



**Australian Government**

**Department of Agriculture, Fisheries and Forestry**

# **Review of modified and copy Mark IV type restraint boxes**

Australian Chief Veterinary Officer

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## Summary

Humane slaughter of cattle is best achieved through effective prior stunning. However, in some markets stunning is not yet accepted and unstunned slaughter of cattle is used. Where cattle are slaughtered without prior stunning humane mechanical restraint is required.

A review of the original Mark IV cattle restraint box concluded that its proper use is consistent with the requirements of the World Organisation for Animal Health (OIE) Code—*Chapter 7.5: Slaughter of Animals* and on this basis slaughter of cattle using the original Mark IV restraint box was found to have ongoing appropriateness.

I am advised that only a small number of these original restraint boxes were installed in Indonesia and that a number of supply chains in Indonesia are using copy or modified boxes. A formal letter of complaint and DVD footage was received by the Department of Agriculture, Fisheries and Forestry (DAFF), from Animals Australia in February 2012. This letter alleged breaches of animal welfare requirements in supply chains approved under Australia's Exporter Supply Chain Assurance System (ESCAS) were occurring during the use of the Mark IV type restraint boxes in Indonesia.

Of the fourteen restraint boxes observed on the DVD footage supplied six did not have features consistent with them having been original Mark IV restraint boxes, the remaining eight appear to be modified Mark IV restraint boxes.

None of the restraint boxes observed in the footage were being used as recommended. Copy boxes and modified boxes were found not to operate consistent with the operational standards of original Mark IV restraint boxes, which can result in significant animal welfare risks. Copy boxes and modified boxes seen in the footage appeared to be underpowered (slow and jerky movement), lacking pressure relief valves, built with protrusions that have potential to injure and cause pain to restrained cattle and do not have effective head/neck restraint as seen in the original Mark IV restraint box.

Animal welfare risks from the use of the above restraint boxes include, but are unlikely to be limited to excess pressure applied by the restraint (resulting in broken ribs or shoulders), injury caused by exposed bolt heads, absent or hard rubber buffers, and head slapping due to absence of head/neck restraint.

This review recommends that pre-slaughter stunning be used wherever possible and additional efforts be put into encouraging global uptake of pre-slaughter stunning. However, given that not all markets accept stunned slaughter this review further recommends that all Mark IV type restraint boxes in ESCAS-approved supply chains should be audited and assessed and where necessary upgraded. Specifically this review recommends that all Mark IV type restraint boxes must use a neck restraint that minimises the risk of head slapping and associated self harm. That restraint may be mechanical or consist of a strap to be applied before the animal is moved into a laterally recumbent position.

This review identified a number of aspects associated with the use of these restraint boxes that warrant closer attention. This review makes the following recommendations.

1. Restraint boxes reliant upon electrical power should only be acceptable within ESCAS supply chains in facilities with reliable supplies of electricity.
2. All operators must demonstrate ESCAS-consistent alternative arrangements in the event of power failure or insufficient power.
3. All restraint boxes reliant on hydraulic pressure must be fitted with operational pressure relief valves and sight gauges in view of the operator.
4. Operators of these restraint boxes must demonstrate their competency to use the equipment with specific attention to ensuring cattle are not subject to excessive body restraint pressure.
5. Restraining devices be routinely assessed, including during ESCAS audits, for absence of sharp edges and harmful protrusions.

Compliant equipment may be used in a non-compliant manner by poorly trained or incompetent and unsupervised operators. Therefore it is recommended that all operators using restraint equipment be required to demonstrate their ability to use it in accordance with the manufacturer's specifications and OIE guidance. Operators of restraint boxes should be required to demonstrate access to and familiarity with the operating and maintenance instructions relevant to the equipment. The standard operating procedures provided for use of this equipment should be reviewed and amended to ensure consistent, humane slaughter of cattle through rapid and effective head restraint which allows for quick access to the throat of the animal.

A number of the findings of this review could have been discovered through thorough independent audits using the ESCAS checklist. This review recommends that an investigation be conducted to determine why independent auditors are not recording the above defects when using the ESCAS checklist.

Overall, Mark IV type cattle restraint boxes, if designed, maintained and operated as per the original Mark IV manufacturer's instructions to meet the ESCAS checklist requirements, provide a humane animal welfare tool for the slaughter of cattle under the conditions observed.

## Introduction

This review follows a formal letter of complaint accompanied with DVD slaughter footage sent to DAFF by Animals Australia in February 2012. The letter alleged animal welfare breaches during the use of the Mark IV type restraint boxes in Indonesia, and some concerns with configuration differences in box design.

The footage provided to the department showed slaughter processing using Mark IV type restraint boxes. Animals involved are of a type that could have been sourced from Australia.

To manage animal welfare risks during the process of slaughter, animals should be effectively stunned immediately before slaughter (pre-stunning). This abolishes all chances of conscious suffering during the process. The Australian Government's position on cattle slaughter is to encourage all operators to effectively stun all animals in ESCAS-approved supply chains prior to

exsanguination by knife. The appropriate use of well designed, maintained, suitable and well operated stunning and restraint equipment at a slaughterhouse in these cases should minimise any adverse animal welfare outcomes during the slaughter process. Conversely, all facilities and equipment if used inappropriately have the potential to lead to adverse animal welfare outcomes.

In facilities where stunning is not currently accepted, OIE-consistent animal welfare outcomes can be achieved using humane handling and slaughter techniques and efficient and secure animal restraint to manage the welfare risks. In these instances the suitability of restraint is critical to achieve the welfare outcome sought. Physical restraint is required to approach Australian-sourced cattle and hold them for the duration of the slaughter process. Restraint equipment used to facilitate cattle slaughter worldwide aims to enable safe, humane and effective slaughter.

The original Mark IV restraint box was developed to facilitate humane slaughter of larger, less domesticated Australian sourced cattle in Indonesia. As pre-stunning is not yet widely adopted in Indonesia, the original Mark IV restraint box offers improvement in the handling and restraint of animals if used as intended. A previous review (20) of slaughter performed by competent people using well maintained, original Mark IV restraint boxes and in accordance with the manufacturer's directions found that animal welfare outcomes associated with the use of the original Mark IV cattle restraint box are consistent with the requirements of the *OIE Code—Chapter 7.5 Slaughter of Animals*. On this basis slaughter of cattle using the original Mark IV restraint box was found to have ongoing appropriateness.

After the export of live cattle to Indonesia was temporarily suspended in 2011, I understand that incomplete plans for the original Mark IV restraint box were released. There are now Mark IV style boxes, whose construction is based to a greater or lesser degree on these plans, that have been fabricated in Indonesia and that are in use in Indonesian slaughterhouses. These boxes are referred to as “copy boxes”. There are also original Mark IV restraint boxes that have been modified after installation, these are referred to as ‘modified boxes’. The term ‘Mark IV type’ boxes in this review, includes both copy and modified boxes.

This review did not reconsider the appropriateness of the original Mark IV restraint box and did not revisit footage of original Mark IV restraint boxes.

Footage of cattle being slaughtered using Mark IV type boxes was provided to the department by Animals Australia and the Royal Society for the Prevention of Cruelty to Animals (RSPCA). The footage showed the slaughter of cattle at several slaughterhouses in Indonesia. Some of the footage had previously been reviewed in early 2012 by DAFF to determine whether there had been ESCAS breaches during processing.

A further review of the footage was undertaken in order to determine:

- whether the restraint and slaughter techniques used caused undue stress on the animals
- whether the Mark IV type restraint boxes in the footage had features to manage risks to animals during the restraint process
- how risks introduced by Mark IV type restraint boxes might be managed.

## Methodology

This review was limited to a desktop assessment of Mark IV type restraint boxes and sought to identify potential issues with copy and modified Mark IV restraint boxes. A desktop review of available footage was conducted together with a literature review (see reference list). The review process followed was similar to that of the previous assessment of restraint boxes, that is, whether the slaughter outcomes seen were consistent with guidance provided in the OIE Code.

Given the limitations of this review approach, the findings of this review should be used as a starting point in addressing potential issues with Mark IV type restraint boxes. I recommend that each restraint box be individually assessed against the potential issues identified in this report.

Having previously (20) established that original Mark IV restraint boxes were appropriate if properly maintained and used by competent animal handlers and slaughter personnel, this review sought to establish whether copy or modified boxes could also provide acceptable animal welfare outcomes during the slaughter process. This was determined through observation of the available footage for compliance with animal welfare requirements in the ESCAS checklist as well as identification of any unmanaged hazards due to the operation and design of the restraint apparatus that could adversely affect the welfare of the animal during the process of restraint and slaughter.

All observations were compared to the “Guidance on Meeting OIE Animal Welfare Standards” developed by the Industry Government Working Group and to the internationally accepted animal welfare guidance in the OIE Code - Chapter 7.1 *Introduction to the Recommendations for Animal Welfare* (incorporating the recently adopted *Article 7.1.4, General principles for the welfare of animals in livestock production systems*) and Chapter 7.5 *Slaughter of Animals*.

The footage was further reviewed to determine if the restraint boxes were original Mark IV restraint boxes, copy boxes or modified boxes. As only modified and copy boxes were seen, these types of restraint box were then compared with the original Mark IV box specifications and operating instructions for assessment of the likelihood of adverse impact on animals held in restraint.

Images, photographs, design specifications and industry funded research reports on the use and performance of the Mark IV type restraint box were considered and face to face consultation with the designer, manufacturer and supplier of the original Mark IV restraint box, Mr Gary Stark was held.

The adequacy of the current Animal Welfare Performance Measures and Targets checklist in the ESCAS for assuring OIE-consistent animal welfare outcomes was also reviewed.

## Background

Australia has supplied restraint boxes into a number of markets where Australian live cattle are exported. In some cases there are unreliable supplies of electricity, water and refrigeration in these locations which preclude import and storage of boxed beef.

Poor animal welfare outcomes filmed in some Indonesian abattoirs and broadcast in May 2011 led to the temporary suspension of live exports of Australian cattle to that market. ESCAS was developed and the Minister asked the Chief Veterinary Officer to review the ongoing

appropriateness of the Mark I and IV restraint boxes. The Mark I restraint box was found unsuitable and the original Mark IV restraint box was found to be appropriate when used properly, that is, capable of being operated to deliver animal welfare outcomes consistent with the advice in the OIE Code (20). The original Mark IV restraint box currently meets financial, infrastructure and cultural requirements as a piece of equipment to facilitate humane slaughter and hygienic processing of cattle in the Indonesian market.

Traditional slaughter techniques in Indonesia involve casting cattle onto the ground. This familiarity with recumbent slaughter together with the physical ease of handling cattle in the original Mark IV restraint box and improved operator safety has led to ready adoption of the Mark IV box in Indonesia.

Some Mark IV boxes have been used to facilitate stunning with animals restrained laterally and stunned before sticking. The boxes can also be adapted with an operator platform to enable stunning of the standing animals from above. However the Mark IV box is primarily used for unstunned slaughter of cattle.

As highlighted in the previous report (20) poor animal welfare outcomes at slaughter may arise from:

1. the suitability of the equipment (restraint box, in this case) used
2. the competence of the operators using the equipment and interacting with the animal

This review is focussed primarily on the first issue, but some commentary will be provided where appropriate on the latter component.

### **The original Mark IV restraint box**

It is not possible to safely, reliably and humanely slaughter large animals such as cattle without some form of physical restraint during the slaughter process. The goal of such restraint is to facilitate rapid slaughter without causing the animal undue stress. OIE article 7.5.2.4 states “methods of restraint causing avoidable suffering should not be used in conscious animals because they cause severe pain and stress”.

Specifications for the original Mark IV restraint box include:

- non slip flooring
- solid sides, limiting external distractions, reducing baulking and improving efficiency
- small front window to reduce risk of injury but to allow vision to reduce baulking
- padded body squeeze restraint with no sharp edges or injurious projections
- smooth action, low noise tilting mechanism reducing noise stress and jerky movement
- pressure control mechanism to ensure the applied pressure is limited and does not exceed comfortable levels for cattle over their thorax or abdomen during restraint
- lateral tilt table to present animal in the correct position (lying on its side) for slaughter and bleeding
- neck restraint bar to restrict movement of the head
- lateral restraint enables the head to be positioned post slaughter to keep the wound edges from touching and facilitate bleed-out.

The welfare outcome associated with appropriate use of these features has been assessed to be OIE consistent (20).

Concern has been raised by some stakeholders regarding the laterally recumbent body position used for slaughter with the original Mark IV restraint box. The question of whether tipping cattle into the lateral recumbent position for slaughter is in breach of the OIE Code's proscription of throwing and dropping of animals has been raised, as well as concerns arising from the potential for animals to experience inversion stress.

The original Mark IV restraint box was designed using the same principles used in Australia when conducting routine veterinary procedures such as hoof trimming (Attachment 1).

Unlike 180 degree inversion in the "Weinberg box" (Attachment 2), the laterally recumbent position is more natural, close to that adopted by cattle at rest. The physiological stressors of inversion restraint are not induced by lateral recumbency in domestic livestock. As with all forms of restraint, prior handling has a significant impact on the animal's level of stress when it enters the restraint. Provided cattle have been appropriately handled up to and including the point where appropriate restraint is applied they usually continue to behave in a calm manner. Once an animal has been safely restrained, the side of the original Mark IV restraint box cantilevers and pivots under the control of the operator and holds it, supported in a laterally recumbent position. This position and height facilitates clear access and improved occupational health outcomes for workers during the slaughter process when compared with previous approaches to slaughter of recumbent cattle in this market.

## Suitable equipment

The table below outlines the assessable presence of restraint box features in the DVD footage that may cause discrete animal welfare risks during the slaughter process.

Visible differences observed in copy and modified restraint boxes:

- neck restraints have been removed
- running rail overhead modified, shortened or missing
- scissor restraints observed with protruding bolt heads
- scissor restraints with modified sharp edged rubber or missing rubber buffers
- power supplies not as fitted with original Mark IV restraint box
- steel sheeting placement inconsistent; sometimes outside the box, allowing cattle to gain hoof purchase and climb
- structural frame configuration differences
- possible table rotation angles seem to differ.

Of the 48 breaches observed, only seven arose from the restraint box itself (all of these in relation to neck restraint), the balance (41 in total) were due to inappropriate practices employed by slaughtermen. I note that the industry provided standard operating procedures allow for three methods of head restraint as follows:



*The use of the lasso rope should be at the discretion of the slaughterman. Options for head restraint are:*

- *Place the lasso around the neck as the animal walks into the restraining device.*
- *Put the lasso around the neck once the animal has been placed on its side,*
- *Hold the head by hand.*

The DVD evidence provided suggests that head restraint is a significant issue with the use of Mark IV type restraint boxes. Many of the boxes were not fitted with the original Mark IV neck restraint or have had them removed. Where the neck restraint is not fitted there is greater risk of the animal being able to cause itself injury from severe head slapping on the table when being placed into lateral recumbency for slaughter.

#### **Recommendation 1**

**That these standard operating procedures be reviewed and amended to ensure consistent, humane slaughter of cattle through rapid and effective head restraint which allows for quick access to the throat of the animal.**

#### **Recommendation 2**

**All restraint boxes must use a neck restraint that minimises the risk of head slapping and associated self harm. That restraint may be mechanical or consist of a strap to be applied before the animal is moved into a laterally recumbent position.**

It is important that no sharp edges or harmful protrusions should be in contact with the animal during the entire restraint procedure (ESCAS checklist 6.5). It was observed that some Mark IV type restraint boxes had scissor restraints with protruding bolt heads and sharp edged rubber or missing rubber buffers. Rubber buffers must be constructed of hollow, compressible rubber section to be impact and pressure absorbent. Post mortem examination should show no recurrent bruising of carcasses. In dealing with preparation of the restraining device, the industry Standard Operating Procedures say:

*Remove any obstructions that can cause animals to hesitate when moving into the device.*

However they do not deal with harmful protrusions or sharp edges built into the restraining device.

#### **Recommendation 3**

**That restraining devices be routinely assessed, including during ESCAS audits, for absence of sharp edges and harmful protrusions (ESCAS checklist 6.5).**



The following table details the observations for each restraint box observed on the DVD footage.

Facility on Footage/ ID	Modified or Copy Box	Makers Mark visible	Bleeding possibly impeded by restraint pressure?	Breathing impeded by restraint pressure	Neck / Head restraint type	Is neck restraint Type Effective?	Is slaughter ESCAS consistent	Animal Welfare/ ESCAS Breaches	Visible box features of interest
1. Terapadu	Modified	Yes	No	No	Rope only. Original head restraint strap removed	Yes	No	ESCAS 1.3 Worker hits beast ESCAS 6.6 Not cut within ten seconds of restraint ESCAS 6.8 Head not held in extension until death confirmed ESCAS 6.12 Multiple strokes of knife ESCAS 6.14 No confirmation of death before commencing second procedure ESCAS 6.15 Hosing water without confirmation of death	-Neck restraint removed -Slow operation -Non original power supply
2. Kalawachi	Modified	Yes	N/A	N/A	Manual restraint only. Original neck restraint has been removed	No	No	ESCAS 6.7 Head is initially free to head slap causing self harm ESCAS 6.8 Head is not held in extension until death confirmed	-Neck restraint removed
3. Temu Petir	Modified	No	No	No	If original, the neck restraint has been removed.	No	No	ESCAS 1.3 Animal is kicked multiple times by operator ESCAS 6.7 Head not restrained to avoid self harm ESCAS 6.8 Head is not held in extension until death is confirmed ESCAS 6.11 Knife appears too short to cut both carotids ESCAS 6.12 Multiple hacking cuts ESCAS 6.14 Operators commence second procedure without confirmation of death ESCAS 6.15 Water sprayed on animal before confirmation of death	- cut off runners over head - crooked latches - post installation modifications and paint possibly covering makers mark
4. Kalawachi, KAJL0615_ 24012012021447	Modified	No	N/A	N/A	Hydraulic neck restraint	Not Assessable	Not Assessable	Poor footage cannot determine actions with any certainty	

5.	Kalawachi. KAJL0615_ 24012012021447	Modified	No	N/A	N/A	Hydraulic neck restraint	Yes	No	ESCAS 6.14 A second procedure was commenced before confirming death ESCAS 6.15 Water was sprayed onto animal before death was confirmed	
6.	Kalawachi, KAJL0615_ 24012012021447	Modified	No	N/V	N/V	Hydraulic neck restraint	Yes	No	ESCAS 6.6 Time from restraint to cut exceeded 10 seconds ESCAS 6.12 Pause in cut, not single continuous ESCAS 6.14 Water was sprayed on animal before death was confirmed ESCAS 6.15 No confirmation of death before second procedure commenced.	
7.	KAJL0615_ 24012012021447 Second Hall (Tum?)	Copy	No	N/V	N/V	Manual neck restraint, no hydraulic neck restraint	No	No	ESCAS 6.6 Greater than ten seconds from restraint to cut ESCAS 6.7 Head restraint does not prevent self harm from head slapping ESCAS 6.12 Multiple cuts applied to throat ESCAS 6.14 Water was sprayed on animal before death was confirmed ESCAS 6.15 Second procedure was commenced before confirmation of death	- no running rail overhead - bolt head exposure -different/ missing buffer rubber
8.	KAJL0615_ 24012012021447 Second Hall (Tum?)	Copy	No	N/V	N/V	Manual restraint, No hydraulic neck restraint	No	No	ESCAS 6.6 Greater than ten seconds between restraint and cut ESCAS 6.7 Head restraint does not prevent self harm from head slapping ESCAS 6.14 Water was sprayed on animal before confirmation of death ESCAS 6.15 second procedure was commenced before confirmation of death	As above
9.	KAJL0615_ 26012012044502	Modified	No	N/V	N/V	Hydraulic neck restraint	Yes	No	ESCAS 6.6 greater than 10 seconds from restraint to cut ESCAS 6.12 Cut not done in one single stroke ESCAS 6.14 Second procedure was performed before death was confirmed ESCAS 6.15 water was sprayed on the animal before death was confirmed	
10.	KAJL0615_	Modified	No	N/V	N/V	Hydraulic	Yes	No	ESCAS 6.12 More than one single stroke on	

26012012044502					neck restraint			throat cut ESCAS 6.14 A second procedure was performed before death was confirmed ESCAS 6.15 water was sprayed onto the animal before death was confirmed	
11. KAJL0615_ 26012012044502 Tum	Copy	No	N/V	N/V	Manual Restraint, No hydraulic restraint	No	No	ESCAS 6.7 head restraint does not prevent self harm ESCAS 6.14 A second procedure was performed before death was confirmed ESCAS 6.15 Water was sprayed on the animal before death was confirmed	- no running rail overhead - bolt head exposure in scissor restraint -different/missing buffer rubber
12. KAJL0616_ 26012012052110 Tum	Copy	No	N/V	N/V	Manual restraint, No hydraulic restraint	No	No	ESCAS 6.7 Head restraint does not prevent self harm ESCAS 6.14 A second procedure was performed before death was confirmed ESCAS 6.15 Water was sprayed on the animal before death was confirmed	As above
13. KAJL0616_ 26012012052110 Tum	Copy	No	N/V	N/V	Manual restraint, no hydraulic restraint	No	No	ESCAS 6.7 Head restraint does not prevent self harm ESCAS 6.14 a second procedure was performed before death was confirmed. ESCAS 6.15 water was sprayed on the animal before death was confirmed	As above
14. KAJL0616_ 26012012052110 Tum	Copy	No	No	N/A	Manual restraint, no hydraulic restraint.	No	No	ESCAS 6.7 Head restraint does not prevent self harm ESCAS 6.14 a second procedure was performed before death was confirmed ESCAS 6.15 Water was sprayed on the animal before death was confirmed.	As above

\* All final head restraint to position animal for cutting is done by hand in all cases except for the first one where a rope halter is used on a very quiet animal

N/A = Not Assessable; N/V = not Visible

Known risks during the slaughter process include false aneurysm formation (8, 11). The predisposing risk factors for false aneurysm formation are poorly understood but are known to include tissue trauma, which is exacerbated by use of blunt knives. It is also possible that excessive body restraint pressure may be a contributing factor as excessive intra-thoracic pressure will act to decrease cardiac output. The original Mark IV restraint box was fitted with pressure relief valves which ensure animals were not restrained too tightly around the ribs or shoulders, causing unnecessary physical discomfort and potentially injury. No relief valves were visible on the footage supplied. It has been suggested that restraint boxes without operational pressure relief valves may exert excessive pressure, particularly where there are no pressure gauges able to be viewed by the operator. All boxes must have working pressure relief valves for the scissor style restraint arms and neck restraint, preventing excessive/harmful restraint. Pressure exerted on the animal should be limited to 1200 psi by the operation of the relief valve. Evidence of excessive pressure may be sought by examining the slaughtered animal for broken ribs, broken shoulders or bruising.

#### **Recommendation 4**

**That all restraint boxes reliant on hydraulic pressure must be fitted with operational pressure relief valves and sight gauges in view of the operator. Further, that operators of these restraint boxes must demonstrate their competency to use the equipment with specific attention to ensuring cattle are not subject to excessive body restraint pressure.**

I am informed by the manufacturer that each original Mark IV restraint box came with an owner's manual in Indonesian containing operating and maintenance instructions. Failure to comply with the manufacturer's guidance can result in loss of functionality of the device.

In order to deliver consistent OIE compliant animal welfare outcomes, all moving parts and structural elements of restraint boxes should be maintained in accordance with the manufacturer's guidance.

Maintenance should be ongoing and programmed. Compliance with the required maintenance schedule should be regularly monitored. Assessment of compliance with the maintenance schedule could be undertaken during ESCAS audits or could form a separate program of work.

#### **Recommendation 5**

**That operators of restraint boxes demonstrate access to and familiarity with the operating and maintenance instructions relevant to the equipment.**

As noted previously, some areas where these restraint boxes are installed do not have reliable supplies of electricity. Further, it would appear from the DVD evidence that some boxes are operating in an under-powered fashion which may be due to a number of reasons including inadequate power supply, inadequate maintenance or installation of underpowered engines. The power supply must be sufficient to ensure hydraulic movement is smooth and timely. The parameters will need to be defined in association with the designer of the equipment and specified in the operator's manual. Power must be sufficient to operate the restraint box at optimal speed regardless of local infrastructure.

#### **Recommendation 6**

**That restraint boxes reliant upon electrical power should only be acceptable within ESCAS supply chains in facilities with reliable supplies of electricity and that all operators demonstrate ESCAS consistent alternative arrangements in the event of power failure or insufficient power.**

The construction and maintenance of restraint boxes should be included in ESCAS audits. If the above criteria were addressed during routine ESCAS audits all boxes would be able to deliver OIE consistent animal welfare outcomes when used by competent staff. Where restraint boxes are found to be non-compliant they should be immediately upgraded to ensure they can deliver OIE consistent animal welfare outcomes, verified through ESCAS auditing.

Further work in market may be required to improve the design quality of any copy boxes already planned for construction.

Close attention should be paid to the operation of all restraint boxes during ESCAS audits; it should not be enough to simply say that “this is a Mark IV restraint box”.

#### **Recommendation 7**

**All Mark IV type restraint boxes in ESCAS-approved supply chains should be audited and assessed and where necessary upgraded.**

### **Competent operators**

Poor slaughter techniques can influence any system. The key to avoiding poor slaughter outcomes is to only use people who perform each stage of the handling and slaughter process in a competent manner. This includes assessment of whether an animal is still capable of feeling pain and stress.

Operators are assisted by provision of standard operating procedures, if these are well written and available in language understood by the operator. As an example, the present industry provided SOP states at 6.3.6 “the head must be restrained for a maximum of 10 seconds before the animal is slaughtered” which could lead operators to think that head must be restrained for 10 seconds, rather than for no more than ten seconds. Furthermore each step of the SOP is not necessarily a step in the slaughter process; some SOP steps are just clarification of the previous step. It is recommended that each step in the SOP is a definitive step in the slaughter process.

Achieving competency at the level advised by the OIE (Article 7.5.1.2) requires effective training. Training can be formal or gained on the job through supervision by a competent person. The ESCAS system formalises the OIE’s advice in this area by requiring that all operators within the Australian livestock export chain are competent to perform the job for which they are responsible, or are directly overseen by someone who is and who takes responsibility for the outcome.

Ongoing auditing, training and observation as well as operational ambition to improve welfare outcomes is required to ensure techniques do not deteriorate once at a desirable level. Ongoing competency is difficult to maintain when there is a high turn-over of staff using the equipment.

ESCAS auditing should be used as an effective tool to help abattoir operators and their staff achieve good animal welfare outcomes when using compliant restraint boxes.

All operators of slaughter boxes, regardless of their source, should understand the principles of humane slaughter to achieve OIE consistent welfare outcomes. This may require support and possible expansion of existing training programs.

#### **Recommendation 8**

**All operators using restraint equipment be required to demonstrate their ability to use it in accordance with the manufacturer's specifications and OIE guidance.**

### **Observations from the DVD footage**

Visible cattle distress or stress were associated with both:

1. the suitability of the equipment (restraint box, in this case) used; and
2. the competence of the operators using the equipment and interacting with the animal

Examples of the former included slow or jerky operation of the box when moving animals into a laterally recumbent position for slaughter, exposed bolt heads potentially causing injury and absence of neck restraint; while examples of the latter included rushing and poking cattle, making cuts to the ears and legs to determine consciousness, trying to close the body restraint before the animal is fully enclosed in the box, and hosing animals once they are laterally recumbent yet still conscious.

There were some constraints in the DVD provided including:

- some footage was at disadvantageous angles for assessment; some was unclear due to image quality, camera movement, obstacles or distance
- absence of audio making it difficult to know if animals were vocalising or if machinery was excessively noisy
- the video angles and resolution made it difficult to assess boxes for evidence of a maker's stamp, in addition some restraint boxes may have been repainted since installation. For the same reason it was difficult to assess if restraints were applied too strongly thus slowing/occluding blood flow once exsanguination has commenced
- it was not possible to accurately determine the angle of the tilt table but it would appear that the final position of tables ranges through 90 degrees to 115 degrees from the vertical, this contrasts with the statements in the W.LIV.0374 and 3004 reviews that the original box stops at 90 degrees
- the quality of the images did not allow for full assessment of the shape and nature of the inner rubber buffers between the animal and the restraint box arms. The original Mark IV restraint box uses hollow, compressible, oval rubber blocks whereas copies tend to use solid, relatively incompressible square blocks
- being able to see if animals can breathe under lateral restraint arm and observing if the chest is rising indicative of respiration is hard to determine from footage and could indicate

that restraint is too tight, inhibiting respiration. Original Mark IV restraint boxes have pressure relief valves to prevent this from occurring.

It was possible to visually distinguish restraint boxes (originals/modified boxes/ copy boxes) based on design modification to the metal fabric and construction variations. It was also possible to see some protrusions or sharp projections on body restraint arms. Footage observed confirmed the post installation modification of original Mark IV boxes can introduce hazards leading to poor animal welfare outcomes. Modifications included the removal of the mechanical neck restraint, alterations to metal sheeting placement and running rail configuration.

## Risk management strategies

Slaughter of animals without stunning carries an increased risk of adverse animal welfare outcomes beyond those encountered with slaughter of stunned animals. Additional risk management strategies are required to deal with the hazard of slaughtering a conscious animal.

Placing animals into lateral recumbency through use of scissor frame squeeze and rollover crush cattle restraint boxes also requires risk management.

The following OIE consistent strategies of ESCAS are used to reduce the risk of adverse animal welfare outcomes throughout the process of unstunned slaughter in lateral recumbency.

- Keeping animals calm and relaxed throughout all stages of handling up to and including the slaughter process helps minimise adverse animal welfare outcomes. This is of particular importance in an abattoir when dealing with animals that have not been exposed to long periods of intensive human contact. It also improves occupational health and safety outcomes as animals are easier and safer to handle for restraint and slaughter.
- Having a dedicated Animal Welfare and management plan and SOPs for all stages of animal handling within the ESCAS system. OIE 7.5.2, ESCAS 4.1
- The use of lairage and slaughterhouse facilities that are designed and constructed to minimise adverse welfare risk to animals; features include non slip flooring, correct lighting, solid smooth construction, and adequate ventilation. OIE 7.5.3, ESCAS 4.5, 4.6, 5.3, 6.2
- Slaughterhouse personnel should be familiar with all animal welfare requirements to conduct their work competently. Competency can be gained through formal training and/or practical experience. OIE 7.5.1
- Awareness of the need to minimise distractions. OIE 7.5.1.4
- Consistent quiet/low stress animal handling at all points of stock interaction and movement, including animal arrival up to and including during the slaughter process. OIE 7.5.2, 7.5.1 ESCAS 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.7, 1.8, 1.9, 1.10, 1.11
- Cattle or buffalo are to be encouraged to enter the restraint box calmly. No restraints additional to the physical “box” are to be applied until the animal is in place. Patience should be maintained to ensure no restraint is placed in a premature, inappropriate or incorrect manner. MLA, 2012 “Standard Operating Procedures for the Welfare of Cattle in overseas markets”, Module 6; Slaughter without stunning.
- Avoidance of excessive pressure applied by restraining equipment that causes struggling or vocalisation in animals. OIE 7.5.2.4.a.ii



- The avoidance of jerking or sudden movement of restraining device. [OIE 7.5.2.4.a.v](#)
- Method of restraint employed is appropriate for the size and class of livestock being slaughtered. [ESCAS 6.3](#)
- Machinery and facilities should be managed to avoid any unnecessary or excessive noises that may cause animals to startle or undue stress. [OIE 7.5.3, 7.5.4](#)
- ESCAS auditing to ensure OIE compliance.

### Un-stunned slaughter

- When slaughtering animals in the recumbent (lateral) position, ensure the head and neck are adequately restrained.
- The head is restrained for as short a time as possible prior to sticking, and in no case longer than 10 seconds. [ESCAS 6.6](#)
- The head is restrained in a manner which facilitates sticking. [ESCAS 6.7](#)
- The neck of the animal must not be overextended nor unacceptable methods of restraint used (unacceptable methods of restraint include but are not limited to: holding the eye sockets, twisting the tail, and forcing the head and neck back). [OIE 7.5.2, ESCAS 6.3](#)
- The head of the animal is kept in extension to prevent the edges of the wounds from touching, until the animal is confirmed dead. [ESCAS 6.8](#)
- The method of restraint is working effectively. [ESCAS 6.9](#)

### Adequacy of the current checklist under ESCAS

The ESCAS checklist has been developed from the OIE standards to ensure animal welfare in Australia's live export markets overseas is to an internationally accepted standard.

The ESCAS principles are aimed at achieving good animal welfare outcomes during the slaughter process until the animal is confirmed dead. Principles include low stress animal handling techniques, task competency, outcome responsibility, outcome accountability, training and animal welfare risk management and mitigation.

The animal welfare deficiencies identified in the DVD footage provided may be summarised as follows, each entry is followed by an ESCAS checklist element that might apply to the concern:

- head slapping due to lack of neck restraint (6.8 - The head is restrained in a manner which facilitates sticking)
- slow or jerky operation of the box when moving animals into a laterally recumbent position for slaughter (6.7 - The head is restrained for as short a time as possible prior to sticking, and in no case for longer than 10 seconds)
- rushing and poking cattle (6.4 - Animals are presented for slaughter without being unduly stressed)
- making cuts to the ears and legs to determine consciousness (6.15 - Death, indicated by cessation of pulsatile bleeding and lack of corneal reflex and lack of rhythmic breathing, is assured before performing any other procedures)
- trying to close the body restraint before animal is fully enclosed in the box (1.3 - If animals are already moving in the correct direction, they are never hit or have pressure put on them)

- hosing animals once they are laterally recumbent yet still conscious (6.15 - Animals must not have water thrown on them prior to confirmed death)
- scissor restraints observed with protruding bolt heads (6.6 - The restraining box is free from obstructions and sharp edges)
- scissor restraints with modified sharp edged rubber or missing rubber buffers (6.6 - The restraining box is free from obstructions and sharp edges)
- excess pressure applied to restrained animals due to absence of pressure relief valves (6.9 - The method of restraint employed is working effectively)

In conclusion, the ESCAS checklist is adequate to identify the animal welfare deficiencies observed in the DVD footage. Nonetheless, 48 ESCAS breaches were recorded in the footage provided.

#### **Recommendation 9**

**That an investigation be conducted to determine why independent auditors are not recording the above defects when using the ESCAS checklist**

A more detailed comparison of the OIE requirements and the ESCAS checklist follows.

#### **Overarching Statements**

OIE 7.1.2.6 That the use of animals carries with it an ethical responsibility to ensure the welfare of such animals to the greatest extent practicable.

OIE 7.1.2.8 That equivalent outcomes based on performance criteria, rather than identical systems based on design criteria, be the basis for comparison of animal welfare standards and recommendations.

OIE 7.1.4.8 Where painful procedures cannot be avoided, the resulting pain should be managed to the extent that available methods allow.

OIE 7.1.4.9 The handling of animals should foster a positive relationship between humans and animals and should not cause injury, panic, lasting fear or avoidable stress.

OIE 7.1.4.10 Owners and handlers should have sufficient skill and knowledge to ensure that animals are treated in accordance with these principles.

OIE 7.5.1.2 Persons engaged in the unloading, moving, lairage, care, restraint, stunning, slaughter and bleeding of animals play an important role in the welfare of those animals. For this reason, there should be a sufficient number of personnel, who should be patient, considerate, competent and familiar with the recommendations outlined in the present chapter and their application within the national context.

Competence may be gained through formal training and/ or practical experience. This competence should be demonstrated through current certification from a competent authority or from an independent body accredited by the competent authority.

The management of the slaughterhouse and the veterinary services should ensure that slaughterhouse staff are competent and carry out their tasks in accordance with the principles of animal welfare.

<u>OIE Welfare guidelines</u>	<u>ESCAS Animal welfare performance measures and targets</u>
<u>OIE 7.5</u> covers all facilities having a dedicated animal welfare and management plan.	<u>ESCAS 4.1</u> covers all facilities having a dedicated animal welfare and management plan
<u>OIE 7.5</u> covers lairage and slaughter house design, ensuring construction minimises any adverse animal welfare outcomes.	<u>ESCAS 4</u> and <u>5</u> cover lairage and slaughterhouse design, ensuring construction minimises any adverse animal welfare outcomes.
<u>OIE 7.1.4.10</u> covers the need for competent handling of animals <u>OIE 7.5.2</u> covers appropriate animal handling techniques to minimise any adverse animal welfare outcomes.	<u>ESCAS 1</u> covers appropriate animal handling techniques to minimise any adverse animal welfare outcomes.
<u>OIE 7.5.6</u> covers the need for competent use of appropriate head restraint for all forms of slaughter.	<u>ESCAS 6</u> refers directly to appropriate head restraint.
	<u>ESCAS 6.6</u> the head is restrained for as short a time as possible prior to sticking, and in no case for longer than 10 seconds
	<u>ESCAS 6.7</u> the head is restrained in a manner which facilitates sticking.
	<u>ESCAS 6.8</u> the head of the animal is kept in extension to prevent the edges of the wounds touching until the animal is dead.
<u>OIE 7.5.1.1</u> covers the need to avoid causing undue stress to animals during restraint and slaughter	<u>ESCAS 6.9</u> The method of restraint is working effectively.
<u>OIE 7.5.9</u> A very sharp blade or knife of sufficient length so that the point of the knife remains outside the incision during the cut. The point of the knife should not be used to make the incision.	<u>ESCAS 6.10</u> Knives are sharpened before beginning the slaughter operation and between animals
	<u>ESCAS 6.11</u> Knife used for slaughter is long and sharp enough to sever both carotid arteries.
	<u>ESCAS 6.12</u> The throat is cut using a single (blade does not leave the wound until act is complete), deep uninterrupted fast stroke of the knife.
<u>OIE 7.5.9</u> covers the risk from poor cutting or occlusion of cut arteries	<u>ESCAS 6.13</u> The cut produces massive pulsatile bleeding from both carotids.
<u>OIE 7.5.9</u> No further procedure should be carried out before the bleeding out is completed (i.e. at least 30 seconds for mammals)	<u>ESCAS 6.14</u> death, (indicated by cessation of pulsatile bleeding and lack of corneal reflex and lack of rhythmic breathing) is assured before performing any other procedures
	<u>ESCAS 5.21 &amp; 6.15</u> Animals must not have water thrown on them or be otherwise disturbed prior to confirmed death.

## Conclusion

When correctly built, operated and maintained the original Mark IV restraint box gives OIE consistent animal welfare outcomes for religious slaughter without pre-slaughter stunning (20). While principally used for un-stunned slaughter the original Mark IV restraint box is stated as having the capacity to “be easily and readily adapted to incorporate the use of stunning” (Stark 2010).

The limiting factor of the original Mark IV restraint box, as with all infrastructure and equipment, is to ensure it is maintained and operated in a humane and optimal manner.

Copy boxes are not exact replicas of the original. In addition some original Mark IV restraint boxes have had post installation modifications. The differences can be significant in terms of animal

welfare outcomes. One common modification is removal of the neck restraint. However, restraint of the head/neck is necessary to reliably achieve OIE consistent animal welfare outcomes.

Humane slaughter of cattle is best achieved through effective prior stunning. Unstunned slaughter and restraint boxes to facilitate unstunned slaughter introduce animal welfare risks which can be managed but which require good equipment and competent personnel with a desire to ensure animal welfare. The DVD evidence provided shows that these two elements of suitable equipment and competent personnel are not always present.

#### **Recommendation 10**

**That pre-slaughter stunning be used wherever possible and additional efforts be put into encouraging global uptake of pre-slaughter stunning.**

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Australian Chief Veterinary Officer  
January 2013

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## Attachment 1






Hoof trimming cattle in a laterally recumbent position


David Bolton, from 'Bolton Hoof trimming' in Victoria states that "most Hoof trimming processes last approximately 6 minutes, animals are often treated multiple times in their life. No obvious yard or crush evasion has been noted by myself [David] or my operators". Cattle are securely held, minor struggling / movement is seen with the initial tip as the feet move off the ground, the cattle then routinely settle until the procedure is finished. No sedation is used for this procedure when using a tipping crush. David has continued to further develop his crush to include shoulder padding to ensure more comfort to the cattle when recumbent. David states that the key to good outcome cattle tipping and hoof trimming is to use low stress cattle handling techniques at all times.



## Attachment 2

### Restraint types

Restraint Title		Angle at time of cutting	Image
Weinberg Pen		<p>Rotates animal 180 degrees (animal held in dorsal recumbency)</p> <p>High stress animal restraint response.</p>	
Facoima		<p>Rotates animal 45 degrees</p> <p>High stress animal restraint response</p>	
Mark I Box	<p>Lateral recumbency</p> <p>High animal stress response and poor physical animal welfare</p> <p>History:</p> <p>Not ESCAS/OIE compliant due to the act of tripping an animal.</p> <p>Poor animal welfare outcome due to inherent design flaws requiring rough handling to restrain and slaughter cattle.</p>		

<p>Mark IV restraint box</p>	<p>Lateral recumbency Conditionally acceptable animal welfare if used properly</p> <p>Current improved version which has evolved from the Mark I box improvements:</p> <p>More gentle, mechanical restraint</p> <p>Mechanically tips the animal into lateral recumbency whilst providing body support.</p> <p>Animal can be slaughtered at waist height, more accessible for effective manual head restraint for sticking.</p>	
<p>ASPCA Box</p>	<p>Upright Position</p> <p>Used primarily for kosher slaughter in the USA</p> <p>Lowest reported animal stress response to restraint when compared to lateral or inverted restraint</p>	