortem established that the cause of death was drowning.

THE CONDUCT OF THE INQUIRY

[4] At the Inquiry the Crown were represented by Mr MacKenzie, Procurator Fiscal, the Shetland Islands. The Maritime & Coastguard Agency (MCA), who carry responsibility for the running of the Coastguard service and for the actions of the Coastguards, were represented by Mr Stocker, Solicitor, Edinburgh. Miss Sandra Moar, the mother of Mr Moar, was represented by Mrs Herd, Solicitor, Kirkwall.

[5] In the course of the Inquiry all parties led witnesses. This enabled a full exploration of the circumstances surrounding the incident and the search and rescue operation undertaken. Significant evidence was taken from local fishermen regarding the specific dangers found in the area of Hoy Sound and how an experienced mariner would react to an emergency situation in that location. Expert evidence was presented on the type of pleasure craft involved and the survival prospects of a person immersed in the sea in Hoy Sound. The Inquiry heard evidence about local concerns surrounding the MCA policy in dealing with 'Non-Attributable' red flares,

see paragraph 9 of the Evidence section. This is a policy endorsed by the Royal National Lifeboat Institution (RNLI) who were not represented.

[6] All three parties represented at the Inquiry prepared written submissions which are lodged in process. Each then had the opportunity to speak to their submissions and to comment on those of the others as they thought fit. All were agreed on the place and date of the death but not the time. The Crown and the MCA invited me to make findings under section 6(1)(a) with the time of death, using British Summer Time (BST), at “approximately 0030” or “approximately 0028 or shortly thereafter”. Miss Sandra Moar proposed that a wider latitude be stated as between 0025 and 0110 BST. All accepted that for the purpose of section 6(1)(b) the cause of death was as given in the post mortem report and confirmed by the pathologist and was death by drowning. Each presented their specific views on any suitable findings in terms of the remaining three criteria in section 6(1) and in particular the controversial issue of MCA policy.

[7] Miss Sandra Moar had consistently sought an inquiry into the circumstances of her son’s death. She voiced concerns relating to the actions of the MCA. Her understandable distress was clearly made considerably worse by the discovery that her son had died about one nautical mile and five minutes from the Stromness Lifeboat Station after firing off a red distress flare on a calm night in summertime. Concern was expressed by Miss Moar and the Lifeboatmen, present and past, who gave evidence about the delay in requesting the launch of the lifeboat. This raised the issue of an independent local policy for notification of the Lifeboat irrespective of the MCA national policy distinction between ‘Attributable’ red flares and ‘Non-Attributable’ red flares. Miss Moar’s position was that the national policy was not fit for purpose.

[8] My duty is as stated in the terms of section 6(1) of the Fatal Accidents and Sudden Deaths Inquiry (Scotland) Act 1976. All Fatal Accident Inquiries are brought under, and are governed by the provisions of the Act. It imposes duties on the Lord Advocate, the procurator fiscal for the district with which the circumstances of the death in question appear to be most closely connected and the sheriff to whom application is made for the holding of an Inquiry.

[9] The primary duty on the sheriff is to issue a determination at or as soon as possible after the conclusion of the evidence and any submissions thereon setting out the circumstances of the death in question by reference to the five criteria listed in the subsection so far as they have been established to his or her satisfaction. Those five are: -

- (a) where and when the death and any accident resulting in the death took place;
- (b) the cause or causes of such death and any accident resulting in the death;
- (c) the reasonable precautions, if any, whereby the death and any accident resulting in the death might have been avoided;
- (d) the defects, if any, in any system of working which contributed to the death or any accident resulting in the death; and
- (e) any other facts which are relevant to the circumstances of the death.

[10] My function at a Fatal Accident Inquiry is to examine and analyse the evidence and to set out in my Determination the circumstances as established. It does not include the making of any finding of fault or apportioning of blame between any persons who might have contributed to the accident. The Act does not allow me to do that.

EVIDENCE AND CONCLUSIONS DRAWN FROM IT

1. Alexander John Moar was a competent seaman who had been involved with boats since he was a young child. He was latterly employed as a Bosun on the Pentalina Ferry and had previously worked with the same company on the Dover to France run. He left school at age 15 and attended Navigation School. He had worked at sea all of his life apart from a period of six months. He could swim. He had owned a pleasure craft, a 17 Dory type vessel, for three years. He used this for fishing and travelling to his work. He was familiar with the sea around Orkney and in particular the specific dangers associated with Hoy Sound.

2. In addition to his practical experience he had training through his employment and an extensive list of qualifications from courses attended. No issue arose in the evidence which led me to doubt that he was a competent seafarer well able to handle the craft involved in the inquiry in the location where the incident leading to his death occurred.
3. Mr Moar had been at work until the morning of 14th June 2007. He worked two weeks on/two weeks off. On Friday the 15th of June he was at home. He resided with his mother in Stromness. Miss Moar was working at her hairdressing salon in Stromness that day. Mr Moar was out and about in Stromness in the afternoon and popped into his mother's salon on three or four occasions asking for a haircut. The last occasion was at approximately 17.15 BST. There was no reliable evidence that he had consumed alcohol to any significant extent prior to 17.15 BST.
4. Between 17.15 and 23.00 BST Mr Moar socialized in public houses in Stromness with friends. He was not in the company of any one friend for the whole night. He consumed a number of alcoholic drinks in the form of pints of lager and spirits. He mentioned going to a party on the island of Hoy in the afternoon. He mentioned it again in the evening and at one point disappeared for a while. He returned home at around 9pm for a box of wine and did not appear to be drunk. When he went back to rejoin his friend in the pub he was smelling of petrol and indicated that he had enough petrol to get to Hoy by boat and back. As the night wore on at least one of his friends was heavily under the influence of alcohol and considered himself unfit to go to sea. There is conflicting evidence on the state of sobriety of Mr Moar. That same friend had told the police six weeks after Mr Moar disappeared that they were both too drunk to go out on a boat. That was not his position in evidence. The general opinion of people who had been in Mr Moar's company was that he was not fit to drive a motor car.
5. At approximately 21.30 BST Mr Moar was at the Harbour on a boat called the Elsa crossing that vessel to access his Dory which was tied alongside.

The owner of the Elsa saw him and spoke to him about damage that had been caused by the Dory to the side of the Elsa. Mr Moar was on his Dory at the time of this conversation and was polite and apologetic. He showed no apparent sign of intoxication. He was steady on his feet. There was a half empty pint of lager on his Dory and the owner had seen him earlier in a public house. He was warned by the owner about going out of the harbour due to the time of night and responded that he would be careful and that he had been on boats all of his life. He left the harbour at about 21.40 BST on his vessel. He was not wearing survival clothing or a lifejacket.

6. At about 23.00 BST Mr Moar was seen at the Flattie Bar in Stromness. At 00:25 BST on 16 June 2007 a telephone call was made from his mobile phone to a friend who heard him say hello before the call was abruptly cut off.
7. After midnight on the morning of 16th June 2007 a resident of the island of Graemsay was driving a tractor on the road to Hoy High Lighthouse. He was driving down a hill. Stromness harbour lies across Hoy Sound in line with his direction of travel. When he was half way down he saw a bright red parachute flare. He was above or parallel to the flare which had possibly been fired at an angle. It was west of the Stromness beacon and one hundred feet in the air when he saw it. A red parachute flare is a flare used and fired from a vessel. When fired it normally rises 1000 feet into the air before it drifts down with a bright red light on a parachute. It is a maritime distress flare designed to provide maximum illumination over a period of time to attract attention and pinpoint a vessel in distress. The advice given is to fire two at five minute intervals. As the flare seen that night was still live when it hit the water it could not have attained full height as it ought to have burnt out by that time. The informant knew the significance of the flare and flashed his tractor lights to signal that he had seen it. There was no response to that signal. He immediately made his way home to call the coastguard. It took him about three minutes to get home. He was still facing where the flare had come from and kept

watching throughout this trip but saw nothing else. He had a clear view and there was good visibility. He went to the telephone and called the coastguard.

8. The call was a 999 call and was recorded by the MCA Freedom system which is a sound recording of all telephone calls and radio calls. The MCA also have the Oak Logger system which records the accurate times of such calls. This call was answered by the Shetland coastguard at a time recorded as 23:30:31 UTC. UTC is Universal Coordinated Time and is used by the MCA. It is one hour behind BST. The call was therefore answered at 00:30:31 BST on the 16 June 2007. I will use both UTC and BST when looking at the next phase of the incident. I do not consider that the use of the different time standards had any adverse effect on the events which occurred. The Acting Watch Manager (AWM) of the Shetland coastguard team established from the informant that the flare had been seen some five minutes earlier off the Point of Ness just west of the Stromness beacon while he had been travelling down the road from Windbreck to the Hoy High Lighthouse. He established that the colour was red, that the informant worked in the offshore industry and was a reliable informant and was able to positively state it was a parachute flare. The informant told him that he had only seen the flare about 100 feet over the water. The AWM asked him if he could see the sea and if he was able to see anything. The informant confirmed that he had a slight view. The phone record seems to show that that he told the AWM that some fishermen were in Sandside Bay and headed off "that way", but that he could see nothing else. In evidence this changed to him having seen them earlier. The impression was clearly that they were not deemed to be a source of the flare. The AWM obtained the informant's name and telephone number, thanked him and commenced an investigation. In evidence the informant indicated that the flare went into the sea 200 yards west of the beacon but that information was not given to the coastguard at the time.

9. The AWM was satisfied that there had been a distress flare fired. The informant had not seen the source from which it had been fired. The MCA classifies distress flares as 'Attributable' when the person reporting the red flare saw the vessel firing the flare or can positively identify the source of the flare, and 'Non-Attributable' when the person reporting the red flare did not see the vessel firing the flare and there is no indication of the source. This report on 15/16 June 2007 was classified as 'Non-Attributable'. The coastguard team proceeded to investigate the report to try to find the source and determine the assistance required in line with the MCA policy guidelines.
10. The AWM and the Watch team created an incident log on the MCA Vision system. The information was recorded by the team members as the incident progressed and the computer system generated the times automatically. As this was an ongoing incident the timings are not an accurate reflection of when things actually happened as recording was not the priority. Information was being sought and being received as the incident unfolded. What is clear is that it can be accepted that the events happened before they were typed in. The Watch Team included the Acting Watch Manager, deputising that night but fully qualified and familiar with the area, a Watch Officer, a Watch Assistant and a trainee Watch Assistant. There was no other ongoing incident and all were concentrating on this report.
11. The AWM accepted that it was a true red flare sighting and had to decide what response was appropriate. A red flare is a statutory distress signal only to be used when a vessel is in grave and imminent danger and in need of immediate assistance. As I have already noted that advice is to fire off more than one at an interval to attract attention and then focus that attention on the correct position of the vessel in distress. It is normal to have two or more red flares on board. If the informant on this occasion had been able to identify the source, the firing platform, it would have been

classified as 'Attributable' and, given the circumstances and location, it is likely that a request would have speedily been made for the launch of the Lifeboat. As he was unable to do so the classification was 'Non-Attributable'. The Watch Managers have to exercise their own discretion in such circumstances subject to guidelines in the MCA Policy. A good sound understanding of the local area involved in the report is therefore of great importance. This is recognised by the MCA in the training they provide which includes familiarisation with local conditions and regular testing of staff, such as the AWM involved here, when transferred to a station such as Shetland which covers an area with some very dangerous waters and a large number of islands. To be able to respond appropriately on the 15/16 June 2007 the Shetland team began to search for the source. Charts were referred to in order to locate the position of the informant and the area concerned.

12. Shipping logs were checked for vessel transit reports. Weather conditions were checked and it was noted that there was no predicted meteor activity in the area. The electronic tracking system was consulted to identify vessels in the area. They detected a fishing boat, The Intrepid, to the west of Hoy Sound and called to see if they had seen anything at 23:34:05 UTC; 00:34:05 BST but raised no response. The Petronordic, a tanker, was at anchor in Scapa Flow, and was contacted but had seen nothing and was asked to check the ships radar (23:36:03 and 23:39:05 UTC; 00:36:03 and 00:39:05 BST). It called in advising that nothing could be detected (23:40:06 UTC; 00:40:06 BST). A merchant vessel, the Bruarfoss, was to the west of Hoy Mouth but had also seen nothing (23:41:22 and response 23:42:06 UTC; 00:41:22 and 00:42:06 BST). Contact was made with these vessels using the Maritime International Distress Safety and Calling Channel. The various calls were made and taken by different team members who had access to the system on their own terminals. The MCA Vision log identified

who took each action and allocated a time which corresponded to the input time of the information.

13. Enquiries were made of Orkney Harbour Authority to establish if the Harbour Master was aware of any vessels overdue or recorded as having left the harbour. The direction and strength of the wind and the tide in the area were checked to assess the effect of drift taking into account the very low height at which the flare had been seen. The Informant had not seen the trajectory it had followed. It was viewed as a possibility that it had been fired at an angle or that it could have been fired from land. There were ongoing exchanges between the members of the Watch Team. It is recorded that the time of year was considered which could mean that leisure craft unfamiliar with the area may be trouble although the time of night made it less likely that such a craft would leave the harbour and unlikely that a fishing vessel would be entering or leaving.
14. The AWM decided that a visual check on the area was necessary and that the Search and Rescue Coastguard Teams from Stromness and Hoy should be deployed. The Stromness coastguard was contacted at 23:43:38 UTC, 00:43:38 BST. The instruction given to them was to go to the Point of Ness to do a visual search for anyone in trouble and then proceed to other vantage points. The AWM contacted Hoy coastguard at 23:44:25 UTC, 00:43:25 BST. It was established that one of the Hoy coastguards was on holiday. A call out was made at 23:49:20 UTC, 00:49:20 BST to a second Hoy coastguard and he was asked to do what he could on his own to check the area. Two persons are required for a team. The Stromness coastguard took five minutes to meet and collect their 4x4 vehicle and their equipment before heading for the Point of Ness. They stopped periodically to check out to Hoy Sound on their way and heard the launch of the Lifeboat.

15. The police were also contacted. By 23:57:12 UTC, 00:57:12 BST, as there was still no information as to the possible source the AWM was concerned that the coastguards on land were taking too long. He decided to request the launch of the Lifeboat from Stromness Harbour. He did so to assist in the investigation. This call was made at 23:57:12 UTC, 00:57:12 BST. The paging system was implemented three seconds later. At this time there had been a period of 27 minutes elapsed from the receipt of the 999 call and an additional estimated three to five minutes from the sighting of the flare. No second flare had been seen. The Lifeboat launch was confirmed at 00:05:36 UTC, 01:05:36 BST on 16 June 2007. Once launched the AWM gave the instructions for a search to be carried out. This included directions to the Lifeboat on where to search. The instructions were based on the information available to the AWM from the team's investigation up to that point. The Lifeboat followed those instructions and travelled one nautical mile before sighting the upturned boat. That information was called in at 00:16:33 UTC, 01:16:33 BST. It was not recorded in the logging system by the Coastguard Watch Team in error but the time is clear from the records in the Oak Logger which can be relied on as accurate. All of the times I have referred to are verifiable from that system.
16. There was an ebb tide running westerly at between 5 to 6 knots at the time the boat was seen with 'wind over' due to the north easterly wind prevailing. The vessel was dragging against the tide. Although visibility was good the upturned Dory would not have been easy to see from a distance and a body in the water would have been very difficult to locate if not impossible. The water temperature was 10 to 11 degrees Celsius. At this point the situation changed to a rescue operation with the priority to find the owner of the Dory. The Lifeboat searched fifteen feet around it using night vision equipment and lights. There were no facilities available to check under the boat. No person was seen to be in the water in the vicinity of the boat. Shouting was heard from the shore, this was later thought to

have been the coastguard, and a Y-Boat was launched by the Lifeboat to search in closer to the shore. The Lifeboat continued to search and found a Red Flare casing near the Kirk Rocks going out of Hoy Sound with the tide. An unused smoke flare was also found in the water.

17. A Search and Rescue operation was then conducted using all available resources including the Stromness Coastguard team the Stromness Lifeboat and 'Y' boat searching from Point of Ness to Breck Ness; the Helicopter R137 from Lossiemouth which conducted an expanding square search based on the location of the smoke canister found by the Lifeboat; and a search of the shores in the vicinity on Hoy and Graemsay as well as that between Point of Ness and Breck Ness. Throughout the night the search was continued and expanded in a thorough manner. R137 was released at 06:11 UTC and replaced by the Coastguard helicopter Rescue Oscar Charlie. No dive team was available locally to enable a search under the Dory. The search was terminated at 18:28 UTC with nothing found. No issue was taken with this operation in the inquiry.
18. The Lifeboat had to wait for the tide to turn before towing the Dory into the harbour. At the point that the Dory was found the ebb tide was running at about 4 to 6 Knots. At its peak it can run at 8+Knots in that area. The Dory was towed into Stromness Harbour and arrangements were made to remove it from the water. When it was brought ashore it was found to have no person in it. It had no sign of catastrophic new damage to it. The anchor was deployed and it was seen to be held by a rope to a stern cleat. There was no VHF radio on the boat. Mr Moar was not in the habit of wearing or carrying any lifejackets or survival suit on the boat.
19. Hoy Sound is an area of water which is notoriously dangerous. That is well known to mariners. The rock formations on the sea bed are

known to force the tide up creating standing waves which can be 2 to 20 metres high. There were none in the area where the capsized Dory was found on the 16 June 2007 but those with a knowledge of the area could have expected to encounter these further out from that location. Any vessel such as the Dory caught in Hoy Sound in an ebb tide and without power would be swept out to sea.

20. On 18 July 2007 following a report of a body sighted on the beach at the Calf of Flotta the Lifeboat was launched from Stromness and a body was recovered from that location. The body was not clothed in any survival suit nor a lifejacket. The body was subsequently identified as that of Alexander John Moar.

PATHOLOGY AND TOXICOLOGY

1. On the 20 July 2007 a post mortem examination was carried out. The pathologist concluded from her findings and the circumstances that Mr Moar died from drowning. She was unable to specify how long he had survived after entry to the water due to the length of time his body had been in the water.
2. There was no reliable result obtained by analysis to confirm what level of alcohol was in Mr Moar's system at the time of entry to the water.

THE DORY

1. The Dory pleasure craft owned and used by Mr Moar on the night of his death was in a good condition, well maintained and generally stable. It was fitted with navigation lights which worked from a battery and would not be affected if the engine cut out. It was buoyant. When capsized it floated but even in the Twilight All Night conditions of the 16 June 2007 it was difficult to see in the water.
2. It was equipped with a 75 HP Mercury engine which was more than was required for propulsion of the craft but it was not overly powerful for it. The engine was mounted on the transom at the stern of the boat.
3. In the construction of the Dory the transom is a major structure at the stern which maintains the water integrity of the boat and carries the

weight of the engine. To facilitate the mounting of the engine there is an area cut out amidships which is the lowest part of the hull.

4. On recovery from the water on 16 June 2007 the main fuel tank was in place and found to be sealed, it had no salt water within it, it had a small amount of fuel in it which was insufficient to reach the pick up pipe.
5. A second fuel tank was found on the Dory. It was not sealed shut and had fuel within it which was heavily contaminated with salt water.
6. Examination of the Dory in August 2010 revealed that there was a pin missing from the bow roller. The bow roller is situated at the prow of the boat and the anchor rope runs through it. The pin was required to hold fast the anchor rope should the anchor be deployed. This would ensure that the vessel would be facing into the oncoming tide. As the pin was missing the anchor rope would not be securely held in position and could jump out of the bow roller. The rope would travel until held at the next fixed point which on this occasion was at a stern cleat. It was clear from all the experienced seamen and the expert witnesses who gave evidence that this would cause the boat to turn resulting in the stern facing into the full force of the ebb tide.
7. Expert opinion and that of the experienced seamen was that with the anchor deployed in that way the boat would begin to ship water over the stern. It would have become unstable very quickly as the current in that area is particularly significant especially in an ebb tide. The weight of the water, added to the weight of Mr Moar on the main deck and the motion of the sea, wind over water that night, would have led to the boat capsizing. The expert view was that this would occur within less than a couple of minutes.

COLD WATER IMMERSION AND SURVIVAL TIMES

1. This aspect of the evidence was of particular significance. As the upturned Dory was found very quickly only one nautical mile from the launch point of the Lifeboat the perception of those involved in the attempted rescue and of Mr Moar's family and friends was that the earlier launch of the Lifeboat could have saved his life. This is an

understandable, and reasonable view to have. The circumstances were considered by two experts in issues relating to sea survival and in particular thermal physiology, thermoregulation and cold water immersion.

2. Cold shock is the reaction of the human body to sudden cooling. It occasions a tenfold increase in breath intake as can be experienced by stepping quickly into a cold shower. It increases blood pressure and the blood vessels on the outside of the body close down to preserve heat. Maximum cold shock occurs on sudden immersion in cold water. It can result in instant death from a heart attack or an auto-immune response sometimes referred to as “Hydro-cution” where the heart stops. If neither of these cause death the gasping response provoked by the sudden immersion in cold water will introduce water into the lungs if the airways are under water. Two to three gasps of air take approximately 2 to 3 litres of air into the lungs. Drowning results from an intake of 1.5 litres of water into the lungs. A person taking 2 to 3 gasps while submerged would drown. Survival would be no more than a few minutes.
3. If Mr Moar survived the shock of the sudden immersion in the water he would have found himself in a sea with a temperature of about 10 degrees Celsius. In such a temperature a person wearing a properly fitted lifejacket would be able to survive for 1 to 2 hours before becoming exhausted or unconscious. There is a 50% survival rate for people in lifejackets in cold water at that temperature but no data for those without lifejackets. If a survival suit was also worn a survival time of 8 hours or more is expected. A person immersed in water of that temperature without a lifejacket would struggle to maintain his airways clear of the water. He would become increasingly incapacitated by progressive peripheral cooling of the muscles and nerves in his limbs. His ability to hold on to any flotation object, tread water or swim would reduce quickly as this effect progressed. Physical activity such as swimming would speed up that process. Alcohol within the system

would depress survival capacity further, adversely affect his decision making abilities, and increase the speed at which fatigue sets in.

4. In an ebb tide a swimmer would be unable to swim against the tide and would be swept away at high speed. The strongest tide that a swimmer with fins can swim against for any duration is 0.5 to 0.75 knots and in a short spurt up to 2 knots. In a period of fifteen minutes a person could be swept out to sea for a distance of a mile. The direction would depend on the currents and tide in the relevant area. In a spring tide as on that night the currents would be stronger and the tide faster.
5. Dr Francis St Clair Golden gave evidence by video link. I found his opinion to be persuasive. He confirmed that he was in agreement with the assessment and opinion of Professor Michael Tipton with whom he had worked for many years. Professor Tipton had concluded that it is probable that Mr Moar, with no lifejacket, either aspirated water and drowned within a minute or two of entering the water, or drowned within 20 to 30 minutes while attempting to swim ashore. Dr Golden indicated that there was a 60% likelihood that Mr Moar suffered 'cold shock' and was incapacitated and died within minutes of immersion. If he survived the cold shock and tried to swim for shore Dr Golden considered that muscular incapacitation from the peripheral effects of cold on muscle and nerve function, combined with hypoglycaemia resulting from the raised blood alcohol, would have rapidly resulted in 'swim failure'. Mr Moar would, in that case, have died long before hypothermia set in. He also pointed out that any period of rest while attempting to swim to shore would have seen Mr Moar swept quickly out to sea and drowned. He was 95% confident that Mr Moar had died quickly and certainly within 30 minutes of immersion. His intuitive view was that death occurred within 5 to 10 minutes.

CONCLUSION

After careful consideration of all of the evidence I conclude that Mr Moar, a young man of 23 years with a seafaring background, made a fatal error of

judgement on the night of the fifteenth of June 2007. I am unable to say with any certainty that his judgement was materially impaired by excessive consumption of alcohol but alcohol consumption was a contributory factor. He had consumed more than just a few pints of lager which increased the danger of him making errors and reduced his survival chances once in the water.

He decided to go to sea in Hoy Sound in his Dory, a craft with which he was at ease, at night, when it was almost dark. While he was in Hoy Sound the tide was ebbing. He did not wear a lifejacket, he did not have a lifejacket, a survival suit, a spare engine with independent fuel source or a VHF radio on board. He did have a good selection of flares, a spare tank of fuel and a mobile phone. Although he had earlier spoken to friends about going to a party on Hoy he left without advising anyone that he was sailing or of his destination. He was aware of the dangerous nature of the stretch of sea he was entering.

Against that background a sequence of events took place on Hoy Sound which led to the capsize of the Dory. It is probable that he ran out of fuel. It is probable that he deployed the anchor when he sought to refuel from the spare fuel tank to avoid being taken into an area of overfalls. It is very unlikely that he chose to anchor the craft from the stern and I consider that for some reason relating to the pin the anchor rope was by accident not held fast in the bow roller. This would be entirely unexpected by him. Due to the position of the anchor rope the ebbing tide, running at about 1 to 2 knots and increasing at 00:25 BST, turned the boat. This led to the stern facing into the tide and to a rapid influx of water through the transom at the stern of the Dory. The vessel would have been quickly swamped with water and, with his weight and the motion of the sea, it would have become inherently unstable. Such time as he had available allowed him to fire one red flare and attempt a phone call logged at 00:25 BST. I think it unlikely that he would have fired the red flare until the capsize of the boat was imminent as he would know well that it is a sign of extreme distress. He would not have done so simply because he ran out of fuel.

There would have been a very short period of time available to him before the full weight of the tide pulled the Dory down and it capsized. The interrupted phone call and the firing of the flare support this as occurring at about 00:25 BST and being a sudden, catastrophic event. The boat was likely to be upright when the flare was fired. Added to this there is the evidence of the informant that he did not see anything in the water and that there was no response to his signal. If the Dory had remained upright for any time after the flare was fired I think it likely that with the good visibility that night the informant would have seen the Dory's navigation lights.

At the point of capsize Mr Moar would have found himself suddenly in the cold water. In the time the witness took to drive home, dial 999 and inform the coastguard it is likely that Mr Moar had either been pulled under by the tide or swept out to sea. Without a lifejacket, there was tragically little prospect of his rescue. I heard that in the area there had not been a successful recovery of a person separated from his vessel and not wearing a flotation device except in shallow water.

His death would have been mercifully speedy. I base this view on the evidence of the experienced seamen as well as the experts. As a fit and healthy young man a heart attack is unlikely and it is not possible to ascertain if he suffered an auto-immune response. It is much more likely that when he was tipped suddenly into the cold sea he aspirated water and drowned. He would not have been able to swim in the ebb tide.

A considerable element of the unpredictable must be taken into account when any person goes to sea and all were agreed that the area into which he ventured was extremely dangerous. The majority view was that it was inappropriate to go to sea whilst under the influence of alcohol but it was not deemed to be uncommon and I was advised that there was a view that competency was not always affected. It is not a view I subscribe to. The effect of alcohol clearly diminishes motor skills and thus the ability to operate machinery, and reduces the effectiveness of decision making skills. The procurator fiscal proposed a determination under section 6(1)(e) which was –

“Amongst a number of people within the seafaring community of Stromness there exists an indifference to the dangers inherent in venturing to sea whilst under the influence of alcohol and to wearing lifejackets whilst at sea. The deceased was one of a number of that seafaring community afflicted by such indifference”. I do not propose to make such a determination. Almost all seafarers who gave evidence were well aware and acknowledged the inappropriateness of going to sea under the influence of alcohol and without a lifejacket.

There was a consensus that a lifejacket should be worn when at sea and I noted that some people had adapted their own behaviour following the tragedy and were at least carrying lifejackets. There has been so much publicity on this issue over the years that it is surprising that there remains any resistance to doing so.

It was also deemed sensible to have a variety of flares on board, which Mr Moar did have. Whilst it is recommended that two red flares are set off within five minutes of one another I found it difficult to see that advice being easy to follow by all vessels regardless of their size. A further recommendation was to have a means of communication other than a mobile phone preferably a VHF radio. This he did not have. In the event of engine failure such a radio would have allowed him to shout for help before setting up the distress flare.

The procedure followed by the Coastguard conformed to the policy adopted nationally by the MCA and approved by the RNLI for ‘Non-Attributable’ red flares. As the flare report was classified as “Non-Attributable’ the response by the MCA officer was an exercise of judgement. Decisions taken must always relate to the circumstances of each individual incident. In hindsight the delay in requesting launch of the lifeboat was open to criticism given the very close proximity of the sighting to a harbour and to the lifeboat station. In the sudden, catastrophic circumstances that befell Mr. Moar I believe that the delay was unlikely to have made any material difference to the outcome for him.

What might have made such a difference falls within the heading of

reasonable precautions. The reference to reasonableness has been clearly stated to relate to the question of the availability and suitability or practicality of the precautions at the time of the accident resulting in death. I consider that there were reasonable precautions which might have prevented his death were. These were - 1) notification of the coastguard when embarking on the voyage he chose to take, there was otherwise no expectation that a pleasure craft would be out in that area at night; 2) the use of a lifejacket which would have kept his airways clear of the water and allowed him to survive for up to 2 hours, the lifeboat coxswain was confident that if Mr Moar had been wearing a lifejacket he would have been found even at the time the Lifeboat did launch; 3) for him to have carried and worn a survival suit which would have extended his ability to survive by about eight hours, this was a night time voyage in dangerous waters; 4) for him to have had a VHF radio to call for help when he ran into difficulties; 5) for him to have made sure that when he set out he had a full tank of fuel connected to the engine sufficient for the trip undertaken, thus avoiding the need to refuel, or 6) for him to have had a secondary engine with its own fuel supply.

MCA Policy – Red Flares

The representatives of the MCA stated that the process relating to red flares had been developed over many years not just since the increase in false flare reports around Britain. It was devised to ensure that the MCA, with the responsibility to co-ordinate rescue resources as a public emergency service, targeted resources as best they could to real incidents. With many more people now having access to leisure crafts, thus having access to red flares, and the increasing use of Chinese Lanterns by the public over the last three years, false alarms have increased significantly. Red distress flares are used inappropriately by canoeists and yachtsmen who do not understand when they should use them. Chinese Lanterns are often very difficult to differentiate from red flares and the public do not understand the problems caused for the emergency services when they are released into the sky.

The very strongly held local view, and that of Miss Moar, was that there should be a policy for an immediate call out of the Lifeboat for all sightings of

red flares in the vicinity of Stromness, especially in Hoy Sound, and also for any similar areas with such a strong tide in the immediate vicinity of a lifeboat station. It was felt that any loss of time with a person in the water reduced the chance of a successful rescue in such a place as Hoy Sound and there was in this particular case no other resource which could have reached the capsized Dory as quickly as the Lifeboat. It was pointed out that there was a low level of false alarms in the Orkney area in comparison with Weymouth for example where there were a lot of pleasure craft. If this policy was adopted for Stromness it was accepted that it would result in different policies applying in different areas of the country. In the view of the MCA this policy difference would not be in the public interest.

Miss Moar directed my consideration to the value that would be obtained from the local knowledge of the lifeboatmen were the policy amended. They knew the local conditions, the current, the tide and the weather and an onsite decision could be made on whether to launch or not. This was seen by those representing the MCA as a significant transfer of responsibility for the decision to launch to the Launch Operations Manager from the Coastguard although the final decision always remained with him when a launch request was made. They considered that this could have damaging consequences for rescue co-ordination.

The head of the MCA Environmental & Emergency Response Standards, a former Commander in the Royal Navy, confirmed that adopting a policy as sought by Miss Moar and the Stromness Lifeboatmen, would be likely to increase call outs by 10%, most would be false, and this would have financial and operational consequences. It would make little difference to the MCA, a public body, but would impact on the RNLI, a charity with finite resources. He expressed the view that false call outs affect the crew adversely and could place crews at risk. He pointed out that the use of a red flare was indicative of a vessel in trouble not a person in the water and if the source of the flare was unidentified the investigation phase was necessary to reach a decision on where to direct the rescue resource. He indicated that it cost £5,000 per hour over a twenty-five year life span to use the lifeboat, and, while cost was not a

consideration at the Rescue Co-ordination Centre it was when determining policy at National level. Both he and the Coastal Safety Manager from Stornoway made it clear that the MCA was not in the business of instantaneous rescue and expected a mariner to be able to survive long enough to allow the rescue to be mobilised.

While I recognise the strength of locally held feeling on this matter, I am not in a position to make any further comment about it, having regard to the restricted nature of the evidence led in the course of the inquiry and to the fact that in the circumstances here, an earlier call out would not have been likely, sadly, to have resulted in a different outcome.