SHERIFFDOM OF NORTH STRATHCLYDE AT OBAN

[2020] FAI 2

OBN-B36-19

DETERMINATION

BY

SHERIFF PATRICK HUGHES

UNDER THE INQUIRIES INTO FATAL ACCIDENTS AND SUDDEN DEATHS ETC (SCOTLAND) ACT 2016

into the death of

ALLAN ARCHIBALD MACCALLUM

Oban, 23 January 2020

Determination

The Sheriff, having considered all of the evidence and submissions, determines:

(1) in terms of section 26(2)(a) of the Inquiries into Fatal Accidents and Sudden Deaths etc. (Scotland) Act 2016, that Allan Archibald MacCallum, born on 3 September 1971, died on 18 August 2018 within the yard at his home at 5 Club Farm, Balemartine, Isle of Tiree, PA77 6UA;

(2) in terms of Section 26(2)(b) of the said Act, that the accident resulting in the death took place on 18 August 2018 within the yard at 5 Club Farm, Balemartine, Isle of Tiree, PA77 6UA;

(3) in terms of Section 26(2)(c) of the said Act, that the cause of his death was chest injuries;

(4) in terms of Section 26(2)(d) of the said Act, that the accident was caused by the failure of a reusable hydraulic fitting which in turn caused the tailgate of a baler to drop rapidly, striking Mr MacCallum on the chest;

(5) in terms of Section 26(2)(e) of the said Act, that once the tailgate was raised it would have been a reasonable precaution to have deployed the baler's hydraulic ram isolation valve to keep that ram in place in the event of hydraulic failure; and that had this precaution been taken, it is likely that both the accident and the resultant death could have been avoided;

(6) in terms of section 26(2)(f) of the said Act, makes no findings;

(7) in terms of section 26(2)(g) of the said Act, that it is a fact relevant to the circumstances of the death that one of the baler's warning labels highlighting the need to deploy the isolation valve when the tailgate was raised had become unreadable through erosion;

Recommendations

No recommendations are made.

NOTE:

Introduction

[1] This was an inquiry held under the Fatal Accidents and Sudden Deaths etc. (Scotland) Act 2016 ("the Act") into the death of Allan Archibald MacCallum. His death was reported to the Crown Office & Procurator Fiscal Service on 20 August 2018. A

preliminary hearing was held on 12 August 2019, at which an inquiry hearing was fixed for 23 October 2019. On the latter date no oral evidence was heard, but a joint minute of agreed facts was lodged together with productions and written submissions, and the court adjourned to issue a written decision.

[2] In these proceedings the Crown was represented by Mr Stuart Fauré, Procurator Fiscal Depute. The company which had sold the baler to Mr MacCallum, J A Bloor Agricultural Services Limited, was represented by Mr Jamie Varney, of BLM Solicitors. Mr MacCallum's family were not represented.

The Legal Framework

[3] This inquiry was held under section 1 of the Act. The purpose of a Fatal Accident Inquiry is set out in section 1(3); it is to establish the circumstances of the death, and to consider what steps, if any, might be taken to prevent other deaths in similar circumstances. The holding of an inquiry is governed by the Act of Sederunt (Fatal Accident Inquiry Rules) 2017. It is an inquisitorial process, not an exercise in establishing criminal or civil liability. The public interest is represented by the Procurator Fiscal. In terms of section 26(1)(a) and section 26(2) of the Act, the sheriff's determination must set out findings on:

(a) when and where the death occurred,

(b) when and where any accident resulting in the death occurred,

(c) the cause or causes of the death,

(d) the cause or causes of any accident resulting in the death,

(e) any precautions which—

(i) could reasonably have been taken, and

(ii) had they been taken, might realistically have resulted in the death, or any accident resulting in the death, being avoided,

(f) any defects in any system of working which contributed to the death or any accident resulting in the death,

(g) any other facts which are relevant to the circumstances of the death.

[4] In terms of section 26(1)(b) and section 26(4) of the said Act the sheriff must make such recommendations, if any, as are considered appropriate regarding any of the following matters which might realistically prevent other deaths in similar circumstances;

(a) the taking of reasonable precautions,

(b) the making of improvements to any system of working,

(c) the introduction of a system of working, and

(d) the taking of any other steps.

[5] In terms of section 2(3) of the Fatal Accidents and Sudden Deaths etc. (Scotland) Act 2016 ("the Act"), the holding of this Inquiry was mandatory, because Mr MacCallum's death resulted from an accident which took place in Scotland and which occurred while he was acting in the course of his occupation as a self-employed farm labourer.

Summary

[6] Mr MacCallum was born on 3 September 1971 and resided at 5 Club Farm, Balemartine, Isle of Tiree. He was a self-employed farm labourer.

[7] On 8 August 2018 he purchased a second-hand baler and bale wrapping equipment from an agricultural machinery dealer, JA Bloor Agricultural Services Ltd, based in Stoke-on-Trent. His intention was to use the baler to work during the coming harvest time. The baler arrived on Tiree on 18 August 2018 and was initially stored at a yard in Balephetrish awaiting collection. Mr Bloor arranged for the operator's manual to be posted to Mr MacCallum at his home address on Tiree. This was the company's established practice when machinery was delivered by a third party haulage company, to avoid the manual being lost. To date it has not been recovered.

The Events of 18 August 2018

[8] At approximately 17:00 hours on 18 August 2018 Mr MacCallum along with his son Sean David MacCallum and a friend Alexander "Alistair" MacArthur collected the baler from the yard at Balephetrish and used Mr MacArthur's tractor to transport it to Mr MacCallum's home at 5 Club Farm, arriving there at approximately 17:45 hours.

[9] Mr MacCallum and Mr MacArthur began making checks on the baler. The baler had three hydraulic hoses which required to be attached to a tractor. One of the hydraulic hoses worked the pick-up reel which lifted hay into the bale chamber. The second hose opened and closed the baler's rear door, or "tailgate". The third hose was used to release the floor of the baler if it was locked.

[10] The baler's tailgate was opened by a pair of hydraulic rams that were "single-acting", i.e. pressure was only supplied to the bottom of the piston. The lower ends of the rams acted on the inner ends of the door locks. The application of pressure caused hydraulic oil to flow into the rams which would then extend, opening the tailgate. Removal of the pressure allowed oil to flow back out of the rams which would then close under the weight of the tailgate (the tailgate of a baler typically weighs in the region of 500 kg). On the offside ram used to raise the tailgate there was a quarter-turn shut-off valve ("the isolation valve"). This valve is specifically intended to protect persons working at the rear of the baler; it isolates the ram and prevents loss of hydraulic fluid in the event of a burst hose.

[11] A warning label was attached to the side panel covering the side of the baler at the isolation valve; it made clear that if a person was to stand underneath the open tailgate, the valve must be put in the closed position. The label shows a sketch of the isolation valve, with its handle shown both in the open position (white) and deployed in the closed position (black). To the left of the sketch was a depiction of a figure standing underneath a raised tailgate holding a spanner, with an arrow pointing to the sketch showing the handle in the closed position. To the right of the sketch was a depiction of a figure standing underneath a raised tailgate with a large X superimposed on him, and an arrow pointing to the handle in its open position.

[12] There was a similar label on the nearside of the baler but it was significantly eroded to the point where it was unreadable.

[13] On examining the baler, Mr MacCallum realized that the hose connections of the baler and his tractor were not compatible. The fittings on the tractor for the hydraulic hoses of the baler to connect to were "female". The baler's hoses also had "female" ends, so Mr MacCallum searched on other nearby machinery for fittings to replace those on the baler hoses.

[14] He managed to find two suitable "male" connector fittings and attached these to two of the baler hoses. For the other hose, Mr MacCallum improvised by cutting the fitting off of the baler hose with an angle grinder, and then used an alternative type of connection, a reusable three-part hydraulic fitting ("the reusable fitting"). This last hose was the one used to operate the tailgate.

[15] After these modifications had been completed by Mr MacCallum, the hoses were connected and the baler's tailgate was raised. Mr MacArthur crawled inside the baler to examine various parts at close quarters. Whilst he did so, Mr MacCallum was leaning over the baler's nearside wheel, looking inside the baler. Suddenly and without warning the tailgate rapidly descended, striking Mr MacCallum on the chest and pinning him to the floor of the baler. His head and upper torso were trapped inside the baler and the rest of his body was outside the baler. Mr MacCallum initially remained conscious but lost consciousness while still trapped. Mr MacArthur, though unhurt, was also trapped inside the baler. He called for assistance and Sean MacCallum responded by using a tractor with a front loader and sling to lift the baler's rear door. Mr MacCallum then fell from the baler to the ground.

[16] Mr MacArthur started first aid including cardiopulmonary resuscitation (CPR), however there were no visible signs of life. Other family members and friends attended the scene. Paramedics also attended and made further attempts to revive Mr MacCallum but these were unsuccessful. Michael McIver, a doctor who was also in attendance, pronounced life extinct at approximately 19:45 hours on 18 August 2018.

Post-mortem examination

[17] A post-mortem examination was carried out on 12 October 2018 at Queen Elizabeth II University Hospital Glasgow by two forensic pathologists, doctors Gemma Kemp (MBBS, FRCPath) and Sharon Melmore (MBChB (Hons) FRCPath). The examination found multiple fractures of the upper right ribs. In addition there were petechial haemorrhages in the conjunctivae (i.e. the mucous membrane that covers the front of the eye and lines the inside of the eyelids) which was supportive of an element of mechanical asphyxia. The evidence indicated that compression of the chest had led to cardiac arrest and death. The cause of Mr MacCallum's death was recorded as "chest injuries".

Investigation

[18] Police constables Stephen Tanner and Sarah Whelan attended the scene, and PC Whelan took photographs of the baler and Mr MacCallum.

[19] The Health and Safety Executive were informed of the circumstances of Mr MacCallum's death and commenced an investigation. On 29 August 2018 an

examination of the baler and tractor was conducted by Mr David Gostick, Specialist Inspector of Health & Safety (Mechanical Engineering). Mr Gostick graduated from the University of Southampton in 1993 with an Honours degree in Mechanical Engineering (BEng Hons). He is registered as a Chartered Mechanical Engineer with the Engineering Council and is a member of the Institution of Mechanical Engineers. He has been an HSE Specialist Inspector since 2012, prior to which he had worked in industry as a mechanical engineer for 20 years.

[20] On 29 August 2018 he was assisted in inspecting the baler by Mr John Cameron MacFarlane, an agricultural engineer and director of Argyll Engineers Limited. Both the tractor and baler were found to be in 'fair' condition. Two of the hydraulic connections between the baler and tractor were found to be in 'generally good' condition. The hose whose failure is discussed further below was found to be in 'generally good' condition. The reusable hydraulic fitting which Mr MacCallum had fitted to that hose was found to be in 'serviceable' condition. The hydraulic isolation valve was found to be in the 'open' position, i.e. its handle was in line with the pipe feeding the ram. When tested the valve was found to function correctly. No safety defects were identified.

[21] Mr Gostick concluded that the reusable hydraulic fitting that Mr MacCallum had used was not assembled properly on to the hose which supplied the tailgate's hydraulic rams. As a result it was incapable of withstanding the hydraulic pressure applied to it in the hydraulic line when the tailgate was raised and it blew off. Once that happened oil flowed unrestricted out of the rams which supported the raised tailgate, which led to it dropping rapidly, crushing Mr MacCallum. Had the isolation valve been closed off

then the tailgate would not have descended when the fitting blew off, because the hydraulic fluid would have been isolated inside the ram.

[22] In Mr Gostick's opinion, once Mr MacCallum had identified the incompatibility of the hydraulic connectors he should have sought the advice of a competent agricultural engineer. His friend Mr MacArthur had suggested going to a local agricultural merchant to get the proper connectors, but as this incident took place on a Saturday evening this would have meant a delay of two days, and Mr MacCallum was keen to get the baler going.

[23] Mr Gostick was able to readily find and download a copy of the operator's manual from the internet. An extract of the passage regarding the tailgate safeguard is included in his report. This shows a photograph of the isolation valve as it appears on a baler; an illustration which is identical to the warning label attached to the offside of the baler in this case; and the following text:

> "If maintenance or installation/assembly work is to be performed with the tailgate open, it is essential to secure the tailgate to prevent it from falling.
>
> "Use the cut-off valve on the right side of the baler for this purpose. The shut-off valve may only be actuated from the right side of the machine.
>
> "Return the valve to its original position after completing maintenance and installation/assembly work."

Discussion and Conclusions

[24] The Procurator Fiscal Depute, with the agreement of Mr Varney, invited me to make only the formal findings which are set out at the beginning of this determination, all in terms of section 26(2)(a) to (d). These relate to the time and place of the accident

and resulting death, the cause of death, and the cause of the accident. I have no difficulty in making these findings; the factual background is not in dispute and I accept the opinion of Mr Gostick as set out in his careful and thorough report.

[25] In addition to these formal findings I have made an additional finding in terms of section 26(2)(e) regarding a reasonable precaution that might realistically have prevented the death. The baler had an isolation valve attached to one of its hydraulic rams which was designed to stop the tailgate falling in a situation where, as happened here, hydraulic pressure failed suddenly. That isolation valve was found to be in working order after the accident. Had it been deployed neither the accident nor the death would have happened.

[26] The evidence shows that Mr MacCallum and Mr MacArthur made some checks on the baler before the hoses were connected, although there is no detail on how extensive those checks were. It is clear that a legible warning label was attached to the panel next to where the isolation valve was. Any person who saw that label should have realised the need to close the valve before going under the tailgate. However that label was on the baler's offside, and at the time of the accident Mr MacCallum was standing at the nearside. Given that the nearside label was eroded to the point of illegibility, and bearing in mind that the operator's manual may never have arrived in the post, the court does not have an evidential basis to conclude whether or not Mr MacCallum or Mr MacArthur were aware of the need to deploy the isolation valve.

[27] However, Section 26(3) of the 2016 Act makes clear that the sheriff is entitled to use hindsight when considering a finding under section 26(2)(e). In her determination

following the inquiry into the death of Sharman Weir (issued on 23 January 2003 at Glasgow Sheriff Court, reproduced in Carmichael's *Sudden Deaths and Fatal Accident Inquiries*, 3rd edition, p.421, paragraph 11-17), Sheriff Reith stated:

> "the purpose of a Fatal Accident Inquiry is to look back, as at the date of the inquiry, to determine what can now be seen as the reasonable precautions, if any, whereby the death might have been avoided and any other facts which are relevant to the circumstances of the death. The purpose of any conclusions drawn is to assist those legitimately interested in the circumstances of the death. They, armed with the benefit of hindsight, the evidence led at the Inquiry, and the Determination of the Inquiry, may be persuaded to take steps to prevent any recurrence of such a death in future."

[28] With the benefit of hindsight it is clear that closing the isolation valve was a reasonable precaution to take. It is to be hoped that others working with similar machinery in future will learn the lessons of this tragedy and utilise failsafe mechanisms in future.

[29] In terms of section 26(2)(f) of the Act, I do not consider there to be any basis in the evidence to find that any defects in any system of working contributed to the accident or to the death. As Mr Gostick has noted it would have been feasible to have delayed for two days to have had suitable hydraulic connectors applied by an appropriately-qualified person. Whilst I can see the sense in this, I consider that in the absence of evidence regarding standard practice in the agricultural sector or Mr MacCallum's own skill-set, no finding under this heading is appropriate.

[30] Turning to section 26(2)(g), this provision replicates the terms of section 6(1)(e) of the Fatal Accidents and Sudden Deaths Inquiry (Scotland) Act 1976. There is no requirement for the facts referred to in the finding to have a causal connection with the

death. Instead, findings under this section should relate to the circumstances of the death as they may affect the public interest - Carmichael's *Sudden Deaths and Fatal Accident Inquiries*, at paragraph 5-77.

[31] On the evidence it cannot be said that the eroded and unreadable state of the nearside warning label was a cause of this accident. However labels of this kind are affixed to machinery in order to convey vital information to persons who may or may not have seen the operator's manual. If they deteriorate to such a state that that they no longer convey that information they serve no useful purpose and must be replaced. There is no evidence as to when it became so eroded, only that it was in that condition on the day in question. The accident could have been prevented by taking the precaution that the label was meant to inform users of. I therefore consider that the fact that the label could not provide that information is a fact relevant to the circumstances of this death. There is a public interest in highlighting this matter to ensure that in future warning labels of this kind are replaced when necessary.

Final Observations

[32] It is an agreed fact that Mr Bloor arranged for the operator's manual to be posted to Mr MacCallum at his home address, in line with his company's established practice when machinery was transported by a third-party haulier to avoid it being lost. Notwithstanding this it is also an agreed fact that to date the manual has not been recovered. Given the importance of ensuring that adequate information on safe operation is conveyed to a new owner, it is regrettable that there should be uncertainty

over whether postal delivery of the manual was successful. It may be advisable for suppliers of agricultural machinery to consider using a recorded-delivery service when sending such manuals by post. However in the absence of detailed information as to standard practice in this sector I do not consider that any formal recommendation can be justified.

[33] Finally I would like to express my sincere condolences to Mr MacCallum's family and friends for their tragic loss. The experiences of his son Sean MacCallum and his friend Alistair MacArthur on the day must have been especially painful as they faced this sudden and horrific accident. The evidence before the Inquiry makes clear that they reacted with impressive level-headedness and skill, and did all that anyone could have done for Mr MacCallum.