

Non-stun cattle slaughter footage – Illegality and welfare statement



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Authorship

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Cover image: a screenshot from the footage that this report is based on.



Illegality and Welfare Statement

Non-Stun Cattle Slaughter

Summary:

Analysis of extensive undercover footage from Hartshead meats slaughterhouse revealed nine categories of illegality. Much of the illegality was part of routine practice rather than isolated incidences. Nine further categories of other welfare problems were also identified, which again were widespread rather than isolated incidences. This is a *conservative* analysis as only examples of the illegality and welfare problems were viewed. Based on this limited assessment, further categories and cases of both illegality and welfare insults within the rest of the footage are highly likely.

1 Introduction

As a specialist in animal welfare science. I have viewed and assessed undercover footage from a cattle slaughterhouse in England, UK, with the aim of identifying any illegality and significant welfare problems. The footage comprised primarily the sticking (incision for slaughter) and hoisting phases of cows' journeys through the slaughterhouse, though there was some footage of the pre-stunning 'race' and 'dressing' areas too. Across 25th and 26th February (unless otherwise stated), five separate cameras (C1–C5) collected the footage from the following slaughterhouse areas:

- C1, pre-restrainer race;
- C2, an aerial rear view of the restrainer box;
- C3, an aerial head view of the restrainer box (close shot);
- C4, an aerial head view of the restrainer box (longer shot); and
- C5, post-kill dressing area (*from 13th February*).

In total there was approximately 47 hours of footage available to me; however, often two cameras were merged side-by-side onto the same video file, which compressed the total video file duration. I scrutinised **a sample** of the most welfare-problematic evidence from this footage, as flagged by Joey Carbstrong and Team. I focused on footage from 25th February and then reviewed a smaller subset of examples from 26th to see if similar problems persisted on a different day.

All examples of slaughter (restrainer box onwards) I assessed concerned Shechita slaughter for the Kosher meat market, though Zabihah slaughter for the Halal meat market was practiced elsewhere in the footage, and possibly non-religious slaughter. Cattle were led up to the restrainer box via a single-file 'race'. Each cow (used hereafter to refer to cattle of all sexes) was kept behind a shutter at the back of the restrainer box until it was their turn. Each cow needed to then proceed forward into the restrainer box and place their head into the head restraint at the front of the restrainer box. Once a cow is in place, the sides and back of the restrainer box would tighten/narrow to limit each cow's movement; the head restraint would also tighten. A slaughterer on the right-hand side of each cow's head would wipe/wash the neck of each cow and then proceed to cut each cow's throat. After a minimum period of 30 seconds, once the slaughterer deemed each cow had become unconscious, other staff would shackle the foot/leg of each cow, the side of the restrainer box would open, and each cow would fall out and be hoisted. In cases of failed attempts at non-stun slaughter, a back-up stun gun was kept on stand-by.

I make the following statement regarding the (il)legality and effects on cattle welfare of the practices evident at the abattoir in the footage.

2 Legislation

Legislation pertaining to this footage comprises the *Animal Welfare Act 2006*, the *Welfare*

at the Time of Killing 2015 (WATOK, 2015), and the retained EU regulation 1099/2009 on the Protection of Animals at the Time of Killing (PATOK, 2009). Additionally, Defra has two formal Guidance documents covering religious (non-stun) slaughter and moving/handling at red meat slaughterhouses (Defra, 2023a, 2023b, respectively). These Guidance documents are intended to explain legislation and how to follow it. Parts from these five pieces of legislation/guidance that relate exclusively to the illegality uncovered have been extracted and can be found in section 5. Throughout what follows, the dependency on citations from the European Food Safety Authority (EFSA) is intentional as Defra (2023a) official Guidance advises this, especially in relation to signs of unconsciousness and death.

3 Illegality evident

Table 1 summarises the extensive illegality found—nine distinct categories of illegality across just the small sample analysed. These were as follows (see Table 1 for examples):

- *Rough handling (RH)*.
 - Use of a (suspected) electric goad or at least a goad with a pointed end (see Figure 1 for evidence). The latter is always illegal; the former is intended for judicious use on rare occasions only (see extracted legislation in section 5 for more information).
 - Excessive/non-permitted goad use was evident primarily during the race and entrance into the restrainer box. This goad also was sometimes used once cattle were in the restrainer box, which is illegal as the cattle have no space ahead of them to move into.
- *Improper knife technique (IKT)*.
 - Ubiquitous ‘sawing’ like motion: Far from being an exception, use of this ‘sawing’ method was standard when slaughtermen cut cows’ throats.
 - While relevant legislation does not explicitly forbid ‘sawing’, it is implied by “rapid, uninterrupted movement”. In accordance with literature on Shechita slaughter—specifically, the Shehiyah (delay) rule—such a ‘sawing’ motion may be acceptable when necessary, but it should not be a routine approach (e.g., see Enkin, 2022, Grandin, 2006). A slower cut or more numerous cuts (even if uninterrupted) will prolong time to insensibility and so increase an animal’s suffering (Grandin, 2006; EFSA, 2020, p. 80). Thus, using such a method routinely is a violation of the Animal Welfare Act 2006 due to avoidable harm being caused.
- *Inadequate checks for consciousness (ICC)*.
 - Frequent absent systematic checks for consciousness.
 - Frequent inadequate systematic checks for consciousness: waving a hand by a cow’s eyes as a formality without paying sufficient attention. A second indicator of unconsciousness should also be used. It should also be noted that, loss of muscle tone and posture, whilst desirable indicators of unconsciousness, are difficult to assess when an animal is so tightly restrained (EFSA, 2013; p. 36).
 - Outcomes of ICC include cows breathing as they are being moved from the restrainer (see Table 1). Some cows were also spontaneously blinking as they were dragged from the restrainer; however, the EFSA does not recognise this as an indicator of consciousness in the non-stun slaughter of cows (whereas, it is an indicator in slaughter with pre-stunning).
- *Inadequate checks for death (ICD)*.
 - Dressing of an animal should not commence until an animal is dead. Signs of life in an animal should be a red flag with corrective action immediately taken. Relevant signs of life in the examples in Table 1 include continuation of bleeding, responses to a painful stimulus (i.e., dressing, in this case), and lifting of the head (muscle tone)—the latter two of which are not only signs of life, *but signs of consciousness* (EFSA, 2020, p. 77; 2013, p. 55). Consciousness should not even be a possibility at this point.
 - Discerning between different movement types is important; see section 4

- for further discussion on this.
- In two cases, ICD referred to cows' heads becoming stuck in the restrainer box equipment and staff decapitating the cows in the restrainer box rather than helping to free the heads. No dressing (e.g., decapitation) should take place in this area as it is highly likely the cows will not yet be dead.
- *Inadequate execution of emergency back-up stun (IB).*
 - High dependency: The regularity with which back-up stunning was used brings into question the 'back-up' nature of this and again highlights the extent of IKT.
 - Insufficient readiness: There were cases of the back-up stun needing to be applied multiple times before working.
- *Unsuitable equipment (E).*
 - Horned cattle frequently became stuck when moving into or out of the head restraint. They require tailored equipment.
 - Occasional incidences with non-horned cows (e.g., legs getting stuck in gaps of restrainer box).
- *Inappropriate restraint (IR).*
 - Cows freeing themselves from the head restraint (isolated incidents).
- *Neglect (N).*
 - Staff should be ready to process cows immediately after they have been ushered/forced into the restrainer box.
 - There were a few cases of cows experiencing lengthy periods of time in the restrainer box and/or head restraint, sometimes unsupervised and sometimes with particularly distressed cows.
- *Premature movement of head restraint (PMR).*
 - Legislation and Guidance clearly stipulates that cows should not be moved (either manually or mechanically) for a minimum of 30 seconds post cut.
 - It seemed standard practice to partially lower the head restraint before this minimum time period. The head remained restrained, just slightly lowered. It is possible this may be intentionally practiced for pragmatic and even potentially welfare reasons (e.g., optimal blood loss). However, no commentary on this matter has been found from UK sources—only American (e.g., Grandin, 2018).
 - If this exception is permitted, the law needs updating.

As detailed in the same table, many animals were subjected to multiple concurrent forms of illegality. These cases of illegality are all self-evident based on the parts of the relevant legislation extracted in section 5.

3.1 Welfare impact of illegality

It is not controversial to state that animal welfare comprises mental, physiological/anatomical, genetic, and behavioural components. Indeed, this is the understanding that legislation is based on. Thus, the occurrence of the illegality outlined above is going to either be significantly reducing the welfare of the cows or at the very least significantly increasing the risk of seriously compromising their welfare. The cows will have increased levels of fear, distress, and pain from prolonged consciousness, injury (or risk of injury), or other aversiveness.



Figure 1. Printscreens from 25.C1.HH.090.1:59:27 (left) on the race and at 25.C3.R.112708.1:21:03 (right) in the restrainer box, highlighting evidence of electric goad (similarity in appearance) or at least a sharp pointed object.

4 Other welfare problems evident

In addition to the clear aforementioned cases of illegality, several welfare problems were identified in the footage, as follows. NB: The following exemplar IDs can be read as “*day.camera.logger.filename.timestamp*”. As these IDs are lengthy, only one example is provided; more can be made available on request (**as they are not isolated incidences**).

- Likelihood of consciousness remaining during hoisting and likelihood of consciousness and/or signs of life remaining during dressing—to a more widespread degree than the more definitive cases listed as illegal in Table 1.
 - These may be illegal, but it is hard to convincingly evidence as such in most cases. Thus, they are demoted to welfare concerns. See below for further discussion.
- Wound disturbance (e.g., 25.C3.R.105807.1:42:00).
 - The slaughterer can occasionally be seen manually checking the wound with his hand, presumably to ensure the cut was successful in severing all required vessels or to encourage optimal bleeding (EFSA, 2020; p. 80).
- Ill design of slaughterhouse.
 - Visibility of dying//dead and hoisted conspecifics to the right of the head restraint (e.g., 25.C3.R.054307.47:24). The partial barrier fails to obscure everything.
- Pain- or stress-related reactions to the cut and exsanguination—including audible gasping (e.g., 25.C3.R.075307.4:40:00), licking pre-cut (e.g., 25.C3.R.082307.2:50:00), tail wagging (e.g., C5.R.00:05:34), shaking.
 - Some behaviours garner limited coverage in the literature as yet, such as tail wagging. Whilst Lücking et al. (2024) mention lateral and vertical tail movements, the wagging of the tail is distinct from this. More research is required to more clearly understand cattle movements both in relation to the meaning of them for cattle welfare and their possible durations.
 - As well as there being other reasons for gasping, blood can get into airways leading to tracheal irritation (EFSA, 2020; p. 81).
- Duration of consciousness post cut.
 - While slaughterers are legally required to wait a minimum of 30 seconds (which was indeed followed), significantly longer time periods indicate lengthy periods of consciousness and suffering for the cattle and likely IKT. It can also suggest other inadequate welfare (e.g., from farm or even genetic related as calmer animals are known to lose consciousness more quickly—those who have experienced poor welfare are likely to be more anxious).
- Killing/death as a welfare problem in and of itself (Yeates, 2010; Butterworth &

Yeates, 2018; Jensen, 2017; Kasperbauer & Sandøe, 2015; Persson et al., 2025).

- The inherent welfare problem of the cattle being in a slaughterhouse and forced/encouraged/expected to move down the narrow/confined space that is the race, and into a tiny restrainer box and head restraint, with full view and smell of conspecifics' blood (and often conspecifics' bodies).
- The extent of this distressing experience for the cattle is highlighted by their escape attempts in the race and restrainer box (e.g., 25.C3.R.082307.1:13:15), their frequent bellowing vocalisations in the race and restrainer box (e.g., 25.C3.R.071807.2:23:00), and their struggling post cut. These are all welfare indicators outlined by the EFSA (2020; p. 76).

The possibility of consciousness remaining or being regained in all post-cut areas in numerous cattle requires further discussion, as does the possibility of signs of life remaining as cows begin to be dismembered. Extensive post-cut movements are evident in the footage—both while cows remain in the restrainer and up to and during the time of dressing. The movements include shaking of the whole body, leg paddling, kicking, head whirling, tail twitching/wagging. It is worth emphasising that many of the movements are perhaps too easily dismissed as unconscious convulsions in all post-cut instances. This may relate to tonic and clonic seizures being widely documented as a response in cattle following captive bolt stunning (e.g., EFSA, 2020, p. 50; Lücking et al., 2024). However, such seizures are never mentioned by the EFSA in relation to slaughter without stunning.

Thus, in the case of non-stun slaughter, these movements may also often be indicators of pain, such as leg kicking and potentially tail wagging (Trindade et al., 2024). Indeed, there is a contradiction present in the literature, highlighted by EFSA (2020); they state movement (muscle tone or anything other than a completely relaxed body) is both a sign of consciousness *and* simply a result of non-conscious convulsions. Often the instruction is to take note only of *co-ordinated* or *purposeful* movement. *However, this urges the questions: What will co-ordinated/purposeful movement look like in an animal that has just undergone the distress and pain of having their throat severed and then shackled and hoisted? Should we really only take heed of head lifts?* Ultimately, this doubt, confusion, and lack of clarity is why EFSA states movements are not a *sole* reliable indicator of consciousness in and of themselves. They can be a red flag though and systematic checks for signs of death should be required prior to dressing, as recommended by the EFSA (2013; p. 60). To be confident in loss of consciousness in non-stunned cattle, as a minimum, EFSA recommends checking four indicators: absence of breathing, loss of muscle tone, loss of posture, and absent eye reflexes. To confirm death, EFSA (2013, p. 60) recommends checking for dilated pupils, loss of muscle tone, and the cessation of bleeding. More recently, EFSA has called for all non-stun slaughter to cease on welfare grounds (EFSA, 2020; p. 96).

Whilst no conclusive meaning of these extensive post-cut movements in the present footage can be arrived at, I would implore application of the “precautionary principle” (Birch, 2017), giving the animal the benefit of the doubt. This can also reduce staff injuries.

5 Relevant extractions from legislation

According to the *Animal Welfare Act 2006*:

- “A person commits an offence if ... (a) an act of his, or a failure of his to act, causes an animal to suffer, (b) he knew, or ought reasonably to have known, that the act, or failure to act, would have that effect or be likely to do so, (c) the animal is a protected animal, and (d) the suffering is unnecessary”(s. 4.1¹).

According to the *WATOK (2015)*:

- “The business operator must ensure that: the place of killing is sited in such a way as to minimise handling of the animal at any time up to the point of killing” (Sch. 1, s. 3).
- “No person may lead or drive an animal over ground or floor, the nature or condition of which is likely to cause the animal to slip or fall” (Sch. 1, s. 14).
- “The business operator and any person engaged in the movement of animals must ensure that every animal is

¹ “Sch.” Refers to “Schedule” of legislation and “s.” to section. If no “Sch.” Is provided, the content can be found in parts of the legislation prior to schedules commencing.

- *moved with care*" (Sch. 1, s. 15).
- "...any person engaged in the movement of animals must ensure that any instrument intended for guiding an animal is used solely for that purpose and only for short periods" (Sch. 1, s. 16).
- Staff must:
 - Ensure "every animal is moved with care" (Sch. 1, s. 15).
 - Ensure "any instrument intended for guiding an animal is used solely for that purpose and only for short periods" (Sch. 1, s. 16).
- Of stunning and killing
 - Stunning pens for bovines must be constructed so as to:
 - "restrict the movement of the head of an animal confined in it so as to permit accurate stunning" (Sch 1., s. 8).
 - "allow unimpeded access to the forehead of an animal confined in it" (Sch 1, s. 8).
 - The penetrative captive bolt stunning device must be: "positioned and applied so as to ensure that the bolt enters the cerebral cortex" (Sch. 1, s. 24).
 - Staff must ensure that:
 - An "animal is bled or pithed without delay after it has been simple stunned" (Sch. 1, s. 31).
 - Bleeding is "completed before the animal regains consciousness" (Sch. 1, s. 31).
 - "...if an animal is bled after simple stunning, no person may cause or permit any further dressing procedure or any electrical stimulation to be performed on the animal before the bleeding has ended and in any event not before the expiry of ... In the case of bovine animals, a period of not less than 30 seconds" (Sch. 1, s. 31).
- For slaughtering in accordance with religious rites:
 - "no person may kill an adult bovine animal in a slaughterhouse in accordance with religious rites without prior stunning unless the animal is individually restrained in an upright position in a restraining pen" (Sch. 3, s. 3).
 - "ensure it is killed by the severance of both its carotid arteries and jugular veins by rapid, uninterrupted movements of a hand-held knife" (Sch. 3, s. 5).
 - "appropriate back-up stunning equipment is kept close to the restraining equipment for use in case of emergency and is immediately used where it is subjected to any avoidable pain, suffering or agitation or has any injuries or contusions" (Sch. 3, s. 6).

According to PATOK (2009):

- When moving/handling animals:
 - It is prohibited to "strike or kick the animals" (Annex III, s. 1.8).
 - It is prohibited to "use prods or other implements with pointed ends" (Annex III, s. 1.8).
 - "The use of instruments which administer electric shocks shall be avoided as far as possible ... [S]uch instruments shall only be used for adult bovine animals ... which refuse to move, and only when they have room ahead of them ... The shocks shall last no longer than one second, be adequately spaced and shall only be applied to the muscles of the hindquarters. Shocks shall not be used repeatedly if the animal fails to respond" (Annex III, s. 1.9).
- "For animals of bovine species, restraining boxes used in conjunction with a pneumatic captive bolt shall be fitted with a device that restricts both the lateral and vertical movement of the head of the animal" (Annex II, s. 3.2).
- "Non-penetrative captive bolt device: this method shall only be used for ruminants of less than 10 kg of live weight" (Annex I, Ch. 2, 1.2)
- Other relevant content from PATOK (2009) is reinforced through the WATOK (2015) legislation, so will not be repeated here.

Within Defra's (2023a) religious slaughter *Guidance*, the following is stipulated:

- "You must cut both an animal's carotid arteries and its jugular veins".
- "After you bleed cattle ... you (or your equipment) must not move the animal until it is unconscious and in any event not before: 30 seconds for cattle"
- "After bleeding any animal (including birds) and waiting the required amount of time, you must check that the animal is unconscious".
- "You must wait until the animal is dead before you can begin dressing or scalding the animal. If you detect signs of life, you must stun and kill the animal immediately".
- "You can find more information in European Food Safety Authority (EFSA) guides on monitoring for unconsciousness and checking for signs of life".

Within Defra's (2023b) *Guidance* on moving animals in red meat slaughterhouses, the following is stipulated:

- "You must not ... use prods or other implements that have a pointed end".
- "You must avoid using electric shock instruments as much as possible. You can only use electric shock instruments on adult cattle and adult pigs, when they refuse to move and if they have enough room to move forward. You must: adequately space electric shocks, only deliver a shock to the muscle of the hindquarters. You must not: deliver a shock for longer than one second, keep using electric shocks if an animal does not respond".
- "You must not: lead or drive an animal over ground or a floor, where it's likely to slip or fall".

Table 1. Summary of observed illegality.

Note: Green, grey, and pink shading represent the same cameras. Footage from the same cameras has been placed adjacent to each other (versus footage from the same day). C4 contained mostly the same footage as C3, thus examples taken from this camera are limited. Only items 7 and 43 were not a categorial “yes” for illegality.

Key: RH: rough handling; IKT: inadequate knife technique; ICC: inadequate checks for consciousness; IR: inadequate restraint; E: equipment; N: neglect; ICD: inadequate checks for death; IB: inadequate back-up stun; PRM: premature restraint movement.

	Filename / Timestamp of exemplar cases	Illegal? (Y/N)	Categories of illegality
<i>Camera, date, logger: C1 (pre-stun race, aerial), 25th Feb, HH</i>			
1	056 00:3:55	Y (repeated use, not restricted to hind quarters – body)	RH, electric/pointed goad
2	074 00:4:04	Y (repeated use, not restricted to hind quarters – body)	RH, electric/pointed goad
3	090 00:1:49	Y (repeated use, not restricted to hind quarters – face/head, possible use on calf)	RH, electric/pointed goad
C1 (pre-stun race, aerial), 26th Feb, RC			
4	0069 1:0:0	Y, repeated use	RH, electric/pointed goad
C2 (restrainer box, aerial rear), 25th Feb, HH			
5	112708 1:16:00	Y, premature release of restrainer box shutter	RH, E
6	112708 1:17:00	Y, ill use of equipment, nowhere for cow to go	RH, electric/pointed goad
7	115208 2:52:00	Potentially, but insufficient detail available	Improper kill/stun, ill-design of restrainer box
8	115708 0:57:00	Y (should not be used in/after restrainer box)	RH, electric/pointed goad
9	125208 0:44:00	Y (repeated use, should not be used in restrainer box)	RH, electric/pointed goad
10	132708 3:27:00	Y (repeated use, should not be used in restrainer box)	RH, electric/pointed goad
11	140208 00:2:40	Y (repeated use, should not be used in restrainer box)	RH, electric/pointed goad

12	142708 00:1:21	Y (repeated use, should not be used in restrainer box)	RH, electric/pointed goad
13	154708 00:1:58	Y (repeated use, should not be used in restrainer box, not always hindquarters)	RH, electric/pointed goad
14	155708 00:2:35	Y (repeated use, should not be used in restrainer box)	RH, electric/pointed goad
15	164208 00:1:54	Y (repeated use, should not be used in restrainer box)	RH, electric/pointed goad
16	164708 00:1:45	Y (repeated use, should not be used in restrainer box, not always hindquarters)	RH, electric/pointed goad
17	171708 00:0:36	Y (repeated use, should not be used in restrainer box)	RH, electric/pointed goad
C2 (restrainer box, aerial rear), 26th Feb, RC			
18	094207 1:44:01	Y (repeated use, should not be used in restrainer box)	RH, electric/pointed goad
C3 (close shot, restrainer box, aerial head view), 25th Feb, Ross			
19	071807 2:10:28	Y, sawing motion, back-up stun	IKT, ICC
20	072307 00:1:04	Y, sawing motion, back-up stun	IKT
21	075307 1:45:00	Y, sawing motion, back-up stun x 3	IKT
22	075307 4:16:20	Y, sawing motion, head breaks free, back-up stun	IKT, IR
23	075807 3:0:0	Y, sawing motion, head stuck in restraint during hoisting (cut off)	IKT, E, ICC, ICD
24	081807 22:00	Y, sawing motion	IKT
25	082307 1:13:15	Y, cow gets stuck in box escape attempt, left neglected, sawing motion	E, N, IKT
26	082807 4:28:09	Y, sawing, absent CC	ICC
27	084307 00:22:00	Y, sawing, absent CC	IKT, ICC
28	090307 00:4:00	Y, sawing, absent CC, horns stuck, knife pass over head, head cut off	IKT, ICC, E, N, ICD
29	093307 3:9:00	Y, head slips out	IKT, IR, ICC
30	094807 4:48:0	Y, unsuitable for horned cows, prolonged time in box	E
31	095807 1:39:0	Y, sawing, early lowering of head restraint, breathing when hoisted	IKT, PRM, ICC
32	095807 3:28:0	Y, sawing, absent CC (pre head restraint movement), worker scrolling on phone	IKT, ICC, N

33	104307 2:46:0	Y, sawing, early lowering of head restraint, delayed/failed onset of back-up stun (x2)	IKT, PRM, IB
34	104807 1:19:0	Y, sawing, early lowering of head restraint, delayed/failed onset of back-up stun	IKT, PRM, IB
35	105807 1:42:00	Y, sawing, early lowering of head restraint, delayed/failed onset of back-up stun	IKT, PRM, IB
C3 (close shot, restrainer box, aerial head view), 26th Feb, HC			
36	052307 00:22:04	Y, sawing, early lowering of head restraint, gasping/breathing	IKT, PRM, ICC
37	052807 2:50:29	Y, vocalisation during hoisting	ICC
38	053807 2:51:04	Y, sawing, early lowering of head restraint, no eye checks,	IKT, PRM, ICC
39	054307 00:11:29	Y, worker on phone	N
40	054307 1:00:00	Y, extended period in restrainer box (if worker was paying attention, there were numerous opportunities when cow had head in required position)	N
41	055807 02:45:10	Y, sawing, early lowering of head restraint	IKT, PRM
42	071307 00:57:23	Y, extended wait in restrainer box, extended period in head restraint	N
43	081807 00:29:00	Possibly, cow blinking as removed from restraint	ICC
44	083807 2:17:20	Y, cow blinks in response to eye check formality, but no action is taken and cow is released soon after	ICC, N
45	091307 1:51:20	Y, extended wait in restrainer box (and for a particularly scared cow), no eye checks	N, ICC
46	092307 00:55:12	Y, sawing, delayed/failed onset of back-up stun (x2)	IKT, IB
47	093807 3:38:17	Y, sawing, delayed/failed onset of back-up stun	IKT, IB
C4 (longer shot of C3: restrainer box, aerial head view), 25th Feb, Ross			
48	082008 00:3:00	Y, unsuitable for horned cows, prolonged time in box, delayed/failed onset of back-up stun	E, IB
C4 (longer shot of C3: restrainer box, aerial head view), 26th Feb, HC			
	N/A	N/A	N/A
C5 (dressing area), 13th Feb, HC			
49	0044 5:03	Y, body movement in response to painful stimulus (neck cutting)	ICD, ICC
50	0044 7:53	Y, body movement in response to painful stimulus (neck cutting)	ICD, ICC

51	0052 8:10	Y, body movement in response to painful stimulus (neck cutting)	ICD, ICC
52	0064 6:58	Y, head lift	ICC
53	0075 6:08	Y, body movement in response to painful stimulus (neck cutting)	ICD, ICC
54	0086 7:55	Y, premature dressing (still bleeding)	ICD, ICC

References

- Animal Welfare Act 2006*. <https://www.legislation.gov.uk/ukpga/2006/45/contents>.
- Birch, J. (2017). Animal sentience and the precautionary principle. *Animal Sentience*, 16(1). <https://doi.org/10.51291/2377-7478.1200>
- Butterworth, A., & Yeates, J. (2018). Longevity and brevity: Is death a welfare issue? In A. Butterworth (Ed.), *Animal Welfare in a Changing World* (pp. 190–197). CABI.
- Defra (2023a). Guidance—Slaughter Without Stunning. <https://www.gov.uk/guidance/halal-and-kosher-slaughter#requirements-for-slaughter-without-stunning-for-kosher-meat>
- Defra (2023b). Guidance— Red Meat Slaughterhouses: Unloading, Handling and Holding Animals. <https://www.gov.uk/guidance/red-meat-slaughterhouses-unloading-handling-and-holding-animals#moving-animals>
- EFSA (2013). Scientific opinion on monitoring procedures at slaughterhouses for bovines. *EFSA Journal*, 11(12), 3460. <https://doi.org/10.2903/j.efsa.2013.3460>
- EFSA (2020). Welfare of cattle at slaughter. *EFSA Journal*, 18(11), e06275. <https://doi.org/10.2903/j.efsa.2020.6275>
- Enkin, A. Rabbi (2022). The ritual laws of Kosher meat. <https://unitedwithisrael.org/the-ritual-laws-of-kosher-meat/>
- Grandin, T. (2006). Improving religious slaughter practices in the U.S. *Anthropology of Food*, 5. <https://doi.org/10.4000/aof.93>
- Grandin, T. (2018). Recommendations to facilitate onset of rapid insensibility after Kosher or Halal religious slaughter. <https://www.grandin.com/ritual/recommendations.facilitate.rapid.insensibility.html>
- [Jensen, K. K. (2017). How should death be taken into account in welfare assessments? *Journal of Agricultural and Environmental Ethics*, 30(5), 615–623. <https://doi.org/10.1007/s10806-017-9688-1>
- Kasperbauer, T. J., & Sandøe, P. (2015). Killing as a welfare issue. In T. Višak & R. Garner (Eds.), *The Ethics of Killing Animals*. Oxford University Press.
- Lücking, A., Louton, H., von Wenzlawowicz, M., Erhard, M., and von Holleben, K. (2024). Movements after captive bolt stunning in cattle and possible animal- and process-related impact factors—A field study. *Animals*, 14, 1112. <https://doi.org/10.3390/ani14071112>
- [PATOK] *Protection of Animals at the Time of Killing 2009*. <https://www.legislation.gov.uk/eur/2009/1099>
- Persson, K., Rodriguez Perez, C., Louis-Maerten, E., Müller, N., & Shaw, D. (2025). “Killing in the name of 3R?” The ethics of death in animal research. *Journal of Agricultural and Environmental Ethics*, 38(Dec), 4. <https://doi.org/10.1007/s10806-024-09936-y>
- Trindade, P. H. E., da Silva, G. V., de Oliveira, F. A., and Luna, S. P. L. (2024). Ranking bovine pain-related behaviors using a logistic regression algorithm. *Applied Animal Behaviour Science*, 271, 106163. <https://doi.org/10.1016/j.applanim.2024.106163>
- [WATOK] *The Welfare of Animals at the Time of Killing (England) Regulations 2015*. <https://www.legislation.gov.uk/ukxi/2015/1782/schedule/1?view=extent>
- Yeates, J. (2010). Death is a welfare issue. *Journal of Agricultural and Environmental Ethics*, 23(3), 229–241. <https://doi.org/10.1007/s10806-009-9199-9>