Australian Federation of Islamic Councils

AUDIT REPORTS

Comprehensive Executive Summary of Halal Poultry (Chicken and Turkey)

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Foreword

It gives me great pleasure to present this comprehensive executive summary of the Halal Poultry Audit Reports, a testament to our unwavering commitment to upholding the highest standards of Halal certification in Australia. This document is not just a reflection of rigorous audit practices but embodies our dedication to transparency, ethical responsibility, and community trust.

The Halal certification process, is essential to, ensuring that the food we consume is not only permissible under Islamic law but also processed with the utmost respect for animal welfare and hygiene. This report, underscores the stringent measures and quality controls AFIC has established, reinforcing our position as pioneers in the Halal certification industry in Australia.

We remain committed to enhancing our certification processes and engaging with our community to address their needs and concerns..

I extend my deepest gratitude to everyone involved in the preparation of this report and to our community for their trust and support. Together, we continue to strengthen the fabric of Halal certification in Australia, ensuring it remains robust, transparent, and aligned with our values.

Dr. Rateb Jneid
President
Australian Federation of Islamic Councils (AFIC)

Introduction

The Australian Federation of Islamic Councils (AFIC) are the pioneers of the Halal certification industry in Australia, including the certification of chicken and turkey for the Australian market. We have been providing this service for decades and currently, a bulk of the domestic Halal chicken and turkey market is certified by AFIC.

AFIC has strict and thorough audit requirements that cover various aspects of production. These requirements are managed by on-site supervisors, site quality control officers, and internal auditors who follow a compliance program.

AFIC Halal certification oversees the various stages of the production process. This includes feed, supervision of slaughtermen, ensuring no cross contamination and numerous other points and many other matters. Our standards are further informed by decades of practice.

This audit report summary focuses on one specific aspect of the Halal certification process: whether the Chickens and Turkeys are alive at the time of slaughter. This is a crucial requirement for being considered Halal.

While chickens can be 'stunned' using electrical or CAS (commonly referred to as gas) methods, this report, commissioned by AFIC with the involvement of external independent auditors, thoroughly demonstrates that the requirement for the animal to be alive at the time of slaughter is met.

The purpose of providing this report is to uphold transparency and share information with the community. It is intended to offer an additional level of assurance regarding AFIC's Halal certification process for poultry.

Key Results

"I can show our results to any cardiologist, and they will see that the chickens were still alive after the controlled atmosphere stunning process"

- independent accredited veterinarian -

Our results showed that all birds tested (over 100) were Halal, they had

- A heartbeat after stunning, as confirmed by an ECG taken by the Vet on a sample from all sites;
- Slaughter is usually at 1.5 minutes after CAS stunning, 3 minutes was used to ensure compliance.
- Could drain out fully after slaughter
- All birds that were dead before slaughter were identified, removed and not used for consumption at all.

A review shows that AFIC has managed and continues to manage Halal certification remarkably well. The service is resilient and robust, as it was set up thoroughly and well structured.

What is Controlled Atmosphere Stunning (CAS)

CAS is a electrical water bath stunning method used in the pre-slaughter handling of animals, particularly poultry, to render them unconscious and insensible to pain before they are processed for meat. This technique is employed as an alternative to traditional stunning methods, such as electrical.

In CAS, the animals are placed in an enclosed chamber or container where the atmosphere is carefully controlled. The primary gases used are typically carbon dioxide (CO2) or a mixture of gases. The idea is to gradually replace the air in the chamber with the controlled gas, creating an environment that induces unconsciousness in the animals.

CAS is considered by some to be a more humane stunning method compared to traditional stunning methods because it allows for a controlled and gradual process, minimizing stress for the animals. Additionally, it aims to provide a more consistent and effective stunning outcome.

What is Electric Stunning

Electric stunning is a stunning method used in the poultry industry to render birds' unconscious and insensible to pain before they are slaughtered for meat. The process involves passing an electric current through the bird's brain, inducing a temporary state of unconsciousness. This is considered a humane method when performed properly, as it aims to minimize stress and pain for the birds during the slaughter process.

It's important to note that the effectiveness of electric stunning depends on factors such as the voltage, frequency, and duration of the electric current.

Australian Federation of Islamic Councils

Comprehensive Executive Summary of Halal Poultry (Chicken)

22nd August 2023

Independent Vet Report BVSc

Baiada, Tamworth NSW

Executive Summary: The aim of this study is to medically assess electrical stunning to determine if the birds are unconscious but not deceased and have a detectable heart beat at time of bleed out (slaughter). The assessment is conducted in accordance with the Australian Federation of Islamic Councils standards for Halal slaughter. The study found the site was compliant meeting all required criteria.

Background: Stunning animals before slaughter is a widely practiced method globally, driven by ethical considerations to minimise animal suffering during the slaughter process. This study focuses on evaluating electrical stunning and its compliance with Halal accreditation standards.

Electrical Water Bath Stunning Process: During water bath stunning, birds are shackled and inverted prior to entry into an electrified water bath, current is passed from the head, through the body and legs to earth via stainless steel shackles. The current (amps), Voltage (Volts), and frequency (Hertz) can all be altered to achieve effective stunning of birds, ideally for Halal certification, birds must be stunned and unconscious, but not dead prior to bleed out.

Methodology: To assess the effectiveness of the water bath stunning, the following methods were employed.

1. Electrocardiography (ECG): Used to monitor the heart's electrical activity.
2. Conscious level of birds assessed using the below vital signs.

This dual approach provided a comprehensive evaluation of the birds' state. Chickens on average were slaughtered 3 seconds post exiting the water bath. ECG results were recorded at 30-60 seconds after exiting the water bath to allow sufficient overlap to ensure these birds would have all had heart beats at time of bleed out

	Light	Moderate	Deep
Wing/leg movement	+	-	-
Breathing	+	+	-
Palpebral reflex	+	+	-
Heart rate	>160	120-160	<120

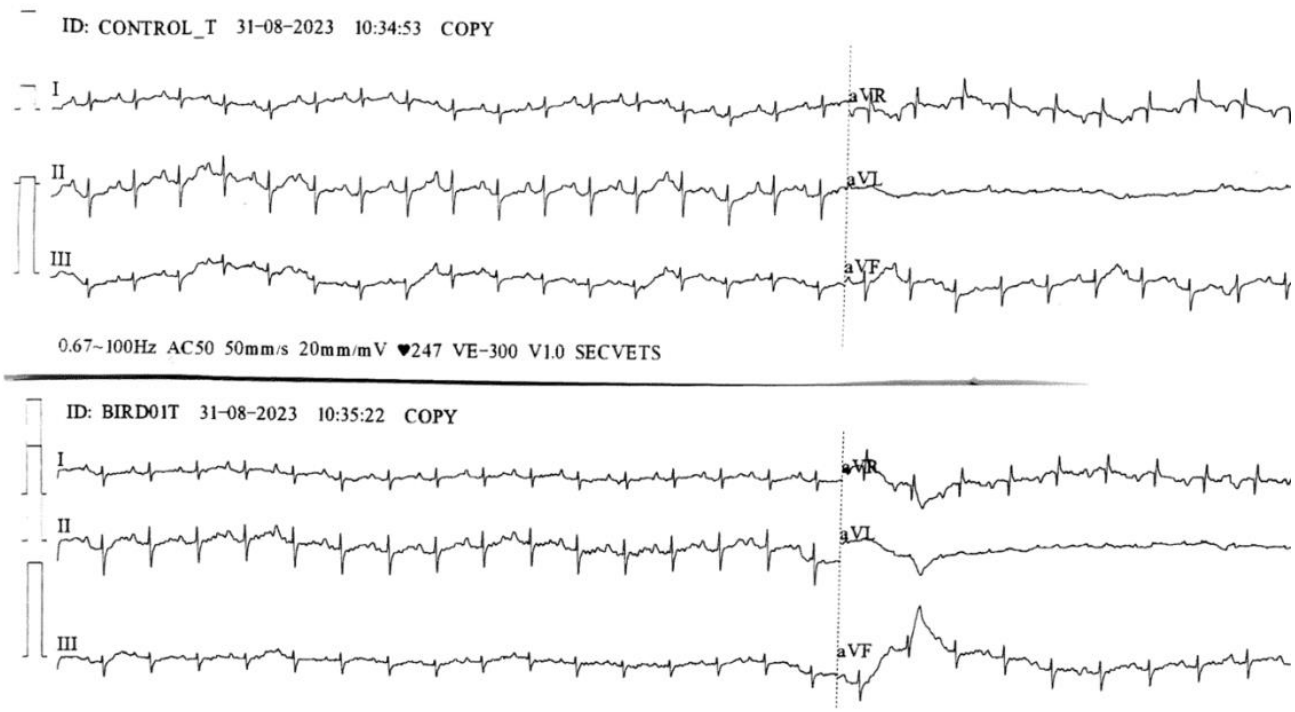
Water bath stunning machine settings

Chickens were shackled prior to stunning, with a duration of shackling no longer than 60seconds. The voltage and current automatically fluctuates to provide an accurate stun, depending on the electrical resistance of the birds present in the bath at any given time. We used 5 ECG leads and connected them to the left wings, right wings, left leg and right leg and sternum of the birds to detect any possible heartbeat. A control bird (not stunned) was sampled at each site prior to entry to stunning machine to ensure equipment was accurate and functional.

Frequency AC	400
Volts	48V +/- 3V
Current	0.8 +/- 0.2

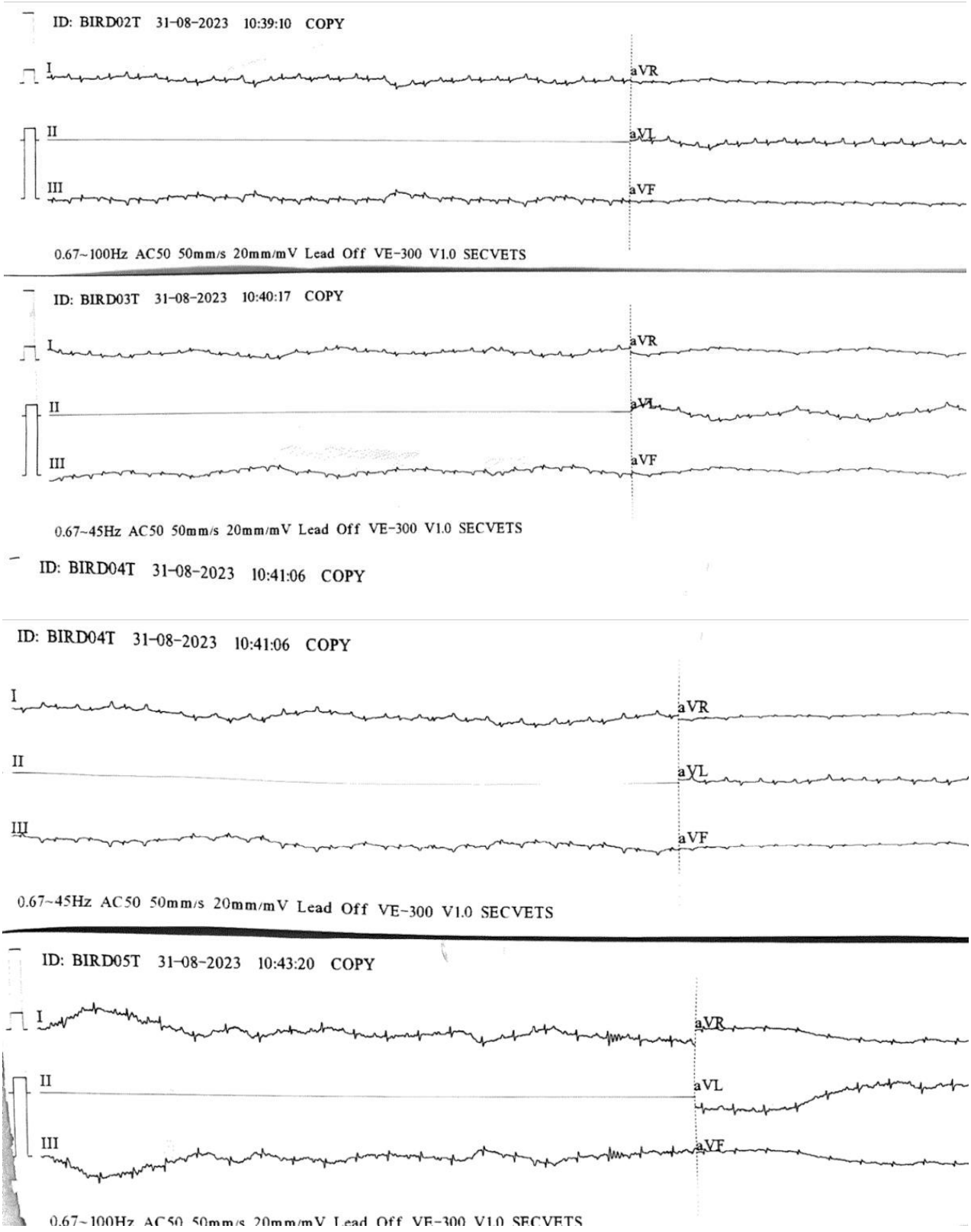
Results

ECG Readings condensed. Control and Birds 1-10.



Results

ECG Readings condensed. Control and Birds 1-10.



Results

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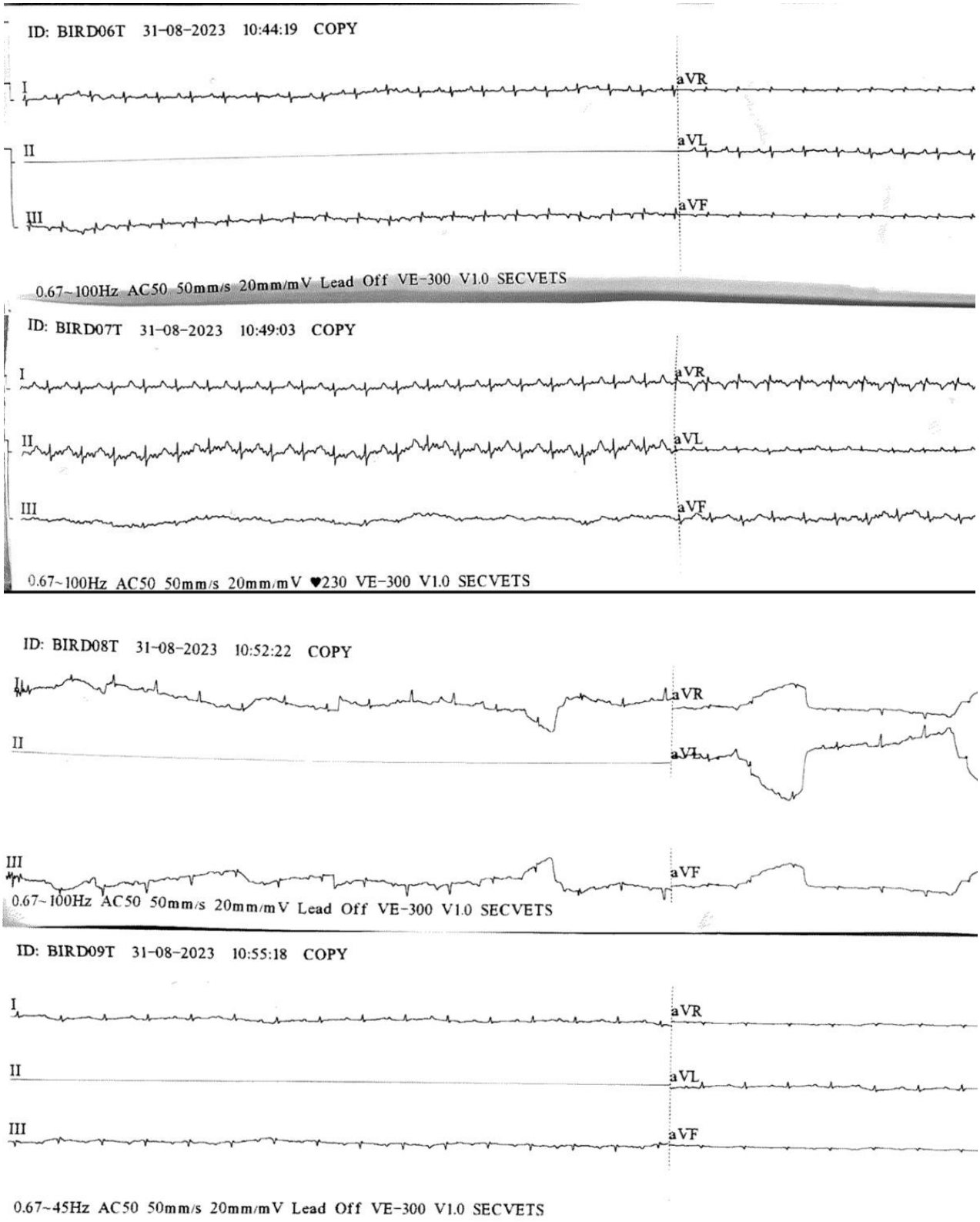


Results

ECG Readings condensed. Control and Birds 1-10.

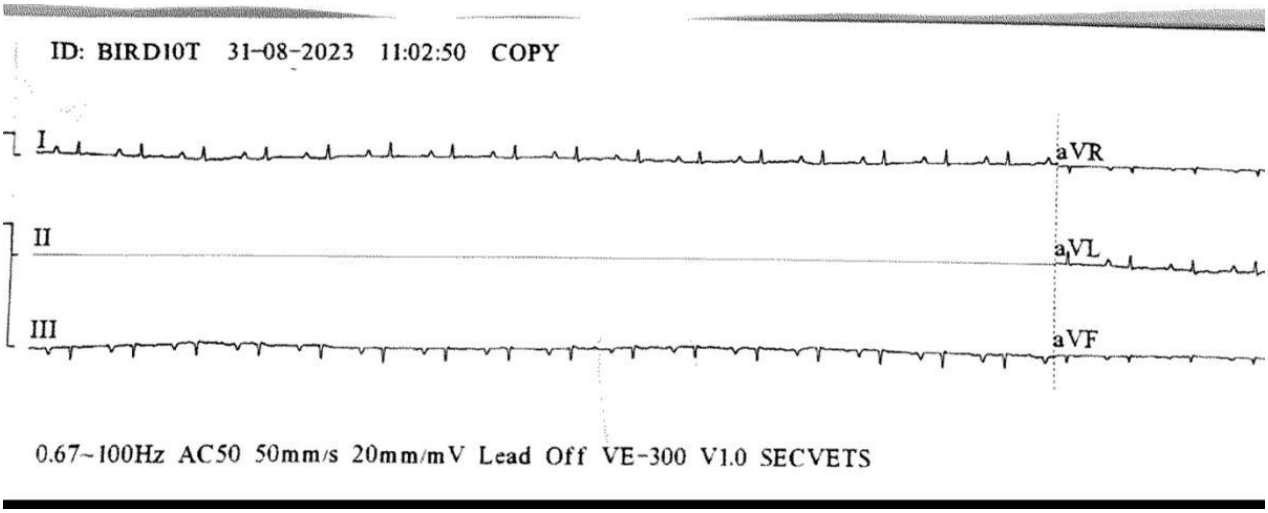


Table showing summary of results.

BIRD	Unconscious L M D	Normal ECG @ 1min	Pass/Fail
1	L	Y	P
2	M	Y	P
3	D	Y	P
4	L	Y	P
5	M	Y	P
6	M	Y	P
7	L	Y	P
8	M	Y	P
9	M	Y	P
10	M	Y	P
11	L	Y	P
12	M	Y	P
13	L	Y	P
14	M	Y	P
15	L	Y	P
16	M	Y	P
17	M	Y	P
18	D	Y	P
19	L	Y	P
20	M	Y	P

Table showing summary of results.

In total 20 birds were examined randomly. The ECG graphs revealed variations in heart activity and rhythm. Level of unconsciousness was categorised as Light (L) Moderate (M), or Deep (D). See table 2.

The wave of depolarisation and re-polarisation shown on the ECG graphs above can be mapped on the body surface by sensing electrodes placed on the extremities and the wings and legs of the stunt birds. The resultant waveform traced on graph paper is called the electrocardiogram (ECG). When an ectopic impulse occurs singly, it generates a beat; when the beat repeats itself, it becomes a rhythm. No rhythm is identical on any of the above birds but it is obvious that there is a detectable heartbeat present in all stunned birds post water bath stunning at this site.

Conclusion: Based on the audit findings, the following conclusions are drawn:

- All 20 randomly sampled birds had positive ECG patterns representative of heart rhythm confirming all birds would be alive at time of bleed out.
- This audit confirms the site is compliant with AFIC's standards for Halal slaughter.

Audit Closure: this audit report summarises the findings concerning the evaluation of Electrical stunning in chicken at the Tamworth site.

Australian Federation of Islamic Councils

Comprehensive Executive Summary of Halal Poultry (Turkey)

22nd September 2023

Independent Vet Report BVSc

Baiada, Beresfield NSW

Executive Summary

The aim of this study is to medically assess electrical stunning to determine if the birds are unconscious but not deceased and have a detectable heart beat at time of bleed out (slaughter). The assessment is conducted in accordance with the Australian Federation of Islamic Councils standards for Halal slaughter. The audit found the site was compliant with AFIC's standards requiring animals to be alive at the time of slaughter.

Background

Stunning animals before slaughter is a widely practiced procedure globally, driven by ethical considerations to minimise animal suffering during the slaughter process. This study focuses on evaluating electrical stunning of turkeys and its compliance with Halal accreditation standards.

Electrical water bath Stunning Process

During water bath stunning, birds are shackled and inverted prior to entry into an electrified water bath, current is passed from the head, through the body and legs to earth via stainless steel shackles. The current (amps), Voltage (Volts), and frequency (Hertz) can all be altered to achieve effective stunning of birds. For Halal certification, birds must be stunned and unconscious, but not dead prior to bleed out.

Methodology

To assess the effectiveness of CAS stunning, the following methods were employed.

1. Electrocardiography (ECG): Used to monitor the heart's electrical activity.
2. Conscious level of birds assessed using a combination of the below vital signs.

	Light	Moderate	Deep
Wing/leg movement	+	-	-
Breathing	+	+	-
Palpebral reflex	+	+	-
Heart rate	>160	120-160	<120

This dual approach provided a comprehensive evaluation of the birds' state. Turkeys on average were slaughtered 3 seconds post exiting the water bath. A Halal slaughter man was present to ensure all birds were bled out. ECG results were recorded at 30-60 seconds after exiting the water bath to allow sufficient overlap to ensure these birds would have all had heart beats at time of bleed out.

Water bath stunning machine settings

Frequency AC	300-350
Volts	200-300
Current	1 -2

Turkeys were shackled prior to stunning, with a duration of shackling no longer than 60 seconds. The voltage and current automatically fluctuates to provide an accurate stun, depending on the electrical resistance of the birds present in the bath at any given time.

We used 5 ECG leads and connected them to the left wings, right wings, left leg and right leg and sternum of the birds to detect any possible heart beat.

Results

ECG Readings of 3 randomly sampled turkeys

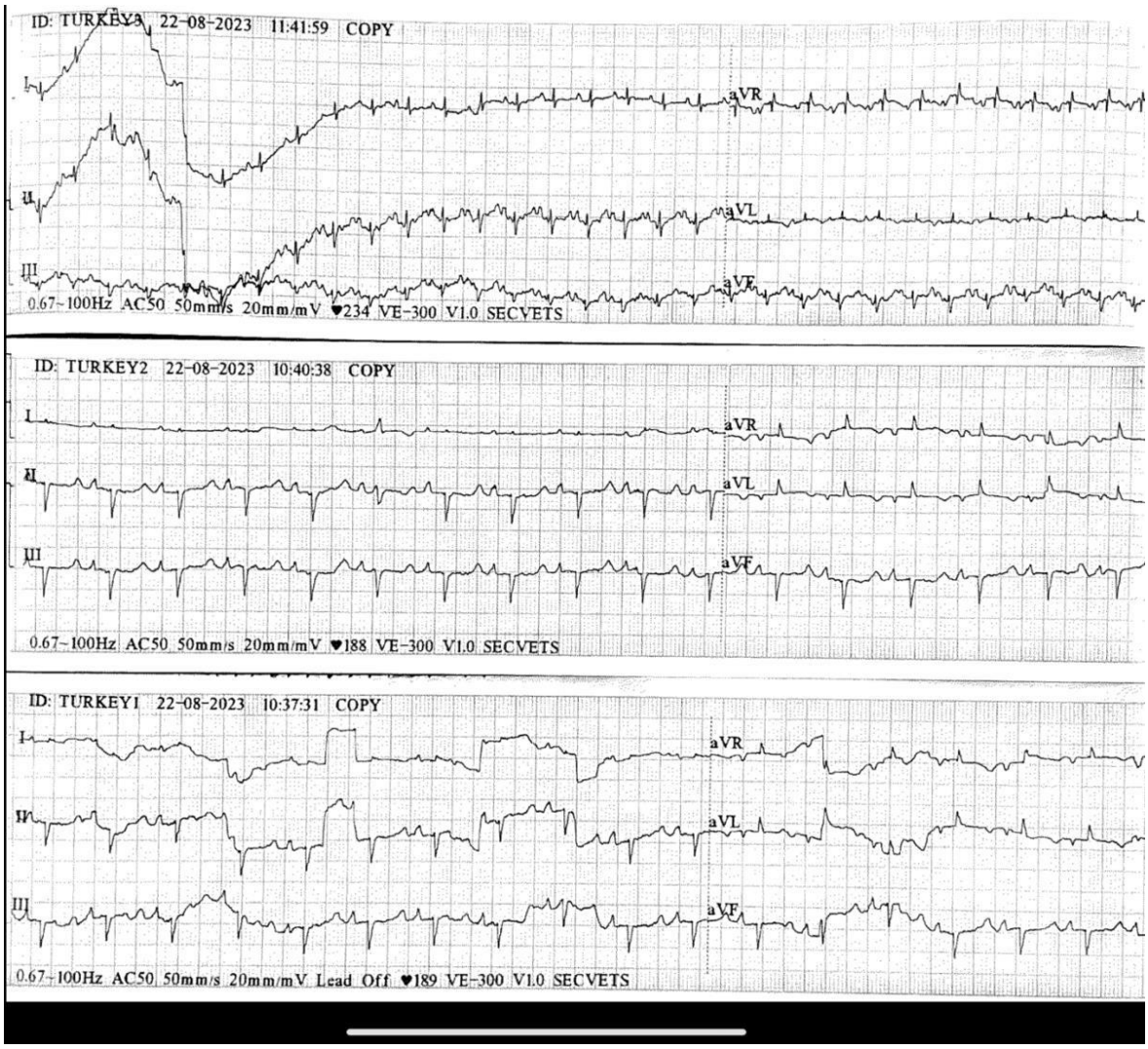


Table showing Summary of results

BIRD	Unconscious L M D	Normal ECG @ 1min	Pass/Fail
1	L	Y	P
2	L	Y	P
3	L	Y	P
4	L	Y	P
5	M	Y	P
6	L	Y	P
7	M	Y	P
8	L	Y	P

Interpretation of the results:

In total 8 birds were examined randomly. The ECG graphs revealed variations in heart activity and rhythm. Level of unconsciousness was categorised as Light (L) Moderate (M), or Deep (D).

The wave of depolarisation and re-polarisation shown on the ECG graphs above can be mapped on the body surface by sensing electrodes placed on the extremities and the wings and legs of the stunt birds. The resultant waveform traced on graph paper is called the electrocardiogram (ECG). When an ectopic impulse occurs singly, it generates a beat; when the beat repeats itself, it becomes a rhythm. No rhythm is identical on any of the above birds but it is obvious that there is a detectable heartbeat present in all stunned birds post stunning at this site. Birds 3 and 8 were wing flapping and resulted in a moving baseline on the ECG. Clear heart beats are still evident.

Conclusion

Based on the audit findings, the following conclusions are drawn:

- All 8 randomly sampled birds had positive ECG patterns representative of heart rhythm confirming all birds would be alive at time of bleed out.
- This audit confirms the site is compliant with AFIC's standards for Halal slaughter.

Audit Closure

This audit report summarises the findings concerning the evaluation of Electrical stunning in turkeys at the Beresfield site in relation to Halal accreditation.

Australian Federation of Islamic Councils

Comprehensive Executive Summary of Halal Poultry (Chicken)

13th September 2023

Independent Vet Report BVSc

Baiada, Adelaide SA

Executive Summary

The aim of this study is to medically assess the effectiveness of Controlled atmosphere stunning (CAS) and electrical stunning to determine if the birds are unconscious but not deceased and have a detectable heartbeat at time of bleed out (slaughter). The assessment is conducted in accordance with the Australian Federation of Islamic Councils standards for Halal slaughter. The site was found to be compliant, with all chickens confirmed alive at time of bleed out.

Background

Stunning animals before slaughter is a widely practiced procedure globally, driven by ethical considerations to minimise animal suffering during the slaughter process. This study focuses on evaluating CAS and its compliance with Halal accreditation standards.

Gas Stunning vs. Electrical Stunning

Gas stunning methods, particularly Controlled Atmosphere Stunning (CAS), have been considered more humane compared to traditional electrical Stunning, as CAS does not require prior shackling of live birds and is believed to improve product quality.

Gas Stunning Process

CAS employs various gas mixtures, commonly utilising carbon dioxide (CO_2) administered in multiple phases. Modern machines utilise up to 5 stages of CO_2 exposure, ensuring gradual and humane unconsciousness. It is important to prevent discomfort or distress caused by high CO_2 concentrations. Modern machines can start with accurate concentration of around 20%, while older 2 stage machines start at higher levels. Exposure in the later stages to higher levels of CO_2 ensures the unconsciousness lasts long enough until brain death occurs in the bird through bleed out. Ideally an unconscious bird to meet welfare standards, should not respond to stimuli, should not be wing flapping or head shaking, but should still have a detectable heart beat.

Methodology

To assess the effectiveness of CAS stunning, the following methods were employed.

1. Electrocardiography (ECG): Used to monitor the heart's electrical activity
2. Conscious level of birds based on assessment of the following 4 vital signs

This dual approach provided a comprehensive evaluation of the birds' state. Chickens on average were slaughtered 20sec post exiting the Stunning chamber. ECG results were recorded at 1minute after exiting the chamber to allow sufficient overlap to ensure these birds would have all had heart beats at time of bleed out. At each site a control bird (Not stunned) was taken from its crate prior to entry into the CAS machine to ensure all testing equipment was functioning and accurate.

Gas stunning machine settings.

	Large Bird	Small bird
INLET %	0.0	0.0
Conveyor%	27.6	22
Bottom %	69.7	63

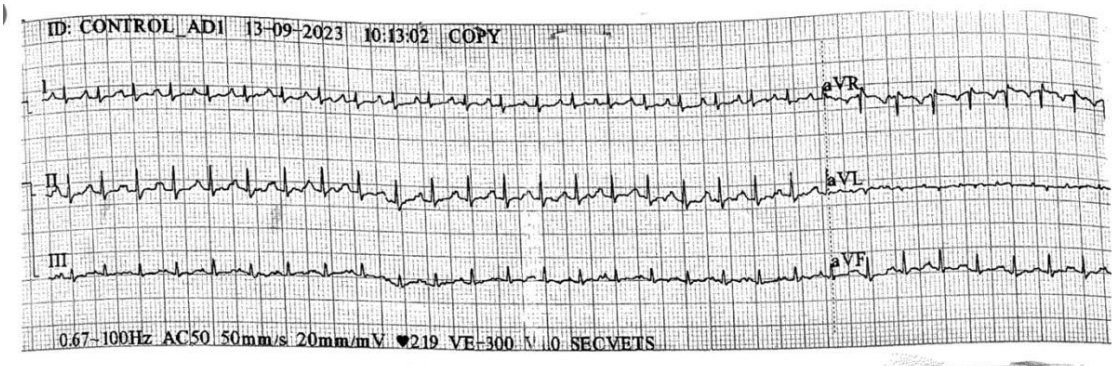
CAS machine is a 3 stage machine. Duration in the chamber is no longer than 3.5minutes. Timed at 208sec.

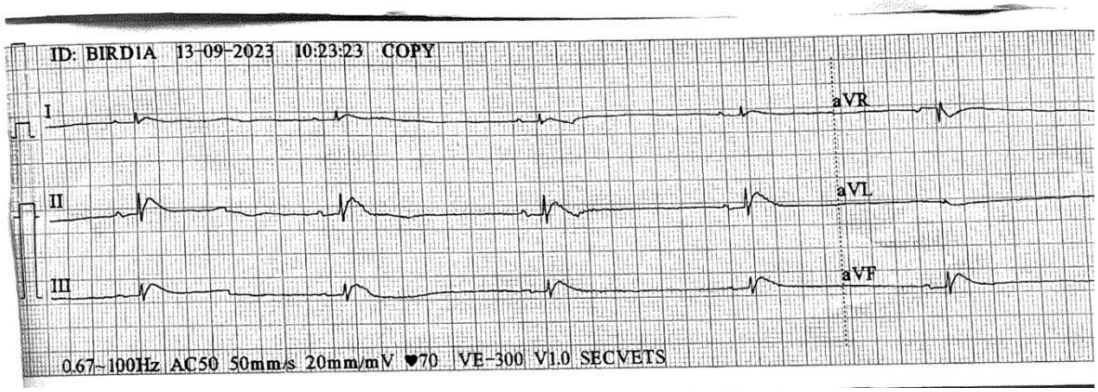
We used 5 ECG leads and connected them to the left wings, right wings, left leg and right leg and sternum of the birds to detect any possible heart beat, see Image 1.

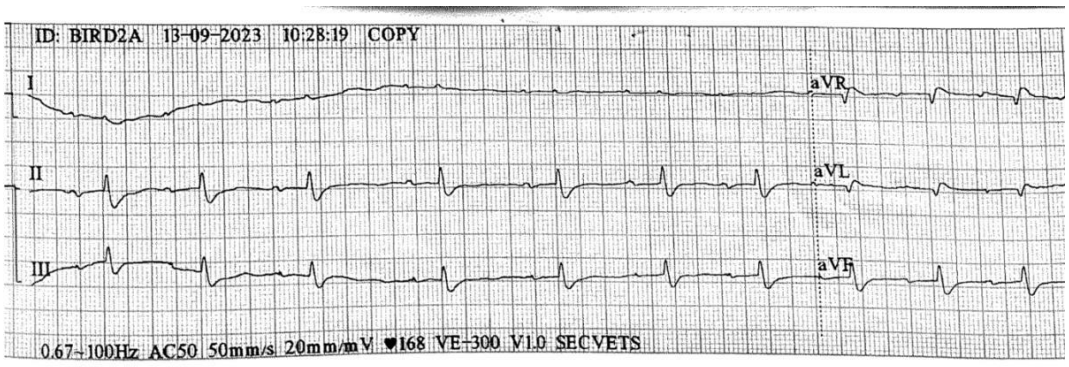
Image 1. Example of Stunned Chicken showing connected ECG leads and positive ECG trace being printed. The purple discolouration of the skin is typical of blood with low Oxygen concentration from CO2 exposure

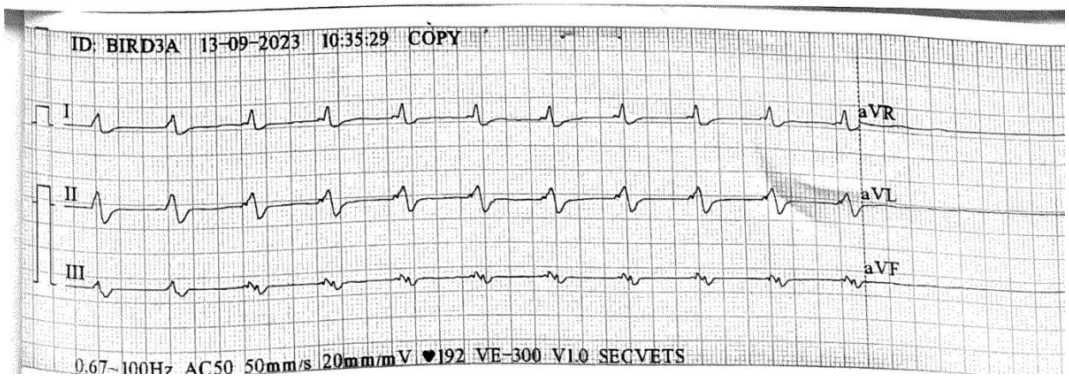
Results

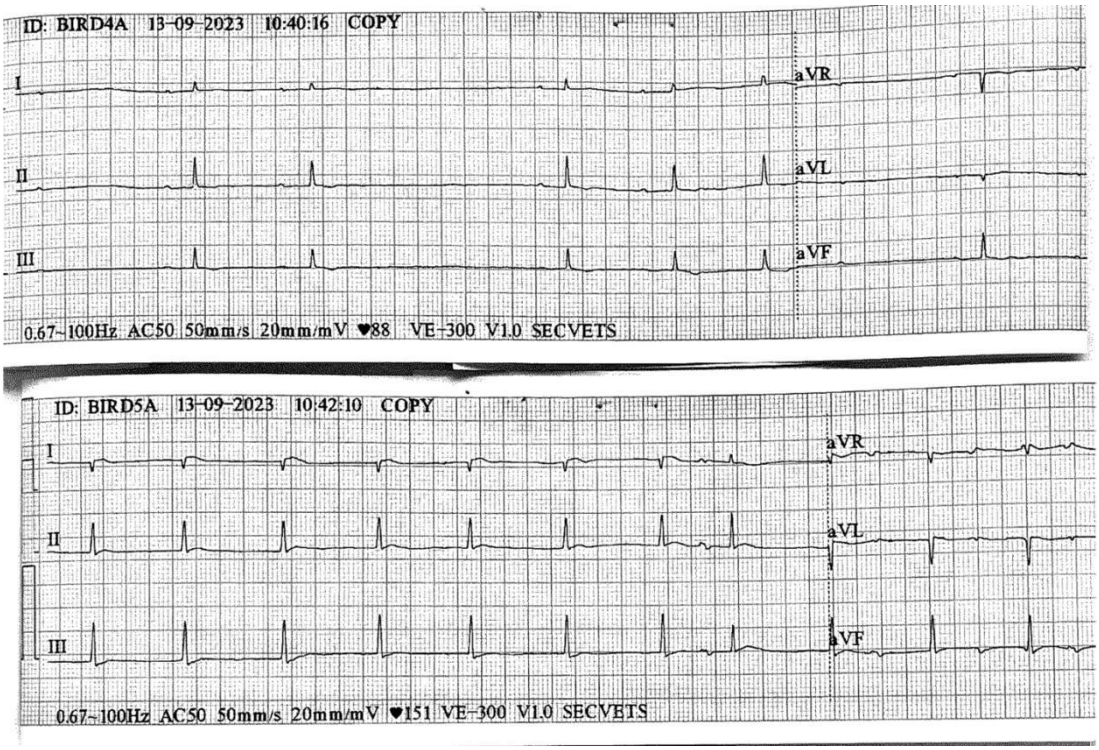
Control then First 11 birds ECG readings. All tested birds showed similar ECG readings.







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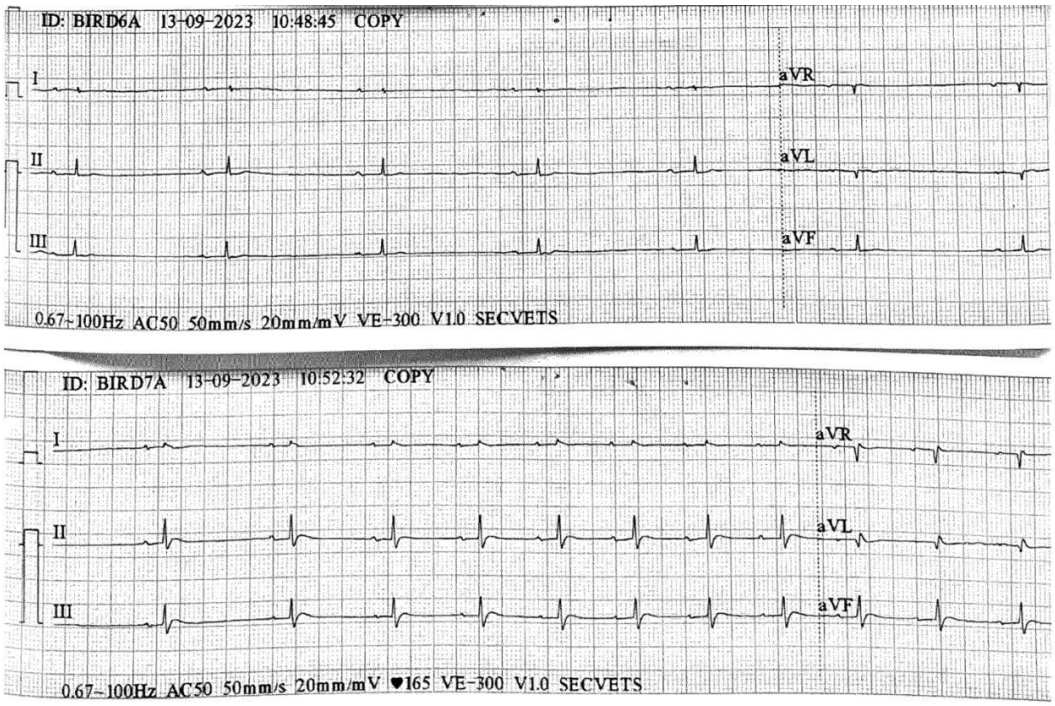
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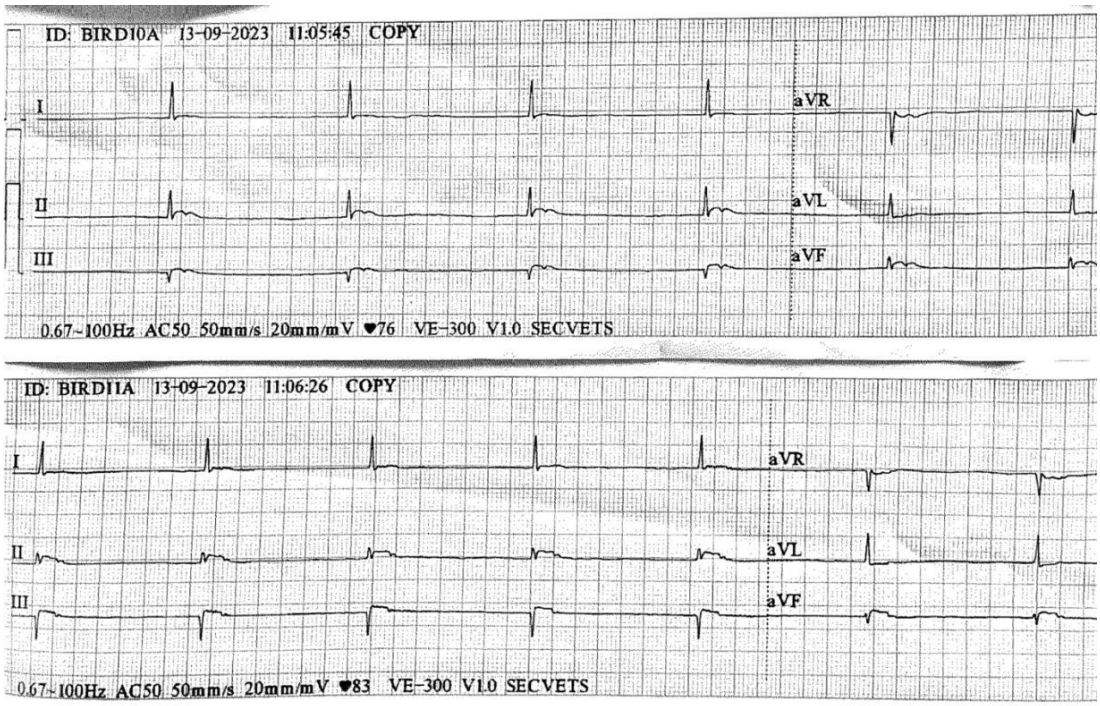


Table showing Summary of results

BIRD	Unconscious L M D	Normal ECG @ 1min	Pass/Fail
1	D	Y	P
2	L	Y	P
3	L	Y	P
4	D	Y	P
5	M	Y	P
6	M	Y	P
7	L	Y	P
8	M	Y	P
9	L	Y	P
10	D	Y	P
11	D	Y	P
12	M	Y	P
13	D	Y	P
14	L	Y	P
15	M	Y	P
16	L	Y	P
17	D	Y	P
18	M	Y	P
19	D	Y	P
20	L	Y	P

Interpretation of the results

In total 20 birds were examined randomly. The ECG graphs revealed variations in heart activity and rhythm. Level of unconsciousness was categorised as Light (L) Moderate (M), or Deep (D).

All Birds that had been stunned showed typical Bradycardia (slowing of heart which is typical of CO2 exposure and indicates a good level of unconsciousness)

The wave of depolarisation and re-polarisation shown on the ECG graphs above can be mapped on the body surface by sensing electrodes placed on the extremities and the wings and legs of the stunt birds. The resultant waveform traced on graph paper is called the electrocardiogram (ECG). When an ectopic impulse occurs singly, it generates a beat; when the beat repeats itself, it becomes a rhythm. No rhythm is identical on any of the above birds but it is obvious that there is a detectable heartbeat present in all stunned birds post gas stunning at this site.

Conclusion

Based on the audit findings, the following conclusions are drawn:

- All 20 randomly sampled birds had positive ECG patterns representative of heart rhythm confirming all birds would be alive at time of bleed out.
- CO2 levels were accurately adjusted to the size of the birds to allow accurate CO2 and O2 exposure.
- All birds were sufficiently stunned/unconscious to meet the sites welfare standards.
- This audit confirms the site is compliant with AFIC's standards requiring the animal to be alive at the time of slaughter.

Audit Closure

This audit report summarises the findings concerning the evaluation of CAS stunning in chickens at the Adelaide site in relation to Halal accreditation.

Australian Federation of Islamic Councils

Comprehensive Executive Summary of Halal Poultry (Chicken)

6th September 2023

Independent Vet Report BVSc

Baiada, Hanwood NSW

Executive Summary

The aim of this study is to medically assess the effectiveness of Controlled atmosphere stunning (CAS) and electrical stunning to determine if the birds are unconscious but not deceased and have a detectable heart beat at time of bleed out (slaughter). The assessment is conducted in accordance with the Australian Federation of Islamic Councils (AFIC) standards for Halal slaughter. The site was found to be compliant, with all chickens confirmed alive at time of bleed out.

Background

Stunning animals before slaughter is a widely practiced procedure globally, driven by ethical considerations to minimise animal suffering during the slaughter process. This audit focuses on evaluating CAS and its compliance with Halal accreditation standards.

Gas Stunning vs. Electrical Stunning

Gas stunning methods, particularly Controlled Atmosphere Stunning (CAS), have been considered more humane compared to traditional electrical Stunning, as CAS does not require prior shackling of live birds and is believed to improve product quality.

Gas Stunning Process

CAS employs various gas mixtures, commonly utilising carbon dioxide (CO_2) administered in multiple phases. Modern machines utilise up to 5 stages of CO_2 exposure, ensuring gradual and humane unconsciousness. It is important to prevent discomfort or distress caused by high CO_2 concentrations. Modern machines can start with accurate concentration of around 20%, while older 2 stage machines start at higher levels. Exposure in the later stages to higher levels of CO_2 ensures the unconsciousness lasts long enough until brain death occurs in the bird through bleed out. Ideally an unconscious bird to meet welfare standards, should not respond to stimuli, should not be wing flapping or head shaking, but should still have a detectable heart beat.

Methodology

To assess the effectiveness of CAS stunning, the following methods were employed.

1. Electrocardiography (ECG): Used to monitor the heart's electrical activity.
2. Conscious level of birds assess based on assessment of the following 4 vital signs

	Light	Moderate	Deep
Wing/leg movement	+	-	-
Breathing	+	+	-
Palpebral reflex	+	+	-
Heart rate	>160	120-160	<120

This dual approach provided a comprehensive evaluation of the birds' state. Chickens on average were slaughtered 1min 30sec post exiting the Stunning chamber. ECG results were recorded at 3minutes after exiting the chamber to allow sufficient overlap to ensure these birds would have all had heart beats at time of bleed out. At each site a control bird (unstunned) was taken from its crate prior to entry into the CAS machine to ensure all testing equipment was functioning and accurate.

Gas stunning machine settings.

	Chamber	1	2	3	4	5
Large bird	O2	21.1	19.8	20	-	-
Large bird	CO2	20.2	27.7	34.5	63.8	74
Small bird	O2	23.8	22.2	19.3	-	-
Small bird	CO2	16.6	30.6	34.2	48.2	66.9

5 Stage CAS Machine

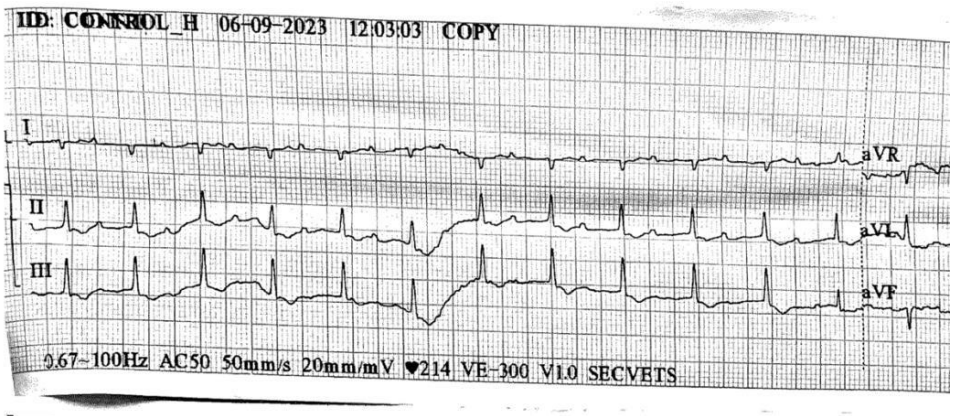
CAS machine is a modern 5 stage machine. Chickens pass through each chamber on a conveyor belt and can freely move around until unconsciousness sets in. Duration in the chamber is no longer than 6 minutes.

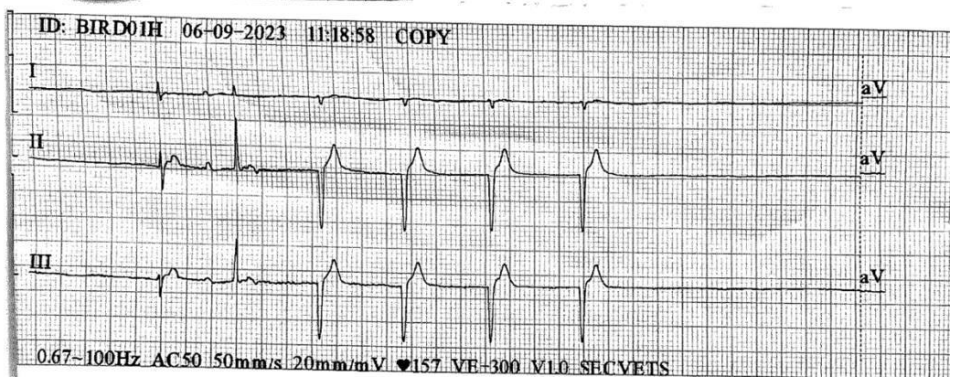
We used 5 ECG leads and connected them to the left wings, right wings, left leg and right leg and sternum of the birds to detect any possible heart beat. See figure 1 as an example of this methodology

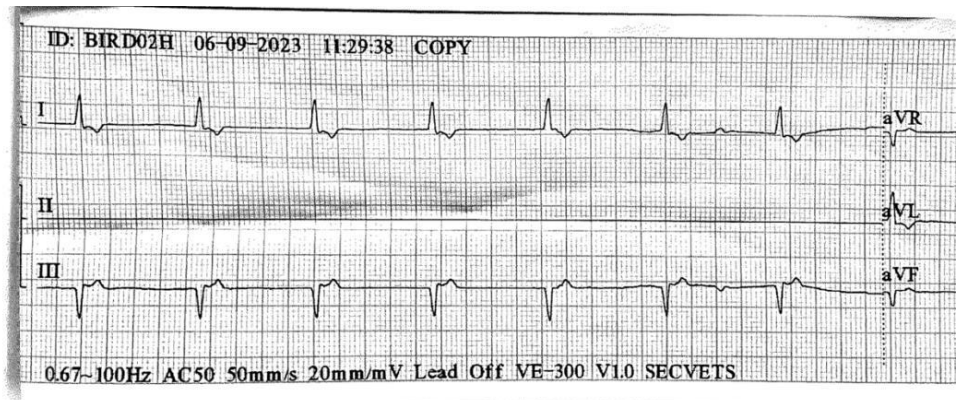
Figure 1. Example of Stunned Chicken showing connected ECG leads and positive ECG trace being printed. The purple discolouration of the skin is typical of low oxygen concentration after CO2 exposure

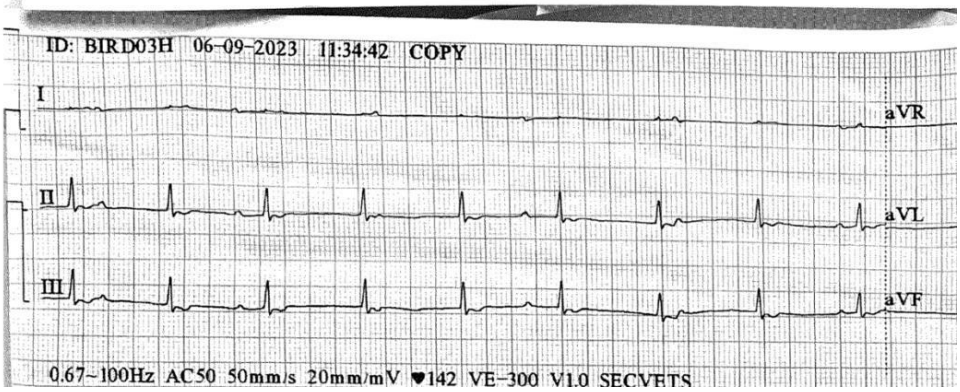
Results

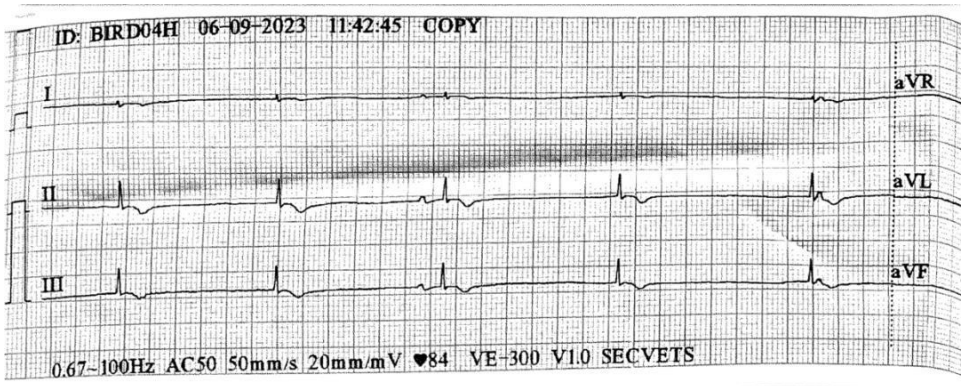
Control then First 10 birds ECG readings. All tested birds showed similar ECG readings.







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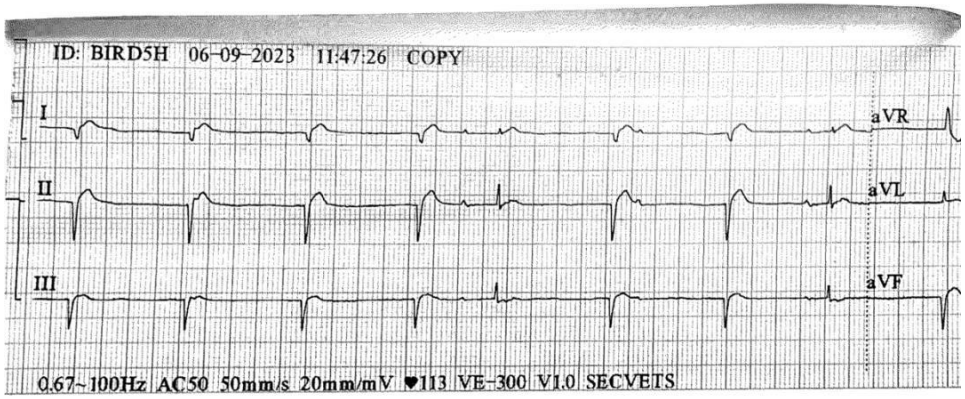
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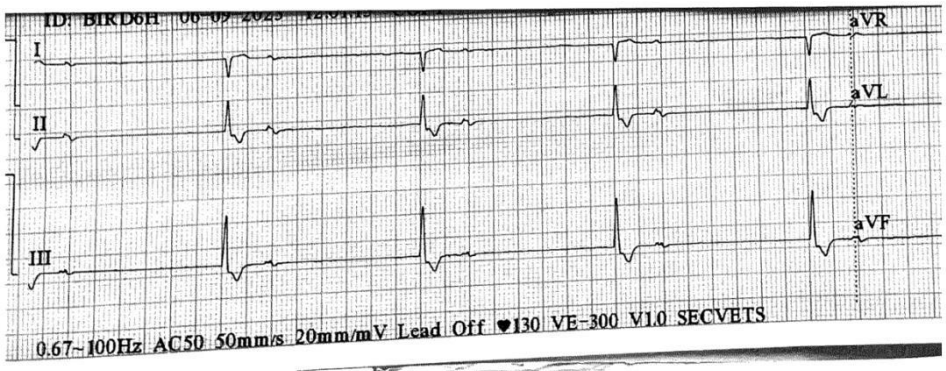
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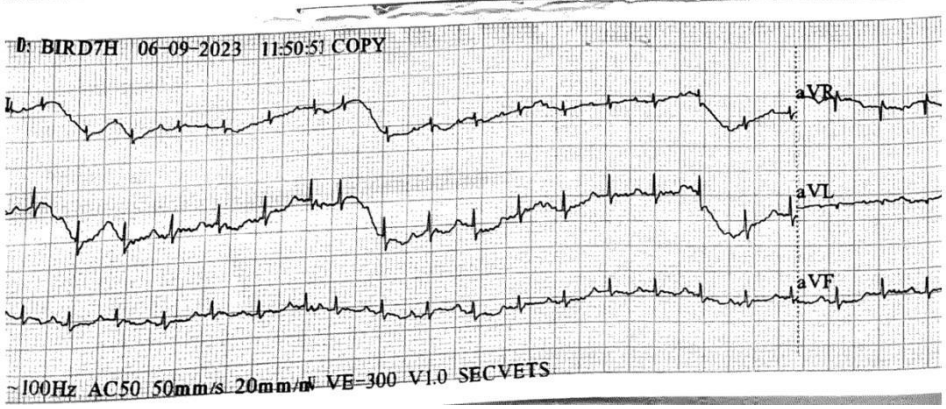
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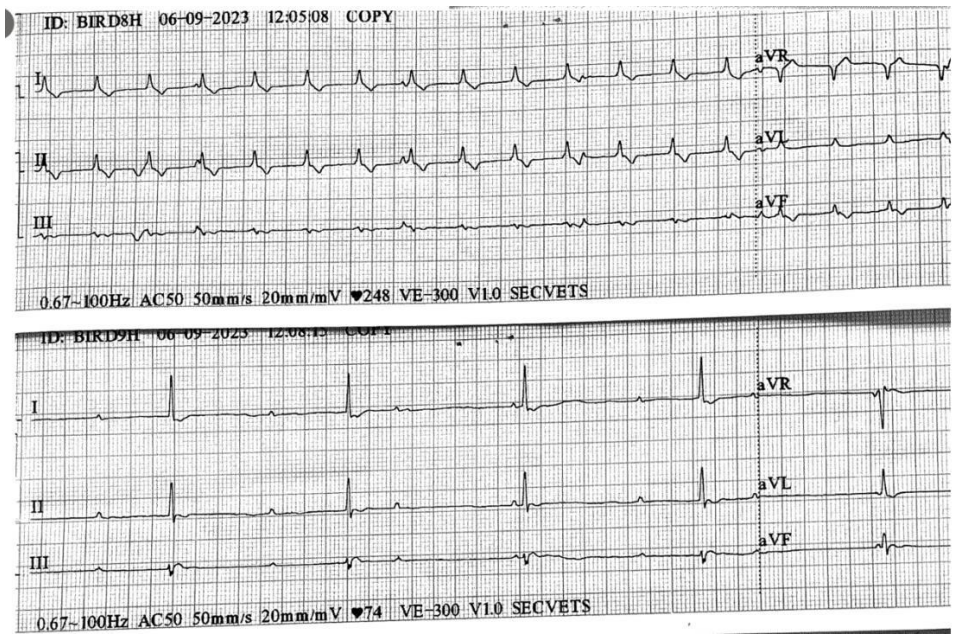
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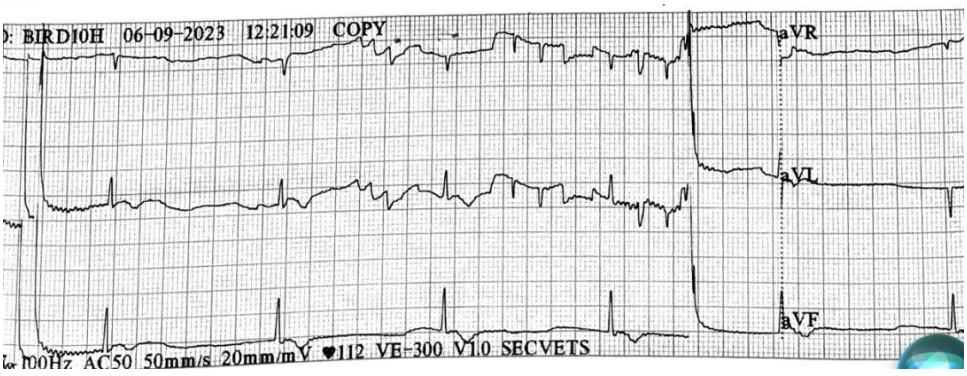
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Table showing Summary of results

BIRD	Unconscious L M D	Normal ECG @ 1min	Pass/Fail
1	M	Y	P
2	D	Y	P
3	M	Y	P
4	D	Y	P
5	D	Y	P
6	D	Y	P
7	L	Y	P
8	L	Y	P
9	D	Y	P
10	D	Y	P
11	D	Y	P
12	M	Y	P
13	D	Y	P
14	M	Y	P
15	D	Y	P
16	M	Y	P
17	D	Y	P
18	L	Y	P
19	D	Y	P
20	M	Y	P

Interpretation of the results

In total 20 birds were randomly examined. The ECG graphs revealed variations in heart activity and rhythm. Level of unconsciousness was categorised as Light (L) Moderate (M), or Deep (D) using the table above.

All Birds that had been stunned showed typical Bradycardia (slowing of heart which is typical of CO2 exposure and indicates a good level of unconsciousness).

The wave of depolarisation and re-polarisation shown on the ECG graphs above can be mapped on the body surface by sensing electrodes placed on the extremities and the wings and legs of the stunt birds. The resultant waveform traced on graph paper is called the electrocardiogram (ECG). When an ectopic impulse occurs singly, it generates a beat; when the beat repeats itself, it becomes a rhythm. No rhythm is identical on any of the above birds but it is obvious that there is a detectable heartbeat present in all stunned birds post gas stunning at this site.

Conclusion

Based on the audit findings, the following conclusions are drawn:

- All 20 randomly sampled birds had positive ECG patterns representative of heart rhythm confirming all birds would be alive at time of bleed out.
- CO2 levels were tightly controlled and consistent throughout the testing period.
- CO2 levels were accurately adjusted to the size of the birds to allow accurate CO2 and O2 exposure.
- All birds were sufficiently stunned/unconscious to meet the sites welfare standards.
- This audit confirms that the site is compliant with AFIC standards requiring animals to be alive at the time of slaughter

Audit Closure

This audit report summarises the findings concerning the evaluation of CAS stunning in chickens at the Hanwood site in relation to Halal accreditation.

Australian Federation of Islamic Councils

Comprehensive Executive Summary of Halal Poultry (Chicken)

16th October 2023

Independent Vet Report BVSc

Baiada, Mareeba QLD

Executive Summary

The aim of this study is to medically assess electrical stunning to determine if the birds are unconscious but not deceased and have a detectable heart beat at time of bleed out (slaughter). The assessment is conducted in accordance with the Australian Federation of Islamic Councils standards for Halal slaughter. The audit found the site was compliant with AFIC standards requiring animals to be alive at the time of slaughter.

Background

Stunning animals before slaughter is a widely practiced method globally, driven by ethical considerations to minimise animal suffering during the slaughter process. This audit focuses on evaluating electrical stunning and its compliance with Halal accreditation standards.

Electrical Water Bath Stunning Process:

During water bath stunning, birds are shackled and inverted prior to entry into an electrified water bath, current is passed from the head, through the body and legs to earth via stainless steel shackles. The current (amps), Voltage (Volts), and frequency (Hertz) can all be altered to achieve effective stunning of birds. Ideally for Halal certification, birds must be stunned and unconscious, but not dead prior to bleed out.

Methodology

To assess the effectiveness of CAS stunning, the following methods were employed.

1. Electrocardiography (ECG): Used to monitor the heart's electrical activity.
2. Conscious level of birds assessed using a combination of the below vital signs.

	Light	Moderate	Deep
Wing/leg movement	+	-	-
Breathing	+	+	-
Palpebral reflex	+	+	-
Heart rate	>160	120-160	<120

This dual approach provided a comprehensive evaluation of the birds' state. Chickens on average were slaughtered 3 seconds post exiting the water bath. ECG results were recorded at 30-60 seconds after exiting the water bath to allow sufficient overlap to ensure these birds would have all had heart beats at time of bleed out.

Water bath stunning machine settings

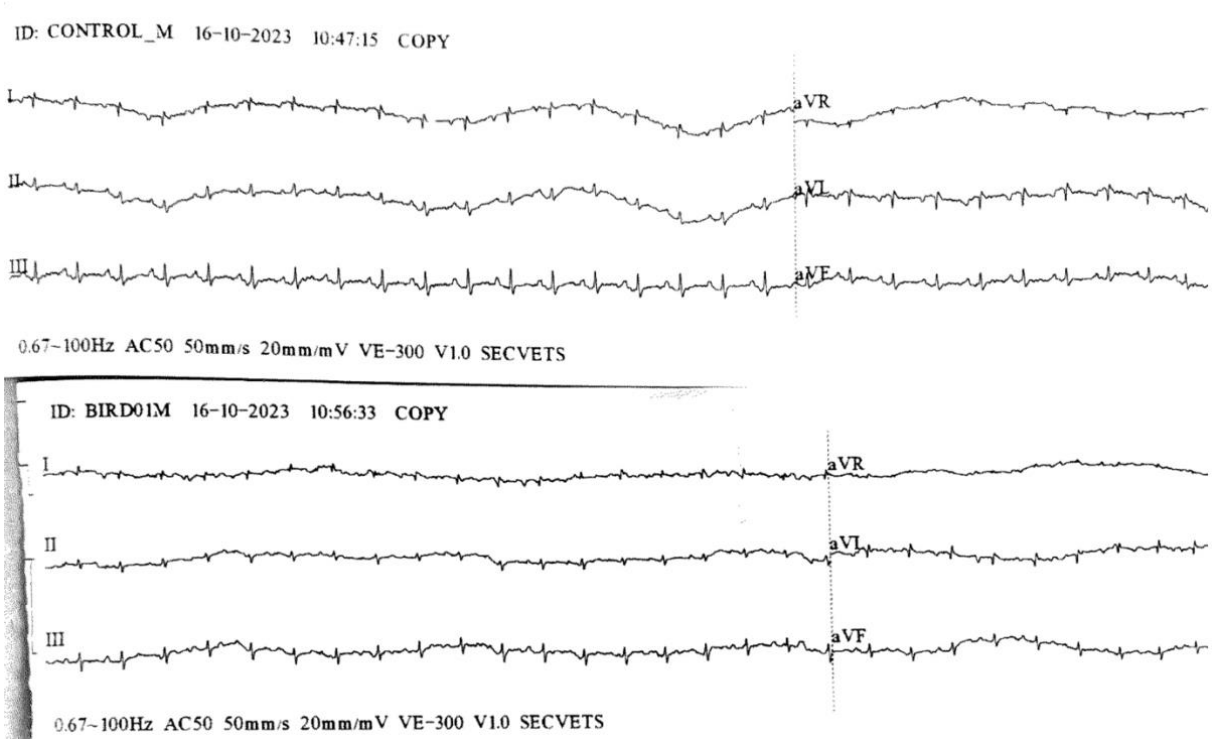
Frequency AC48	319
Volts	63. +/- 3
Current	1.39 +/- 0.3

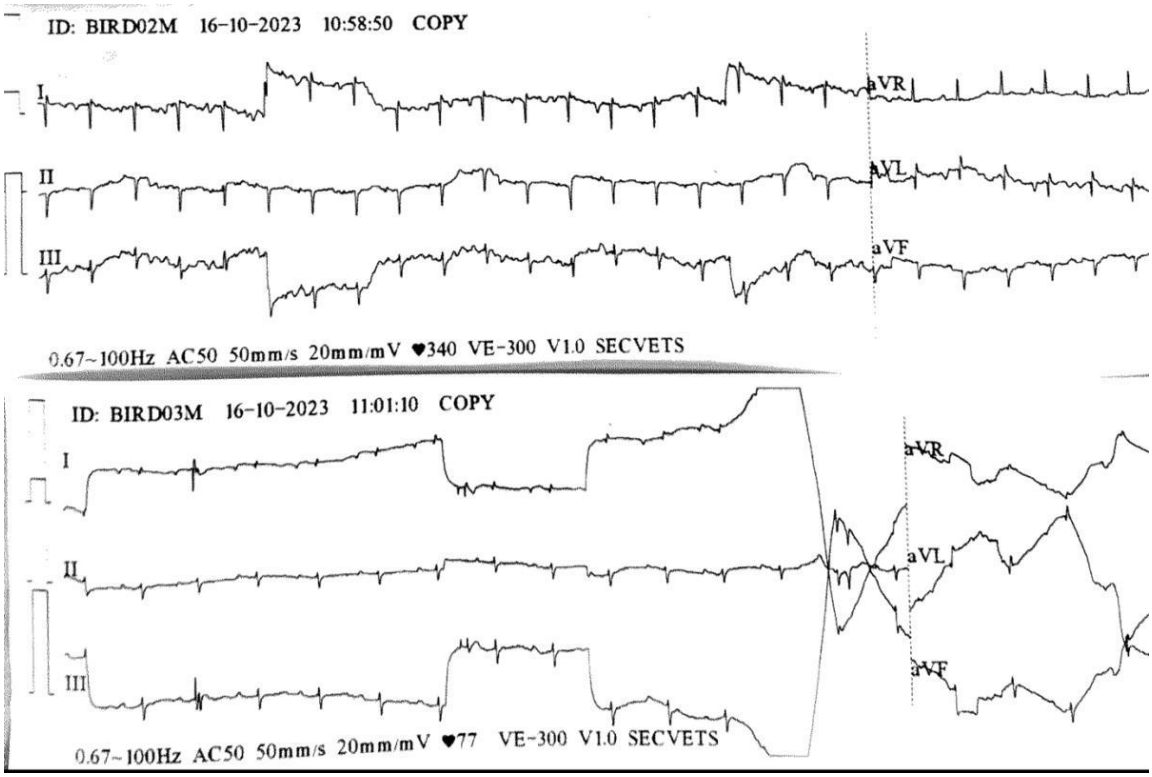
Chickens were shackled prior to stunning, with a duration of shackling no longer than 60 seconds. The voltage and current automatically fluctuates to provide an accurate stun, depending on the electrical resistance of the birds present in the bath at any given time.

We used 5 ECG leads and connected them to the left wings, right wings, left leg and right leg and sternum of the birds to detect any possible heartbeat.

Results

ECG Readings of the control bird and the first 10 randomly sampled birds.

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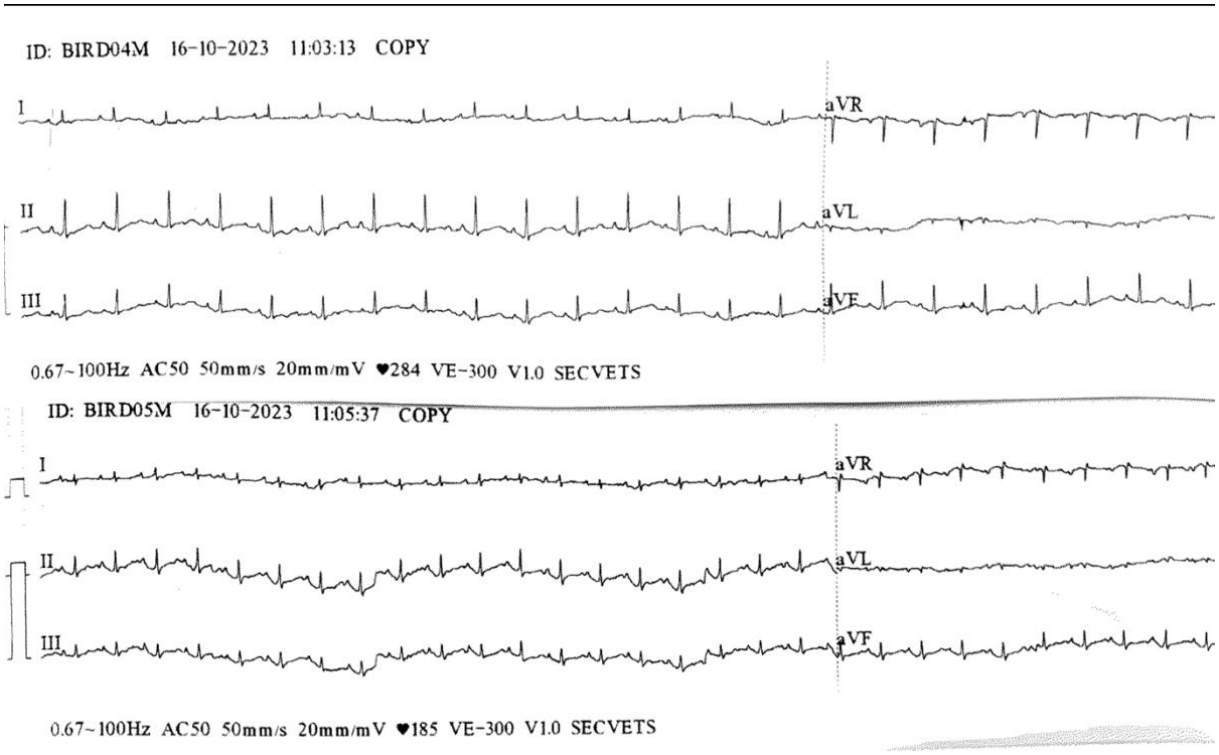
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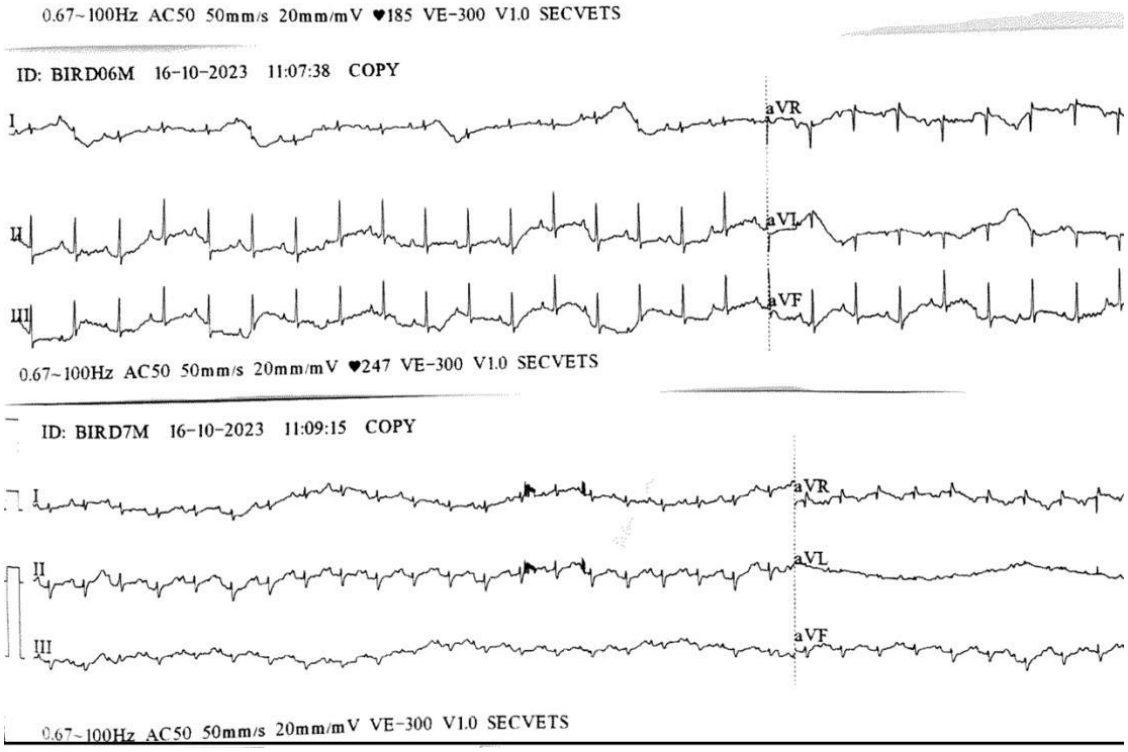
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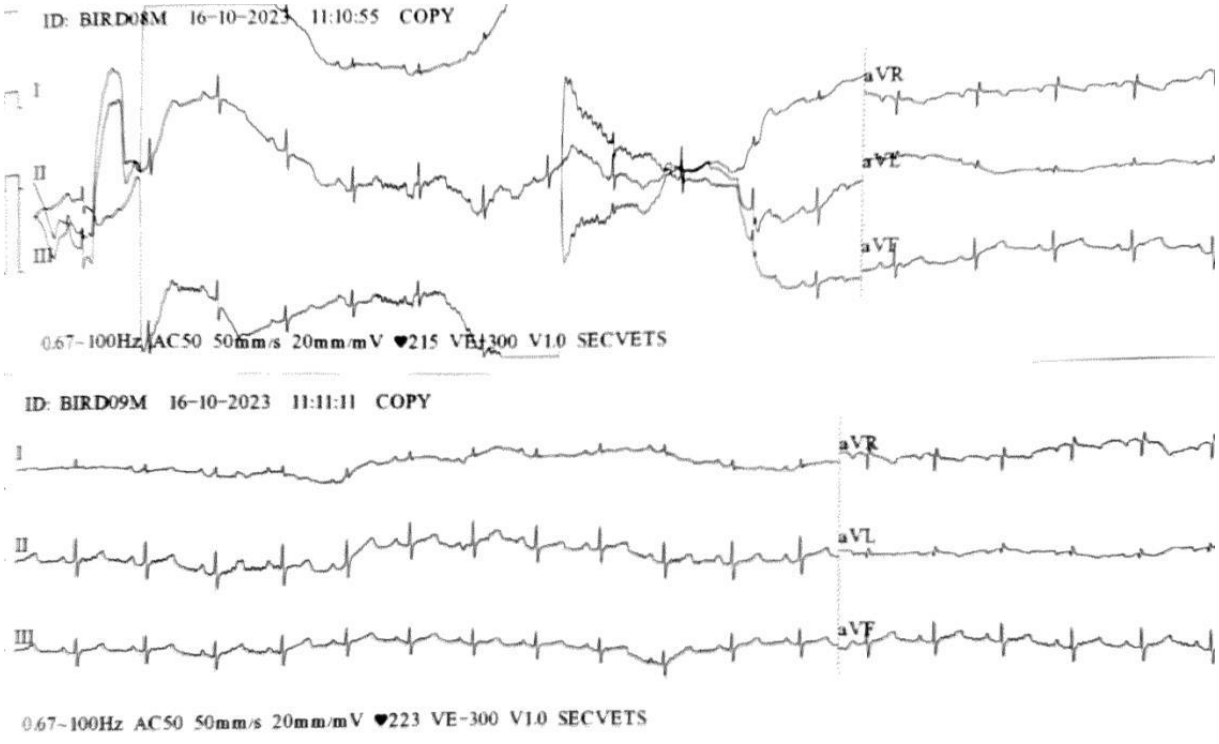
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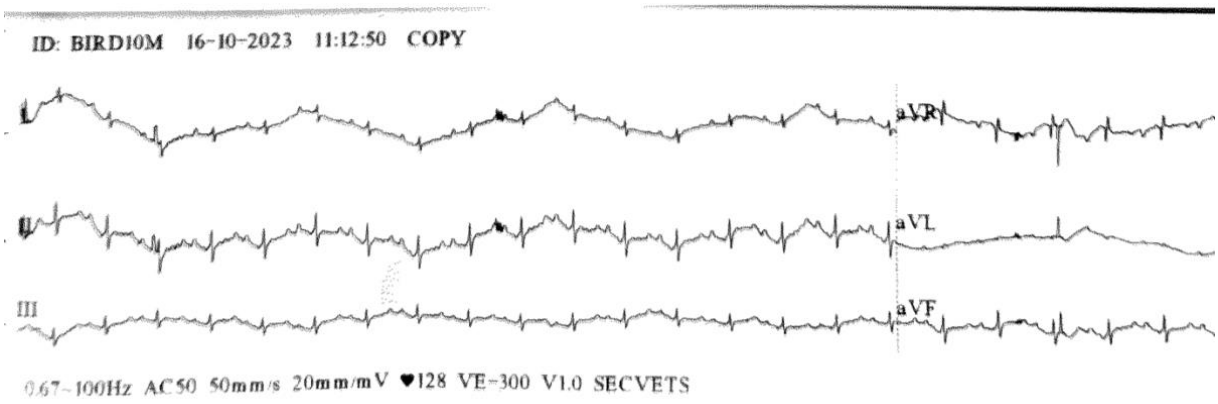
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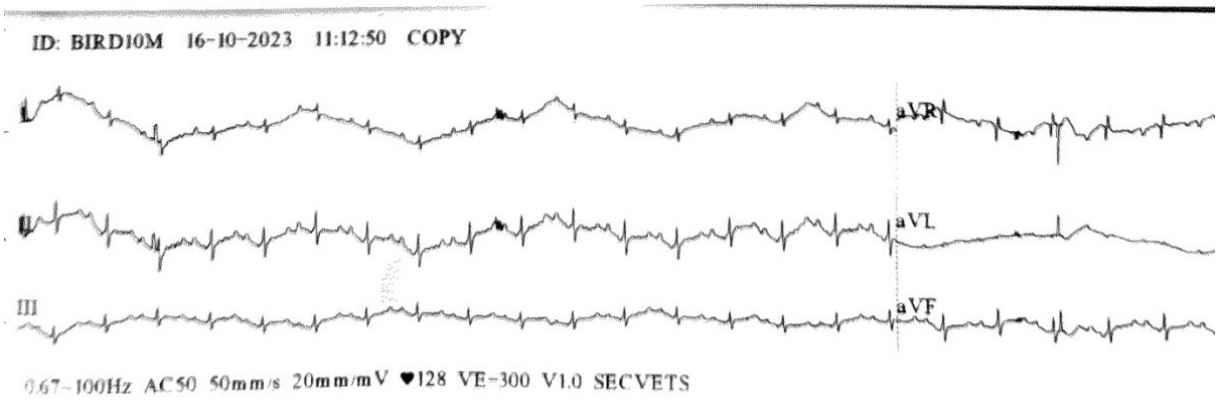
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I
aVR
II
aVL
III
aVF
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Table showing Summary of results

BIRD	Unconscious L M D	Normal ECG @ 1min	Pass/Fail
1	M	Y	P
2	L	Y	P
3	L	Y	P
4	L	Y	P
5	M	Y	P
6	M	Y	P
7	M	Y	P
8	L	Y	P
9	L	Y	P
10	L	Y	P
11	L	Y	P
12	M	Y	P
13	M	Y	P
14	L	Y	P
15	L	Y	P
16	M	Y	P
17	L	Y	P
18	L	Y	P
19	L	Y	P
20	L	Y	P

In total 20 birds were examined randomly. The ECG graphs revealed variations in heart activity and rhythm. Level of unconsciousness was categorised as Light (L) Moderate (M), or Deep (D).

The wave of depolarisation and re-polarisation shown on the ECG graphs above can be mapped on the body surface by sensing electrodes placed on the extremities and the wings and legs of the stunt birds. The resultant waveform traced on graph paper is called the electrocardiogram (ECG). When an ectopic impulse occurs singly, it generates a beat; when the beat repeats itself, it becomes a rhythm. No rhythm is identical on any of the above birds but it is obvious that there is a detectable heartbeat present in all stunned birds post water bath stunning at this site. Birds 3 and 8 were wing flapping and resulted in a moving baseline on the ECG. Clear heart beats are still evident.

Conclusion

Based on the audit findings, the following conclusions are drawn:

- All 20 randomly sampled birds had positive ECG patterns representative of heart rhythm confirming all birds would be alive at time of bleed out.
- Stun to bleed out was extremely quick at under 3 seconds.
- This audit confirms the site is compliant with AFIC's standards for Halal slaughter.

Audit Closure

This audit report summarises the findings concerning the evaluation of electrical stunning in Chicken at the Mareeba site in relation to Halal accreditation

Australian Federation of Islamic Councils

Comprehensive Executive Summary of Halal Poultry (Chicken)

21 November 2023

Independent Vet Report BVSc

Baiada, Beresfield NSW

Executive Summary

The aim of this study is to medically assess the effectiveness of Controlled atmosphere stunning (CAS) and electrical stunning to determine if the birds are unconscious but not deceased and have a detectable heart beat at time of bleed out (slaughter). The assessment is conducted in accordance with the Australian Federation of Islamic Councils (AFIC) standards for Halal slaughter. The site was found to be compliant, with all chickens confirmed alive at time of bleed out.

Background

Stunning animals before slaughter is a widely practiced method globally, driven by ethical considerations to minimise animal suffering during the slaughter process. This audit focuses on evaluating CAS stunning and its compliance with Halal accreditation standards

Gas Stunning vs. Electrical Stunning

Gas stunning methods, particularly Controlled Atmosphere Stunning (CAS), have been considered more humane compared to traditional electrical Stunning, as CAS does not require prior shackling of live birds and is believed to improve product quality.

Gas Stunning Process

CAS employs various gas mixtures, commonly utilising carbon dioxide (CO_2) administered in multiple phases. Modern machines utilise up to 5 stages of CO_2 exposure, ensuring gradual and humane unconsciousness. It is important to prevent discomfort or distress caused by high CO_2 concentrations. Modern machines can start with accurate concentration of around 20%, while older 2 stage machines start at higher levels. Exposure in the later stages to higher levels of CO_2 ensures the unconsciousness lasts long enough until brain death occurs in the bird through bleed out. Ideally an unconscious bird to meet welfare standards, should not respond to stimuli, should not be wing flapping or head shaking, but should still have a detectable heart beat.

Methodology

To assess the effectiveness of CAS stunning, the following methods were employed.

1. Electrocardiography (ECG): Used to monitor the heart's electrical activity
2. Conscious level of birds assess based on assessment of the following 4 vital signs

	Light	Moderate	Deep
Wing/leg movement	+	-	-
Breathing	+	+	-
Palpebral reflex	+	+	-
Heart rate	>160	120-160	<120

This dual approach provided a comprehensive evaluation of the birds' state. Chickens on average were slaughtered 1min 30sec post exiting the Stunning chamber. ECG results were recorded at 3minutes after exiting the chamber to allow sufficient overlap to ensure these birds would have all had heart beats at time of bleed out. At each site a control bird (unstunned) was taken from its crate prior to entry into the CAS machine to ensure all testing equipment was functioning and accurate.

Gas stunning machine settings.

2 Stage CAS Machine

Table CO2 Settings and levels recorded.

	Set point	Readout
Inlet	0.0	0.0
Conveyor	50	48 +/- 5
Bottom	57	57 +/- 5

CAS machine is a older 2 stage machine. Chickens pass through the main chamber in their crates. The crates are lowered into the chamber where the CO2 levels are at their highest, then they rise back out of the chamber and into the shackling area. Duration in the chamber is no longer than 6 minutes. We used 5 ECG leads and connected them to the left wings, right wings, left leg and right leg and sternum of the birds to detect any possible heart beat. See figure 1 as an example of this methodology.

Figure 1. Example of Stunned Chicken showing connected ECG leads and positive ECG trace being printed. The purple discolouration of the skin is typical of low oxygen concentration after CO2 exposure.

Results

Results- ECG graphs of 8 random birds collected.

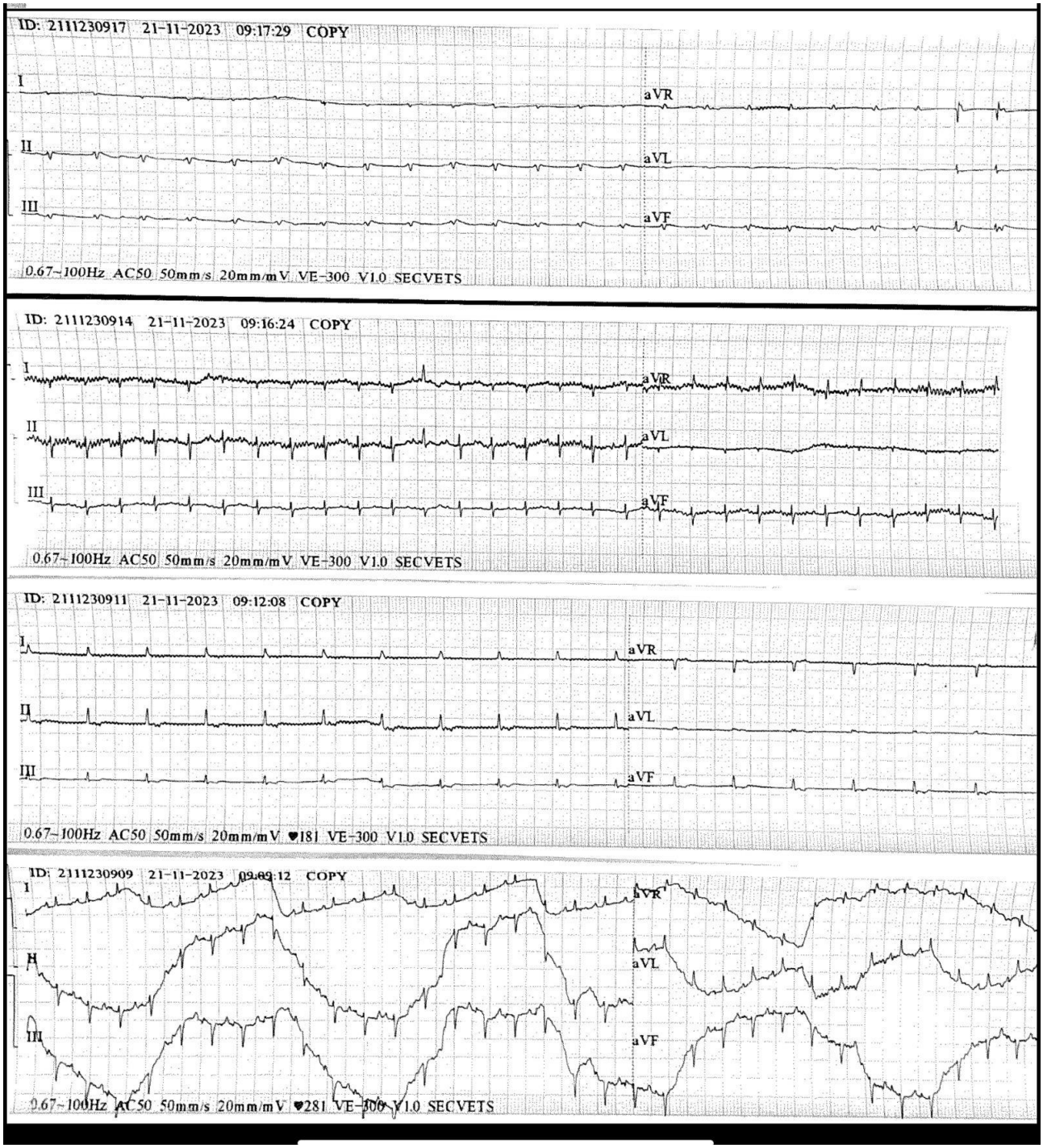

Figure 2. ECG graphs.

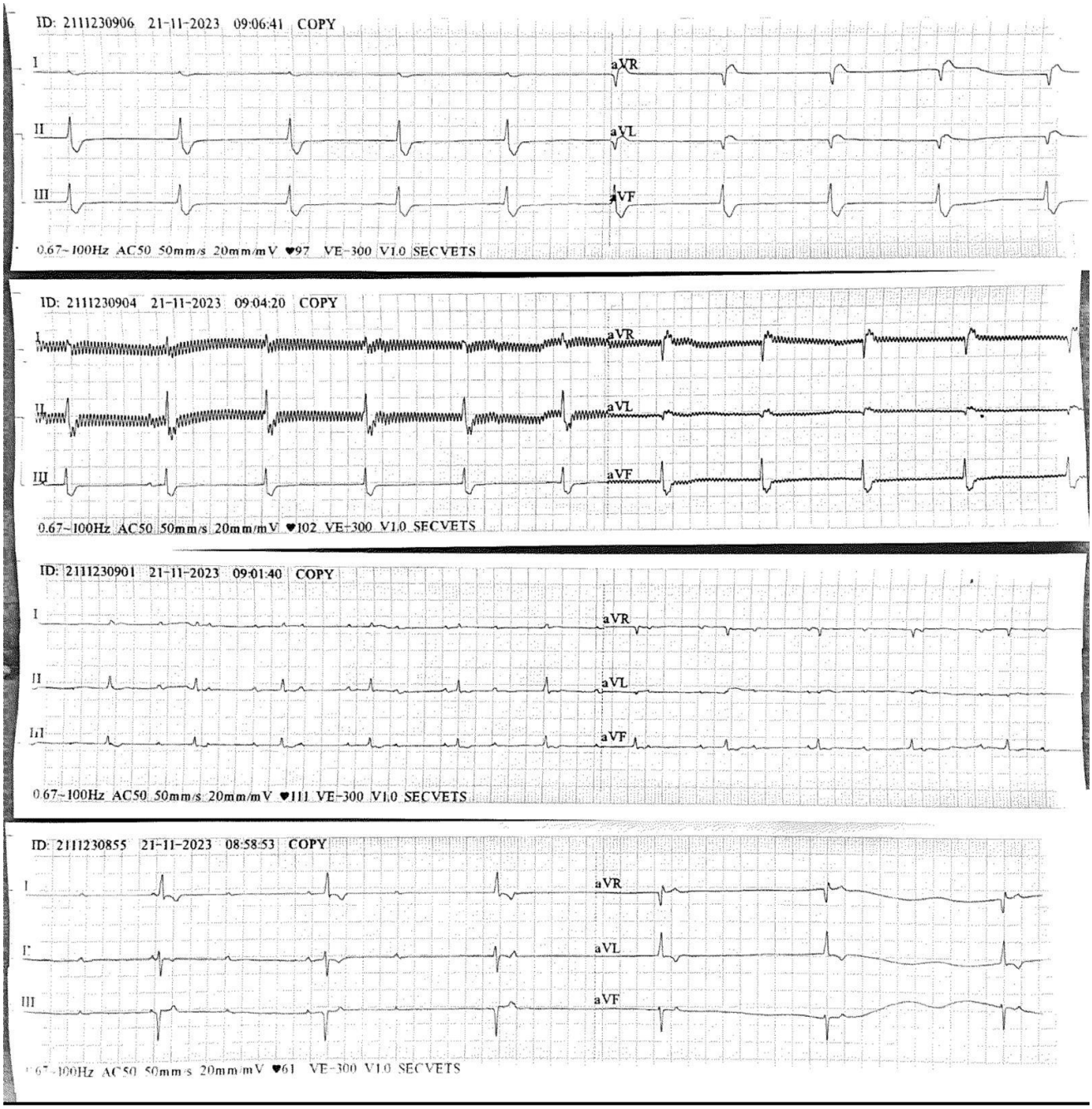

Figure3. ECG graphs.

Table showing Summary of results

BIRD	Unconscious L M D	Normal ECG @ 3min	Pass/Fail
1 8:50	L	Y	P
2 8:53	D	Y	P
3 8:56	M	Y	P
4 8:58	D	Y	P
5 9:01	D	Y	P
6 9:04	D	Y	P
7 9:06	D	Y	P
8 9:09	L	Y	P
9 9:11	L	Y	P
10 9:14	L	Y	P
11 9:16	D	Y	P
12 9:17	M	Y	P
13 9:19	D	Y	P
14 9:20	M	Y	P
15 9:22	D	Y	P

Interpretation of the results

In total 15 birds were randomly examined. The ECG graphs revealed variations in heart activity and rhythm. Level of unconsciousness was categorised as Light (L) Moderate (M), or Deep (D) using the table above. All Birds that had been stunned showed typical Bradycardia (slowing of heart which is typical of CO2 exposure and indicates a good level of unconsciousness). This is evident in the ECGs in figure 3, where all heart rates are below 120. The wave of depolarisation and re-polarisation shown on the ECG graphs above can be mapped on the body surface by sensing electrodes placed on the extremities and the wings and legs of the stunt birds. The resultant waveform traced on graph paper is called the electrocardiogram (ECG). When an ectopic impulse occurs singly, it generates a beat; when the beat repeats itself, it becomes a rhythm. No rhythm is identical on any of the above birds but it is obvious that there is a detectable heartbeat present in all stunned birds post gas stunning at this site.

Conclusion

Based on the audit findings, the following conclusions are drawn:

- All 15 randomly sampled birds had positive ECG patterns representative of heart rhythm confirming all birds would be alive at time of bleed out.
- CO2 levels were tightly controlled and consistent throughout the testing period.
- CO2 levels were accurately adjusted to the size of the birds and atmospheric conditions on the day to Stun the birds sufficiently, yet maintain a heart beat.
- All birds were sufficiently stunned/unconscious to meet the sites welfare standards.
- This audit confirms that the site is compliant with AFIC's standards requiring animals to be alive at the time of slaughter.

Audit Closure

This audit report summarises the findings concerning the evaluation of CAS stunning in chickens at the Beresfield site in relation to Halal accreditation.

Australian Federation
of Islamic Councils

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