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RECOMMENDED ANIMAL HANDLING GUIDELINES & AUDIT GUIDE:

A Systematic Approach to Animal Welfare

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NAMI NORTH AMERICAN MEAT INSTITUTE

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EXECUTIVE SUMMARY AND HISTORICAL PERSPECTIVE

The Humane Methods of Slaughter Act of 1958 was the first federal law governing the handling of livestock in meat plants. The 1958 law applied only to livestock slaughtered for sale to the government. In 1978, the Humane Methods of Slaughter Act was reauthorized to cover all livestock slaughtered in federally inspected meat plants. Additional information is found in the Code of Federal Regulations and in specific United States Department of Agriculture (USDA) directives and notices.

The North American Meat Institute (NAMI or the Meat Institute) has a demonstrated commitment to voluntary animal handling programs that go above and beyond regulatory requirements. In 1991, the Meat Institute published *Recommended Animal Handling Guidelines for Meat Packers,* the first voluntary animal welfare guidelines for meat packing operations. Authored by Temple Grandin, Ph.D., of Colorado State University, the illustrated guidelines offered detailed information about optimal handling of animals, how to troubleshoot animal handling problems in packing plants, how to stun animals effectively, how to maintain equipment thoroughly, and how to move non-ambulatory animals while minimizing stress. The guidelines were implemented widely by members of the meat packing industry.

In 1997, at the request of the American Meat Institute[1], Dr. Grandin developed a new document called *Good Management Practices (GMPs) for Animal Handling and Stunning.* The document detailed measurable, objective criteria that could be used to evaluate the well-being of livestock in meat packing plants. Self-audits using the criteria were recommended in an effort to identify and address any problems and sustain continuous improvement. When the GMPs were developed and implemented, they were envisioned as a voluntary tool for use by meat companies. In the years that followed, major restaurant chains began developing animal welfare committees and conducting audits of their meat suppliers using the Meat Institute's audit tool. Beginning in 1999, compliance with the GMPs became part of many customer purchasing specifications.

In 2004, the Meat Institute's Animal Welfare Committee determined that the two animal welfare documents should be merged into a single, updated document that included official audits for pig, cattle and sheep slaughter. The merged document was released in 2005 and has been updated every other year since that time.

The objective criteria (Core Criteria) in this document were developed based on survey data collected over time in plants throughout the United States (Grandin, 1997, 1998a, 2000, 2001b). The NAMI Animal Welfare Committee, together with Dr. Temple Grandin, have determined what "targets" are reasonably achievable when plants employ good animal handling and stunning practices.

[1]The North American Meat Institute was formed in 2015 from the merger of the American Meat Institute and the North American Meat Association.

INTRODUCTION

As the saying goes, “You manage what you measure.” Understanding and using the Meat Institute’s guidelines and audit program to measure outcomes can help companies manage animal handling more effectively. The Meat Institute audit guidelines recommend that companies conduct both weekly internal (self-audits) and annual third-party audits using measurements of the Core Criteria:

- **Most critical: willful acts of abuse (egregious acts)**
- **Access to water**
- **Falls**
- **Electric prod use**
- **Vocalizations**
- **Effective stunning**
- **Bleed rail insensibility**

To ensure continuous improvement, NAMI recommends conducting internal audits at least weekly and varying those audit days and times during shifts to assess the role that employee experience, behavior, and fatigue may play in animal handling and stunning. However, audits represent a “snapshot in time.” Many variables can impact audit outcomes, especially when live animals are involved. These can include:

- **Changes in plant personnel**: it may take time for a new employee to become as skilled an animal handler as a more experienced employee. However, willful acts of abuse can NEVER be tolerated.
- **Breed, age, and gender of livestock**: these factors all can affect temperament.
- **Previous handling or lack of handling and human contact**: livestock that are accustomed to seeing people are generally less skittish at the plant.
- **Weather**: livestock sometimes react to weather or seasonal changes, like a thunderstorm.
- **Auditor influence**: auditors play a critical role in the assessment of humane handling and must have the appropriate expertise and the ability to interact with plant personnel during the audit.

For these reasons, audits should be considered part of a process and trends should be considered along with each specific audit result to determine if results are an anomaly or a pattern. A plant’s proposed corrective/preventive measures and follow-up also should be considered. While it is essential to set numeric targets, the mere act of auditing, measuring, and tracking will help companies manage more effectively and will contribute to improved animal welfare.

Ethical, Regulatory and Economic Considerations

Optimal livestock handling is extremely important to meat packers for obvious ethical reasons. Once livestock – cattle, pigs, and sheep—arrive at packing plants, proper handling procedures are not only important for animal well-being, they can also be the difference between safe and unsafe workplaces and profit or loss. Research clearly demonstrates that many meat quality benefits can be gained through careful, quiet animal handling. (Hambrecht *et al*., 2005ab, Warner *et al*., 2009)

In addition, government bodies around the world dictate strict humane handling and slaughtering standards for packing plants. This document provides practical information that can be used to develop animal handling programs and to train employees in the principles of good animal handling practices.

Management Commitment

A key factor in establishing and maintaining optimal animal handling and stunning in plants is a clearly communicated management commitment to animal handling. All levels of management must play an active role. This commitment can include:

- An animal welfare mission statement that is widely circulated and/or posted visibly in various places in a plant.
- A program of ongoing monitoring and measurement of animal handling and stunning practices and outcomes (Chapter 5).
- Regular internal training and opportunities to attend outside training programs.
- Recognition and/or rewards for jobs well done.

This guide provides employees and managers with information that will help them improve both handling and stunning. Proper animal handling is not only an important ethical goal, it helps ensure the industry operates safely, efficiently, and profitably.

In conclusion, managers must be committed to animal welfare. Plants that have managers who insist on good handling and stunning practices tend to have better results. Positive and negative feedback also is very important. You manage the things you measure, which is why auditing is important. Maintaining good transportation, handling, and stunning practices requires continuous measurement, monitoring, and management.

Special Note about Country-Specific Regulations: This document may be used globally. However, it is essential to be aware of your country's specific regulatory requirements. Some country-specific regulations are noted throughout this document, and are marked with their respective country symbols (for United States regulations, and for Canadian regulations).

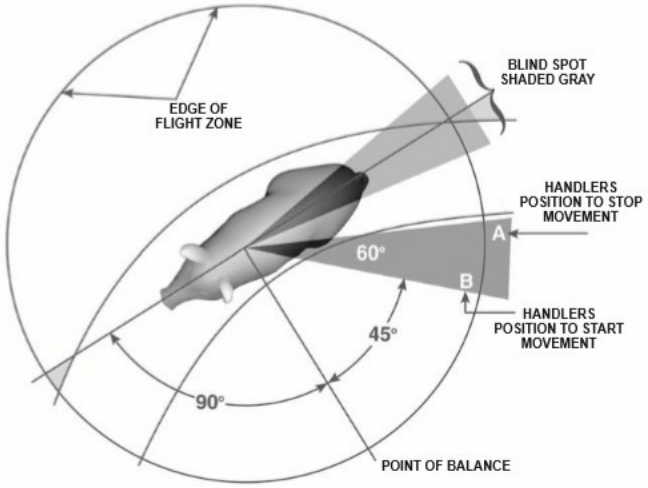
Section 1: Recommended Livestock Handling Principles

The principles of good livestock handling are similar for different species. All livestock are herd animals and are most easily handled in groups by calm handlers who work with livestock's natural instincts and behaviors.

Understanding Flight Zone and Point of Balance

Handlers who understand the concepts of flight zone and point of balance can move animals easily. The "flight zone" is the animal's personal space and the size of the flight zone is determined by how accustomed the animal is to people and handling. Completely tame animals have no flight zone and people can touch them. More skittish animals will begin to move away when the handler penetrates the edge of the flight zone.

A handler will know if he is outside the flight zone if all animals face him without backing up or moving. To keep livestock calm and move them easily, the handler should work on the edge of the flight zone. Penetrate the flight zone to prompt movement and back out of the flight zone to stop movement. The best positions are shown on the Flight Zone Diagram (right). The handler should avoid the blind spot behind the animal's rear.



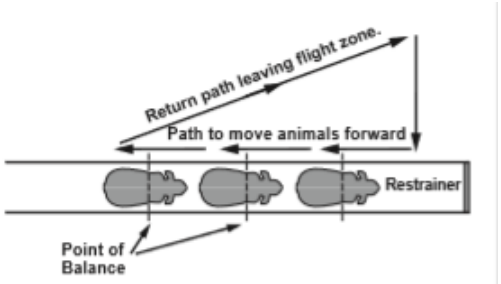
(Photo courtesy of the National Pork Board's TQA Handbook, 2004)

Flight Zone Diagram—This diagram shows the correct positions for the handler to move livestock. To make an animal go forward, he should work on the edge of the flight zone in positions A and B. The handler should stand behind the point of balance to make an animal go forward and in front of the point of balance at the shoulder to make an animal stop or back up. The handler should avoid the blind spot behind the animal's rear.

Animals become agitated when a person is inside their flight zone and they are unable to move away, as might happen in a small pen, so for safety, deep penetration of the flight zone should be avoided. If livestock turn back and run past the handler while they are being driven, the handler should back up and increase the distance between him and the animals at the first indication of a turn back.

If a group of livestock balks at an object, a smell, or a shadow ahead, be patient and wait for the lead animal to cross the affected area. The other animals will follow. If cattle rear up in a single file chute, back away from them and don't touch them. They are rearing in an attempt to increase the distance between themselves and the handler and will usually settle down if left alone.

The "point of balance" is at the animal's shoulder. The handler's position in relationship to the point of balance can cause livestock to move forward or backward. All species will move forward when the handler stands behind the point of balance and will back up if the handler stands in front of the point of balance (See Point of Balance Diagram, right).



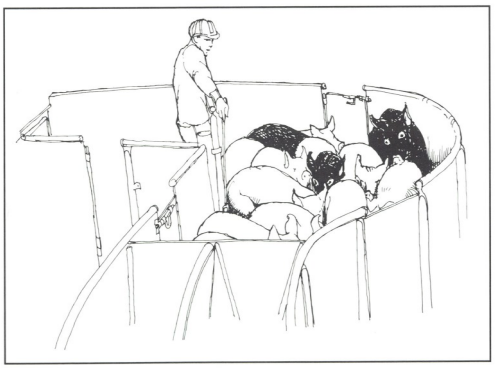
Point of Balance Diagram—Cattle will move forward when the handler passes the point of balance at the shoulder of each animal. The handler walks in the opposite direction along side the single file race.

Many handlers mistakenly stand in front of the point of balance or place handling tools such as paddles or flags in front of the animal's point of balance while attempting to make an animal move forward in a chute or alley. This will result in the opposite of the desired effect *(i.e.* the animal will move backward).

Groups of cattle, sheep, or pigs in a chute will often move forward without prodding when the handler walks past the point of balance in the opposite direction. If animals are moving through the chute by themselves, leave them alone. Prodding should be done only when absolutely necessary because most livestock can be moved by lightly tapping.

Moving Animals

Livestock naturally follow the leader and handlers should leverage this behavior. Prompt one animal to move in the right direction and others likely will follow. Livestock will move more easily from the crowd pen into the single file chute when the chute is partially empty. This space allows animals to enter the chute immediately and reduces the frequency of animals turning around in the crowd pen.



Pig crowd pen with an abrupt entrance to prevent jamming.

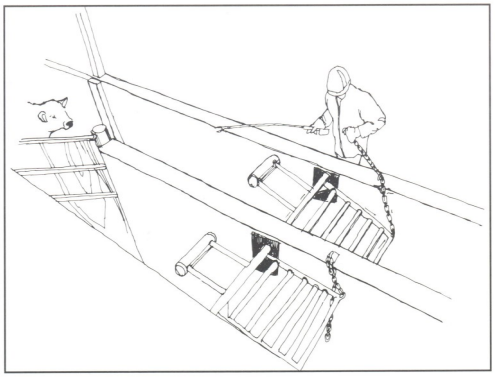
Partially empty chutes are valuable because they provide room to take advantage of the following behavior of livestock. Handlers are often reluctant to allow chutes to become partially empty because they fear gaps will form in the line and slow the process, but once a handler learns to use this method, he/she will find it is more effective in handling animals calmly and efficiently.

A common mistake is overloading the crowd pen that leads to the single file chute. The crowd pen and the staging alley between the crowd pen and the yards should never be more than 75% full (half full is ideal) so that animals have room to turn around.

Cattle moving into a single file, following a leader.

Handlers must also avoid pushing the crowd gate too tightly on the animals. An effective method is to leave the crowd gate open and allow the animals to flow into the single file chute. The crowd pen should become the "passing through" pen. The crowd gate may be used to follow the animals, but should never be used to push them forcibly. If the handler focuses on moving the leaders into the chute instead of pushing animals at the rear of the group, others will follow.

One-way or sliding gates at the entrance to the single file chute must be open when livestock are brought into the crowd pen because they will balk at a closed gate. One-way flapper gates can be equipped with a rope to open them from the crowd pen. When the crowd pen is operated correctly, electric prods can usually be eliminated and other driving aids such as flags, paddles, and flexible shafts with streamers can be used. Animals can easily be turned by blocking the vision on one side of the head with these aids. If the leader balks at the chute entrance, a single touch with the prod may be all that is required.



Holding a one-way gate open to facilitate cattle entry into the chute.

Calm animals are easier to move than excited animals and efforts to keep livestock calm enhance both welfare and efficiency. Some highly excitable animals, for example, are difficult to drive and once excited, can require up to 30 minutes to calm down. These animals often vocalize, bunch, and pile up. As another example, pigs hauled shorter distances (*e.g.* 45 minutes) may be more difficult to unload because they have not had sufficient time to rest after being loaded on the farm.

Careful, quiet handling during the last few minutes before slaughter can help improve meat quality. Research shows that excessive use of electric prods in the stunning chute increases toughness in beef and lowers meat quality in pork (Hambrecht *et al*., 2005ab, Warner *et al.*, 2009). For example, highly excitable pigs can have severe pale, soft, exudative (PSE) tissue due to agitation during handling, even though these pigs are negative for the halothane gene, which is a gene that when inherited, increases stress in pigs.


Finally, it is important to note U.S. and Canadian federal rules prohibit driving ambulatory livestock over non-ambulatory livestock. For a definition of the term “non-ambulatory” please see the Glossary of Terms on page 66).

Preventing Injuries, Bruises and Falls

FLOORING

All areas where livestock walk should have a non-slip surface to prevent falls and crippling injuries. Animals can become agitated and excited when they lose their footing. Non-slip flooring can include textured concrete, grooving, sand, and rubber mats. It is particularly important in stunning boxes and restrainer entrances and can also be used on weigh scales.

Existing floors can be roughened with a concrete grooving machine as long as the pattern is sufficiently deep. Grooved flooring has proven successful, though other approaches may also be used.


A good example of non-slip flooring.

New concrete floors should have a diamond or square pattern with deep grooves. A rough broom finish is not sufficient as it will become worn smooth. It is also essential to use the right concrete or epoxy mix for maximum resistance to wear. For specific design considerations, see Appendix I at the end of this document.

Other examples of non-slip flooring include rubber mats, stamped aluminum, or steel bars. To prevent damage to hooves, do not cross the steel bars on top of each other at each intersection; the bars must be welded so the grid lies flat.

INJURY AND BRUISE PREVENTION

Livestock can be bruised moments before slaughter and it is important to monitor edges and surfaces throughout the livestock holding and driving areas. Gates, fences, and chutes should have smooth surfaces. Sharp edges with a small diameter, such as angle irons, exposed pipe ends, and channels will cause bruises.

Round pipe posts or sharp edges with a larger diameter are less likely to cause bruises than edges with a small diameter. Vertical slide gates in chutes should be counter-weighted to prevent back bruises. The bottom of these gates should be padded, such as with cut tires or conveyor belting. The gate track should be recessed into the chute wall to eliminate a sharp edge that will bruise. Pressing up against a smooth flat sur-

face such as a concrete chute fence will not cause bruises. However, a protruding bolt or piece of metal will damage hides and bruise the meat. Bruise points can be detected by tufts of hair or a shiny surface on a fence or gate.

This bad bruise point could cause damage to both hide and meat.

In pork plants, the bottom 18 inches (46 cm) to 24 inches (61 cm) of a vertical slide gate (guillotine) can be cut off and replaced with a curtain made from flexible material, such as discarded conveyor belting. The pigs will not attempt to go through the curtain. This change will prevent back injuries if the gate is accidentally closed on a pig. The entrance to the restrainer/knock box should be inspected often for broken parts with sharp edges.

Improving Animal Movement

Calm animals will move naturally through well-designed systems with a minimum of driving and prodding. To keep animals calm, take the following steps:

- **Handlers should be quiet and calm:** Each group of animals is different and should be handled according to their level of reaction. In most cases, yelling, banging on walls with paddles, and arm-waving may excite and agitate animals. The use of low stress handling techniques is always recommended.

- **Use lighting to your advantage:** Animals tend to move from darker areas to more brightly lit areas and may refuse to enter a dark or shadowy place. Lights can be used to illuminate the chute up ahead and attract animals. Lights should never shine directly into the eyes of approaching animals.

  Illuminating the entire chute area with uniform lighting can eliminate patches of light and dark which may confuse or distract animals. Animals may be difficult to drive out of the crowd pen into the chute if the pen is brightly illuminated by sunlight and the chute is inside a darker building.

  An animal looks at a sun spot and stops.

  It is important to maintain lights and their bulbs. In many instances, a handling system may work well when lights are new, but the animals will balk more and more as the lights dim with age. Experiment with portable lights to find the most efficient and consistent lighting.

- **Eliminate visual distractions:** Handlers should get down to livestock eye level to observe truck ramps and chutes from the animals' perspective. Livestock balk at flapping objects such as a coat hung over a fence, a hanging chain, shadows, puddles of water, light reflections, or any object that stands in their way. A drain or a metal plate running across an alley can cause animals to stop and when possible should be located outside the areas where animals walk. Install shields or use flexible material, such as strips of discarded conveyor belting, to create curtains to prevent animals from seeing movement up ahead as they approach the restrainer or stunning box.

- **Redirect air flow:** Air hissing and ventilation drafts blowing in animals' faces can seriously impede movement. Ventilation systems may need to be adjusted to avoid such impediments.

Hose may cause balking.

- **Use solid sides in chutes and crowd pens leading up to chutes**: Solid sides in these areas help prevent animals from becoming agitated when they see activity or distractions outside the fence, such as people. Livestock tend to be calmer in a chute with solid sides. The crowd gate on the crowd pen should also be solid to prevent animals from attempting to turn back towards the area they just left.

- **Reduce noise:** Animals are very sensitive to noise. Reducing high-pitched motor and hydraulic system noise along with any other banging or reverberation can improve animal movement. Clanging and banging metal should be reduced and hissing air should be muffled.

Even yellow tape can frighten cattle because it is unfamiliar to them.

- **Move animals in small groups:** Areas like the crowd pen and the staging areas leading to the crowd pen where animals are being actively handled (and not simply penned or held) should never be more than 75% full; 50% is ideal. Do not push crowd gates tight against the animals as cattle and pigs need room to turn. When a group of animals is particularly difficult to move, reduce the group size. If a lone animal becomes nervous or agitated, place it with other animals where it is likely to become calmer. Remember though: never enter the crowd pen or other confined space with one or two agitated, excited livestock. A species difference is that cattle, pigs, and goats should be moved in small groups. Sheep can be moved in a continuous flow.

  Note: For sheep, large groups may be moved and the crowd pen can be filled all the way up.

- **Spray water from above or behind.** When wetting animals, be sure not to spray the animals' faces with water because they will back up.

Section 2: Livestock Driving Tools

Electric Prods

Electric prods should not be used as a primary driving tool and should be used sparingly to move livestock during transport or in plants. A well-designed plant that has eliminated distractions and other handling impediments (detailed above) can greatly reduce electric prod use, though it is difficult to eliminate it entirely. Certainly, the need for electric prod use can vary depending on breeds of animals, production practices on the farm, class of animal (*i.e.* cull dairy cows versus fed steers), the group of animals, the day, and the handling system used.

In most plants, the only location an electric prod is needed is at the entrance to the stun box or restrainer. Electric prods should only be picked up and used on a resistant animal and then put back down. Many well-managed plants have eliminated electric prods in the holding pens and the crowd pen that leads to the single file chute. Survey data collected during audits of 30 plants indicated that in 81% of the beef plants and 77% of the pork plants, 5% or less of the animals were moved with an electric prod (Grandin, 2012). Plants should strive to use the electric prod on 25% or fewer cattle and pigs. The voltage should be low enough that it does not consistently produce a “bark” or “squeal” in pigs or a “moo” or a “bellow” in cattle, but still sufficient to persuade animals to move.

Prods with sufficient power to knock an animal down or paralyze it must not be used. Electric prods also must never be applied to sensitive parts of the animal such as the eyes, ears, mouth, nose, vulva, testicles, udder, or anus. The prod should not be used on the animal’s head. In addition, prods also must not be used on an animal that has been identified as stressed, non-ambulatory, or disabled.

When non-battery-operated prods are used, they must never be wired directly to house current; a transformer must be used. Refer to your country-specific regulations regarding acceptable voltage parameters for electric prod use.

Electric prods are ineffective on sheep because the wool insulates the shock of a properly applied prod. This lack of response could lead handlers to prod animals in sensitive areas such as the anus or vulva, which is considered an egregious act of abuse. As a result, electric prods should be a tool of last resort when ha ndling sheep, and used only when absolutely necessary (typically limited to large rams at the entrance to the restrainer), after all other driving tool options have been exhausted. Prod use with sheep should be limited to 5% or fewer sheep.

Canadian federal regulations prohibit the use of electric prods on sheep.

Other Driving Tools

Substitutions for electric prods are possible in most instances. Effective driving tools can include plastic paddles, witches’ capes, flexible shafts with nylon flags on the end, or large flags. Plastic streamers or garbage bags attached to a flexible shaft also can be used. Cattle can be easily turned and moved in the crowd pen by shaking streamers near their heads.

For moving pigs, a large flag on a short handle or rattle paddle works well. Flags can be made from lightweight plastic tarp material and can vary in size from 20 in x 20 in to 30 in x 30 in (50 cm x 50 cm to 76 cm x 76 cm). Lightweight sorting boards can be used to move livestock, and they are effective for unloading pigs.

Moving cattle with flag.

Moving pigs with paddle.

Moving pigs with sort board.

Shakers (which may be attached to a variety of handles), cans, or paddles that make a rattling sound can move sheep and pigs effectively. The tools should be used to gently guide animals though sound and visual cues and should never be used to strike or "karate chop" an animal. To view a video by Dr. Temple Grandin about proper use of driving tools, go to https://www.grandin.com/videos/videos.html.

Some plants may use "lead" animals like other sheep as an animal handling tool. These animals are trained to go on trailers and lead the other sheep off or to enter pens and lead sheep up chutes.


Lead Sheep

Note: Lead animals must be provided appropriate housing, daily feed, and access to water when not working.

Vibrating or air prods are relatively new driving tools that can move cattle or pigs without applying electrical curent. Because they are often made by modifying tools like engravers, it is critical that any pointed end be worn down and smoothed before the tool is used to handle animals. Vibrating prods can be applied to the back, rump, or shoulders of animals. If used improperly, vibrating air prods can be stressful or even abusive to animals. Like electric prods, vibrating or air prods should never be used to strike or forcefully jab an animal or be applied to sensitive parts of the animal such as the eyes, ears, mouth, nose, vulva, testicles, udder, or anus. The prod should not be used on the animal's head.

Vibrating prods should not be used for sheep. Wool cover makes them less effective. In addition, a sheep's skin is softer than cattle or pig hide, which may make them more prone to injury from careless use of the vibrating prod.

Section 3: Willful Acts of Abuse/Egregious Acts

Some behaviors toward livestock are so severe that they are considered egregious acts of abuse no matter where or why they occur.

Egregious acts of abuse include, but are not limited to:

- **Dragging** a conscious animal, non-ambulatory or otherwise;
- **Intentionally applying prods to sensitive parts** of the animal such as the animal's mouth, eyes, ears, nose, anus, vulva, testicles, or belly;
- **Deliberate slamming** of gates on animals;
- **Malicious driving of ambulatory animals** on top of one another either manually or with direct contact with motorized equipment;
- **Purposefully driving animals off high ledges,** platforms, or off a truck without a ramp (driving market weight or adult animals off a low stock trailer is acceptable);
- **Hitting or beating** an animal;
- **Animals frozen** to the floor or sides of the trailer;
- **Lifting sheep by the wool or throwing a sheep**.

These acts constitute automatic failures on the transportation and plant audits.

Section 4: Developing an Emergency Livestock Management Plan

It is essential that plants have emergency livestock management plans in place. Potential vulnerabilities should be assessed based on geographic location, climate, and other issues that would require swift action to ensure good animal welfare.

Plants should plan for short term emergencies like minor plant breakdowns, minor weather events, and scheduling errors and may develop contingency plans that call for trucks to keep moving under certain conditions until animals can be unloaded in adequate facilities. If a plant possesses the facilities to provide access to fans/water/protection on the plant site, the contingency plan may state that transporters are to use those provisions to provide an optimal internal trailer temperature.

In the event of a disruption to normal operations like a line stoppage inside the plant, the flow of livestock may be disrupted and necessitate keeping livestock in drive alleys or unloading docks, rather than returning animals to holding pens or back to the farm of origin. Establishments should include in their humane handling procedures a method by which animals waiting in drive alleys should be assessed and provided water. Environmental factors such as ambient temperature, humidity, access to shade, and stocking density should be considered when determining when water will be provided to animals being held in a drive alley or conveyance area. If livestock show any signs of stress or discomfort at any time, water should be provided.

In the event of an extended plant breakdown, snow storm, motor vehicle accident, natural disaster, building damage, fire, tornado, or other long-term line stoppage, procedures should be in place to stop additional truckloads of animals from arriving at the plant.

Plans should be kept in an accessible location and should be reviewed at least annually. At a minimum, the emergency plan should include guidance for the following:

- How feed and water will be provided during an emergency, such as a plant shutdown where livestock may need to be held overnight.
- How electricity can be provided through back-up generators should power be lost.
- How housing will be provided to animals should housing become uninhabitable due to fire or weather conditions, such as snow or flood.
- How animals will be evacuated in an emergency such as a fire or flood.
- For animals that cannot be returned to the farm of origin, there should be a designated place such as a livestock auction yard, stockyard, buying station, feedyard, or other location where animals can be unloaded and provided adequate facilities.

Section 1: General Transportation Considerations

Managing the transportation of animals involves many variables, including temperature control, careful driving practices, proper trailer design and maintenance, as well as the actual loading and unloading process. Proper management of these factors should result in enhanced animal welfare and improved meat quality.

Please refer to the applicable industry transportation program for species-specific standards and recommendations. The following items should be considered when transporting animals:

- **Training:** Thanks to meat animal industry leaders, strong science-based programs dedicated to educating producers, transporters, and packers about proper animal husbandry practices exist today. Many of these species-specific programs provide training and certification. Training provides the building blocks of good animal husbandry skills. Certification proves that a producer/transporter/packer is aware of and practices industry-approved animal handling techniques. It is the position of NAMI that producers, transporters, and packers should consider participating in industry-approved, formal transportation training.

- **Truck driving practices:** Careful truck driving helps prevent bruises and injuries. Sudden stops and rapid acceleration increase injuries and stress and ultimately lead to decreased carcass value. Selecting routes that are the most direct and minimizing time on unpaved roads will also provide benefits.

- **Stoppages:** The number of ill, injured, and fatigued animals as well as Dead on Arrival (DOA) and Euthanized on Arrival (EOA) numbers increase dramatically when a vehicle is stopped. Drivers are encouraged to minimize stoppages, especially in hot weather. Keeping trucks moving promotes air flow and reduces heat stress.

- **Design:** Livestock trailers should be designed in a manner that is conducive to the humane transport of the species being transported. All flooring should be non-slip. Trailers must have sufficient height between decks to allow animals to stand in their natural position without their head or back coming in contact with the roof. Internal ramps should sit flush, with panels/rails in place to prevent animals from falling off the side. Ramps should not be so steep they cause animals to slip and should be constructed of non-slip material. Gates and doors should open and close freely and must be able to be secured shut.

- **Maintenance and cleanliness:** Trailers should be kept clean and in good repair. Trailers should be regularly inspected and maintenance should be performed as needed. Excessive manure, urine, and wet bedding should be addressed between loads. The addition of materials such as sand or shavings can provide supplemental traction to floors. Drain plugs/traps should be securely in place after clean out and prior to loading.

- **Loading:** Research shows that overloading livestock trucks can increase bruising and the number of fatigued, injured, non-ambulatory, or dead animals (Ritter *et al*., 2007). Trailers must be loaded at the proper industry recommended level. Trailers should not be overcrowded and gating utilized when loads are light. For guidance on loading density, please reference industry transport guidelines for specific species. Drivers and loading crews must be aware of trailer square footage and average weight of animals to determine number of animals per compartment. Drivers must also be aware of conditions that

require density adjustments such as extreme weather, animal class and condition (*i.e.* cull animals), or physical attributes such as horns. Animals that are not compatible by nature (*i.e.* aggressive intact males, animals of very different sizes) must be segregated and all gates closed on loads that require segregation during transport.

- **Fitness for transport:** All animals presented for transport must be fit for transport. Loading unfit animals is unacceptable and considered an egregious act of abuse by farm audits.

- **Receiving:** The plant is responsible for ensuring that the facility is prepared to receive animals. Ramps and docks should have non-slip flooring and lighting in the area should be sufficient for unloading. Acceptable handling equipment must be available for staff and drivers and training in proper use should be provided. Rushing livestock during unloading can be a major cause of bruises, particularly loin bruises. Management should closely supervise truck unloading. Extreme weather management tools must be provided and loads scheduled to prevent truck line ups and allow for timely unloading of trailers. Policies and means for handling non-ambulatory animals must be provided, including well-maintained euthanasia equipment.

Section 2: Temperature Management During Transport

Temperature extremes can be harmful to animals, but careful planning and temperature mitigation strategies can protect them.

Cold Weather Management

Special Considerations for Pigs: Freezing temperatures and wind chills can be dangerous, particularly for pigs. The combination of cold ambient temperatures and wind speed can create significant wind chill. Wind protection and bedding should be provided according to the species-specific industry standard used by the facility. Older cull swine are particularly vulnerable. Trailers should be loaded lighter in extreme cold because extra room is required to ensure no animal is forced up against the sides of the trailer.

Special Considerations for Cattle, Veal and Sheep: While cattle and sheep are less sensitive to cold weather than pigs, it is still important to manage temperatures to protect animals. Keeping animals dry is essential for protecting them from cold stress. Cold weather transport requires proper boarding and insulating bedding for sheep, veal calves, cull dairy cows, and sometimes cull beef cows, as these animals are all likely to lie down during transport. Veal calves are particularly temperature-sensitive and require special care during transport. They must be handled with extreme consideration and checked often during cold weather transport.

Hot Weather Management

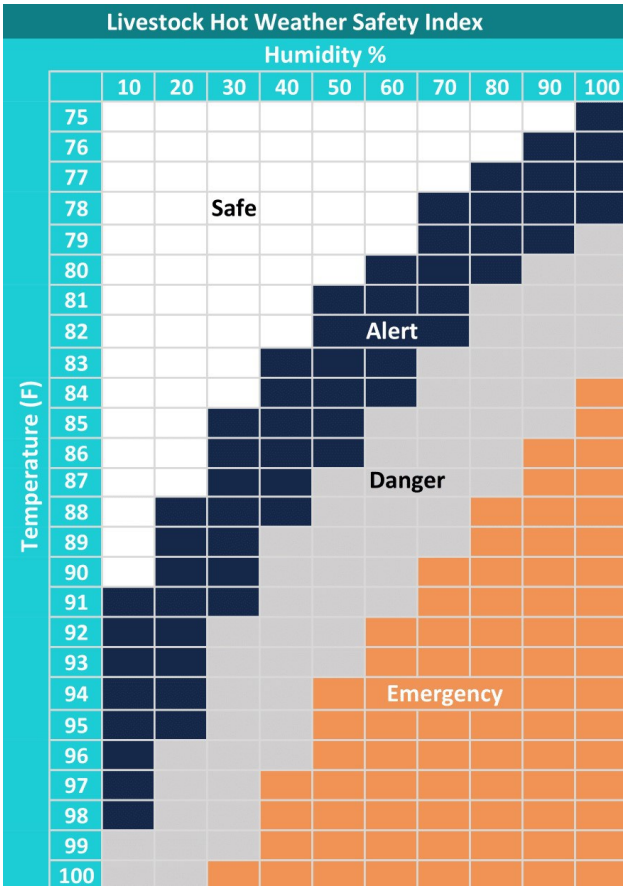
Special Considerations for Pigs: Ensuring that pigs are hydrated prior to transport is extremely important. Hydration can help prevent heat stress. Hot weather and humidity are deadly to pigs because they do not have functioning sweat glands, so special precautionary measures must be taken in hot weather conditions. Problems with heat stress may start to occur at 60ºF (16ºC; National Pork Board TQA Handbook, 2017). At 90ºF (32ºC) death losses almost double compared to 60ºF (Sutherland *et al*., 2009).
Additionally, rapid temperature fluctuations and periods of extremely hot weather can greatly increase the incidence of meat quality and animal welfare issues. In these circumstances, plants should take extra care in handling animals to minimize bloodsplash problems.

Special Considerations for Sheep and Cattle: While sheep and cattle are less vulnerable to heat stress than pigs, it is important to develop heat mitigation plans for sheep and cattle when extreme heat occurs.

Considerations for All Species: Use the following procedures to keep animals cool and eliminate unnecessary transport losses during extreme weather conditions. Refer to your country's industry-specific recommendations for other heat mitigation strategies.

Pre-Transport and Loading:

- The combination of high heat and humidity is especially dangerous if animals must be transported in the 'danger zone' of the emergency index. When possible, schedule transportation and receiving early in the morning or at night.
- Open nose vents.
- Unplug ventilation holes/slots.
- Do not bed pigs with unprocessed, long-stem straw in hot weather because it can increase temperature on the trailer. Processed, chopped straw is acceptable to use in hot weather.
- When necessary, reduce loading densities using good judgement and guidance from industry transportation programs.
- Load promptly at the farm to avoid heat buildup.
- Wetting and misting of hogs and sheep is a recognized heat mitigation strategy.
- See Pork and Beef Quality Assurance Transportation Quality Assurance Programs and the Canadian Livestock Transportation Certification Program for specific recommendations.



Heat Stress Chart—The chart provides a guide for plant managers and truckers to help reduce heat stress of livestock. Hazard to the animal increases when both temperature and humidity increase. When conditions are in the "alert zone", truckers need to be careful to keep livestock cool. When conditions get into the danger and emergency zone, try to shift loading schedules to avoid the hottest part of the day. Problems with heat stress in pigs may start as low as 60°F (16° C.) Source: *National Pork Board Transport Quality Assurance Handbook Version 6.*

During Transport:

- Be prepared to adjust to rapid temperature fluctuations which are especially prevalent in spring and fall.
- Do not stop for extended periods of time. When stopping to check animals, be sure it is for a short period of time to prevent overheating and to keep air moving.

Arrival at Plant:

- Barns/lairage at packing plants should have sufficient capacity and an arrival schedule so that animals can be promptly unloaded from trucks and provided cover, when appropriate.
- Trailers will have better air flow if trucks do not park side by side.
- You may need to initiate heat mitigation strategies at the plant, including wetting, misting and fans. Continuous movement of trailers is also an effective heat mitigation strategy.

Section 3: Timeliness of Arrival and Wait Time to Unload

The time that animals spend on trucks directly correlates to animal welfare and ultimately, to final meat quality (Sutherland *et al*., 2009; Ritter *et al*., 2006). Longer periods of time on a truck without water and extended exposure to extreme weather can cause increased fatigue, EOA, DOA, lameness, injury, and weather-related stress. Moreover, pale, soft, and exudative meat (PSE in swine), dark cutters (in beef), and carcass bruising will increase the longer animals are on a stationary trailer.

In order to reduce unnecessary time spent on a trailer, producers, buyers, transporters, and plant staff need to work together to create a streamlined process that will provide the opportunity for trucks to arrive at a plant in a timely manner and unload promptly. If the stakeholders involved in the transportation of animals do not uphold their responsibilities or communicate efficiently, the results are long truck lines at plants, decreased animal welfare, poor meat quality, tired transporters, and trucks that may be late for their next load.

Delivering and receiving animals at a plant is a multifactorial process and many variables are involved to protect animal welfare, to ensure product quality, and to keep the movement of animals efficient for plant operations. It is recommended that large plants (more animals = more trucks delivering) give each truck a scheduled time to unload. Scheduling trucks ensures the plant staff is available to receive animals, provides a steady flow of trucks to the plant, prevents truck lines, and reduces the time animals spend on the trailer. Plants may give an exact time (*i.e.* 2 p.m.) or a window of time (*i.e.* 2-3 p.m. or 2-6 p.m.) for an appointment. Typically, this depends on harvest plans and space in lairage. It is everyone's responsibility to communicate scheduled appointment times at the plant. Transporters should pay special attention to scheduled appointment times. Arriving early or late can cause a truck line and delay unloading. Trailers should not be warehoused at off-site locations not intended to hold livestock in order to prevent backups.

Producers, buyers, and transporters need to work together to plan a reasonable loading time at the site of origin. The amount of time it takes to load animals depends upon site design, animals' temperament, drive time to the plant, weather, traffic, road conditions, *etc*., and such factors need to be accounted for when determining a loading time. Transporters should always leave immediately after loading in order to provide air movement during hot weather, allow animals to spend less time on the trailer, and stagger loads arriving at the plant.

Even with a precise scheduling program, timeliness of truck arrivals and unloading can still be affected by outside factors including weather, miscommunication of scheduled appointment time at the site of origin and/or plant, plant breakdown/shutdown resulting in lairage being filled to capacity, trucks arriving before/after receiving hours with no staff available, *etc*. If a transporter is delayed and will be arriving outside of their scheduled appointment time, they should communicate an estimated time of arrival to the plant. If the plant is experiencing a situation that does not allow for timely unloading of animals, the plant must initiate its Emergency Livestock Management Plan (see Chapter 1, Section 4).

Section 4: Non-Ambulatory Animals on Trucks

A non-ambulatory animal is an animal that cannot or will not rise from a recumbent position or that cannot walk. This includes, but is not limited to, acutely split animals and animals that require hobbles to assist in the healing of injuries or to prevent further injury.

Delayed unloading can cause death losses and non-ambulatory animals due to extreme temperatures, exposure, and stress. For this reason, animals should be unloaded as soon as possible during periods of extreme temperatures to prevent exposure, stress, and possibly increased mortality.

When a non-ambulatory animal is found on a trailer, the ambulatory animals within the compartment should be removed first, taking care not to compromise the non-ambulatory animal or run the ambulatory animals over it. Once all ambulatory animals are removed from the compartment, the non-ambulatory animal should be moved (where allowed) or euthanized. If a non-ambulatory animal impedes unloading, it should be euthanized or humanely moved (where allowed) before continuing with the unloading process. Ambulatory animals must not be driven over non-ambulatory animals.

To off-load a non-ambulatory animal from a truck, employees must utilize a process that causes as little stress as possible. Examples of devices used for the movement of non-ambulatory animals off of trailers in the U.S. include sleds, slide boards/belting, or carts. A non-ambulatory animal's location within the trailer should be considered when moving it humanely and safely. Live animals must never be dropped to the ground from any part of the trailer.

Canadian federal rules prohibit the movement of non-ambulatory animals. The animal must be euthanized where it is.

Section 5: Euthanizing Animals on Trucks or In the Yards

When an animal will not be slaughtered for human consumption, and it has to be euthanized on a trailer or in the yards, extra care must be taken to ensure that it does not recover sensibility. In addition to the primary application of the euthanasia device (most commonly a captive bolt gun), a second (ancillary) step should be used to ensure death. Examples of a secondary step include:

- Administering a second knock with either captive bolt or firearm.
- Pithing by inserting a thin metal or plastic rod into the hole made by the captive bolt to further damage the brain. Pithing must never be used on ruminant animals (cattle or sheep) that will be used for food.
- Exsanguination (bleeding the animal after it has been euthanized with a captive bolt gun).

Canadian federal rules prohibit the use of pithed swine from use for human consumption.

All signs of return to sensibility that are specified in Chapter 3, Section 3 must be absent. Handlers should stay with the animal until death is confirmed and the animal should be rechecked before moving or disposing of it to ensure that euthanasia was effective.

After arrival at the plant livestock should be rested prior to stunning to improve meat quality, following species -specific company or industry standard practices (Warriss, 1998, Ferguson, 2001). When possible, animals should be kept in their original transport groups to prevent aggressive behavior due to new social environments.

For a detailed description of recommended pen space allocations and optimal facility layout, see Appendix I.

Section 1: Proper Design and Use of Restraints

A variety of equipment is used to prepare animals for stunning and slaughter, and the design and maintenance of them may impact both handling and the quality of stunning. Common examples are center track and 'V' restrainers, but some plants stun animals in pens. Pigs and cattle should enter a restraint device easily with minimal balking. Correcting problems with animal restraint devices can also help reduce bruises and meat quality defects such as blood splash. The basic principles of low-stress restraint are outlined below.

Well-designed stunning box.

Design of Restraints

Cattle, pigs, and sheep may balk at the restrainer entrance if they can see people or moving conveyors through the end of the restrainer. To block the animals' view of people or moving objects while they are entering the restrainer, the following methods can be used:

- Install metal shields on box-type restrainers to block animals' vision.
- If the restrainer exit faces a blank wall, a curtain will usually not be needed.
- Block the animals' vision of an escape route until it is fully held in a restraint device. This is especially important on restrainer conveyors.
- A flexible curtain at the discharge end of the conveyor works well.

Additionally, the restraint device must be properly lit. Animals will not enter a dark place or a place where light blinds them. To reduce balking at the entrance of a conveyor restrainer, install a light above the entrance over the lead-up chute. It should illuminate the entrance of the restrainer, but must not shine into the eyes of approaching animals. Lighting over the top of the conveyor in the restrainer room will help induce cattle to raise their heads for the stunner. Light coming up from under a conveyor restrainer should be blocked with a false floor to prevent animals from balking at the "visual cliff effect."

Restrainer systems should be equipped with a long, solid hold-down rack to prevent rearing. For cattle, the hold-down should be long enough so that the animal is fully settled down onto the conveyor before it emerges from under it. This hold-down is only intended as a visual barrier, and should not press on the animal's back.

Eliminate air hissing and other distractions such as clanging and banging (see Chapter 1, Section 1). Extending the solid hold down cover on a conveyor restrainer will usually have a calming effect and most animals will ride quietly. Solid hold-downs can also be beneficial for pigs on conveyor restrainers. Sheep have an intense, natural behavior to follow the sheep in front of them, so a solid hold down may not be needed.

Both sides of V-conveyor restrainers should move at the same speed. To test this, mark each side with tape or a crayon. After three revolutions, the marks should be no more than four inches apart, or the width of one slat.

As previously discussed, it is important to provide good footing in all handling areas. Provide non-slip flooring in box-type restrainers and a non-slip, cleated entrance ramp on conveyor restrainers. A restraint device must either fully support an animal or have non-slip footing so the animal can stand without slipping. Animals tend to panic when they lose their footing and feel like they may fall. Restraint devices that use a floor that suddenly drops, as opposed to a pneumatically controlled false floor, are not acceptable.

The restraint device must apply sufficient pressure to provide the feeling of being held, but avoid excessive pressure that causes pain. Install a pressure regulator on a pneumatic or hydraulic system to reduce the maximum pressure that can be applied. Very little pressure is required to hold an animal if it is fully supported by the device. If an animal bellows or squeals in direct response to the application of pressure, the pressure should be assessed, and if needed, reduced. Different sized animals may require differing amounts of pressure. Hydraulic or pneumatic systems should have controls that enable a cylinder on the device to be stopped in mid-stroke.

Restraint devices should hold fully sensible animals in a comfortable, upright position. Shackling and hoisting, shackling and dragging, trip floor boxes and leg clamping boxes are not acceptable. Restrainers that rotate animals on their backs are used sometimes in glatt kosher operations in the United States, but more commonly in glatt kosher operations in South America and Europe. For information on using and auditing these devices, refer to: https://www.grandin.com/ritual/rec.ritual.slaughter.html (also see Chapter 3, Section 4: Religious Slaughter).

Any parts of a restrainer that contact the animal should have smooth, rounded surfaces and be designed so that uncomfortable pressure points are avoided. Parts of restrainers operated by pneumatic or hydraulic cylinders that press against the animal's body should move with a slow steady motion. Sudden, jerky motion excites animals. On existing equipment, install flow control valves to provide smooth steady movement of moving parts that press against the animal.

Head restraint is much more agitating for livestock than body restraint. Never hold an animal in a head restraint device for more than a few seconds; the animal should be stunned or ritually slaughtered immediately after the head holder is applied. The animal's reaction to head restraint should be observed. If the animal struggles or vocalizes, it is an indication that the device is causing discomfort. Animals can be held in a comfortable body restraint for longer periods.

Calm animals make accurate and effective stunning possible, so noise should be reduced in the stunning area. As in other areas, mufflers can be used on air valve exhausts or they can be located outside. Rubber stops on gates can be used to stop clanging, and braking devices on the shackle return can improve safety and reduce loud noise. In addition, consider replacing small diameter with large diameter plumbing, which makes less noise, and replace pumps with quieter ones. Rubber hose connections between the power unit and metal plumbing will help prevent power unit noise from being transmitted throughout the facility. Any new equipment installed in animal holding or stunning areas should be engineered for quietness.

Rubber flap gate ; Vertical slide gates constructed from flexible curtain made from conveyer belting will not injure the pigs if it is accidentally closed on them. Note how the framework that slides in the track is bolted above the curtain.

It is possible to modify existing restraint devices to lower vocalization scores and agitation. Balking at the entrance is also easy to reduce. Many effective modifications require minimal expense and can include non-slip floor grating, lighting, and shields to block vision.

General Handling at Restraint

The following points will help handlers understand general handling principles at restraint:

- If an animal is walking into the restrainer by itself, do not touch it with an electric prod.
- Gentle handling prevents damage to small blood vessels caused by excited animals jamming against each other or equipment. Minimize time to bleeding after stunning to minimize meat damage.
- Electric prod usage should be kept at a minimum.
- Animals should never be left in the restrainer system during breaks or lunch.
- Be sure that one side of a V restrainer does not run faster than the other. This causes stretching of the skin that damages blood vessels.
- Application of a second electrical stun should be done only when the there is a question about the efficacy of the initial stun or if routine second stuns – "security stuns" – are part of a plant's systematic approach to animal welfare. Note that additional stuns can increase bloodsplash in pigs.
- Do not slide the stunning wand on the pig when the wand is energized. This is considered hot wanding.
- The slats on the V restrainer and hold-down rack and chutes should be insulated to prevent electrical current leakage.

***Note*:** Electrical immobilization must not be confused with electric stunning. Electrical immobilization devices that restrain an animal by paralyzing muscles, but do not cause insensibility, are unacceptable.

Section 2: Recommended Stunning Practices

Good stunning practices promote good animal welfare and meat quality, and are typically included in a country's humane handling regulations. Captive bolt stunning is widely used in cattle slaughter. Electric stunning is performed in pig and sheep slaughter. Properly done, electric stunning passes high amperage current through the brain and induces instantaneous insensibility by inducing a grand mal epileptic seizure. The use of carbon dioxide to produce unconsciousness is used in pig slaughter as well. Firearms are also sometimes used to stun animals. Please refer to the American Veterinary Medical Association's (AVMA) Guidelines for

the Euthanasia of Animals and Guidelines for the Humane Slaughter of Animals for information on the use of firearms to stun livestock. When stunning is done correctly, animals feel no pain and become instantly unconscious. Stunning animals correctly also prevents stress, which enhances meat quality.

Captive Bolt Stunning

The penetrating captive bolt stunner consists of a steel bolt housed in a barrel with a flange and piston at one end. When fired, the expansion of gases propels the piston forward and forces the bolt out of the muzzle of the barrel. The bolt is retained within the barrel by a series of cushions that absorb the excess energy of the bolt. The bolt is then retracted back into the gun either automatically or manually, depending upon the design of the gun. These guns are powered by either gunpowder in a cartridge or compressed air (pneumatic stunner).

Pneumatic stunners must have an adequate air supply. Low air pressure is one cause of poor stunning. The compressor pressure gauge should be checked to make sure that the stunner is receiving the manufacturer's recommended air pressure for the species, sex, and weight class of the animal being stunned. All equipment manufacturers' recommendations and instructions must be followed.

The two main factors contributing to the effectiveness of the captive bolt gun are 1) bolt velocity and 2) accurate placement. To be effective, the bolt must have sufficient bolt velocity for the weight class and animal type. Bolt velocity is dependent on grain strength of the cartridge (or air pressure), maintenance, repair, and storage. In addition, the gun must be accurately placed on the animal's head, perpendicular to and flush with the skull. To produce instantaneous unconsciousness, the bolt of a penetrating captive bolt gun must penetrate the brain with a high concussive impact.

The correct positions for stunner placement are shown in the diagrams on the following page (pg. 23).

For cattle, the stunner is placed on the middle of the forehead on the intersection an "X" formed by drawing lines between the eyes and the base of the horns. Stunning an inch (2.5 cm) above the intersection of the X is also very effective. If a non-penetrating stunner is used, as they sometimes are with cattle and veal in religious slaughter, accurate aim is critical to achieve instantaneous insensibility. A head-holding device may be needed to position the head for non-penetrating captive bolt.

For pigs, the frontal site is in the center of the forehead slightly above a line drawn between the eyes, and the captive bolt gun should be held flush to the head, or at the intersection of an "X" formed by drawing lines between the eye and the base of the top of the ear.

For sheep, there are three acceptable points of entry for firearms: the front of the head just above the eyes, the top of the head, and slightly behind the poll aiming toward the angle of the jaw (*i.e*. the base of the tongue).

A good stunner operator learns to be patient and avoid chasing the animal's head, taking the time to aim and get one good, effective shot squarely on the animal's head. A good stunner also recognizes when he hasn't achieved a good stun and immediately takes a second shot. A second application of the stunner is acceptable as a security measure provided the auditor has had the opportunity to confirm insensibility after the initial stun.

Diagram 1

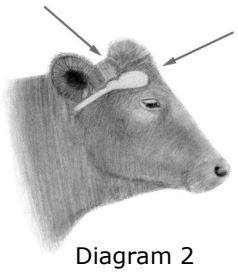


Diagram 2

Beef Cattle Stunner Placement—For cattle, the stunner is placed on the middle of the forehead on an "X" formed between the eyes and the base of the horns. Stunning an inch above (2.5 cm) the intersection of the X is also very effective. The animal can also be shot with a firearm behind the poll (Diagram 2). This is a common point of entry for animals with thick skull mass, horns, or when the frontal shot is difficult to make. **The poll shot is for firearms only.**

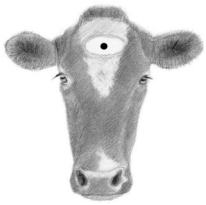


Diagram 3

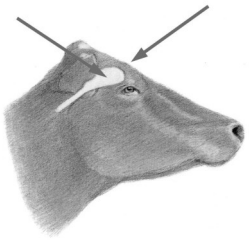


Diagram 4

Dairy Cattle Stunner Placement—For long-faced dairy cattle, such as Holsteins, the point of entry for firearms and penetrating captive bolt guns is approximately 2 inches (5cm) above the intersection of the "X" formed between the eyes and the base of the horns (Diagram 3). Holstein can also be shot with a firearm behind the poll (Diagram 4).

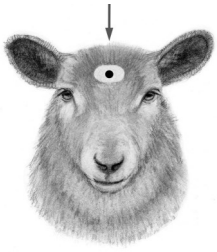


Diagram 5

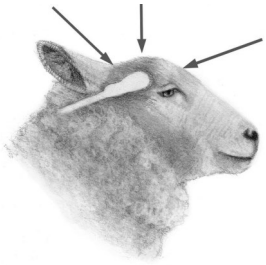


Diagram 6

Sheep Stunner Placement—For the application of the captive bolt gun, the ideal point of entry is the highest point/top of the head (Diagram 6). There is great variation in the skull shape of the different sheep breeds. There are three acceptable points of entry for firearms on sheep: the front of the head just above the eyes, the top of the head and the back of the poll. When shooting on the frontal part of the head, the bullet must enter right above the eyes (Diagram 5). When an animal has horn mass, the most effective shot is behind the poll, pointing towards the mouth of the sheep. The ideal position for shooting sheep is the top of the head with the bullet traveling down towards the throat.

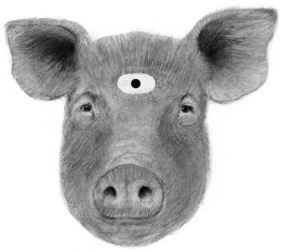


Diagram 7

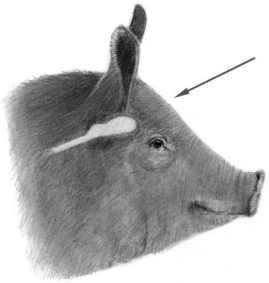


Diagram 8

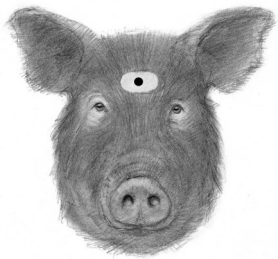


Diagram 9

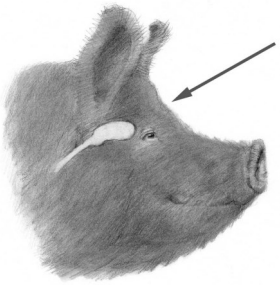


Diagram 10

Market Pig, Sow, and Boar Stunner Placement—For gunshot the bullet should enter the pig's skull approximately 1 inch (2.5cm) above the eye-brow, in the middle of the forehead. Ideally, the bullet will travel at an angle directing it to the brainstem (Diagrams 7 & 8). For older boars and sows, the shot should be located 1.5-2 inches (3-4 cm) above the eye-brow (Diagrams 9-10). When using a penetrating captive bolt, the target for shooting a market weight pig is approximately 1inch (2.5cm) above its eyebrow, in the middle of its forehead.

For mature boars and sows, the captive bolt shot should be located 1.5-2 inches (3-4cm) above the eyebrow. Mature pigs with exaggerated skull structures may require a slightly lower (1cm) target location. Your captive bolt gun must provide adequate force and penetration depth, which many of the captive bolt guns for stunning do not. New technology has provided captive bolts with extended bolts and proper force for more effective stunning and killing of larger animals.

Captive Bolt Stunner Maintenance and Design

Poor stunner maintenance and/or poor stunner loading can result in failed effectiveness of the captive bolt gun. Stunners must be cleaned and serviced per the manufacturer's recommendations to maximize velocity and to prevent misfiring or partial firing. If a "test stand" to measure bolt velocity is available, daily testing is strongly recommended for plants. For small plants, regular, periodic testing is acceptable.

A verified maintenance program where a trained employee signs off each day that he/she has cleaned and tested the stunners is recommended. Captive bolt stunners must be taken apart and cleaned every day they are fired. If parts show signs of wear, they should be replaced. A stunner should be cleaned every week even if it is not fired.

Stunner cartridges must be kept dry and the correct cartridge strength must be used. A day's supply of cartridges may be stored in the stunning area. It is recommended that all leftover cartridges that have been exposed to moist environments be properly discarded daily. For long-term storage beyond a day's supply, store cartridges in an airtight container in a room with low humidity, such as an office. Damp cartridges will cause poor stunning and should be properly discarded.

A major impediment to good stunning is poor ergonomic design of bulky pneumatic stunners. Ergonomics for stunning in a conveyor or restrainer can be improved with a handle extension on the stunner and by hanging the pneumatic stunner on an angle.

Fatigued operators can also contribute to ineffective stunning. Scoring at the end of the shift will pinpoint this problem. In some large plants, two stunner operators may be necessary. Rotating the stunner operator to other jobs throughout the day may help prevent errors caused by fatigue. To reduce fatigue, the balancer device that reduces the heavy pneumatic stunner weight must be well-maintained so that it works freely and easily.

Electric Stunning

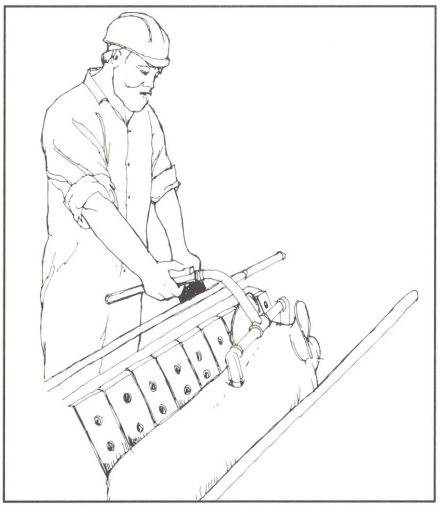
When electric stunning is done correctly, the animal will feel nothing. To produce instantaneous, painless unconsciousness, sufficient amperage (current) must pass through the animal's brain to induce a grand mal epileptic seizure.

There are three distinct types of electric stunning:

1. **Head-only stunning:** Electric current is passed through the brain only and causes a temporary period of unconsciousness. The animals will return to consciousness unless pigs are bled within 15 seconds and cattle and sheep are bled within 10 seconds. When head-only stunning is used, the signs of a grand mal epileptic seizure can be easily observed. The first phase is a still, rigid (tonic) phase, followed by a vigorous kicking (clonic) phase. If the animal is not bled, it will return to sensibility when the kicking phase stops. This type of stunning is often used in Halal slaughter plants.
2. **Head-to-body cardiac arrest electric stunning:** Electric current is simultaneously passed through the brain and the heart with one application. Some systems use a single wand that extends from head to body. When using a single wand, the distance between the head electrode and the back electrode should not exceed 14 inches (35 cm). Other systems use two separate wands that are applied to the

brain and the heart at the same time. Cardiac arrest stunning requires the use of a restraining device to prevent the animal from falling away from the stunning wand before it receives the complete stun. When correctly done, unconsciousness is permanent. However, bleeding within 60 seconds is recommended.

3. **Two-step cardiac arrest electric stunning**: In a two-step system, the current is first passed through the head, then immediately applied to the chest to stop the heart. When correctly done, unconsciousness is permanent. However, bleeding within 60 seconds is recommended.



Electric head-to-back cardiac arrest stunner placed in the correct position on a big in a V restrainer.

In all three types, the electrodes must be placed properly to ensure that the electric current passes through the brain.

When "head-only" stunning is used with scissor-type tongs, the electrodes may be either placed on the forehead or top of the head and bottom of the head or clamped around the sides of the head like ear muffs. Electrodes also may be placed in a "top to bottom" position on top of the head and below the jaw. Electrodes must be placed firmly against the animal because breaking electrical contact during the stun may reduce the effectiveness of the stun.

When a wand with two stationary electrodes is used, they may be placed in the hollow behind the ears or on the forehead (in some countries), for at least two seconds for pigs and three seconds for sheep. Stunners should be equipped with a timer. Stunning tongs and wands must never be placed on the neck because this would cause the current to bypass the brain, nor should they be placed on sensitive areas such as inside the ear or in the eye.

Canadian federal rules prohibit placing electrodes on the forehead or top of the head and bottom of the head. In Canada, electrodes should only be placed around the sides of the head. Head-to-back stunning is permissible.

Some plants may achieve cardiac arrest stunning through a two-step method by first applying the tongs to the head for two seconds for pigs and three seconds for sheep to induce insensibility, then immediately reapplying to the chest for an additional two seconds for pigs and three seconds for sheep.

It is essential that electrodes be fully energized only *after* they are in full and firm contact with animals. If electrodes are energized and then applied, animals will vocalize. This is called "hot wanding," and is one of the core criteria for measurement of stunning.

Electrical Specifications for Electric Stunning

Meat packers should use amperage, voltage, and frequency settings which will reliably induce unconsciousness. Insufficient amperage or a current path that fails to pass through the brain results in a large electric shock or heart attack signs, even though the animal may be paralyzed and unable to move. Both properly and improperly stunned cardiac arrested animals can look similar. Electric stunning equipment must operate within the electrical parameters that have been verified by scientific research to induce instantaneous insensibility.

Modern stunning circuits use a constant amperage design. The amperage is set and the voltage varies with the animal's resistance. Older style circuits are voltage-regulated. These circuits are inferior because they allow large amperage surges, which can fracture bones and cause blood splash.

Amperage: The flow of electricity is called the amperage and is measured in amps. Scientific research has shown that an electric stunner must have sufficient amperage to induce a grand mal seizure to ensure that the animal will be made instantly insensible. Insufficient amperage can cause an animal to be paralyzed without losing sensibility. Amperage is the most important variable to measure. If lower amperages are used, the stunner may induce cardiac arrest, but the animal will feel the shock because the seizure was not induced.

Plants should be permitted to use circuits that lower the amperage setting after an initial, one second stun at the recommended amperage. Plants should also be encouraged to use constant amperage electronic circuits that prevent amperage spiking. Constant amperage circuits prevent high amperage spikes. High amperages can increase blood spots (Blackmore and Peterson, 1981).

Voltage: The force or pressure of the current is called voltage and is measured in volts (V). There must be sufficient voltage to deliver the recommended minimum amperage; 250 volts is the recommended minimum voltage for pigs to ensure insensibility. The required voltage depends on the type of stunner, the wetness of the animal's skin, and whether or not the animal is dehydrated.

Frequency: The frequency of the current is how many times the waveform is repeated in a second and this is measured in Hertz (Hz). This is important for head and back stunning. Electricity that is supplied at a frequency of 50 Hz means it repeats itself 50 times each second. Most AC power sources (household power) are delivered at 50 Hz or 60 Hz (U.S. and Canada are 120 V/60 Hz).

Electrical Settings for Different Species

Small Pigs 180-200lb/85kg
Amperage (amps): Minimum 1.25
Voltage (volts): Minimum 250
Frequency (Hz): 50-60
Time (seconds): Minimum 2.0

Market Pigs and Large Sows >200lb/100kg
Amperage (amps): 2.0 or more
Voltage (volts): Minimum 250
Frequency (Hz): 50-60
Time (seconds): Minimum 2.0

Sheep
Amperage (amps): Minimum 1.0
Voltage (volts): Minimum 250
Frequency (Hz): 50-60
Time (seconds): 3.0

Cattle
Amperage (amps): 1.5
Voltage (volts): 400
Frequency (Hz): 50-60
Time (seconds): 1.0 for insensibility, up to 15.0 to reduce kicking

***Note:** Electrically-stunned cattle may require a two-phase stun: a current should first be applied across the head to render the animal insensible before a second current is applied from the head to the body to induce cardiac arrest. Modern systems may have a third current to reduce convulsions.

***Note:** It will typically take 3-5 seconds to stun pigs and sheep.

A single 400-volt, 1.5-amp current passed from the neck to the brisket failed to induce epileptic form changes in the brain in cattle. Observations in plants outside the U.S. indicate that a single current passed from the middle of the forehead to the body appears to be effective, but research is needed to verify this.

To ensure that the electrodes remain in firm contact with a bovine's head for the duration of the stun, the animal's head must be restrained in a mechanical apparatus. Due to the high electrical resistance of cattle hair, the electrode should be equipped with a water system to provide continuous wetting during the stun.

Ensuring Effective Electric Stunning

Adequate electrical parameters for cardiac arrest stunning at a frequency of 50 to 60 cycles cannot be determined by clinical signs, because cardiac arrest masks the clinical signs of a seizure. Measurement of brain function is required to verify any new electrical parameters that may be used in the future. Common causes of a return to sensibility after electric stunning are:

- Wrong position of the electrode
- Amperage that is too low
- Poor bleed out
- Poor electrode contact with the animal
- Other factors that may contribute to poor electrical stunning are:
  - Dirty electrodes
  - Insufficient wetting of animals
  - Electrode contact area that is too small
  - Animal dehydration
  - Dirty animals
  - Long hair or wool
  - Interrupted contact during the stun

Animals should be wetted prior to stunning. The most modern sheep stunners from New Zealand use water jets to conduct electricity down through the wool. It is also important that electrodes be cleaned frequently to ensure a good electrical connection. The minimum cleaning schedule should be once a day. For personal safety, the electrode wand must be disconnected from the power supply before cleaning.

Preventing 'Hot Wanding'

To prevent pain to the animal and blood spots in the meat, the wand must be firmly pressed against and in full contact with the animal before electrodes are energized. The operator must not break and remake the circuit during the stun as this causes the animal's muscles to tense up more than once and blood spots may increase. If the stunning wand is energized before it is in full contact with the pig, the pig will squeal, which is called "hot wanding." Hot wanding is detrimental to welfare as the animal feels it, and it is likely to increase blood spots in the meat.

Stunning wands and wiring should be checked often for electrical continuity and electrodes should be kept clean to provide good electrical contact. A worn switch also may break the circuit enough to cause blood spots. Operators should never use the stunning wand as a prod.

Plants that observe significant vocalizations immediately prior to electrical stunning should consider whether this is the sign of a hot wanding problem. Plants with excessive vocalization scores during electric stunning also often have return to sensibility problems.

Supplemental Information on Electric Stunning

Cattle

The OIE (2016) requires a minimum of 1.5 amps applied across the head to induce immediate epileptiform activity in the electroencephalogram (EEG) of large cattle. Typical stunning systems in the U.S. are 60 Hz. Modifications that would result in higher initial frequencies are not recommended. The frequency may rise after the initial application. A frequency of 60 or 50 cycles should be used unless higher frequencies are verified in cattle by either electrical or neurotransmitter measurements taken from the brain. A more recent study has shown that 1.15 amps sinusoidal AC 50 Hz applied for one second across a bovine's head is effective to induce insensibility (Wotton et al., 2000). A longer application is usually required to depolarize the spine to reduce kicking (up to 15 seconds).

Pigs

Research has shown that too high an electrical frequency will fail to induce insensibility and is most effectively induced at frequencies of 50 Hz (Anil and McKinstry, 1992). Frequencies from 2000 to 3000 Hz failed to induce instant insensibility and may cause pain (Croft, 1952; Warrington, 1974; Van der Wal, 1978). However, in pigs weighing less than 200 lb. (80 kg), research has shown that a high frequency 1592 Hz sine-wave or 1642 Hz square wave head; only stunning at 800 ma (0.80 amp) would induce seizure activity and insensibility in small pigs (Anil and McKinstry, 1992). One disadvantage is that the pigs regained sensibility more quickly compared to stunning at 50 to 60 Hz. The pigs in this experiment weighed one-third less than comparable U.S. market pigs and this probably explains why the lower amperages were effective.

Other research has shown that stunning pigs with frequencies higher than 50 to 60 cycles is effective. This is the type of stunning used in many large U.S. pork slaughter plants. In this experiment, the pigs were stunned with a head only applicator. High frequency stunning has never been verified to induce instant insensibility when applied as a single stun with a head-to-body electrode. Equipment is commercially available for stunning pigs at 800 Hz applied across the head by two electrodes and a second stun with 50 to 60 Hz from head to body. Research has shown that 800 Hz is effective when applied by two electrodes across the head (Wenzlawowicz *et al*., 1999; Lambooij *et al*., 2007).

Carbon Dioxide (CO_2) Stunning Parameters

Carbon dioxide stunning may be used in swine to induce death *or* to result in a state of surgical anesthesia (unconsciousness). These states are dependent upon the relationship between exposure time and CO_2 concentration, and systems will produce pigs in both states.

Key Points for CO_2 Stunning:

- Research and manufacturer recommendations show that concentrations of CO_2 for pigs should be about 90% and never less than 82% (Atkinson et al., 2012).
- Concentration and dwell time in CO_2 should be documented.
- If concentrations are lower, then dwell times must be longer.

In the scientific literature, there are inconsistent results on how pigs react to the induction of CO_2 anesthesia. Some genetic breeds or lines of pigs tend to attempt escape from the container when they first smell the gas while others respond with a calm anesthetic induction. For example, a Dutch researcher found that the excitation phase occurred prior to the onset of unconsciousness (Forslid, 1987). Another study has shown

that pigs of a Pietrain genetic background may have more physiological reactiveness to CO_2 induction (Troeger and Wolterdorf, 1989). However, Australian researchers found that being shocked with an electric prod was more aversive (disliked) than inhaling CO_2 (Jongman *et al*., 2000)

Background genetics may be a contributing factor and may require a different gas mixture or other adjustment. Observations in several plants indicate that elimination of the stress (halothane) gene through breeding has reduced problems with stressful anesthetic induction. The stunning parameters for each plant should be evaluated by comparing gas concentration to insensibility after stunning. In most systems, the induction phase is not visible, but where it is, the gas mixture is not acceptable if the pigs have excessive excitation or escape movements prior to loss of consciousness. However, it is normal to observe kicking and convulsions (clonic and tonic systemic and muscle reactivity phases) after pigs lose consciousness (fall over).

Handlers must be careful not to overload the gondolas (elevator boxes) that hold groups of pigs in a CO_2 system. In a properly loaded gondola, the pigs must have sufficient room to stand without being on top of each other. There are many different sizes and configurations of gas stunning systems, and each facility has its own specifications for loading animals. Refer to the facility procedure for gondola loading parameters. This should be supported by either manufacturer recommendations or company/facility data. The National Pork Board TQA transportation space recommendations are an accepted guideline for gondola space (graphic at right). Handlers must never overload the gondolas by forcing pigs to jump on top of each other.

Many automated CO_2 units use powered (automatic) driving gates. Powered gates may be used to move animals by making contact with them, but should never cause an animal to fall and they should never be used to skid or slide non-ambulatory animals.

In evaluating any stunning method, one must look at the entire system including the handling and means of stunning. Group stunning using CO_2 gas provides significantly less stressful handling as pigs are moved more slowly and in groups which eliminates the need for pigs to line up in single file chutes and then a restrainer, which is contrary to their natural behavior.

Transport Space Recommendations*

Average Weight (lbs.)	Square Feet Per Head
12	0.65[22]
50	1.53
100	2.32
150	2.95
250	4.26
275	4.57
300	4.79
350	5.48
400	6.39
450	7.00
500	7.69
550	8.39

*When weather conditions become extreme, consult Cold– and Hot-Weather sections for adjustment.

National Pork Board TQA transportation space recommendations are an accepted guideline for gondola space.

Stunning to Bleed Interval Recommendations

Captive bolt: Both penetrating and non-penetrating captive bolts are effective if used and maintained correctly. Non-penetrating stunners cause less damage to the brain (Finnie et al., 2000). Animals stunned with a non-penetrating captive bolt gun should be bled within 30 seconds. There is no maximum stun-to-bleed interval for penetrating captive bolt (OIE 2016).

CO_2: There is no maximum stun-to-bleed interval for large machines with long duration immersion. The maximum stun to bleed interval for short duration (where immersion may be less than 90 seconds) is 30 seconds.

Electric cardiac arrest: Sixty seconds maximum if no secondary stun is applied.

Head-only reversible electric: Pigs should be bled within 15 seconds and cattle and sheep should be bled within 10 seconds when head-only reversible electric stunning is used.

Note: This parameter does not have to be measured for welfare reasons unless non-penetrating captive bolt or head-only reversible electric stunning is used.

Section 3: How to Determine Insensibility and the Signs of Return to Sensibility

Physiological processes occur in response to stunning and some of these processes can be confusing. It is important for anyone working in meat plants or other facilities where livestock are slaughtered to understand what various physiological processes mean and don't mean in different species and how they may be impacted by stunning methods. With this information, proper assessments of insensibility can be made, and appropriate additional actions can be taken when necessary to ensure insensibility.

The latest research by Terlouw, et. al. (2016) confirms that consciousness and unconsciousness occur on a continuum that essentially has three phases: 1) definitely unconscious, 2) the transition phase, and 3) definitely conscious. The presence of one or more of three signs: corneal reflex (eyeball movement in response to touch), eyelash reflex in response to touch, or rhythmic breathing (where the ribs move in and out at least twice) indicates that an animal is unconscious but is in the transition phase and may soon become conscious (see Tables 1 and 2 , pg. 31 and 32, respectively). In such a case, a prompt second stun is essential from an immediately-available backup stunner.

Limb Characteristics

Captive Bolt, Gunshot, and Electrical Stunning

Uncoordinated kicking of the unrestrained back leg and uncoordinated paddling of the front legs are often misunderstood and misinterpreted.

With firearms, captive bolt, and electrically stunned animals, kicking will occur. Ignore the kicking; the head should be your focus. When using a captive bolt gun or firearm, hogs in particular can display violent and uncoordinated kicking and thrashing. This is not an indication of sensibility, and should not be confused with a righting reflex. Paddling movements may also continue even when the spinal cord is severed, because the walking circuit is located in the middle of the spine.

CO_2 Stunning

When pigs are stunned using CO_2 to induce insensibility, some animals may have slow limb movement. This is permissible. Additionally, agonal respiration or gasping is sometimes found in animals stunned with CO_2. This is an abnormal pattern of respiration caused by a natural reflex of the brainstem and may be accompanied by strange vocalization and sudden, involuntary reflexes including muscle jerks or twitches. This is permissible.

Table 1: Assessing Unconsciousness in Livestock During Slaughter

Definitely Unconscious: ***ALL of the following signs are ABSENT***	**Unconscious But Beginning Transition Back to Consciousness:** ***ONE OR MORE of the following signs are PRESENT***	**Definitely Conscious:** ***ANY of the following signs are PRESENT***
• Menace reflex that occurs when a hand is waved in front of the eye without touching • Eyelash reflex in response to touch • Corneal reflex* • Rhythmic breathing where the ribs move in and out at least twice	• Eyelash reflex in response to touch • Rhythmic breathing where the ribs move in and out at least twice • Corneal reflex*	• No loss of posture/animal standing • Righting reflex on the rail • Vocalization • Spontaneous, unprovoked blinking • Menace reflex that occurs when a hand is waved in front of the eye without touching • Eye pursuit of a moving object
Unconscious: No Action Needed	**Unconscious: Re-stun Immediately**	**Conscious: Re-stun Immediately**

**For cattle, a finger may be used to test the corneal reflex. Because pigs and sheep have small eyes, a small blunt object, like a pencil eraser or something similar may be used.*

Table 2: Signs of a Properly Stunned Animal by Stunning Method

	Head	Tongue	Back	Eyes	Limbs	Vocalization	Respiration	Tail	Response to pain
Cattle -- captive bolt	Must appear dead, hang straight and floppy	Straight and limp	Hanging straight, no righting reflex	No natural blinking. Wide open, blank stare, no response to touch; nystag-	Uncoordinated kicking of hind legs is acceptable, no righting reflex present	None	Rhythmic breathing (ribs moving in and out at least twice) is absent. Agonal gasping not acceptable	Relaxes shortly after being on the rail	A pinch or pinprick may be applied to the nose only and no response should be observed.
Cattle -- electric	Must appear dead, hang straight and floppy	Straight and limp	Hanging straight, no righting reflex	Eyes may vibrate (nystagmus), but no natural blinking	Uncoordinated kicking of hind legs is acceptable, no righting reflex present	None	Agonal gasping like a fish out of water is normal. Rhythmic breathing (ribs moving in and out at least twice) is absent.	Relaxes shortly after being on the rail	A pinch or pinprick may be applied to the nose only and no response should be observed.
Pigs -- CO2	Must appear dead, hang straight and floppy	Straight and limp	Hanging straight, no righting reflex	No natural blinking	Uncoordinated kicking of hind legs is acceptable, no righting reflex present	None	Agonal gasping like a fish out of water is normal. Rhythmic breathing (ribs moving in and out at least twice) is absent.	Relaxes shortly after being on the rail	A pinch or pinprick may be applied to the nose only and no response should be observed.
Pigs -- electric	Must appear dead, hang straight and floppy	Straight and limp	Hanging straight, no righting reflex	Eyes may vibrate (nystagmus), but no natural blinking	Uncoordinated kicking of hind legs acceptable, no righting reflex present	None	Agonal gasping like a fish out of water is normal. Rhythmic breathing (ribs moving in and out at least twice) is absent.	Relaxes shortly after being on the rail	A pinch or pinprick may be applied to the nose only and no response should be observed.
Pigs -- captive bolt	Must appear dead, hang straight and floppy	Straight and limp	Hanging straight, no righting reflex	No natural blinking. Wide open, blank stare, no response to touch; nystag-	Uncoordinated kicking of hind legs is acceptable, no righting reflex present	None	Rhythmic breathing (ribs moving in and out at least twice) is absent.	Relaxes shortly after being on the rail	A pinch or pinprick may be applied to nose only and no response should be observed.
Sheep -- electric	Must appear dead, neck hangs on angle with limp and floppy head	Straight and limp	Due to anatomical differences in sheep, back may not hang completely straight; no righting reflex	Eyes may vibrate (nystagmus), but no natural blinking	Uncoordinated kicking of hind legs is acceptable, no righting reflex present	None	Agonal gasping like a fish out of water is normal. Rhythmic breathing (ribs moving in and out at least twice) is absent.	Relaxes shortly after being on the rail	A pinch or pinprick may be applied to the nose only and no response should be observed.

Head Characteristics: All Stunning Methods

To put it simply, THE HEAD MUST BE DEAD. When cattle are shot with a captive bolt, it is normal to have a spasm for 5 to 15 seconds, but the spasm should stop after 15 seconds. For all methods of stunning, when cattle and pigs are hung on the rail, their head should hang straight down and their backs must be straight.

Due to differences in anatomy, sheep that are properly stunned and are insensible may not hang with their necks straight down. However, their heads should be limp and floppy.

Back and Neck Characteristics: All Stunning Methods

A post-stun spasm is normal and may cause some neck flexing, generally to the side. However, the neck should relax, and the head should flop within about 20 seconds. At that point, the back should hang straight in cattle and pigs. Anatomical differences in sheep prevent the neck from hanging completely straight. Animals stunned with gas stunning equipment should be completely limp and floppy (though animals may exhibit slow limb movement and gasping, which is acceptable).

No stunned animal should exhibit an arched-back righting reflex. When a partially sensible animal is hung on the rail it will attempt to lift up its head as if the animal is trying to remove itself from the rail. Sometimes the head will flop up momentarily if a back-leg kicks or spasms, but this should not be confused with a righting reflex.

Tongue Characteristics: All Stunning Methods

If the tongue is out, it should be straight and limp. A stiff, curled tongue is a sign of possible return to sensibility. In addition, if the tongue goes in and out, this may be a sign that the animal is starting the process of returning to consciousness and the animal should be re-stunned. The tongue retained within the mouth is not to be used as an indicator of sensibility as the tongue may just get stuck inside.

Eye Characteristics

Captive Bolt or Gunshot

When captive bolt is used, the eyes should be wide open with a blank stare. There must be no eye movements and the animal must NEVER show a natural blink where the eyes open and then re-close or have an eye reflex in response to touch. If you are not sure what a natural blink looks like, look at live animals in the yards (lairage) before assessing insensibility. Palpebral and/or menace reflexes (when the eye blinks when a hand is waved in front of it) must be absent.

Insensibility may be questionable if the eyes are rolled back or they are vibrating (nystagmus); this is a sign of a potential return to consciousness and the animal should immediately be re-stunned.

Electrical Stunning

Immediately after electrical stunning, the animal will clamp its eyes shut, but they should relax into a blank stare.

In electrically-stunned pigs, eye movements can be misinterpreted when untrained people indiscriminately poke at the eyes (for example, when looking for a corneal reflex). Instead, a hand can be waved in front of the eye to test for the menace or threat reflex. If an electrically-stunned animal blinks within five seconds after stunning, this is a sign that the amperage is too low. Blinking should be checked within five seconds and after 60 seconds. In most plants, blinking will not be found immediately after stunning because the plant is using the correct amperage.

Nystagmus (vibrating eye) is permissible in electrically stunned animals, especially those stunned with frequencies higher than 50 to 60 cycles. After it has been verified that the amperage is set correctly, the most important time to observe for signs of return to sensibility is 60 seconds after electrical stunning. This provides time for the eyes and neck to relax after the rigid (tonic) and kicking (clonic) phases of the epileptic seizure. Checking for signs of return to sensibility after bleeding ensures that the animal will not recover.

The animal must NEVER show a natural blink where the eyes open and then re-close or have an eye reflex in response to a hand waved in front of the eye.

CO_2

No natural blinking should be present and there should be no response to the reflex in which a hand is waved in front of the eye without touching it. In some unusual instances, nystagmus has been observed in a CO_2 stunned pig, and when this occurs, it often is associated with short CO_2 exposure time.

Eyes: All Stunning Methods

If the animal blinks with a natural blink, where the eyes open and then re-close, it is not properly stunned.

Tail Characteristics: All Stunning Methods

Shortly after being hung on the rail, the tail should relax and hang down.

Respiration: All Stunning Methods

There should be no rhythmic breathing where the ribs move in and out at least twice.

****Note***: Agonal breathing or gasping like a fish out of water may be present in electric and CO2 stunned animals. It is the sign of a dying brain and is acceptable.

Vocalizations: All Stunning Methods

There should be no vocalizations such as a moo, bellow, or squeal. A groan, moan, or last breath is not considered vocalization.

Refer also to the chart labeled “Assessing Unconsciousness in Livestock During Slaughter” on page 31. The chart is based upon a French study (Terlouw *et al.*, 2016) that uses the term “unconsciousness,” which is the same as insensibility.

Events indicating return to sensibility:

- Unconscious but beginning to transition back to consciousness; if this occurs, the animal should be immediately re-stunned:
  - Corneal reflex in response to touch.
  - Return of rhythmic breathing—ribs move in and out at least twice.
- These signs indicate complete sensibility and the animal should be re-stunned immediately:
  - Spontaneous natural blinking without touching (like live animals in the yards).
  - Menace or threat reflex present.
  - Righting reflex and raising the head.
  - Complete return to sensibility can occur as quickly as 15 to 20 seconds, or as long as 60 seconds or more.

Section 4: Religious Slaughter (Kosher and Halal)

Religious (ritual) slaughter is conducted according to the requirements of either the Jewish or Muslim faith. These religions have specific conditions that must be met for the slaughter of acceptable animals. During the religious slaughter process, a ritual slaughter man cuts the neck of the animal with a razor-sharp knife. The major difference between religious and conventional slaughter is that in religious slaughter, animals are not stunned prior to neck-cutting. In the U.S., Congress passed the Humane Slaughter Act in 1958 and recognized that some of the law's requirements would conflict with the religious slaughter practices. Most notably, Kosher traditions prohibit pre-slaughter stunning. Some methods of Halal slaughter allow stunning of animals before the cut is made, as long as the unconsciousness produced can be reversed. The Humane Slaughter Act acknowledges that religious slaughter can be performed humanely (7 USC 1906), and USDA FSIS Directive 6900.2 and CFIA Guidelines for Ritual Slaughter of Food Animals without Pre-Slaughter Stunning address the regulatory aspects of religious slaughter. 

Note: Pigs are not covered under religious slaughter because their consumption is forbidden under Jewish and Muslim law.

Restraint in Religious Slaughter

Cattle, calves, sheep, or other animals that are religiously slaughtered without prior stunning should be restrained in a comfortable position. For both humane and safety reasons, plants should install modern upright restraining equipment whenever possible.

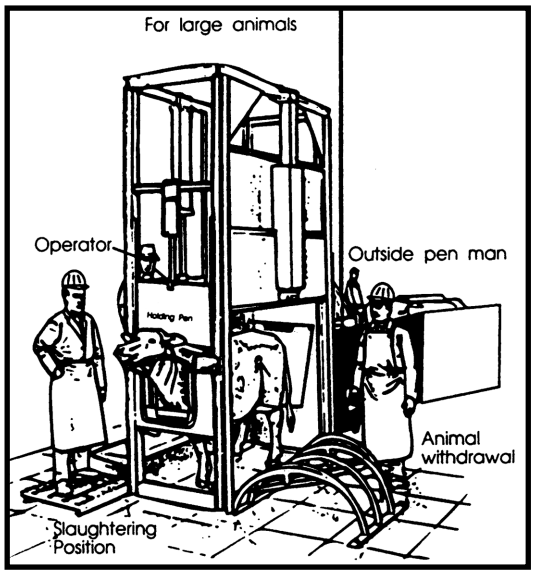
The OIE guidelines (2016) clearly state that "methods of restraint causing avoidable suffering should not be used in conscious animals because they cause severe pain and distress. Suspending or hoisting animals (other than poultry by the feet or legs) should not be used." Some examples of restraint systems include:

- **Stationary knock box:** This device consists of a narrow stall with an opening in the front for the animal's head. After the animal enters the box, it is nudged forward with a pusher gate and in some systems, a belly lift comes up under the brisket. The head is restrained by a chin lift that holds it still for the throat cut. Vertical travel of the belly lift should be restricted to 28 inches (71.1 cm) so that it does not lift the animal off the floor. The rear drop gate should be equipped with either a separate pressure regulator or special pilot-operated check valves to allow the operator to control the amount of pressure

exerted on the animal. Pilot-operated check valves enable the operator to stop the air cylinders that control the apparatus at mid-stroke positions. The pen should be operated from the rear toward the front.

An American Society for the Prevention of Cruelty to Animals (ASPCA) pen can be easily installed in one weekend with minimum disruption of plant operations. It has a maximum capacity of 100 cattle per hour and it works best at 75 head per hour or less. A small version of this pen could be easily built for calf plants.

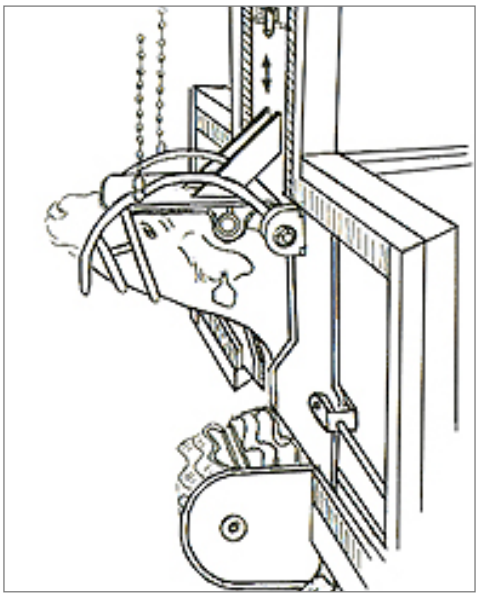
Head restraint is the last step. Head-holding devices should be designed to avoid excessive bending of the neck. The restrainer should be adjusted so that the animal is held in a balanced, upright position. The operator should reduce sudden and jerky motion of moving parts on the restrainer to keep animals calm prior to cutting. Many cattle will stand still if the box is slowly closed up around them and less pressure will be required to hold them. Small animals such as sheep may be held manually by a person during religious slaughter. Ritual slaughter should be performed immediately after the head is restrained (within 10 seconds of restraint). Immediately after the cut and the captive bolt stun (in the case of religious slaughter with stunning), the operator should completely release the rear pusher gate, and loosen the head holder.



Upright pen for religious slaughter.

- **Conveyor restrainer systems:** Either V restrainer or center track restrainer systems can be used for holding cattle, sheep, or calves in an upright position during Kosher or Halal slaughter. The restrainer is stopped for each animal and a head holder positions the head for the ritual slaughter official. For cattle, a head holder similar to the front of the ASPCA pen can be used on the center track conveyor restrainer. A bi-parting chin lift is attached to two horizontal sliding doors.

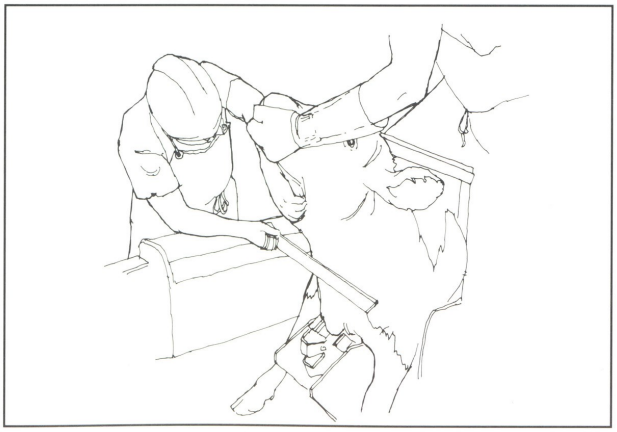
- **Small restrainer systems**: For small plants that religiously slaughter a few calves or sheep per week, an inexpensive rack constructed from pipe can be used to hold the animal in a manner similar to the center track restrainer. Animals must be allowed to bleed out and become completely insensible before any other slaughter procedure is performed (shackling, hoisting, cutting, *etc*).


Center track restrainer being used for religious slaughter.

Shackling and hoisting, shackling and dragging, trip floor boxes, and leg clamping boxes should never be used. In a very limited number of glatt kosher plants in the United States and more commonly in South America and Europe, restrainers that position animals on their backs are used. For information about these systems and evaluating animal welfare, refer to www.Grandin.com.

The Cut in Religious Slaughter

Halal slaughter has fewer specifications for the type of knife that is used compared to Kosher slaughter. In all religious slaughter operations, the knife must be sufficiently sharp to pass a paper sharpness test conducted by dangling a single sheet of standard printer paper by the corner with the thumb and forefinger. When the knife is held in the other hand, it should be able to easily slice through the edge of the dangling sheet of paper. The knife must be dry when this test is performed. OIE guidelines specify that the knife should be long enough to span the width of the animal's neck. It is considered a best practice to utilize a straight blade knife twice the width of the neck. A longer knife may be needed to accommodate large bulls.



Restrainer system for religious slaughter of calves and sheep.

The throat cut should be made immediately after the head is restrained (within 10 seconds), and should cut the skin, trachea, esophagus, and two major blood vessels (carotid arteries and jugular veins) to ensure quick and thorough bleeding of the animal. Plants that conduct religious slaughter should use the same scoring procedures except for stunning scoring, which should be omitted in plants that conduct religious slaughter without stunning.

Signs of Insensibility in Religious Slaughter

Signs of insensibility are distinct for un-stunned, religiously slaughtered livestock. If held in an upright box, loss of posture usually occurs within 6-8 seconds in sheep or 12-15 seconds in cattle, closely followed by eye roll and loss of alertness in the ears. Often the head will flex back as well.

Auditors may confirm insensibility by observing for:

- The eye roll and absence of spontaneous, natural blinking.
- A weak corneal reflex may still be present immediately after the eye roll.
- The animal may continue to gasp or breathe after the eye roll for a period of several seconds.

****Note***: If animals are stunned with a captive bolt after the throat has been cut, auditors can then confirm insensibility by observing the signs of insensibility outlined in Chapter 3, Section 3. Additionally, if head-only, reversible, electric stunning is performed before the throat is cut, auditors can confirm insensibility between the stun and the cut using the same signs of insensibility outlined in Chapter 3, Section 3.

Shackling and hoisting can occur once the animal is completely insensible. Invasive dressing procedures such as skinning of the head or limb removal should not occur until corneal reflex is absent and the animal is clearly dead.

When slaughter without stunning is done, there is a transition zone between clearly conscious and sensible and unconscious and brain dead (Terlouw, et al., 2016). Animals that have not collapsed are definitely conscious. Animals are brain dead when the following three signs are absent: 1) corneal reflex in response to touch, 2) eyelash reflex, and 3) rhythmic breathing. The transition zone from fully conscious to unconscious is not distinct.

In a practical situation in a commercial slaughter plant which is performing religious slaughter without pre-cut stunning, the animal should remain in the restraining box until after collapse (LOP – loss of posture) and eye roll in an upright box or eye roll alone in a rotating box. If either of these signs remain 40 seconds after the cut, the animal should be shot with a captive bolt. Before invasive dressing procedures such as skinning, de-horning, leg removal, or severing the spinal cord are performed, ALL signs of brain death must be observed. A breathing sound that can be heard from the cut trachea is considered rhythmic breathing. This sound must be absent before invasive dressing procedures are conducted.

When slaughter without stunning is done with careful technique, the time for the animal to collapse can be shortened and over 95% of the animals should either collapse (LOP – loss of posture) and/or have eye roll within 30 seconds (Grandin, 2015; see charts that detail data from one well-managed kosher slaughter plant on page 39).

When slaughter with stunning is performed, the stun should be performed within seconds of the religious cut. Plants should make sure that they can meet all the stunning requirements outlined in Chapter 3, Section 2. All components of effective stunning must apply, and the procedure should also be monitored like non-religious slaughter (see Chapter 3, Section 3).

By evaluating the humane handling processes, communicating expectations, establishing measures, monitoring, and providing feedback on results, even the most challenging of operations can meet or exceed industry standards. Stun efficacy does not apply to un-stunned religious slaughter; however, Dr. Temple Grandin explains on her website: “A skilled slaughter man can induce over 95% of the cattle to collapse within 30 seconds if cut effectively.”

Vocalization

When evaluating religious slaughter, cattle vocalization should be 5% or less of the cattle in the crowd pen, lead up chute, and restraint device. A slightly higher vocalization percentage is acceptable because the animal must be held longer in the restraint device compared to conventional slaughter. A 5% or less vocalization score can be reasonably achieved. Scoring criteria for electric prod use and slipping on the floor should be the same as for conventional slaughter.

For Audit Purposes

Kosher or Halal plants that do not practice pre-cut stunning must meet the following criteria to pass a NAMI audit:

- Restraining to position conscious animals for the throat cut by hoisting by the limbs, dragging a leg, clamping boxes, or trip floor boxes will result in an automatic audit failure.
- Vocalization score of 5% or less in cattle entering and while in box. Do not score vocalizations in sheep.
- Falling score is the same as conventional slaughter: 1% or less.
- Electric prod use score is the same as conventional slaughter: 25% or less.
- Shoot with captive bolt if collapse (LOP = loss of posture) and eye rollback do not occur within 40 seconds.
- When slaughter with stunning is performed, auditors should make sure that plants meet all the stunning requirements outlined in Chapter 3, Section 2.

Note: While not a criterion, upright restraint is always preferred.

Total Animals: n = 1810	Time between animal entering the box and complete of set up, in seconds	Time between setup completion and throat cut, in seconds	Time between throat cut and eye roll (loss of consciousness) in seconds		Cattle taking longer than 30 seconds to collapse and have eye roll	Cattle requiring a captive bolt shot
Average	25.5	3.8	22.8			
Std. Dev.	5.99	1.69	3.78			
Maximum	57	18	38	Number	35	0
Minimum	3	1	3	Percent	1.97%	0%

Table 1. Bleed Efficacy Data: This data indicates that in one glatt kosher plant (no post-cut stun), 98% of the cattle collapsed (eye roll) in 30 seconds or less; no cattle required a captive bolt shot due to ineffective bleeding. All cattle were insensible within 40 seconds and remained insensible on the bleed rail. The plant restrained the animals with light pressure in an upright restraint box. Immediately after the throat cut, the restraint was loosened on the head and body to facilitate a rapid blood flow and hasten loss of consciousness. The chin lift was kept up to keep the cut open. Data collected between December 2010 to December 2014.

Total Animals: n = 7718	Number of Animals Sensible on Rail	Number of Animals Prod was used on	Number of Animals Slipping	Number of Animals Falling	Number of Animals Vocalizing
Number of Animals	0	208	48	0	346
% Required to Pass NAMI Audit	0	25	3	1	5
Plant Avg. %	0	2.7	0.6	0	4.5
Std. Dev	0	1.21	0.49	0	1.33
Worst Day %	0	14.3	6.7	0	15
Best Day %	0	0	0	0	0

Table 2. From weekly unannounced reviews (188 total audits). This data shows that limits were met for all measures when averaged, indicating program management and control. Typical week-to-week variation occurred. Electric prod use was minimal, with the average being 2.7%, which is considered excellent. The availablility of a vibrating prod and rattle paddle as primary driving tools contributed to this very low percent. Vocalization was the most challenging criteria to control, with 33% of the audit scores exceeding the 5% limit, but the average score was 4.5%. In most cases, the cause of vocalization was difficulty restraining the head, especially on smaller cattle; vocalization during neck washing; or due to agitation after prod use. Vocalization scores of 5% can be easily achieved in a well-managed plant that slaughters without stunning (Grandin, 2012). When excessive pressure is applied by a restraint device, vocalization scores may range from 23% to 47% (Grandin, 1998; Bourquet et al., 2011; Hayes et al., 2015). Collapse times can be improved by cutting the throat high on the neck in the C1 position close to the jaw (Gregory et al., 2012; Gibson et al., 2015). Data collected December 2010 to December 2014.

Before invasive dressing procedures are started, the following indicators of brain death **MUST be absent:**

- Corneal reflex
- Eyelash reflex
- Rhythmic breathing

Section 5: Recommended Handling of Disabled or Compromised Livestock

Although non-ambulatory and compromised animals represent a small fraction of all livestock arriving at packing plants, they are significant because they require special attention in the areas of handling, transport, holding pens, and inspection areas. It is important that water and shelter be provided to injured and non-ambulatory livestock. Feed must be provided for any livestock held at a plant for more than 24 hours, whether they are non-ambulatory or not. Below is a list of terms used to describe disabled and/or compromised animals:

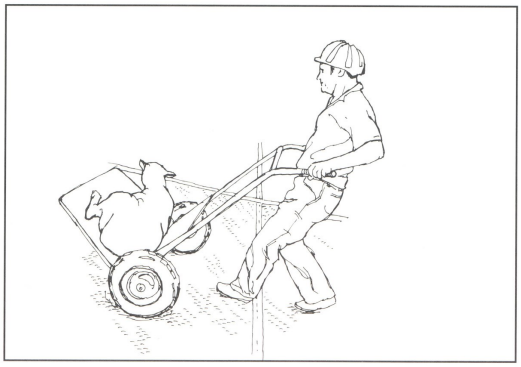
- ***Non-ambulatory animal*:** an animal that cannot or will not rise from a recumbent position or that cannot walk.
- ***Fatigued pig:*** according to the National Pork Board, a fatigued pig is defined as having temporarily lost the ability or willingness to walk, but has a reasonable expectation to recover full locomotion with rest.
- ***Unfit animal:*** an animal with reduced capacity to withstand transportation and where there is a high risk that transportation will lead to undue suffering. If transported, unfit animals would endure unjustified and unreasonable suffering. Unfit animals may only be transported for veterinary treatment or diagnosis.
- ***Compromised animal:*** an animal with reduced capacity to withstand handling or transportation, but where handling or transportation with special provisions will not lead to undue suffering. Compromised animals may be locally transported with special provisions to receive care, be euthanized, or humanely slaughtered.

Factors that May Cause Disabled or Compromised Animals

- Aggressive handling can lead to injured, stressed, or fatigued livestock.
- The two leading causes of non-ambulatory pigs are:
  - Poor health/injury
  - Fatigue that arises during handling or transport.
- Some cattle and sheep experiencing heat stress will appear fatigued, and may exhibit panting and/or reluctance to move.
- In cattle, mounting activity and animal fights can lead to injuries that can cause animals to become non-ambulatory.
  - A common cause of mounting is the “buller steer syndrome,” which is found among confined and pasture-kept cattle. The buller behavior occurs when a steer is repeatedly mounted (“buller”) and ridden by its pen mates (“rider”) until it is injured or killed. The usual practice is to remove the animal being ridden.
  - Mounting is also a common cause of bruises and crippling injuries on cows. This can be a problem, especially with bulls.
  - Bulls and steers that are repeatedly mounting other animals should be placed in separate pens.

Moving Non-ambulatory Animals

If non-ambulatory or compromised animals found in the stockyards, crowd pen, or stunning chute must be moved, they should not be moved by dragging, pushing, pulling, or scooting. By using slide boards, sleds, and carts, animals can be transported humanely and efficiently to a pen or other area where they can be examined by an inspector (if necessary), stunned, and moved to slaughter. In pork and sheep plants, the single file lead up to the stunning chute or restrainer should be equipped with side doors so that non-ambulatory livestock can be easily removed. In order to prevent further injury to non-ambulatory animals by equipment or other animals, minimal movement may be required to roll the animal or slide it onto carts and other devices. The stress of this movement must be weighed against the potential harm to the animal if it is not moved promptly.



Cart used to move downers.

Note: If the animal has been euthanized, it may be dragged.

Regulatory Considerations for Non-ambulatory Animals

In the United States, since December 30, 2003, all cattle that arrive at packing plants as non-ambulatory or that become non-ambulatory at packing plants are to be condemned and must be euthanized. They cannot be used for food. Non-ambulatory cattle arriving on trucks should be humanely euthanized on the truck and removed for disposal. Non-ambulatory cattle should be euthanized with a captive bolt stunner or firearm and disposed of. If bleeding is the secondary step used in the euthanasia process, the area should be cleaned (*i.e.* bedding removed, area rinsed) afterward to prevent balking. Some cattle may be deemed suspect and yet still be ambulatory. These cattle should be moved to separate pens for examination by USDA inspectors.

Non-ambulatory pigs and sheep may be slaughtered if inspected and passed by a USDA veterinarian. These animals should be held in a designated location for additional ante-mortem inspection. At that time, they may be passed for inspection, condemned, or segregated and slaughtered as U.S. Suspect.

Per Canadian regulations, non-ambulatory animals must **NOT** be moved while they are conscious and must be stunned for slaughter or euthanized where they are located. Until the plant is able to euthanize the non-ambulatory animal, they must protect it from injury caused by other animals and they must stun the down animal before it is loaded onto any moving device.

Objective criteria can be used to evaluate humane livestock handling during transport by analyzing factors once trucks arrive at plants. Plants should conduct internal audits at least weekly and vary those audit days and times during shifts to assess the role that employee experience, variance in transporters, behavior, and fatigue may play in animal handling.

This section details how to audit during the receiving and unloading of livestock at meat packing facilities for cattle, swine, and sheep.

Section 1: Auditor Instructions and Information

This audit is intended to monitor and verify the welfare of animals arriving at meat packing facilities. It is the responsibility of third-party auditors to:

- Arrange with plant management the best time to perform the audit to ensure the plant will be receiving animals and a representative audit sample can be acquired.

- Establish with plant management which industry transportation program guidelines the establishment uses as a standard. Plants may use National Pork Board's Transport Quality Assurance (TQA™) program (swine), the Beef Quality Assurance Transport (BQAT)™ program (cattle), the Canadian Livestock Transporter (CLT) Certification Program (swine, cattle, poultry, horses and sheep), or a combination of standards.

- All auditors should participate in the National Pork Board's Transport Quality Assurance (TQA™) program (swine), the Beef Quality Assurance Transportation (BQAT™) program (cattle), the Canadian Livestock Transporter (CLT) Certification Program (swine, cattle, poultry, horses and sheep), or a similar program that covers other species to educate themselves on the current transportation practices and guidelines for that species.

- Establish with plant management the location of the unloading area and the areas that the audit will cover. The unloading area parameters include the trailer holding or staging area, the trailer itself (only when auditing the condition of the trailer or if the trailer meets requirements for the ambient temperature), and the immediate unload area (*i.e.* up to the exit gate of the unloading alley/receiving pen or to the gating of the first alley off the trailer). Due to design variance between plants, this will need to be established by plant management and communicated to the auditor. The balance of the handling and stunning areas will be covered in the facility audit.

- The auditor must find a safe place to stand that will not impede unloading or cause the animals to balk. The auditor must not enter the trailer while the animals are being unloaded.

- Some core criteria points may not apply to the plant the auditor is auditing. It is the responsibility of the auditor to meet with management and review the core criteria and their applicability before conducting the audit.

- Some core criteria will be dependent on animal type, trailer style, plant design, or regional climatic differences. Choose the points that apply to the animal type or trailer being audited.

- Scoring for the core criteria of falls, electric prod use, vocalization, stunning, and insensibility are performed on a *per animal* basis. The score is applied as a yes or no score. For example, an animal is scored as either falling or not falling, or as vocalizing or silent. If an auditor observes multiple falls or vocalizations from one animal, it is still only counted once on the audit sheet.

- Secondary items are listed within the core criteria. These items allow for specific comments or observations to be noted on the audit sheet but will not be scored as part of the audit criteria. They are intended to provide a broader understanding of the plant and the transporters and offer areas for continuous improvement.

- Truck selection: The number of trailers to be audited will be determined before beginning the audit. The auditor will base the audit results on the trailers that were actually audited, not on trailers they may have observed that were not part of the selected audit sampling. No less than two trailers and no more than five trailers should be audited and scored per audit. Small plants should audit the trucks that arrive during their audit, up to five trucks. In large plants, auditors can select trucks based upon the auditor's selection scheme (which he/she should make every effort to be randomized), what unloading docks are being used during the audit (auditors should monitor trucks at different docks), and what trucks can be audited in an efficient manner.

Gooseneck farm livestock trailer

Potbelly/drop center trailer

- Observation of an egregious act of abuse at any point in the process always results in a failed audit.

Section 2: Completing the Transportation Audit Form

- ***Trailer number.*** In this space, enter the sequence number of the trailers audited and the truck identification numbers, if applicable.

- ***Total number of animals on board.*** This is the total number of animals on the trailer being audited. This number can be obtained from the plant staff, transporter or scale ticket.

- ***Types of trailers.*** Note the type of trailer.

- ***If transporting swine, has the driver completed TQA™ or CLT?*** This area is to note whether a driver is currently certified in National Pork Board's TQA™ training program, CLT, or another recognized swine training program.

- ***If transporting cattle, has the driver completed BQAT™ or CLT?*** This area is to note whether a driver is currently certified in National Cattlemen's Beef Association's BQAT™ training program, CLT, or another recognized cattle training program.

Auditor Tip:

- Once the total number of animals on board is obtained from plant staff, transporter or scale ticket, there is no need to count the animals as they come of the trailer.

- ***If transporting sheep, has the driver completed training?*** This area is to note whether a driver is currently certified in an industry-derived program, CLT, or another recognized sheep training program.

Section 3: Scoring the Audit

- ***Core Criterion 1 applies to the plant only.*** It is scored only once during the audit. The pass or fail for this core criterion is based on the percentage of audit points received out of the total possible points.

- ***Core Criteria 2-7 apply to individual trailers only.*** Each trailer will be individually assessed. At the end of the audit, the total points for all the trailers will be added together to obtain the final scoring for each of the core criteria. The average of the trailers scored will serve as the overall score. If any single truck does not meet all the required criteria, this should be noted on the audit form. NAMI recommends that a corrective action process be initiated for any single truck scoring below 80%, which may include a written warning to the driver indicating that future poor performance may result in up to and including termination of delivery privileges to that establishment. Corrective actions should also include communication with the producer/feedlot outlining expectations regarding humane transport and potential adjustments to written policies at the establishment.

Auditor Tip:

If any single truck does not meet all the required criteria, this should be noted on the audit form.

Core Criterion 1: Plant Transportation Policy and Preparedness for Receiving Animals

This Core Criterion audits the plant's animal welfare policies for transportation and preparedness for receiving animals. It is only scored once during an audit. The following are explanations of each of the applicable points to be scored during the audit:

- ***The plant has written animal welfare policy for transporters.*** Plants must have a written animal welfare policy for transporters hauling animals to their plants. The policy can be an in-house policy; a policy that strictly references the TQA™, BQAT™, or CLT; or a combination of recognized species-specific programs.

- ***The plant provides extreme temperature management tools (water, fans, protection, etc.).*** As stated in Chapter 2, transportation and temperature extremes can be detrimental to animal welfare and meat quality; it is crucial to mitigate environmental/temperature related stress during the process of animal transportation. Refer to Chapter 2, and the establishment's selected industry standard for verification of compliance.

- ***Arrival management process minimizes waiting time at the plant.*** Plants should have policies in place to minimize waiting times at the plant. A scheduling system that allows a specific number of loads to arrive at a given time period works for most plants. Plants should have the lairage space and personnel to meet the requirements of the loads they are accepting.

- ***Emergency plans are in place for animals in transit.*** Plants should provide a written policy that outlines an action plan for loaded trailers in transit to the establishment. This action plan may include:
  - ◊ Contacting transporters/dispatchers en route to keep their vehicle moving per the establishment's emergency livestock management plan until there is sufficient room at the plant to unload.
  - ◊ Requesting that trucks follow the provided emergency plan and provide a comfortable area for animals to await further instructions on unloading.
  - ◊ Requesting that crews postpone loading of animals at the source.
  - ◊ Requesting that transporters unload animals at an alternate facility.

- ***The plant has a written policy for non-ambulatory and fatigued animals and tools available for handling.*** The plant must have a written policy for handling non-ambulatory and fatigued animals on trailers. A non-ambulatory animal at unload is an animal that cannot or will not rise from a recumbent position or that cannot walk.

  - ◊  U.S. plants must also provide equipment for employees or transporters to use in handling non-ambulatory and fatigued animals humanely. This equipment can include, but not be limited to, sleds, stretchers, hand carts, and mechanized equipment. In plants that euthanize non-ambulatory animals where they are found, this equipment may not be necessary, as long as the animal is not moved before it is euthanized.

  - ◊  Canadian plants are not allowed to move non-ambulatory animals that arrive at the plant or become non-ambulatory during unloading; the animal must be euthanized where it is found.

  Fatigued pigs are pigs that have temporarily lost the ability or the desire to walk but have a reasonable expectation to recover full locomotion with rest (National Pork Board).
  - ◊ Fatigued pigs may be allowed time to recover but must be protected from other animals and weather. All plants must also provide provisions for protection, which can include, but not be limited to resting pens, protective boards/gates, etc.

- ***Acceptable handling tools are available and utilized as needed.*** The plant must provide handling tools for plant staff and transporters to aid in the movement of animals off trailers. As part of internal training for plant staff and listed expectations of transporters, plants should have a procedure to describe the proper use of handling tools, which may include, but are not limited to, rattle paddles, sort boards, witches' capes, or nylon flags.

- ***Acceptable euthanasia tools are available.*** Acceptable euthanasia tools for use in lairage (yards/barns) include firearms and penetrating captive bolt for cattle and firearms, penetrating captive bolt stunners, and a handheld cardiac arrest electric stunner for pigs and sheep. One of these appropriate euthanasia tools and an employee(s) trained to use them must be available at all times when animals are being received. A prudent establishment will always have two appropriate euthanasia tools immediately available.

- ***Maintenance records for euthanasia equipment, proper storage, and employee training for euthanasia are available.*** Cleaning frequency and preventative maintenance should occur per the manufacturer's recommendations and instructions. The equipment and ammunition must be stored in a dry place when not in use to prevent ammunition from becoming ineffective. Proper cleaning and maintenance of equipment will result in effective stunning. Documentation of cleaning and maintenance must be provided for each piece of equipment. Employees must be trained in the company's euthanasia policy and the application of the mode of euthanasia. Documentation of training must be provided and employees should be able to demonstrate knowledge of training.

- ***Gates in unloading area swing freely, latch securely, and have no sharp protrusions.*** Only gates appropriate for the animals being slaughtered should be used. Gates should have smooth edges to prevent bruising. There should be no protruding parts on the gates that may injure the animals in any way. Gates should swing freely and latch securely to keep animals in pens and never be slammed shut on an animal passing through them. Gates should be constructed such that they do not permit an animal's head or limb(s) to become wedged under or stuck through a gap or opening.

- ***Non-slip flooring is evident.*** The unloading area should have non-slip flooring to allow the animals to maintain good footing and to prevent slipping and falling.

- ***Unloading area and ramps are in good repair (e.g. no broken cleats, holes or gaps).*** The unloading area should be properly maintained and in good repair and free from sharp edges that can injure the animals. There should be no broken cleats, holes, or gaps where animals can get stuck or be directly injured. The ramp or dock and the unloading area must also be clean enough to prevent slips and falls. Some manure and urine build up is unavoidable due to the nature of animals, but significant build up should be minimized. In winter weather conditions, the unloading area must be free of ice such that it does not cause falls.

- ***There is adequate lighting.*** The unloading area must have sufficient lighting to observe animals during the unloading process.

- ***Staff is available for receiving animals.*** Plant staff should be available to receive animals during plant receiving hours. If transporters are scheduled to arrive during off-hours, a plant employee should be available by phone to assist transporters if necessary. The contact number should be made available to the transporters.

- ***Staff is properly trained.*** The plant must have a training program and staff handling animals at unloading must be trained. It is not necessary to review the substance of a plant's training program; it is only necessary to ensure that a program is in place and being implemented.

Scoring:

Excellent – 14 of the criteria met
Acceptable – 12 to 13 of the criteria met
Not Acceptable – 11 or less criteria met

Auditor Tip:

It is not necessary to review the substance of a plant's training program; it is only necessary to ensure that a program is in place and being implemented.

Core Criterion 2: Set-up and Loading of Trailer

- ***Compartments are gated.*** This criterion applies only to swine, sheep, and veal calves. Market cattle are only gated under special circumstances. In a standard commercial swine trailer, all gates should be closed to segregate compartments. There may be trailers with special sectional gating or freight gating where closure of all gates will not be required or even possible. If the auditor is unable to see if all the gates are closed, obtain the information from the driver or from the plant staff that are unloading the trailer. If all the gates are not closed, note the reason on the audit form (*i.e.* broken gate).

Auditor Tip:

Questions about the type of gating in the trailer should be discussed with the driver.

- ***Trailer is loaded at proper density.*** The auditor may visually observe the trailer. Signs of overcrowding for pigs may include: piling, excessive squealing, open mouth breathing, excessive numbers of fatigued animals, injured animals, dead on arrival (DOA), or euthanized on arrival (EOA). Signs of overcrowding for cattle and sheep may include: vocalization, animals not settled, animals standing on each other, open mouth breathing, excessive number of fatigued animals, injured animals, DOA, or EOA. If any overcrowding indicators are present, the auditor may assess the loading density based on applicable industry standards to determine if the load was not in compliance. Gates should close easily without squeezing animals.

- ***Incompatible animals are segregated when required.*** Segregation prevents more aggressive animals from injuring other animals in the trailer. Examples of appropriate segregation include keeping aggressive, intact males separate from females as well as separating significantly larger animals from smaller ones.

- ***Trailer is properly aligned with the unloading area.*** Unloading areas differ in type and design between species and plants. Trailer designs are ever-evolving to ensure good animal welfare and optimal carcass quality. Plants should make accommodations and materials available to ensure that the unloading area can receive several different types of trailers. Examples of these materials may include transfer mats, specialized ramps, and flippers.

  Trailers must be aligned square and flush with the unloading ramp/dock. Plants need to ensure that there are minimal gaps between the dock/ramp and the bottom of the trailer exit. Moreover, plants need to ensure there are minimal gaps between the back end of the trailer and the side walls of the unloading area. If holes and gaps are unavoidable due to unloading area design in relation to the trailer design, they must not be large enough to allow legs or feet to get caught or injured or for animals to become wedged or escape. It may be necessary for a driver to realign the trailer if it is not aligned properly.

Scoring:

When auditing swine, sheep, and veal calves, apply all 4 core criteria: gating, loading density, animal segregation, and proper alignment (worth 1 point each, for a total of 4 points possible). For all other cattle apply 3 core criteria: all criteria but gating (worth 1 point each, for a total of 3 points possible).

Excellent – 100% average score
Acceptable – 90% average or greater score
Not Acceptable – Less than 90% average score

If a single truck does not meet all the required criteria, this should be noted on the audit form. NAMI recommends that a corrective action process be initiated for any single truck scoring below 80%, which may include a written warning to the driver indicating that future poor performance may result in up to and including termination of delivery privileges to that particular establishment. Corrective actions should also include communication with the producer/feedlot and potential adjustments to written policies at the establishment for driver and producer/feedlot expectations regarding humane transport.

Example: 5 swine trailers were audited for a possible total of 20 points.
(5 trailers x possible 4 points divided by 20)

#1 – 4 pts; #2 – 4 pts; #3 – 4 pts; #4 – 3 pts; #5 – 4 pts
Total = 19 pts 19/20 = 0.945 or 95%

Secondary Item: Non-slip, solid flooring. The trailer must be outfitted with non-slip flooring to minimize slips and falls of the animals. Examples of non-slip flooring include, but are not limited to, rubber mats, stamped tread, sand, shavings, steel reinforcement rods, *etc*. There must be no holes in the flooring or items that can cause an animal to trip. With stamped tread, the tread should be significant enough that it provides non-slip flooring.

Secondary Item: Gates and doors open freely and can be secured shut. All gates and roller doors on trailers should open and close freely. They must be able to be safely secured shut and not have gaps or spaces where animals can get their heads or legs wedged.

Secondary Item: Internal ramps function properly and extend all the way to the floor. Internal ramps must be able to be lowered down easily and secured into place when not in use. They must reach all the way to the floor of the trailer and set level unless they are aligning with an adjustable chute. They must have non-slip flooring or steps and no holes or gaps where the animals can get wedged or injured. Barriers must be in place to ensure animals do not fall off the ramps.

Secondary Item: No sharp or protruding objects that can injure the animals. There can be no sharp or protruding objects on the trailer that may injure the animals. This includes gates, pass-through areas, trailer walls, floors or ramps, or any place that the animal may contact an object.

Secondary Item: Trucks follow plant policy or industry best practices for bedding. Each plant should have bedding requirements as part of their plant's animal welfare transportation policy. Not only can bedding provide extra insulation during cold weather, it can also provide extra traction for footing and will absorb urine to help keep the trailer floor dry. Because bedding becomes compacted during transport, it is difficult to measure upon arrival at the plant and that is why this is considered a secondary criterion. There are some regions, however, that may never use bedding due to warmer climates. When this is the case, it should be noted in the plant policy. Bedding should comply with and be audited against either the establishment's written policy or the industry transportation program guidelines that the establishment utilizes as a standard.

Secondary Item: Side slats or plugs are in place at recommended levels for the current temperature. This criterion is most commonly assessed for hogs, cull animals, dairy cows, and veal calves; however, cold weather protection may be used no matter the species or class in extremely cold temperatures. Each plant should have winter protection requirements as part of their animal welfare transportation policy. This policy allows for the climatic differences within all regions to be recognized. Use of side slats or plugs should follow and be audited against either the establishment's written policy or the industry transportation program guidelines that the establishment utilizes as a standard.

Core Criterion 3: Wait Time to Unload

This Core Criterion audits the timeliness of truck arrivals and the length of time trucks spend in line waiting to unload. As discussed in Chapter 2, the time that animals spend on trucks is directly correlated to animal welfare and final meat quality.

Scoring:

To score plant unloading, the wait time begins as soon as the trailer arrives at the plant premises and stops when the first animal walks off the trailer. Record the arrival time of the trailer. This can be obtained from plant staff. The plant will receive the full 4 points if unloading started within 60 minutes of the truck's arrival at the plant. Points will then be deducted for each 30 minutes past the 60 minutes it takes to start unloading. All species should be unloaded within 60 minutes. Time to unload (from when the first animal steps off the trailer until the last animal walks off) will be noted separately as a secondary item.

Plant begins unloading within:	**Points Received:**
60 minutes of arrival	Full 4 points
61 – 90 minutes	3 out of 4 points
91 – 120 minutes	2 out of 4 points
≥ 120 minutes (with reason)	1 out of 4 points
≥ 120 minutes (without reason)	0 out of 4 points

Excellent – 95% or greater score
Acceptable – 85% or greater score
Not Acceptable – Less than 85% score

If any trailer exceeds 90 minutes, this should be noted on the audit form.

Example: 5 trailers audited at a plant. 20 possible points (5 trailers x 4).
#1 – 4 pts
#2 – 4 pts
#3 – 3 pts
#4 – 4 pts
#5 – 3 pts Total = 18 pts 18/20 = 0.9 or 90%

Secondary Item: Amount of time it took to unload the entire trailer once unloading began. Record the actual time it took to unload all the animals. This will assist in providing a broader understanding of the unloading process. Timing begins when the first animal steps off the trailer and ends when the last animal steps off or is removed from the trailer.

Core Criterion 4: Falls

Falls are to be scored in the unloading area (*i.e.* up to the exit gate of the unloading alley/receiving pen or to the gating of the first alley off the trailer) only after all four limbs are off the trailer and on the unloading ramp or dock. Slips will be scored as a secondary item and tallied under this core criterion. It is important to be clear about the definitions of falls:

- A fall occurs when an animal loses an upright position suddenly in which a part of the body other than the limbs touches the ground.
- During scoring of falling, all falls are counted, regardless of the cause of the fall.

Additional secondary criteria for the transportation audit are below and should be noted on the audit form accordingly.

Scoring:

Excellent – No falling
Acceptable – 1% or fewer falling (body touches floor)
Not acceptable – More than 1% falling down

Secondary Item: Slips. Slips occur when a portion of the leg other than the foot touches the ground or floor, or a foot loses contact with the ground or floor in a non-walking manner.

Secondary Item: Temperament of the animals (normal moving, excitable, docile). Temperament of the animals can be noted in this area to assist in providing additional information on the unloading of the animals. Animals can have a desire to get off the trailer without any persuasion. If there is a high incidence of slips or falls and the animals are noted as excitable, then a temperament problem is the likely reason for the slips and falls. If there is a high incidence of slips and falls and the animals are noted as being docile, it is more likely that poor footing is the problem.

Secondary Item: Did the person doing the unloading do so quietly and calmly? (Yes or No). This allows the auditor to note the behavior of the handler during the unloading process. If, during the unloading process, the handler excessively yells or screams, bangs on the trailer, or appears to be rough and impatient during handling, this should be noted. These comments may assist in explaining excessive slips and falls and helps note the attitude of the handler.

Auditor Tip:

If, during the unloading process, the handler excessively yells or screams, bangs on the trailer, or appears to be rough and impatient during handling, this should be noted. These comments may assist in explaining excessive slips and falls and helps note the attitude of the handler.

Core Criterion 5: Electric Prod Use

Electric prod use is to be scored in the unloading area only after all four of the animal's limbs are on the unloading ramp or dock. Touching an animal with a prod is scored whether the prod is energized or not. NAMI recommends that electric prods be the driving tool of last resort after other options have been attempted while unloading animals. Some plants have opted to not allow the use of electric prods during the unloading process. In these instances, electric prods will only be used when difficult animals are encountered. Electric prods should only be used when absolutely necessary and never applied to a sensitive area (animal's mouth, eyes, ears, nose, anus, vulva, testicles, or belly). Applying a prod to *any animal's s*ensitive areas is considered a willful act of abuse.

Auditor Tip:

Touching an animal with a prod is scored whether the prod is energized or not.

Scoring:

Excellent – 0%
Acceptable – 10% or less
Not acceptable – More than 10%

Secondary Item: Does the plant have a "No Electric Prod Use" policy posted? (Yes or No). Plants will all have an individual policy on electric prod use. Note here if the plant has a policy posted for no electric prod use in the unloading area.

Secondary Item: During unloading, does anyone have an electric prod in their hands? (Yes or No). The auditor should describe clearly what the driver and the plant staff are doing. Since, on the trailer, it is very difficult to judge exactly which animals and how many of them are being prodded, it can only be noted as a secondary item, but usage should be noted. It is important to note this to provide a complete report of the unloading process.

Secondary Item: Were rattle paddles, sort boards, flags, or other handling tools used incorrectly? (Yes or No). See Core Criterion 1 in this chapter for examples of acceptable handling tools. These are tools designed to assist in unloading and moving of animals, and must not be used incorrectly.

Handling tools may not be used aggressively to strike or injure animals. Aggressive striking may include but not be limited to:

- Handling tools raised over the handler's head and then brought down on an animal.
- Excessive number of contacts of handling tool on animals.
- Continually using both hands to hold handling tool to cause more physical force.
- Excessive use of multiple handling tools to increase fear/noise/contact (sort boards, witch's capes, and flags are considered visual barriers; handling tools such as rattle paddles, electric prods, sort sticks/rods, *etc*. are considered contact driving aids).

Handling tools may not be used in a way that deviates from their intended use. Deviations may include but not be limited to:

- Modifying approved handling tools in a manner that may cause undue injury to animals.
- Using broken handling tools that have become ineffective and/or sharp.
- Using handling tools to touch/prod sensitive areas, *i.e.*: animal's mouth, eyes, ears, nose, rectum, vulva, testicles, or belly.
- Using handling tools to hit animals in the face.
- Throwing handling tools at or in the path of animals.

Core Criterion 6: Condition of Animal

Fitness for transport is one of the biggest welfare issues during transport. An animal must be fit enough to endure the normal stress of transport. An unfit animal is an animal with reduced capacity to withstand transportation and where there is a high risk that transportation will lead to undue suffering. If transported, unfit animals would endure unjustified and unreasonable suffering. Unfit animals may only be transported for veterinary treatment or diagnosis. A compromised animal is an animal with reduced capacity to withstand transportation, but where transportation with special provisions will not lead to undue suffering. Animals that are compromised are more likely to become fatigued, injured, non-ambulatory, or die during transport. Compromised animals may be locally transported with special provisions to receive care, be euthanized, or be humanely slaughtered. A non-ambulatory animal at unload is an animal that cannot or will not rise from a recumbent position or that cannot walk. This includes, but is not limited to, acutely split animals and animals that require hobbles to assist in the healing of injuries or to prevent further injury. Other factors that may affect fitness during transport include weather, trailer condition, other animals, driver skill, genetics, footing, and length of journey. Compromised and unfit animals are scored in this core criterion. Examples of compromised or unfit animals include:

- ***Severe injuries/conditions in pigs, cattle and sheep:*** Examples of severe injuries in pigs include broken legs, bleeding gashes, deep visible cuts, and prolapses (larger than a baseball or dark in color and necrotic). Severe injuries in cattle and sheep include broken legs, bleeding gashes, deep visible cuts, necrotic prolapses, and severe cancer eye. For sheep, be sure to exclude superficial shearing cuts in the skin layer.

- ***Severely lame pigs, cattle, and sheep:*** Severely lame animals are animals that appear to be experiencing significant pain, especially in the hoof or leg, forcing the animal to limp or walk with extreme difficulty, to the point of potentially becoming non-ambulatory. A severely lame animal appears unlikely to make it through the harvest/slaughter process without experiencing extreme discomfort and distress.

- ***Fatigued pigs/heat stressed cattle and sheep:*** Fatigued pigs are pigs that have temporarily lost the ability or the desire to walk but have a reasonable expectation to recover full locomotion with rest (National Pork Board). Cattle and sheep experiencing heat stress will exhibit open-mouthed panting and may be reluctant to move.

Unfit for transport: prolapse

Unfit for transport: cancer eye

Unfit for transport: frostbite

- ***Frostbite (PIGS ONLY):*** Visible signs of frostbite include purple/dark pink patches on the skin, which is especially apparent on light colored pigs. These visible signs will be scored. This may occur during extreme cold temperatures.

- ***Calving, farrowing, or lambing:*** This includes all animals that have delivered or are in the process of delivering on the trailer.

Scoring:

All compromised animals are tallied together for all loads. The total is then divided by the total number of animals audited.

Pigs:

Excellent – 1% or less compromised animals on the trailer at arrival
Acceptable – 3% or less compromised animals on the trailer at arrival
Not Acceptable – More than 3% compromised animals on the trailer at arrival

Pigs Example: 5 trailers are audited, with 925 total pigs audited on all 5 trailers.

# of compromised animals	
Trailer #1	3 pigs
Trailer #2	1 pig
Trailer #3	6 pigs
Trailer #4	2 pigs
Trailer #5	4 pigs

Total: 16 pigs 16/925 = 0.017 or 1.7%

Cattle/sheep:

Excellent – 1% or less compromised animals on the trailer at arrival
Acceptable – 2% or less compromised animals on the trailer at arrival
Not Acceptable – More than 2% compromised animals on the trailer at arrival

LEFT: Unfit for transport: Emaciated cow.

RIGHT: Unfit for transport: Emaciated pig

Secondary Item: Number of dead animals on the trailer. Deads on arrival (DOAs) are animals that are dead on the trailer. This does not include animals that are euthanized after arrival at the plant. Animals that require euthanasia would be classified as compromised. DOAs will be tallied here and noted on the final audit report, but not scored.

Auditor Tip:

DOAs will be tallied here and noted on the final audit report, but not scored.

Secondary Item: Does the plant have a method for communicating back to the site of trailer loading? Infrequently, trailers arrive at plants containing excessive numbers of DOAs or animals in other such compromised situations. Plants should have a practice of communicating these issues back to the producer or site of loading so they can make corrections or address issues with the truck driver.

Secondary Item: Were any of the animals unloaded considered emaciated or in poor body condition? This secondary item is intended for plants receiving cull animals. Emaciated pigs will be extremely narrow in the loin, have a hollow flank area, and their ribs and backbones can be easily seen. Cattle and sheep in poor body condition will be extremely thin and emaciated; their ribs and backbones can easily be seen. Such animals would be described as “very thin” with no fat on the rib or in the brisket and the backbone is easily visible, some muscle depletion is evident through the hind quarter. The severely thin attributes of these animals may sometimes compromise their mobility, cause severe weakness, and lead to debilitation. These animals will be tallied here and noted on final audit report but not scored.

Secondary Item: Did any of the animals have poor udder conditions? This includes any animal that displays a severely engorged udder that is interfering with the animal’s ability to walk. This secondary item is specific for plants receiving cull animals. Poor udder condition includes udders that descend below the hock, significantly push out against the rear legs causing difficulty of movement, or highly distended udders which cause obvious pain/distress to the cow. Animals with poor udder conditions will be tallied here and noted on the final audit report but not scored.

Secondary Item: Were severely injured/severely lame animals promptly euthanized so they did not enter the slaughter system? (Yes or No).

Core Criterion 7: Willful Acts of Abuse/Egregious Acts

Any willful act of abuse is grounds for automatic audit failure. See Chapter 1, Section 3.

This chapter discusses auditing animal handling and stunning in packing plants and outlines the audit criteria.

Section 1: Auditing Instructions

Audit sample size is based on previous surveys, non-normalcy of the data associated with the attributes listed in the Core Criteria, and practicality of use. Numerous peer-reviewed surveys conducted on animal welfare attributes in slaughter facilities use the 100-head sample (Grandin, 1997; Grandin 1998a; Grandin, 2000; and Grandin, 2012). Additionally, calculations to determine sample size needed to detect an attribute rely on numerous assumptions, including independence between observations and a normal distribution of the data. Due to the nature of an audit, observations will not be independent, as animals that flow through a slaughter facility will likely be part of the same group or groups of animals. Additionally, a normal distribution of the data for numerous criteria is not observed. For example, the data collected for assessing Core Criterion 3 in the Slaughter Audit, "Falls," is not normal, because such criteria are observed to be very frequent or non-existent. This indicates a more binomial distribution of the data would likely be applicable. If different assumptions must be made to determine the sample size for each attribute, this would result in and audit that requires, for example, 281 samples for one attribute, and only 70 for another. Auditing a different number of animals for each criterion not practical, nor is it easily-understood. Therefore, based upon previous work, differences in the assumptions that must be made when calculating sample size for each attribute, and practicality of use, the audit requires a 100-head sample.

In each area, the 100 head should be selected on a random basis by time or by sampling every "X" animal to ensure that a broad sample of loads/handling are included. Scoring for the core criteria of falls, electric prod use, vocalization, stunning, and insensibility are performed on a *per animal* basis. The score is applied as a yes or no score. For example, an animal is scored as either falling or not falling, or as vocalizing or silent. If an auditor observes multiple falls or vocalizations from one animal, it is still only counted once on the audit sheet.

Auditor Tip:

Scoring for the core criteria of falls, electric prod use, vocalization, stunning, and insensibility are performed on a *per animal* basis. The score is applied as a yes or no score.

Secondary items are listed after the core criteria. These items allow for specific comments or observations to be noted on the audit sheet but will not be scored as part of the audit criteria. They are intended to provide a broader understanding of the plant and offer areas for continuous improvement.

Section 2: Auditing Multiple Factors Simultaneously

In many plants, it is possible to score more than one core criteria at a time. For example, while scoring stunning in swine, an auditor can also score vocalization at the entrance to the stun box. In fact, in some small plants, it may be essential, because you may not have the opportunity to observe a sufficient number of animals if each core criterion is audited separately. Due to variability in plant layout and design, auditors must determine where to stand to observe multiple criteria and not impede handling. It is essential that views be unobstructed.

Vocalization scoring is done on a per animal basis. For example, when auditing, if a steer vocalizes when it is touched with an electric prod, it is scored as one point for use of the prod and one additional point for the vocalization. If the same steer moos three times, it is still one point for vocalization. A single distressed cow or steer will often vocalize with several short moos that are closely spaced and these would be scored as a single vocalization. All cattle vocalizations that occur in the stun box or religious slaughter box are scored. Only pig vocalizations provoked by electric pods or equipment problems are scored. Vocalization is not scored in sheep.

When slips and falls are scored in the crowd pen, count all slips and falls within the crowd pen itself and in the groups of animals entering the crowd pen. If multiple slips or falls are observed in a group of animals that is outside this area, it may be indicative of a problem in that area. This is not part of the formal score for the crowd pen, but should be noted in the comments. If some other area of the yards has a problem with falling, the auditor should move to this area and score it.

It is helpful to follow the 1/3, 1/3, 1/3 rule of thumb when scoring animal handling. Pick a place in each of the following areas to observe animals for slips and falls and electric prod use:

- Drive alley
- Crowd tub
- Single-file chute

Your observations in these three areas should add up to the total number of animals necessary to complete the audit.

If you have already observed 100 animals to score prod use and you see a prod used in another area, you do not count it because your prod scoring has been completed. However, if you observe use of a prod that is a willful act of abuse, that should be documented as an abusive act even if you have already prod scored 100 animals. **Willful acts of abuse always count and result in a failed audit.**

Auditor Tip:

If you have already observed 100 animals to score prod use and you see a prod used in another area, you do not count it because your prod scoring has been completed.

Section 3: Scoring of Small Plants

Small beef plants that process fewer than 50 beef cattle per hour may need to make adjustments in scoring due to small sample size and differences in cattle behavior. Ideally, 50 or more cattle should be scored, but this may not be practical in a plant that processes 5 to 10 cattle per hour.

Typically, even in small pig plants, a larger number of pigs will be available. If larger numbers are available even in small pig plants, they should be used to improve the reliability of the audit. For a plant's own internal audit, data should be pooled and averaged. Small pooled data sets can be scored per these guidelines.

When an outside auditor audits a small plant, sometimes only 10 to 20 cattle are observed. If one stun were missed, the plant would not achieve the 96% acceptable score. If passing or failing the stunning audit is based on a single small data set, one miss should be permitted. However, on pooled data, the 96% first shot efficacy score must be maintained. On small data sets of 10 to 20 cattle, all cattle (100%) must be rendered insensible prior to hoisting to pass the audit.

In small beef plants with line speeds of less than 20 cattle per hour, the animals may stand for long periods in the single file chute (race) and "talk" to each other. Their "talking" vocalizations are not scored. "Talking" vocalizations in the handling system occur more often at slow line speeds. An animal should be scored as vocalizing if the vocalization is determined to have been provoked by handling or equipment. However, all cattle vocalizations that occur in the stunning box are counted.

Core Criterion 1: Willful Acts of Abuse/ Egregious Acts

Any willful act of abuse is grounds for automatic audit failure. For a list of willful acts of abuse, see Chapter 1, Section 3.

Auditor Tip:

For a list of willful acts of abuse, see Chapter 1, Section 3.

Core Criterion 2: Access to Water

All livestock must have access to clean water in holding pens in plants. Each holding pen must have a suitable and accessible water source.

In the event of a disruption to normal operations, like a slaughter line stoppage inside the plant that stops the flow of livestock for a period of time, the flow of livestock may be disrupted and necessitate keeping livestock in drive alleys or unloading docks, rather than returning animals to holding pens or back to the farm of origin. Establishments should include in their emergency management plan procedures for providing water to animals waiting in drive alleys (see Chapter 1, Section 4).

Core Criterion 3: Falling

Good animal welfare and quiet calm handling is impossible if animals slip or fall on the floor. All areas where animals walk should have non-slip footing. Animals should be observed during all phases of handling from the crowd pen to the stunning chute or the gate where pigs enter the stunning pen for CO_2 gondolas. Because survey results indicate that the greatest slipping and falling problems occur in high traffic areas such as the drive alley near the crowd pen and the stunning chute, scoring should be done in such high traffic areas (Grandin, 1998).

It is important to be clear about the definitions of falls:

- A fall occurs when an animal loses an upright position suddenly in which a part of the body other than the limbs touches the ground.
- During scoring of falling, all falls are counted, regardless of the cause of the fall.
- All falls that occur in a stun box or restrainer before stunning or religious slaughter are counted as falls.

Scoring:

Score a minimum of 100 animals in large plants. In most plants that have non-slip flooring, falling seldom occurs. In fact, problems with slipping or falling are usually either a big problem or almost no problem.

Score in the areas where the animals are being actively handled. For all species, falls caused by powered gates are counted.

Excellent – No falling
Acceptable – Fewer than 1% falling
Failure – More than 1% falling

Note: For scoring of very small plants, see Chapter 5, Section 2.

Auditor Tip:

For all species, falls caused by powered gates are counted.

Core Criterion 4: Electric Prod Use

Reducing the use of electric prods will improve animal welfare. Using electric prods significantly raises heart rate, open mouth breathing, and many other physiological measures. For purposes of auditing, touching livestock with an electric prod is counted whether the prod is energized or not. Prod use should be monitored at the entrance to the restrainer.

Scoring:

Cattle

	Percent of Animals Prodded:
Excellent	5% or less
Acceptable	25% or less
Failure	more than 25%

Pigs Moving Through Single File in Electric or CO_2 Systems

	Percent of Animals Prodded
Excellent	10% or less
Acceptable	25% or less
Failure	more than 25%

Pigs With CO_2/Group Stunning Systems
(No Single File Chute or Systems Where Pigs Are Stunned on the Floor in Groups)

	Percent of Animals Prodded
Excellent	Zero animals prodded
Acceptable	5% or less
Failure	More than 5%

Sheep

	Percent of Animals Prodded
Excellent	Zero animals prodded
Acceptable	5% or less
Failure	More than 5%

***Note:** Electric prods should rarely be used on sheep. The only exception is at the restrainer entrance on large sheep that refuse to enter. The OIE (2016) international slaughter guidelines state that electric prods should not be used on sheep. There are some very large sheep that are difficult for a person to push manually into the restrainer. A single application of an electric prod may be required to move them.

***Note:** Electric prods are not allowed on sheep in Canada.

Core Criterion 5: Vocalization and Gondola Loading

Vocalization

Vocalization can be an indicator of stress in livestock. During handling, there are six major causes of provoked vocalizations including, but not limited to: electric prod use; sharp edges; pressure from the hold-down rack; sides of a v-restrainer moving at different speeds; hitting or poking livestock; and excessive pressure applied by moving mechanized parts of an animal restraint device such as a head-holder, rump-pusher gate, or body restraint equipment.

Cattle

When cattle vocalization is being evaluated, animals from more than one feedlot or ranch should be observed. There are variations in the tendency of some cattle to vocalize.

Cattle vocalizations should be audited in the crowd-pen, lead-up chute, restrainer, and stun box. All vocalizing animals in the stun box, restrainer, or religious slaughter box are scored. Vocalizing animals in the crowd-pen and lead-up chute are scored only during active handling when the handler is moving the animals. Vocalizations in the yards are not scored because cattle standing quietly in the yards will often vocalize to each other.

Auditor Tip:

Vocalizations in the yards are not scored because cattle standing quietly in the yards will often vocalize to each other.

Cattle should be stunned immediately after they enter a stun box or restrainer. Isolated animals will often vocalize. It has observed that vocalization scoring is very effective for identifying plants with handling or equipment problems. Vocalization scoring works well in packing plants because cattle are stunned quickly after they are restrained.

Pigs

Because it is impossible to count individual vocalizations when a group of pigs is being handled, vocalization scoring of individual pigs can only be conducted in the restrainer, stun box, or group stunning pen.

It is important to count squeals only and not grunts in pigs. A squeal is an extended sound produced with an open mouth, indicating excitement, fear, or pain. Squealing that occurs when pigs root under each other or jump on top of each other is counted if provoked by electric prods, yelling, poking, or hitting the pigs.

Score pig squeals after the most posterior part of the hind end is past the restrainer entrance. The definition of the restrainer entrance for different types of equipment is listed below:

- **V conveyor restrainer –** The entrance point is located on the outer circumference of the slats where they turn around the sprocket (pivot).
- **Center track conveyor restrainer –** The entrance point is located at the point where the conveyor emerges from the housing and is exposed. In the unlikely event that a pig squeals because both legs and feet get on one side of the center track, the squeal would be counted.
- **Stun box –** The entrance point is located on the inside surface of the tailgate.
- **Group floor stunning –** The entrance point is the gate where the pigs enter the stunning pen. Score after the pigs enter and the gate is closed.

When CO_2 stunning is evaluated, a stunning cycle consists of the time to fill a gondola. Another simple method for monitoring continuous improvement within a plant is estimating the percentage of time that the entire stunning room is quiet. As each pig is stunned, the person doing the scoring checks off whether or not the room was quiet. The score is the percentage of stunning cycles where the room was quiet. Because vocalization scores can vary by auditor, number of pigs, and room acoustics, room vocalization scores are difficult to compare across plants and should not be measured by third party auditors. This is for internal use only. However, one can conclude that a plant that has continuous, constant squealing may have pig welfare problems. This method is excellent for internal plant monitoring over time.

Sheep

Vocalizations are not scored in sheep.

Scoring:

Score a minimum of 100 animals in large plants and 50 in small plants. Small plants should score an hour of production. For data collection on large numbers of animals, fractional percentages can be used. A single animal that vocalizes more than once is counted as one vocalization.

An animal should be scored as vocalizing if the vocalization is determined to have been provoked by handling or equipment. If there is no way to identify the cause of a vocalization, it should not be counted. If possible, note the cause on the audit form. Vocalizations caused by hot wanding a pig are scored as part of the stunning score. Do not score them as part of the pig handling vocalization score.

Auditor Tip:

Vocalizations caused by hot wanding a pig are scored as part of the stunning score. Do not score them as part of the pig handling vocalization score.

Excellent – 1% or less of the animals vocalize
Acceptable – 3% or less of the animals vocalize
Failure – More than 3% vocalize

****Note:*** 3% or less of cattle should moo or bellow. In Kosher or Halal operations or any operation using a head holder, up to 5% vocalization is acceptable for a passing score.

Criteria for Vocalization of Pigs in Conveyor Restrainers

Do not score grunts or squeals that can be attributed to hot wanding or squeals that appear unprovoked by humans or by equipment. Score a minimum of 100 pigs in large plants and 50 pigs in small plants that process 50 to 99 pigs per hour. In plants that process less than 50 pigs per hour, score one hour of production.

Auditor Tip:

Do not score grunts or squeals that can be attributed to hot wanding or squeals that appear unprovoked by humans or by equipment.

Excellent – 2% or less of the pigs squeal in the restrainer; none due to hot wanding.
Acceptable – 5% or less of the pigs squeal in the restrainer; none due to hot wanding.
Failure – More than 5% squeal in the restrainer; none due to hot wanding.
When 50 or less pigs are scored, a single squealing pig is acceptable. When more data is collected and averaged, use the 5% level for an acceptable rating.

Auditor Tip:

Criteria for Room Vocalization.
(Should be used in internal audits only and not compared across plants)
Score a minimum of 100 pigs in large plants and 50 pigs in small plants.

Acceptable – 50% or more of the time the room is quiet.

Additionally, plants can easily install a decibel monitor, which can help to determine room vocalization even when no active audit is being performed.

Gondola Loading

The gondola or other conveyance for moving animals into the gas system must also be evaluated for animal handling to ensure they are not overloaded.

Scoring:

Score 50 gondolas in large plants that process more than 500 pigs per hour per CO_2 machine to determine the percentage of gondolas (elevator boxes) that are overloaded. In small plants score 25 gondolas. There will be instances where an auditor may not be able to see directly into the gondola. In this case, an auditor can observe the number of animals that are loaded into the gondola and compare to loading requirements of the plant, rather than directly observing the animals inside the gondola. A gondola or elevator is to be scored as over-loaded if there is not sufficient space for the animals to stand or lie down without being on top of each other. Score on a per gondola basis:

Auditor Tip:

There will be instances where an auditor may not be able to see directly into the gondola. In this case, an auditor can observe the number of animals that are loaded into the gondola and compare to loading requirements of the plant, rather than directly observing the animals inside the gondola.

Excellent – No gondolas are overloaded on a 50-gondola audit
Acceptable – 4% or less of gondolas are overloaded
Failure – More than 4% are overloaded

Note: For gas systems where the animals ride head to tail on a continuous conveyor that does not have separate animal compartments, omit gondola scoring.

Core Criterion 6: Effective Stunning

Plants are evaluated on the effects of a single application of captive bolt, firearm, electric stun, or exposure to CO_2.

Effective Captive Bolt or Firearm Stunning

Captive bolt stunning is used often in cattle, but only occasionally in pigs and sheep. Regardless of species, an acceptable score is 96% or above. When evaluating effective captive bolt or firearm stunning, the auditor monitors whether or not an animal is rendered insensible with a single shot.

If one-shot efficacy falls below 96%, immediate action must be taken to improve the percentage. Note that shots in the air where the animal is not touched do not count as missed-shots. If the stunner bolt makes any visible mark or injury on the animal, a missed shot is counted. Touching an animal with the outer housing that surrounds the bolt, but not firing, does not count as a missed shot.

Auditor Tip:

Note that shots in the air where the animal is not touched do not count as missed-shots.

Some plants routinely shoot some heavy-headed animals, such as older cattle, bulls, and sows, twice to ensure insensibility. This is called a security stun. In this situation, the auditor must examine the animal for signs of sensibility before the second shot is applied. This is necessary to ensure that the stunner is capable of rendering 96% or more of the animals insensible with a single shot.

Scoring:

Score a minimum of 100 animals in large plants and 50 in plants that process 50 to 99 per hour. In very small plants which process less than 50 animals per hour, score one hour of production. For a more accurate assessment in small plants, data collected over a period of time should be averaged. These criteria apply to all species.

Excellent – 100% instantly rendered insensible with one shot
Acceptable – 96% or more instantly rendered insensible with one shot
Failure – Less than 96% instantly rendered insensible with one shot

Electrical Stunning Systems for Pigs and Sheep

When evaluating effective electrical stunning, the auditor monitors both the correct placement of stunning wands or tongs and the effectiveness of the stun in ensuring insensibility.

Scoring:

Score a minimum of 100 pigs or sheep in large plants that process more than 100 animals per hour and 50 in plants that process 50 to 99 per hour. In very small plants score one hour of production. For data collection on large numbers of animals, the fractional percentages can also be used.

Accurate Placement of stunner

Rating	Placement Criteria
Excellent	100% correct placement
Acceptable	99% correct placement
Failure	Less than 99% correct placement

Effective stunning

Rating	Effectively Stunned
Excellent	100% effectively stunned
Acceptable	98% effectively stunned
Failure	Less than 98% effectively stunned

Hot Wanding—Pigs Only

Rating	Placement Criteria
Excellent	No hot wanding
Acceptable	1% or less hot wanding
Failure	More than 1% hot wanding

*Special Audit Point for Plants That Use Head-Only Reversible Electric Stunning

Plants that use head-only reversible electric stunning systems must use extra care in ensuring that animals remain insensible when they are bled. Plants using this method should consider adding an audit point to their regular audits: when evaluating the effectiveness of reversible electrical stunning, the auditor monitors whether or not an animal is rendered insensible immediately following administration of a stun as evidenced by the absence of signs that an animal is starting the process of a return to consciousness (see Chapter 3, Section 3).

CO_2 Stunning System Operation for Pigs

The efficacy of CO_2 stunning is determined when insensibility is scored. The core criterion is that the animal remains insensible after exiting the chamber. When evaluating the effectiveness of CO_2, the auditor monitors whether or not an animal is rendered insensible when it emerges from the CO_2 chamber as evidenced by the absence of signs of sensibility. If signs of a return to sensibility are observed, the animal must be immediately re-stunned using an immediately available backup stunner.

Note: Plants with CO_2 systems that have shorter gas exposure times need to check insensibility on the shackle table as well. Plants that fall into this category should consider adding an audit point to their regular audits.

Scoring

Score a minimum of 100 animals exiting the chamber in large plants and 50 in plants that process 50 to 99 per hour. In very small plants, which process less than 50 animals per hour, score one hour of production.

For a more accurate assessment in small plants, data collected over a period of time should be averaged.

These criteria apply to all species:
Excellent – No animals show signs of sensibility
Acceptable – 98% or more of the animals show no signs of sensibility
Failure – Less than 98% of the animals show no signs of sensibility

Core Criterion 7: Bleed Rail Insensibility

Auditors should monitor a minimum of 100 animals in large plants and look for signs of sensibility, such as eye reflexes, vocalization, or the righting reflex. However, auditors should not stop the plant's process in an attempt to find signs of insensibility. When a 100-animal audit is performed, **100% must be rendered insensible**. There is zero tolerance for beginning any slaughter procedure such as skinning the head, leg removal, or scalding, on a sensible animal.

While no sensible animal should be observed on the bleed rail or bleed table during a 100-head audit, on rare occasions, it is possible that an animal with partial return to sensibility will be observed. An animal on the rail showing transition signs is NOT counted as sensible as long as the backup stunner is IMMEDIATELY accessible and a successful second stun is administered IMMEDIATELY. It is CRITICAL that animals showing signs of potential return to sensibility be re-stunned immediately. When a second application of the stunner is done in any location before the animal is hoisted, it is counted as a second stun, not as a sensible animal on the bleed rail or bleed table.

Assessing Unconsciousness in Livestock During Slaughter

Definitely Unconscious: ***ALL of the following signs are ABSENT***	**Unconscious But Beginning Transition Back to Consciousness:** ***ONE OR MORE of the following signs are PRESENT***	**Definitely Conscious:** ***ANY of the following signs are PRESENT***
• Menace reflex that occurs when a hand is waved in front of the eye without touching • Eyelash reflex in response to touch • Corneal reflex* • Rhythmic breathing where the ribs move in and out at least twice	• Eyelash reflex in response to touch • Rhythmic breathing where the ribs move in and out at least twice • Corneal reflex*	• No loss of posture/animal standing • Righting reflex on the rail • Vocalization • Spontaneous, unprovoked blinking • Menace reflex that occurs when a hand is waved in front of the eye without touching • Eye pursuit of a moving object
Unconscious: No Action Needed	**Unconscious: Re-stun Immediately**	**Conscious: Re-stun Immediately**

**For cattle, a finger may be used to test the corneal reflex. Because pigs and sheep have small eyes, a small blunt object, like a pencil eraser or something similar may be used.*

Scoring:

100 percent of animals must be rendered insensible. Signs of consciousness such as eye reflexes, vocalization, or the righting reflex must be absent. If one or more signs is present it is grounds for an automatic failure of the audit.

For all of the species: Dressing procedures such as skinning, scalding, limb removal, etc. must never be performed on a sensible animal. The animal must be effectively re-stunned before any of these procedures are performed.

Use these targets when evaluating plant performance internally over time by averaging the scores of many audits.

Cattle Insensibility
Shows one or more signs of sensibility:
Excellent – 1 per 1,000 animals or less
Acceptable – 1 per 500 animals or less

Pig and Sheep Insensibility
Shows one or more signs of sensibility:
Excellent – 1 per 2,000 animals or less
Acceptable – 1 per 1,000 animals or less

Auditor Tip:

When a second application of the stunner is done in any location before the animal is hoisted, it is counted as a second stun, not as a sensible animal on the bleed rail or bleed table.

GLOSSARY OF TERMS

Amperage: the flow of electricity, or current (measured in amps).

Bloodsplash: petechial (pinpoint size) hemorrhages that result when small capillaries in muscle rupture because of increased blood pressure and muscular contraction.

Clonic: a phase within a seizure in which the animal displays uncontrolled kicking and twitching.

Compromised animal: an animal with reduced capacity to withstand handling or transportation, but where handling or transportation with special provisions will not lead to undue suffering; compromised animals may be locally transported with special provisions to receive care, be euthanized, or humanely slaughtered.

Corneal reflex: the blinking effect elicited by lightly touching the cornea (surface) of the eyeball; this reflex is a sign of sensibility.

Crowd gate: a gate used in an animal handling system that can facilitate the movement of livestock from a large pen into a single-file alley or used for moving a group of animals along a drive alley.

Crowd pen: a pen which aids in the movement of animals into a single-file alleyway; contrary to the name, the crowd pen should never be crowded—it should only be filled 50-75%.

Emaciated: abnormally thin and weak; emaciated pigs will be extremely narrow in the loin, have a hollow flank area, and their ribs and backbones can be easily seen; in cattle and sheep, their ribs and backbones can easily be seen.

Exsanguination: the act of draining the blood from an animal.

Fall: occurs when an animal loses an upright position suddenly in which a part of the body other than the limbs touches the ground.

Fatigued animal: fatigued pigs are pigs that have temporarily lost the ability or the desire to walk but have a reasonable expectation to recover full locomotion with rest (Source: National Pork Board). Cattle and sheep experiencing heat stress will exhibit open-mouthed panting and may be reluctant to move.

Flight zone: an animal's personal space; determined by the wildness or tameness of the animal, or how accustomed animals are to people and handling.

Frequency (regarding electric currents): how many times the waveform is repeated in a second (measured in Hertz (Hz)).

Gondola: a large pen/cage in which pigs can be loaded before being exposed to carbon dioxide stunning.

Hot wanding: an instance in which the stunning wand is energized before it is in full contact with a pig, which usually elicits an adverse response, such as a squeal.

Lairage: a place where livestock may be held during transit to a slaughter facility or in a slaughter facility.

Menace reflex: the blinking effect elicited by waving a hand in front of the eye; this reflex is a sign of sensibility.

Non-ambulatory animal: an animal that cannot or will not rise from a recumbent position or that cannot walk.

Non-penetrating captive bolt: a captive bolt device which provides a concussive effect without the bolt penetrating the skull.

Nystagmus: a condition in which the eye makes repetitive, uncontrolled movements; appears that the eye is vibrating.

Penetrating captive bolt: a captive bolt device which provides a concussive effect from the bolt penetrating the skull.

Pithing: causing further damage to the brain after an animal has been rendered in sensible by captive bolt or firearm by inserting a thin metal or plastic rod into the hole made by the concussive device.

Point of balance: the point at which an animal will move forward or backward in relation to a handler's movement, located at the shoulder of the animal.

Poor udder condition: the condition of an animal that displays a severely engorged udder that is interfering with the animal's ability to walk, including udders that descend below the hock, significantly push out against the rear legs causing difficulty of movement, or highly distended udders which cause obvious pain/distress.

Restrainer: a chute, box, or conveyor system that holds an animal still for handlers to more effectively place a captive bolt, firearm, or electric stun device to render an animal unconscious.

Rhythmic breathing: breathing displayed by animals, in which the ribs move in and out *at least twice;* this is a sign of sensibility.

Righting reflex: an attempt of an animal to lift up its head and/or arch its back (or right itself), in response to being hung upside down; animals which are sensible after being hung on the rail will exhibit such a reflex; the presence of this reflex is a sign of sensibility, and is not tolerated.

Security stun: an additional stunning action taken after the first stun has rendered an animal unconscious.

Single file chute: an alleyway in which animals are moved single-file, usually leading up to the restrainer or stun box.

Slip: occurs when a portion of the leg other than the foot touches the ground or floor, or a foot loses contact with the ground or floor in a non-walking manner.

Split animal: an animal (usually bovine) whose back legs have split underneath it, and will not support the animal's weight.

Tonic: a phase within a seizure in which the animal displays stiffness and rigidity due to extreme muscle contraction.

Unfit animal: an animal with reduced capacity to withstand transportation and where there is a high risk that transportation will lead to undue suffering; if transported, unfit animals would endure unjustified and unreasonable suffering (unfit animals may only be transported for veterinary treatment or diagnosis).

Voltage: The force or pressure of an electric current (measured in volts).

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Pen space and Stocking

Pen space allocations may vary depending upon weather conditions, animal sizes, and varying holding times. All species should be able to lie down if held overnight.

As a rough guideline:

Cattle

- 20 sq. ft (1.87 sq. m) should be allotted for each 1,200 lb (545 kg) animal
- 22 sq. ft (2.04 sq. m) should be allotted for each 1,400 lb (635 kg) animal
- 23 sq. ft (2.13 sq. m) should be allotted for each 1,500 lb (680 kg) animal
- 24 sq. ft (2.22 sq. m) should be allotted for each 1,600 lb (720 kg) animal

Pigs

- 6 sq. ft (0.55 sq. m) should be allotted for each 250 lb pig (114 kg)
- 11-12 sq. ft (1.03 – 1.12 sq. m) should be allotted for each mature sow
- Up to 40 sq. ft (3.74 sq. m) should be allotted for each mature boar to reduce fighting. Another alternative is to pen them individually (Swine Care Handbook, National Pork Board, 2003).

Sheep

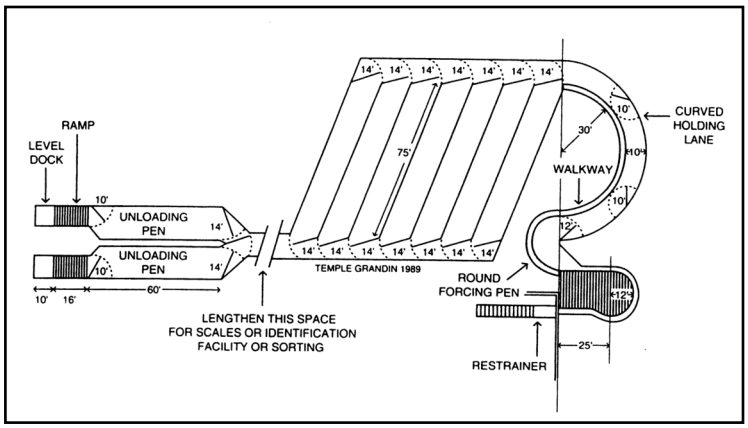
- 5 sq. ft (0.46 sq. m) should be allotted for each market weight lamb
- 6 sq. ft (0.55 sq. m) should be allotted for each mature sheep

These stocking rates will provide adequate room for "working space" when animals are moved out of the pen (Klein *et al*., 2018). If the animals are stocked in the pen more tightly, it will be difficult for the handler to empty the pen.

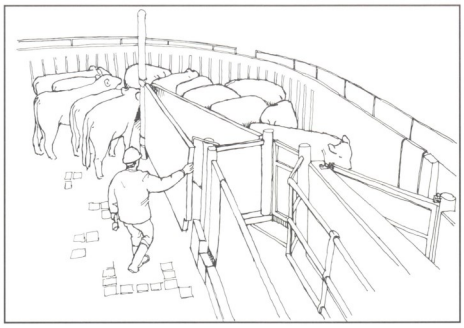

Adequate pen space is important because not only do animals need room to move away from the handler and out of the pen, but U.S. regulations require that they must have room to move to available water (9 CFR 313.2(e)).

Recommended Handling Facility Layout

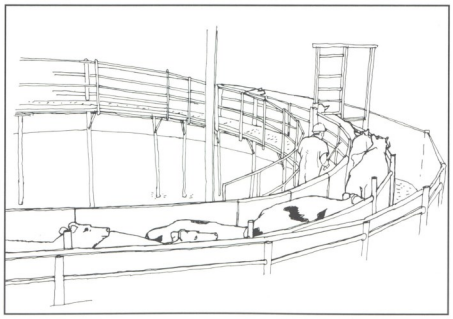
The diagram below illustrates a modern cattle stockyard and chute system. Animal movement is one-way and there is no cross traffic. Each long narrow pen holds one truckload. The animals enter through one end and leave through the other. The round crowd pen and curved chute facilitate movement of livestock to the stunner. Modern livestock facilities have many good features. The unloading ramps have a 10-foot (3 m) level dock for the animals to walk on before they go down the ramps. Each unloading pen can usually hold a full truck load. The pens may also be made double the width to hold two truckloads in each pen. Unloading pens are recommended for both pig and cattle facilities to facilitate prompt unloading. Long, narrow diagonal pens eliminate sharp corners and provide one-way traffic flow.



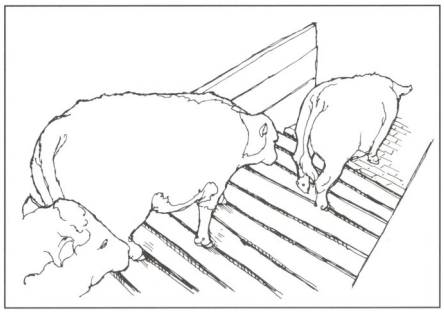
Example of chute system



Crowd pen.



Curved chute.



Unloading ramp.

The round crowd pen and curved single file chute take advantage of the natural tendency of animals to circle. It also prevents them from seeing the other end while they are standing in the crowd pen. A curved chute should be laid out correctly. Too sharp a bend at the junction between the single file chute and the crowd pen will create the appearance of a dead end. In fact, all species of livestock will balk if a chute looks like a dead end.

As a guideline, the recommended radii (length of crowd gate) are:

- Cattle, 12 ft (3.5 m)
- Pigs, 8 ft (2.5 m)
- Sheep, 8 ft (2.5 m)

The basic layout principles are similar for all species, but there is one important difference: cattle and sheep crowd pens should have a funnel entrance, but pig crowd pens must have an abrupt entrance because pigs will jam in a funnel. A crowd pen should never be installed on a ramp because animals will pile up in the crowd pen. If ramps have to be used, the sloped portion should be in the single file chutes. In pig facilities, level stockyards and chute systems with no ramp are most effective. Facilities should be designed with level flooring with a slope or grade sufficient for drainage only.

Unloading Facility Design

For all species, plants should have sufficient unloading capacity so trucks can unload promptly. Unloading ramps should have a level dock before the ramps go down so animals may walk on a level surface when they exit the truck. A good target for the ramp slope is no more than 20° (It may go up to 25° for adjustable ramps). Stair steps are recommended on concrete ramps because they provide better traction than cleats or grooves when ramps are dirty.

For cattle, the recommended stair step dimensions are 3 ½ in (10 cm) rise and a 12-in (30 cm) long tread. If space permits, an 18-in (45 cm) long tread will create a more gradual ramp. For market pigs, a 2 ½ in (6.5 cm) rise and a 10-in (26 cm) tread works well. On adjustable ramps, cleats with 8 in (20 cm) of space between them are recommended. All flooring and ramp surfaces should be non-slip to avoid injury.

Canadian regulations require that ramp slopes be no more than 20° for pigs, 25° for cattle, and 35° for sheep.

Finding Distractions that Hinder Easy Movement

Problem: Animal refuses to move through an alley, chute or race.
Possible Causes:
If animals refuse to move through an alley, chute or race, there may be a very simple solution. Once the area is clear, step into the race to see what distractions may be hindering movement. Any one of the items on the following list may cause animals to stop moving or back up and prevent a properly designed facility from working efficiently. In some facilities, two or three different distractions must be removed before animals will move easily. Often, identifying the problem requires trial and error.

Look for:

- **Sparkling reflections on puddles** that can be eliminated by moving a light fixture.
- **Reflections** on smooth metal that can be minimized by lighting changes.
- **Chains that jiggle** and can be fastened.
- **Metal clanging or banging** that can be secured. Rubber stops can be used on gates, for example, to prevent clanging.
- **High pitched noises** and other **loud or reverberating noises** that can be silenced.
- **Air hissing** that can be silenced with mufflers or piped outside.
- **Air drafts blowing** toward approaching animals, which can be redirected away from them.
- **Clothing hung** on the fence that can be removed.
- **Moving piece of plastic** that can be secured or removed.
- **Fan blade movement** that can be blocked by installing a shield to block the animals' view.
- **Seeing people** moving up ahead. Install a shield so approaching animals cannot see them.
- **Small object on the floor** such as a coffee cup, hose, or paper.
- **Changes in flooring and texture** that can be made uniform.
- **Drain grate** on the floor that can be moved to another location outside races.
- **Sudden changes in the color of equipment or flooring.** Colors with high contrast like yellow are the worst. Use of single colors on floors and walls can facilitate movement.
- **Race entrance is too dark**. Animals prefer to move from a darker place to a brighter place.
- **Bright light such as blinding sun.** Animals will move from a darker place to a brighter place, but they will not move toward blinding light. Examples of blinding light are looking into the sun or a bare light bulb.
- **One-way and back-up gates.** Install them two to three body lengths away from the crowd pen. Equip the one-way gate near the crowd pen with a device so that it can be held open when the single file race is filled. Many facilities have too many backup gates. Try tying them open.

Resolving Problems in Center Track Conveyor Restrainer Systems and V-Belt Restrainer Systems for Cattle, Pigs, and Sheep

Problem: Animal stops at entrance and refuses to enter.
Possible Causes:

- **Hold-down rack is too low and the animal bumps its shoulder as it enters.** Raise hold-down so that there is approximately 4 in (10 cm) of clearance for the tallest animal. The hold down should be solid to block vision.

- **Entrance is too dark.** Install a light that illuminates the entrance. The light must not shine in an approaching animal's eyes.
- **Slick floor.** Animals panic when they slip. Rods can be welded to floor to provide a non-slip floor, but make sure the rods are welded flush to each other, not on top of each other. The entrance ramp into the restrainer must be non-slip.
- **Entrance ramp is missing.** Reinstall entrance ramp. Forcing an animal to jump into a restrainer frightens it. See diagrams on www.Grandin.com.
- **Leg spreader is too wide and it bumps the inside of the animals' legs.** This problem only occurs in center track restrainers. See diagrams on www.Grandin.com.
- **No False Floor.** On all types of restrainers, animals will be afraid to enter if they see a steep drop off (visual cliff) below the restrainer. Install a solid false floor approximately 6 in. (15 cm) below the feet of the largest animal. See diagrams on www.Grandin.com.
- **No belly rails.** On center track restrainers, belly rails keep the animal centered over the leg spreader bar. See diagrams on www.Grandin.com.
- **Distractions in plant.** Install a curtain at the exit end of the restrainer. Look through the restrainer and see if you can see distractions such as moving conveyor, a yellow apron, or sparkling reflections on a moving piece of equipment.
- **Broken sharp edges in entrance.** Repair or replace entrance parts. Plants should do daily pre-operations checks on restrainers to ensure the entrance is in good repair.

*If an animal is walking into the restrainer by itself, do not poke it with an electric prod. Center track systems require less prodding to induce cattle to enter them. Workers need to break the "automatic prod reflex" habit.

Problem: Animal struggles and vocalizes in the conveyor restrainer.
Possible Causes:

- **V conveyor sides run at different speeds.** Both sides must run at the same speed. To test this, mark each side with tape or a crayon. After three revolutions the marks should be no more than 4 inches apart from each other, or the width of one slat.
- **Hold down too short**. On all types of restrainers, the animal must be completely restrained and riding on the conveyor with its feet off the entrance ramp before its head emerges from under the hold down. The principle is blocking vision until the animal is fully restrained.
- **Broken slats and other parts**. Sharp edges that stick into animals will cause struggling. On the center track restrainer, the metal guides along the conveyor must not be bent. Replace broken or bent slats. Slats must line up and provide a smooth continuous surface.
- **Hold-down too high**. This is most likely a problem when small animals are handled. Install a flexible curtain on the discharge end of the hold down rack to block the vision of smaller animals.
- **Adjustable sides not centered**. Struggling is more likely to occur if the adjustable sides of the center track conveyor push the animal to one side and make it feel off balance. Adjustable sides should be at the same setting on both sides.

Problem: Animal struggles and vocalizes in a stun box with a head holder.
Possible Causes:

- **Held in the head holder too long.**
- **Head holder** or other part of the restraint apparatus applies excessive pressure.
- **Slipping** on the floor.
- **The animal's skin is pinched** by the equipment.

Resolving Electrical Stunning Problems

Problem: Animal blinks within five seconds after stunning.
Possible Causes:

- **Electrode is placed in the wrong position and the electrical current fails to go through the brain.** The animal blinks because the stunner failed to induce the grand mal epileptic seizure that is required to induce instant insensibility.
- **The electrical amperage may be too low.** Even though the electrode is in the correct position, there is not enough current passing through the brain to induce a grand mal epileptic seizure. The amperage and/or voltage should be checked and may need to be increased.
- **High electric resistance of the animal.** This is especially a problem in old sows or dehydrated animals.
- **Electrode contact area is too small or the electrodes are dirty.** Increase surface area of electrodes or clean them.
- **The animal is too dry, which results in high electrical resistance.** This is most likely to be a problem in cattle or sheep and continuous wetting during the stun may be required in these two species. Additionally, animals that are dehydrated may have high electrical resistance and be difficult to stun, so proper hydration prior to stunning is important.

Problem: The initial stun appears to be done correctly but the animal blinks or shows other signs of return to sensibility 30 to 90 seconds after stunning.
Possible Causes:

- **The stunning-to-bleed interval is too long.** This is especially a problem with head-only reversible stunning. The solution is to shorten the interval between stunning and bleeding.
- **Poor bleeding if an animal shows a sign of return to sensibility after it has been bled**. This can occur in cardiac arrested animals because there are always a few animals in which the heart is not stopped. Training of the person doing the bleeding will usually solve this problem.
- **Poor initial contact results in the animal receiving a stunning time that is too short.** A common cause is a fatigued operator.
- **Interrupted contact.** The stunning wand or tongs may bounce or slide during the stun and result in a stunning time that is too short. Poor design of the stunning wand is a likely cause. Another cause can be an overloaded stunner operator who is stunning more animals than he can easily handle.
- **Placement of the head electrodes in the wrong position on the head.** Reposition the electrodes so that the electrical current will pass through the brain.

Resolving Captive Bolt Stunning Problems

Problem: Poor captive bolt stun outcomes.
Possible Causes:

- **Stunner has not been maintained.** A dirty stunner will lose bolt velocity. High bolt velocity is required for an effective stun.
- **Damp cartridges for a cartridge-fired stunner.** Cartridges must be kept in a dry place. Cartridges should not be stored long-term in the slaughter room. However, it is acceptable to store cartridges needed for that day's production in the slaughter room.
- **An overheated cartridge-fired stunner will lose bolt velocity.** Rotate cartridge-fired stunners to prevent overheating.

- **Worn cylinder bore on a pneumatic stunner.** Even when the stunner has been serviced correctly, the machined cylinder bore eventually wears out and the stunner will lose hitting power. At this point the stunner will have to be replaced. A clean air supply will help prevent cylinder wear.
- **Poor ergonomics of bulky pneumatic stunners.** Adding additional handles will aid positioning. When a pneumatic stunner is used with a conveyor restrainer, it is often easier to position the stunner if it is hung from the balancer on a 30° angle.
- **Stunner operator chases the animal's head.** The operator should be trained to wait for the animal to stop moving and then position the stunner. Chasing the head will result in poor stunning.
- **Excited animals.** Careful, quiet handling and driving of animals into the stun box or restrainer will provide calm animals that are easier to stun correctly.
- **Air pressure too low to power a pneumatic stunner.** Use the air pressure setting recommended by the manufacturer. This usually requires a dedicated compressor, which powers only the stunner.
- **Slick floor in stunning box causes cattle to become agitated.**
- **Poor placement.** Stunner is not placing the captive bolt square against the center of the head or not placing the bolt in the "X" between the base of the horn and the eye.

Resolving CO_2 Stunning Problems

Problem: Stunning is ineffective; animals are not rendered completely insensible.
Possible Causes:

- **Low CO_2 concentration.** Increase the gas concentration.
- **Exposure time is too short.** Slow down the number of pigs which are moved through the system.
- **The time between the exit from the CO_2 chamber and bleeding is too long.** To prevent recovery from the anesthesia, bleed the animals more quickly. This is most likely to be a problem in small CO_2 machines that have a short gas exposure time.
- **Poor bleeding technique.** If animals show signs of return to sensibility after bleeding, the person doing the bleeding may need more training.

Working with livestock in a plant setting can be challenging and unpredictable. It is essential that safety be a priority when handling and stunning animals. In addition to following all company worker safety procedures, below are a series of safety tips that can help protect employees.

Livestock Facility and Trucking

- If prods are wired into the house current, they must always be wired through a transformer.
- Man-gates and other devices must be installed so people can easily escape from agitated cattle. This is especially important for areas with solid fences. In concrete fences, toeholds can be formed in the walls.
- Be alert around the unloading dock. A truck driver backing in may not be able to see you.
- Handle cattle quietly. Excited animals are more likely to cause accidents.
- Never enter the crowd pen or other confined space with one or two agitated, excited livestock.

Electric Stunning of Sheep and Pigs

- The stunner operator's station must be kept dry.
- The operator should wear rubber boots and stand on non-conductive plastic grating.
- The restrainer frame and worker walkway structure should be grounded to a perfect ground. The side of the restrainer that the stunner operator can touch should also be covered with heavy insulating material.

Captive Bolt Stunning

- Cartridge-fired stunners must ALWAYS be un-cocked before they are set down.
- NEVER, EVER throw a cartridge-fired stunner to another person.
- Inspect latches on stunning boxes to make sure they latch securely. Before the next animal is admitted to the box, check the latch. All guards must be kept in place over exposed pinch points that could be easily touched by employees during normal operation of the restrainer system equipment.
- If a worker has to get inside a restrainer conveyor system to un-jam it, lock it out first to prevent somebody else from turning it on.
- Cartridge-fired stunners must always be kept unloaded when they are carried away from the stunning area.
- Good maintenance is essential with pneumatic stunners to prevent excessive recoil, which can strain and injure the operator's hands, arm, or back.
- The use of a cartridge gun holder is considered a best practice. Do not lay a gun on the edge of a stun box.
- Never test-fire a cartridge-fired stunner in the air. Without any resistance, the bolt can break and become a projectile.

Safe Livestock Handling

- A lone, agitated animal can be very dangerous and may cause injury during handling. Many serious cattle handling injuries are caused by a single agitated animal.
- Escaped cattle must never be chased. An animal that is loose on the plant grounds will return to the stockyard if it is left alone. If an animal gets loose inside the plant, employees should stay quiet while one designated person either stuns it or eases it out a door.
- Stay out of the blind spot behind the rear end of large livestock. If they cannot see you, they are likely to

kick you.

- Install a safety fence consisting of upright posts around the cattle shackling area to prevent cattle from entering other parts of the plant.
- Do not try to stop an animal that is running back from a group.

Religious Slaughter Practices

Shackling and hoisting un-stunned cattle and calves can be very dangerous. It has caused many serious accidents. In one plant, replacement of the shackle hoist with a restrainer resulted in a dramatic reduction in accidents. Shackling and hoisting of live sheep is also hazardous.

Official NAMI Audit Forms are included in the following section. These forms are dated. Updates to these forms may be made based upon new information and user feedback. Any updated forms will be posted on **www.animalhandling.org.**

Cattle Transportation Audit Form

Date: _____

Name and auditing company: _____

Plant location: _____

Plant contact: _____

Number of trucks audited: _____

Temperature/weather conditions: _____

Core Criterion 1: Plant transportation policy and preparedness for receiving animals

1. Plant has a written animal welfare policy for transporters.	_____ / 1
2. Plant provides extreme temperature management tools.	_____ / 1
3. Arrival management process minimizes waiting time at the plant.	_____ / 1
4. Emergency plans in place for animals in transit.	_____ / 1
5. Written policy for non-ambulatory and fatigued animals + tools available for handling.	_____ / 1
6. Acceptable handling tools available and utilized as needed.	_____ / 1
7. Availability of acceptable euthanasia tools.	_____ / 1
8. Maintenance records for euthanasia equipment, proper storage and employee training for euthanasia.	_____ / 1
9. Gates in unloading area swing freely, latch securely and have no sharp protrusions.	_____ / 1
10. Non-slip flooring.	_____ / 1
11. Unloading area and ramps in good repair.	_____ / 1
12. Adequate lighting.	_____ / 1
13. Staff available for receiving animals.	_____ / 1
14. Does the plant have documented employee training for livestock receiving?	_____ / 1

Total for Core Criterion 1: _____ / 14

Excellent – 14 of the 14 criteria met
Acceptable – 12 or 13 of the criteria met
Not Acceptable – 10 or 11 of the criteria met

Notes:

_____

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_____

Score each truck using the following audit score sheet for Core Criteria 2 – 7. You will need to make a copy of the remaining pages for each truck. At the end of the audit, the points for each load will be added together to obtain the final score for each of the core criteria.

Trailer #: _____ **Total # of animals on trailer:** _____

Type of Trailer: Straight Trailer Drop Center/Pot Belly Trailer Farm Trailer Other

Cattle Type (circle all that apply): Fed Cattle Cull Dairy Cows Cull Beef Cows Mature Bulls

Has the driver completed the Beef Transportation Quality Assurance™ program or the Canadian Livestock Transporter (CLT) Certification Program? Yes or No _____

Core Criterion 2: Set-up, loading and alignment of trailer

1. Trailer is loaded at proper density. _____ / 1
2. Incompatible animals are segregated when required.* _____ / 1
3. Trailer is properly aligned with the unloading area to prevent animals' extremities from being caught in gaps. _____ / 1

Total for Core Criterion 2: _____ / 3

Note: This criterion only applies to swine, sheep, and veal calves.

Individual truck scores will be averaged together. At least two trucks must be scored. See final scoring form for calculations.

Excellent – 100% average score
Acceptable – 90% average score or greater
Not Acceptable – Less than 90% average score

Notes:

_____
_____
_____
_____

Core Criterion 3: Timeliness of arrival of the truck and trailer and animal unloading

Time truck/trailer arrives to plant: _____ **Time first animal unloads:** _____
Total time to begin unloading: _____

Plant begins unloading within:
60 minutes of arrival = Full 4 points
61 to 90 minutes = 3 out of 4 points
91 to 120 minutes = 2 out of 4 points
≥ 120 minutes (with reason) = 1 out of 4 points
≥ 120 minutes (without reason) = 0 out of 4 points

Total for Core Criterion 3: _____ / 4

Individual truck scores will be averaged together. At least two trucks must be scored. See final scoring form for calculations.

Excellent – 95% or greater
Acceptable – 85% or greater
Not Acceptable – Less than 85%

Notes:

_____
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_____
_____

Core Criterion 4: Falls

Total number of falls.

Tally number of falls here: _____ **Percent:** _____

Excellent – No falling
Acceptable – 1% or fewer falling (body touches floor)
Not acceptable – More than 1% falling down

Notes:

_____
_____
_____
_____

Core Criterion 5: Electric Prod Use

Total number of animals electrically prodded during unloading.

Tally electric prod use here: _____ **Percent:** _____

Excellent – 0% or less
Acceptable – 10% or less
Not acceptable – More than 10%

Notes:

_____
_____
_____
_____

Core Criterion 6: Condition of Animal

1. Non-ambulatory animals (tally here): _____
2. Severely injured animals (tally here): _____
3. # above that were severely emaciated *(tally here for transfer to secondary criteria)*: _____
4. Severely lame animals (tally here): _____
5. Heat-stressed animals (tally here): _____
6. Calving (tally here): _____

Total for Core Criterion 6: _____ **Percent:** _____

Excellent –1% or less compromised animals on the trailer at arrival.
Acceptable –2% or less compromised animals on the trailer at arrival.
Not Acceptable –More than 2% compromised animals on the trailer at arrival.

Notes:

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_____

Core Criterion 7: Willful Acts of Abuse/Egregious Acts

Any willful act of abuse/egregious act grounds for automatic audit failure.

Willful acts of abuse include, but are not limited to: 1) dragging a conscious, non-ambulatory animal; 2) intentionally applying prods to sensitive parts of the animal such as the eyes, ears, nose, anus, testicle or belly; 3) deliberate slamming of gates on animals; 4) malicious driving of ambulatory livestock on top of one another either manually or with direct contact with motorized equipment (this excludes loading a non-ambulatory animal for transport); 5) purposefully driving livestock off high ledges, platforms, or off a truck without a ramp (driving market weight or adult animals off a low stock trailer is acceptable); 6) hitting or beating an animal; or 7) animals frozen to the floor or sides of the trailer.

Any willful act of abuse observed? Yes or No

Notes:

_____
_____
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_____
_____

Final Scoring—Cattle Transportation Audit

Core Criteria	Total on all trucks	Total number of animals audited or total points available	Actual Score	Pass or Fail
Core Criterion 1 Plant Audit		14		
Core Criterion 2 Set up, loading, and alignment of trailer		(# of trucks x 3 points divided by # of trucks)		
Core Criterion 3 Timeliness of arrival and unloading		(# of trucks x 4)		
Core Criterion 4 Falls		(Total # of falls)		
Core Criterion 5 Electric Prod Use		(Total # electrically prodded)		
Core Criterion 6 Condition of Animals		(Total # of compromised animals)		
Core Criterion 7 Any willful acts of abuse observed?		(Yes or No)		

Notes:

_____

_____

_____

_____

Passed all numerically scored criteria? Yes or No

Notes:

_____

_____

_____

_____

Auditor Signature: _____

Secondary Items for Cattle Audit

Secondary Transport Audit Items		
Documents	**Yes**	**No**
Does the plant have a "No Electric Prod Use" policy posted?		
Does the plant have a method for communicating back to the site of trailer loading?		
Facilities and Equipment		
Is non-slip, solid flooring provided in the trailers?		
Can trailer gates and doors open freely and be secured shut?		
Do internal ramps function properly and extend all the way to the floor?		
Are there any sharp or protruding objects present that can injure animals?		
If transporting dairy cows, veal calves, and some cull beef cows, are winter side slats or plugs in place at recommended levels?		
Animal Handling and Training		
Do the people unloading have electric prods in their hands?		
Did the driver use an electric prod in or through the sides or roof of the trailer?		
Were rattle paddles, sort boards, flags, or other handling tools used incorrectly?*		
Were any of the animals unloaded considered severely emaciated? If yes, tally the number of animals here:		
Did any of the cattle have poor udder conditions? If yes, tally the number of animals here:		
Were severely injured/severely lame animals promptly euthanized?		
Unloading		
Did the person unloading the trailer do so quietly and calmly?		
Time first animal unloads:		
Time last animal unloads:		
Total unload time[¥]:		
Total number of slips[¶]:		
Temperament of livestock (circle one)**: Excitable Normal Docile		

*Comment on the use of electric prods and if acceptable handling tools were used incorrectly.
[¥]Provide comment on trailers that may have experienced problems or lengthy unloading times.
[¶]Comment on the attitude and behavior of the people unloading the livestock here. As an example, their temperament may be correlated to the number of slips and falls.
**Note any problems or comments on livestock temperament. For example, there may have been a high number of slips on one load and the temperament of the animals may have been a factor.

Notes:

_____

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_____

Auditor Signature: _____

Date: _____

Swine Transportation Audit Form

Date: _____

Name and auditing company: _____

Plant location: _____

Plant contact: _____

Number of trucks audited: _____

Temperature/weather conditions: _____

Core Criterion 1: Plant transportation policy and preparedness for receiving animals

1. Plant has a written animal welfare policy for transporters. _____ / 1
2. Plant provides extreme temperature management tools. _____ / 1
3. Arrival management process minimizes waiting time at the plant. _____ / 1
4. Emergency plans in place for animals in transit. _____ / 1
5. Written policy for non-ambulatory and fatigued animals; tools available for handling. _____ / 1
6. Acceptable handling tools available and utilized as needed. _____ / 1
7. Availability of acceptable euthanasia tools. _____ / 1
8. Maintenance records for euthanasia equipment, proper storage and employee training for euthanasia. _____ / 1
9. Gates in unloading area swing freely, latch securely and have no sharp protrusions. _____ / 1
10. Non-slip flooring. _____ / 1
11. Unloading area and ramps in good repair. _____ / 1
12. Adequate lighting. _____ / 1
13. Staff available for receiving animals. _____ / 1
14. Does the plant have documented employee training for livestock receiving? _____ / 1

Total for Core Criterion 1: _____ / 14

Excellent – 14 of the criteria met
Acceptable – 12 or 13 of the criteria met
Not Acceptable – 10 or 11 of the criteria met

Notes:

_____
_____
_____
_____
_____
_____

Score each truck using the following audit score sheet for Core Criteria 2 – 7. You will need to make a copy of the remaining pages for each truck. At the end of the audit, the points for each load will be added together to obtain the final score for each of the core criteria.

Trailer #: _____ **Total # of animals on trailer:** _____

Type of Trailer: Straight Trailer Drop Center/Pot Belly Trailer Farm Trailer Other

Swine Type (circle all that apply): Market Pigs Cull Sows Mature Boars

Has the driver completed the National Pork Board's TQA™ program or the Canadian Livestock Transporter (CLT) Certification Program? Yes or No

Core Criterion 2: Set-up, loading and alignment of trailer

1. Compartments are gated. _____ / 1
2. Trailer is loaded at proper density. _____ / 1
3. Incompatible animals are segregated when required. _____ / 1
4. Trailer is properly aligned with the unloading area to prevent extremities from being caught in gaps. _____ / 1

Total for Core Criterion 2: _____ / 4

For swine, each of the four criteria is worth 1 point each, for a total of 4 points for this Core Criterion.

Individual truck scores will be averaged together. At least two trucks must be scored. See final scoring form for calculations.

Excellent – 100% average score
Acceptable – 90% average score or greater
Not Acceptable – Less than 90% average score

Notes:

_____
_____
_____
_____

Core Criterion 3: Timeliness of arrival of the truck and trailer and animal unloading

Time truck/trailer arrives at plant: _____ **Time first animal unloads:** _____
Total time to begin unloading: _____

Plant begins unloading within:
60 minutes of arrival = Full 4 points
61 to 90 minutes = 3 out of 4 points
91 to 120 minutes = 2 out of 4 points
≥ 120 minutes (with reason) = 1 out of 4 points
≥ 120 minutes (without reason): = 0 out of 4 points

Total for Core Criterion 3: _____ / 4

Individual truck scores will be averaged; at least two trucks must be scored. See final scoring form for calculations.

Excellent – 95% or greater
Acceptable – 85% or greater
Not Acceptable – Less than 85%

Notes:

_____
_____
_____
_____

Core Criterion 4: Falls

Total number of falls.

Tally number of falls here: _____ **Percent:** _____

Excellent – No falling
Acceptable – 1% or fewer falling (body touches floor)
Not acceptable – More than 1% falling down

Notes:

_____
_____
_____
_____

Core Criterion 5: Electric Prod Use

Total number of animals electrically prodded during unloading.

Tally electric prod use here: _____ **Percent:** _____

Excellent – 0% or less
Acceptable – 10% or less
Not acceptable – More than 10%

Notes:

_____
_____
_____
_____

Core Criterion 6: Condition of Animal

1 Non-ambulatory animals (tally here): _____
2. Severely injured animals (tally here): _____
3. # above that were severely emaciated *(tally here for transfer to secondary criteria):* _____
4. Heat-stressed animals (tally here): _____
5. Severely lame animals (tally here): _____
6. Frostbitten animals (tally here): _____
7. Farrowing animals (tally here): _____

Total for Core Criterion 6: _____ **Percent:** _____

Excellent –1% or less compromised animals on the trailer at arrival.
Acceptable –3% or less compromised animals on the trailer at arrival.
Not Acceptable –More than 3% compromised animals on the trailer at arrival.

Notes:

_____
_____
_____
_____

Core Criterion 7: Willful Acts of Abuse /Egregious Acts

Any willful act of abuse/egregious acts is grounds for automatic audit failure.

Willful acts of abuse include, but are not limited to: 1) dragging a conscious, non-ambulatory animal; 2) intentionally applying prods to sensitive parts of the animal such as the eyes, ears, nose, anus or testicles; 3) deliberate slamming of gates on livestock; 4) malicious driving of ambulatory livestock on top of one another either manually or with direct contact with motorized equipment (this excludes loading a non-ambulatory animal for transport); 5) purposefully driving livestock off high ledges, platforms, or off a truck without a ramp (driving market weight or adult animals off a low stock trailer is acceptable); 6) hitting or beating an animal; or 7) animals frozen to the floor or sides of the trailer.

Any willful act of abuse observed? Yes or No

Notes:

_____
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_____
_____
_____

Final Scoring — Swine Transportation Audit

Core Criteria	Total on all trucks	Total number of animals audited or total points available	Actual Score	Pass or Fail
Core Criterion 1 Plant Audit		14		
Core Criterion 2 Set up, loading and alignment of trailer, compartments gated		(# of trucks x 4 points divided by # of trucks)		
Core Criterion 3 Timeliness of arrival and unloading		(# of trucks x 4)		
Core Criterion 4 Falls		(Total # of falls)		
Core Criterion 5 Electric Prod Use		(Total # electrically prodded)		
Core Criterion 6 Condition of Animals		(Total # of compromised animals)		
Core Criterion 7 Any willful acts of abuse observed?		(Yes or No)		

Notes:

_____

_____

_____

_____

Passed all numerically scored criteria? Yes or No

Notes:

_____

_____

_____

_____

Auditor Signature: _____

Date: _____

Secondary Items from Swine Audit

Secondary Transport Audit Items		
Documents	**Yes**	**No**
Does the plant have a "No Electric Prod Use" policy posted?		
Does the plant have a method for communicating back to the site of trailer loading?		
Facilities and Equipment		
Is non-slip, solid flooring provided in the trailers?		
Can trailer gates and doors open freely and be secured shut?		
Do internal ramps function properly and extend all the way to the floor?		
Are there any sharp or protruding objects present that can injure animals?		
Do trucks follow plant bedding requirements or industry best practices?		
Are winter side slats or plugs in place at recommended levels?		
Animal Handling and Training		
Do the people unloading have electric prods in their hands?		
Did the driver use an electric prod in or through the sides or roof of the trailer?		
Were rattle paddles, sort boards, flags, or other handling tools used incorrectly?*		
Were any of the animals unloaded considered severely emaciated? If yes, tally the number of animals here:		
Were severely injured/severely lame animals promptly euthanized?		
Unloading		
Did the person unloading the trailer do so quietly and calmly?		
Time first animal unloads:		
Time last animal unloads:		
Total unload time¥:		
Total number of slips¶:		
Temperament of livestock (circle one)**: Normal Moving Difficult to move		

*Comment on the use of electric prods and if acceptable handling tools were used incorrectly.
¥Provide comment on trailers that may have experienced problems or lengthy unloading times.
¶Comment on the attitude and behavior of the people unloading the livestock here. As an example, their temperament may be correlated to the number of slips and falls.
**Note any problems or comments on livestock temperament. For example, there may have been a high number of slips on one load and the temperament of the animals may have been a factor.

Notes:

_____

_____

_____

Auditor Signature: _____

Date: _____

Sheep Transportation Audit Form

Date: _____

Name and auditing company: _____

Plant location: _____

Plant contact: _____

Number of trucks audited: _____

Temperature/weather conditions: _____

Core Criterion 1: Plant transportation policy and preparedness for receiving animals

1. Plant has a written animal welfare policy for transporters.	_____ / 1
2. Plant provides extreme temperature management tools.	_____ / 1
3. Arrival management process minimizes waiting time at the plant.	_____ / 1
4. Emergency plans in place for animals in transit.	_____ / 1
5. Written policy for non-ambulatory and fatigued animals; tools available for handling.	_____ / 1
6. Acceptable handling tools available and utilized as needed.	_____ / 1
7. Availability of acceptable euthanasia tools.	_____ / 1
8. Maintenance records for euthanasia equipment, proper storage and employee training for euthanasia.	_____ / 1
9. Gates in unloading area swing freely, latch securely and have no sharp protrusions.	_____ / 1
10. Non-slip flooring.	_____ / 1
11. Unloading area and ramps in good repair.	_____ / 1
12. Adequate lighting.	_____ / 1
13. Staff available for receiving animals.	_____ / 1
14. Does the plant have documented employee training for livestock receiving?	_____ / 1
Total for Core Criterion 1:	_____ / 14

Excellent – 14 of the criteria met
Acceptable – 12 or 13 of the criteria met
Not Acceptable – 10 or 11 of the criteria met

Notes:

_____

_____

_____

Score each truck using the following audit score sheet for Core Criteria 2 – 7. You will need to make a copy of the remaining pages for each truck. At the end of the audit, the points for each load will be added together to obtain the final score for each of the core criteria.

Trailer #: _____ **Total # of animals on trailer:** _____

Type of Trailer: Straight Trailer Drop Center/Pot Belly Trailer Farm Trailer Other

Sheep Type (circle all that apply): Fed Lambs Cull Ewes Mature Rams

Core Criterion 2: Set-up, loading and alignment of trailer

1. Compartments are gated. _____ / 1
2. Trailer is loaded at proper density. _____ / 1
3. Incompatible animals are segregated when required. _____ / 1
4. Trailer is properly aligned with the unloading area to prevent extremities from being caught in gaps. _____ / 1

Total for Core Criterion 2: _____ / 4

Individual truck scores will be averaged together. At least two trucks must be scored. See final scoring form for calculations.

Excellent – 100% average score
Acceptable – 90% average score or greater
Not Acceptable – Less than 90% average score

Notes:

_____
_____
_____
_____

Core Criterion 3: Timeliness of arrival of the truck and trailer and animal unloading

Time truck/trailer arrives to plant: _____ **Time first animal unloads:** _____
Total time to begin unloading: _____

Plant begins unloading within:
60 minutes of arrival = Full 4 points
61 to 90 minutes = 3 out of 4 points
91 to 120 minutes = 2 out of 4 points
≥ 120 minutes (with reason) = 1 out of 4 points
≥ 120 minutes (without reason): = 0 out of 4 points

Total for Core Criterion 3: _____ / 4

Individual truck scores will be averaged together. At least two trucks must be scored. See final scoring form for calculations.

Excellent – 95% or greater
Acceptable – 85% or greater
Not Acceptable – Less than 85%

Notes:

_____
_____
_____
_____

Core Criterion 4: Falls

Total number of falls.

Tally falls here: _____ **Percent:** _____

Excellent – No falling
Acceptable – 1% or fewer falling (body touches floor)
Not acceptable – More than 1% falling down

Notes:

_____
_____
_____
_____

Core Criterion 5: Electric Prod Use

Total number of animals electrically prodded during unloading.

Tally electric prod use here: _____ **Percent:** _____

Excellent – 0% or less
Acceptable – 10% or less
Not acceptable – More than 10%

Notes:

_____
_____
_____
_____

Core Criterion 6: Condition of Animal

1. Non-ambulatory animals (tally here): _____
2. Severely injured animals (tally here): _____
3. # above that were severely emaciated *(tally here for transfer to secondary criteria):* _____
4. Severely lame animals (tally here): _____
5. Heat-stressed animals (tally here): _____
6. Lambing (tally here): _____

Total for Core Criterion 6: _____ **Percent:** _____

Excellent – 1% or less compromised animals on the trailer at arrival.
Acceptable – 2% or less compromised animals on the trailer at arrival.
Not Acceptable –More than 2% compromised animals on the trailer at arrival.

Notes:

_____
_____
_____
_____

Core Criterion 7: Willful Acts of Abuse /Egregious Acts

Any willful act of abuse/egregious act is grounds for automatic audit failure.

Willful acts of abuse include, but are not limited to: 1) dragging a conscious, non-ambulatory animal; 2) intentionally applying prods to sensitive parts of the animal such as the eyes, ears, nose, anus or testicles; 3) deliberate slamming of gates on livestock; 4) malicious driving of ambulatory livestock on top of one another either manually or with direct contact with motorized equipment (this excludes loading a non-ambulatory animal for transport); 5) purposefully driving livestock off high ledges, platforms, or off a truck without a ramp (driving market weight or adult animals off a low stock trailer is acceptable); 6) hitting or beating an animal; or 7) animals frozen to the floor or sides of the trailer. In sheep operations, lifting an animal by the wool or throwing a sheep also is an act of abuse.

Any willful act of abuse observed? Yes or No

Notes:

_____
_____
_____
_____

Final Scoring — Sheep Transportation Audit

Core Criteria	Total on all trucks	Total number of animals audited or total points available	Actual Score	Pass or Fail
Core Criterion 1 Plant Audit		14		
Core Criterion 2 Set up, loading and alignment of trailer, compartments gated.		(# of trucks x 4 points divided by # of trucks)		
Core Criterion 3 Timeliness of arrival and unloading		(# of trucks x 4)		
Core Criterion 4 Falls		(Total # of falls)		
Core Criterion 5 Electric Prod Use		(Total # electrically prodded)		
Core Criterion 6 Condition of Animals		(Total # of compromised animals)		
Core Criterion 7 Any willful acts of abuse observed?		(Yes or No)		

Notes:

_____

_____

_____

_____

Passed all numerically scored criteria? Yes or No

Notes:

_____

_____

_____

_____

Auditor Signature: _____

Date: _____

Secondary Items from Sheep Audit

Secondary Transport Audit Items		
Documents	**Yes**	**No**
Does the plant have a "No Electric Prod Use" policy posted?		
Does the plant have a method for communicating back to the site of trailer loading?		
Facilities and Equipment		
Is non-slip, solid flooring provided in the trailers?		
Can trailer gates and doors open freely and be secured shut?		
Do internal ramps function properly and extend all the way to the floor?		
Are there any sharp or protruding objects present that can injure animals?		
Do trucks follow plant bedding requirements or industry best practices?		
Are winter side slats or plugs in place at recommended levels?		
Animal Handling and Training		
Do the people unloading have electric prods in their hands?		
Did the driver use an electric prod in or through the sides or roof of the trailer?		
Were rattle paddles, sort boards, flags, or other handling tools used incorrectly?*		
Were any of the animals unloaded considered severely emaciated? If yes, tally the number of animals here:		
Were severely injured/severely lame animals promptly euthanized?		
Unloading		
Did the person unloading the trailer do so quietly and calmly?		
Time first animal unloads:		
Time last animal unloads:		
Total unload time¥:		
Total number of slips¶:		
Temperament of livestock (circle one)**: Excitable Normal Docile		

*Comment on the use of electric prods and if acceptable handling tools were used incorrectly.
¥Provide comment on trailers that may have experienced problems or lengthy unloading times.
¶Comment on the attitude and behavior of the people unloading the livestock here. As an example, their temperament may be correlated to the number of slips and falls.
**Note any problems or comments on livestock temperament. For example, there may have been a high number of slips on one load and the temperament of the animals may have been a factor.

Notes:

_____
_____
_____
_____

Auditor Signature: _____
Date: _____

Cattle and Calves Slaughter Audit Form

Date:_____ **Time:**_____
Plant: _____ **Auditor:** _____
Weather: _____ **Line Speed:** _____
Stunner Type: _____ **Operator:** _____
Plant Contact Name: _____ **Phone:** _____
Email: _____ **Establishment No.:** _____

Core Criterion 1: Willful Acts of Abuse/Egregious Acts— Conventional and Religious

Any willful act of abuse/egregious acts is grounds for automatic audit failure.

Willful acts of abuse include, but are not limited to: 1) dragging a conscious, non-ambulatory animal; 2) intentionally applying prods to sensitive parts of the animal such as the eyes, ears, nose, anus, vulva, testicles or belly; 3) deliberate slamming of gates on livestock; 4) malicious driving of ambulatory livestock on top of one another either manually or with direct contact with motorized equipment (this excludes loading a non-ambulatory animal for transport); 5) purposefully driving livestock off high ledges, platforms, or off a truck without a ramp (driving market weight or adult animals off a low stock trailer is acceptable); 6) hitting or beating an animal; or 7) animals frozen to the floor or sides of the trailer.

Were any willful acts of abuse observed? Yes _____ No _____

If yes, detail incident(s) below:

_____
_____
_____
_____

Notes:

_____
_____
_____
_____
_____
_____

Core Criterion 2: Access to Water — Conventional and Religious

Observe access to water.

Do animals in all holding pens have access to clean drinking water? Yes _____ No _____

Notes:

_____

_____

_____

_____

_____

Core Criterion 3: Falls — Conventional and Religious

Count the number of cattle that 1) slip and 2) fall during handling in any of the following locations: crowd pen, single file chute, barns, alleys, or stunning box. Falling is a core criterion and slipping is a secondary criterion. A slip is recorded when a knee or hock touches the floor. In cattle stun boxes and the single file chute, a slip should be recorded if the animal becomes agitated due to multiple short slips. A fall is recorded if the body touches the floor. **One percent or fewer falls is required for a passing score**.

X = no slipping or falling
F = fell
S = slipped

Animal Number:

1	_____	11	_____	21	_____	31	_____	41	_____	51	_____	61	_____	71	_____	81	_____	91	_____
2	_____	12	_____	22	_____	32	_____	42	_____	52	_____	62	_____	72	_____	82	_____	92	_____
3	_____	13	_____	23	_____	33	_____	43	_____	53	_____	63	_____	73	_____	83	_____	93	_____
4	_____	14	_____	24	_____	34	_____	44	_____	54	_____	64	_____	74	_____	84	_____	94	_____
5	_____	15	_____	25	_____	35	_____	45	_____	55	_____	65	_____	75	_____	85	_____	95	_____
6	_____	16	_____	26	_____	36	_____	46	_____	56	_____	66	_____	76	_____	86	_____	96	_____
7	_____	17	_____	27	_____	37	_____	47	_____	57	_____	67	_____	77	_____	87	_____	97	_____
8	_____	18	_____	28	_____	38	_____	48	_____	58	_____	68	_____	78	_____	88	_____	98	_____
9	_____	19	_____	29	_____	39	_____	49	_____	59	_____	69	_____	79	_____	89	_____	99	_____
10	_____	20	_____	30	_____	40	_____	50	_____	60	_____	70	_____	80	_____	90	_____	100	_____

Percent falling: _____
For recording as a secondary: percent slipping: _____

Note where falling occurred.

Notes:

_____

_____

_____

_____

_____

Core Criterion 4: Electric Prod Use— Conventional and Religious

Monitor the percentage of 100 cattle prodded with an electric prod at the restrainer entrance. If multiple employees use prods, score 100 animals passing by each employee. Add the percentages together to determine final score. **Twenty-five percent or fewer cattle should be prodded for a passing score.**

Note whether or not a prod was used for each animal and the apparent reason for prod use:

X = moved quietly without an electric prod
P = electric prod used without apparent reason
B = electric prodded in response to balking

Animal Number:

1_____	11 _____	21 _____	31 _____	41 ____	51 ____	61 _____	71 ____	81 _____	91 _____
2_____	12 _____	22 _____	32 _____	42 ____	52 ____	62 _____	72 ____	82 _____	92 _____
3_____	13 _____	23 _____	33 _____	43 ____	53 ____	63 _____	73 ____	83 _____	93 _____
4_____	14 _____	24 _____	34 _____	44 ____	54 ____	64 _____	74 _____	84 _____	94 _____
5_____	15 _____	25 _____	35 _____	45 ____	55 ____	65 _____	75 ____	85 _____	95 _____
6_____	16 _____	26 _____	36 _____	46 ____	56 ____	66 _____	76 ____	86 _____	96 _____
7_____	17 _____	27 _____	37_____	47 ____	57 ____	67 _____	77 ____	87 _____	97 _____
8_____	18 _____	28 _____	38 _____	48 ____	58 ____	68 _____	78 ____	88 _____	98 _____
9_____	19 _____	29 _____	39 _____	49 ____	59 ____	69 _____	79 ____	89 _____	99 _____
10_____	20 _____	30 _____	40 _____	50 ____	60 ____	70 _____	80 ____	90 _____	100 _____

Percent prodded: _____
Percent balking: _____

Notes:

_____
_____
_____
_____
_____

Core Criterion 5: Vocalization — Conventional and Religious

Monitor the number of cattle that vocalize in the crowd pen, lead-up chute, stunning box, or restrainer. Vocalizing animals in the crowd-pen and lead up chute are scored only during active handling. All vocalizations in the stun box or restrainer are counted. Score an animal as a vocalizer if it makes any audible vocalization. **Three percent or less of cattle should moo or bellow. In Kosher or Halal operations or any operation using a head holder, up to 5% vocalization is acceptable for a passing score.**

It is helpful to note the possible cause of vocalization using the codes below:

X = non-vocalizer
P = prod
S = stun
F = fell or slipped
U = unknown cause
R = restrainer
M = missed stuns
SE = sharp edges
UN = unprovoked

Animal Number:

1		11		21		31		41		51		61		71		81		91	
2		12		22		32		42		52		62		72		82		92	
3		13		23		33		43		53		63		73		83		93	
4		14		24		34		44		54		64		74		84		94	
5		15		25		35		45		55		65		75		85		95	
6		16		26		36		46		56		66		76		86		96	
7		17		27		37		47		57		67		77		87		97	
8		18		28		38		48		58		68		78		88		98	
9		19		29		39		49		59		69		79		89		99	
10		20		30		40		50		60		70		80		90		100	

Percent vocalizing: _____

Notes:

_____
_____
_____
_____
_____
_____

Core Criterion 6: Effective Stunning — Conventional Only

Score 100 cattle in plants with line speeds greater than 100 cattle per hour. Fifty cattle should be audited in slower plants processing 50 to 99 head of cattle or calves per hour. In plants that process less than 50 per hour, score one hour of production. If the audit is conducted in a religious slaughter facility, skip to Core Criterion 7. A point is subtracted for every animal that requires a second stun. **Ninety-six percent accuracy is required for a passing score.**

It can be helpful to note observations about missed stuns using the following guide:
X = stunned correctly
G = stunning failed due to apparent lack of maintenance
A = missed stun due to poor aim

Animal Number:

1	11	21	31	41	51	61	71	81	91
2	12	22	32	42	52	62	72	82	92
3	13	23	33	43	53	63	73	83	93
4	14	24	34	44	54	64	74	84	94
5	15	25	35	45	55	65	75	85	95
6	16	26	36	46	56	66	76	86	96
7	17	27	37	47	57	67	77	87	97
8	18	28	38	48	58	68	78	88	98
9	19	29	39	49	59	69	79	89	99
10	20	30	40	50	60	70	80	90	100

Stun Efficacy Percent: _____

Notes:

_____

_____

_____

_____

_____

_____

Core Criterion 7: Bleed Rail Insensibility — Conventional and Religious

All signs of sensibility (consciousness) must be absent. Score the same number of animals for stunning scoring. There is *zero tolerance* for beginning any procedures like skinning the head or leg removal on any animal that shows signs of sensibility. **Any sensible animal on the bleed rail constitutes an automatic audit failure.**

You may note observations about insensibility using the following guide:

X = completely insensible; no signs of return to sensibility
E = eyes moved when touched
BL = blinking
RB = rhythmic breathing
VO = vocalization
RR = righting reflex/animal attempts to lift head
ST = stiff, curled tongue (this must occur with another one of the criterion above in order to fail this core criterion)

Animal Number:

1		11		21		31		41		51		61		71		81		91	
2		12		22		32		42		52		62		72		82		92	
3		13		23		33		43		53		63		73		83		93	
4		14		24		34		44		54		64		74		84		94	
5		15		25		35		45		55		65		75		85		95	
6		16		26		36		46		56		66		76		86		96	
7		17		27		37		47		57		67		77		87		97	
8		18		28		38		48		58		68		78		88		98	
9		19		29		39		49		59		69		79		89		99	
10		20		30		40		50		60		70		80		90		100	

Percent insensible: _____

Notes:

_____
_____
_____
_____
_____
_____

Final Scoring – Cattle and Calves Audit

Core Criteria	Passing Score	Actual Score
Core Criterion 1: Willful Acts of Abuse	No willful acts of abuse	_____
Core Criterion 2: Access to Water	Yes—water provided	_____
Core Criterion 3: Falls	1% or fewer falls	_____
Core Criterion 4: Electric Prod Use	25% or less prodded	_____
Core Criterion 5: Vocalization	3% or less 5% or less for religious slaughter	_____ _____
Core Criterion 6: Effective Stunning	96% or greater accuracy	_____
Core Criterion 7: Bleed Rail Insensibility	100% insensible	_____

Plant passed all Core Criteria? Yes _____ No _____

Auditor Signature: _____
Date: _____

Secondary Audit Items: Cattle and Calves

These items may be helpful in gathering general information about a facility. However, because they involve a high degree of subjectivity and because they are almost impossible to score objectively, they should not be used in determining whether a facility passes or fails an audit.

Secondary Slaughter Audit Items		
Documents	**Yes**	**No**
Does the facility have a documented training program for its employees or use an outside training program to teach the principles of good animal handling?		
Does the facility have a protocol that is written or widely understood for handling non-ambulatory animals?		
Does the company perform internal audits at least weekly?		
Does the company have an emergency management plan for livestock on file?		
Does the emergency plan include instructions on when/how water will be provided to animals in drive alleys/unloading docks?		
Facilities and Equipment		
Do employees inspect the facility weekly and document for repair any damage or sharp protrusions that may injure animals?		
Does the facility have a protocol for stunning equipment maintenance?		
Is non-slip flooring provided throughout the facility?		
Do crowd pens generally appear to be less than 75% full?		
Animal Handling and Training		
Are facility personnel trained in handling non-ambulatory animals?		
Does the facility provide special training to stunner operators to ensure proper equipment use and stunning efficacy?		
Does the facility train its personnel and have a written procedure or protocol about how to handle a sensible animal on the bleed rail?		
Are non-electrical devices the primary tool used to move livestock?		
Do holding pens appear to be overcrowded?		
If mounting behaviors were observed, are animals that chronically mount removed from the pen?		
Percentage of animals that slipped:		

Final Scoring

Plant passed all core criteria? Yes _____ No _____
Were any acts of abuse observed? Yes _____ No _____
Plant passed all secondary criteria? Yes _____ No _____

If no on secondary, include notes related to secondary audit items:

_____

_____

_____

Auditor Signature: _____
Date: _____

Pig Slaughter Audit Form

Date: _____ **Time:** _____
Plant: _____ **Auditor:** _____
Weather: _____ **Line Speed:** _____
Stunner Type: _____ **Operator:** _____
Plant Contact Name: _____ **Phone:** _____
Email: _____ **Establishment No.:** _____

**Note: For group CO_2 stunning systems, vocalization is a secondary criterion because it is difficult to count the number of pigs that are vocalizing.*

Core Criterion 1: Willful Acts of Abuse/Egregious Acts

Any willful act of abuse/egregious act is grounds for automatic audit failure.

Willful acts of abuse include, but are not limited to: 1) Dragging a conscious, non-ambulatory animal; 2) intentionally applying prods to sensitive parts of the animal such as the eyes, ears, nose, anus, vulva, testicles or belly; 3) deliberate slamming of gates on livestock; 4) malicious driving of ambulatory livestock on top of one another either manually or with direct contact with motorized equipment (this excludes loading a non-ambulatory animal for transport); 5) purposefully driving livestock off high ledges, platforms, or off a truck without a ramp (driving market weight or adult animals off a low stock trailer is acceptable); 6) hitting or beating an animal; or 7) animals frozen to the floor or sides of the trailer.

Any willful act of abuse observed? Yes or No

If yes, detail incident(s) below:

_____
_____
_____

Notes:

_____
_____
_____
_____

Core Criterion 2: Access to Water

Observe access to water.

Do animals in all holding pens have access to clean drinking water? Yes _____ No _____

Notes:

_____
_____
_____
_____

Core Criterion 3: Falls

Count the number of pigs that 1) slip and 2) fall during handling in the crowd pen, single file chute, barns, alleys, or stunning box. One percent or fewer pigs may fall for a passing score. A fall is recorded if the body touches the floor. Even slight slipping should be noted and recorded as a secondary criterion. If flooring results in slight slipping for most animals, this can result in fear or agitation and should be corrected. Falling is a core criterion and slipping is a secondary criterion. Falls caused by powered gates are counted. **One percent or fewer falls is required for a passing score**.

X = no slipping or falling
F = fell
S = slipped

Animal Number:

1		11		21		31		41		51		61		71		81		91	
2		12		22		32		42		52		62		72		82		92	
3		13		23		33		43		53		63		73		83		93	
4		14		24		34		44		54		64		74		84		94	
5		15		25		35		45		55		65		75		85		95	
6		16		26		36		46		56		66		76		86		96	
7		17		27		37		47		57		67		77		87		97	
8		18		28		38		48		58		68		78		88		98	
9		19		29		39		49		59		69		79		89		99	
10		20		30		40		50		60		70		80		90		100	

Percent falling: _____
For recording as a secondary audit item: percent slipping: _____

Note where falling occurred.

Notes:

_____
_____
_____
_____

Core Criterion 4: Electric Prod Use

Electric or CO_2 Stunning Systems Where Pigs Enter in Single File

Monitor the percentage of 100 pigs prodded with an electric prod at the restrainer entrance. If multiple employees use prods, score 100 animals passing by each employee. Add the percentages together to come up with a final score. **Twenty-five percent or less pigs may be prodded for a passing score.**

Note whether or not a prod was used for each animal and the apparent reason for prod use:

X = moved quietly without an electric prod
P = electric prod used without apparent reason
B = electric prodded in response to balking

Animal Number:

1_____	11 _____	21 _____	31 _____	41 ____	51 ____	61 _____	71 ____	81 _____	91 _____
2_____	12 _____	22 _____	32 _____	42 ____	52 ____	62 _____	72 ____	82 _____	92 _____
3_____	13 _____	23 _____	33 _____	43 ____	53 ____	63 _____	73 ____	83 _____	93 _____
4_____	14 _____	24 _____	34 _____	44 ____	54 ____	64 _____	74 _____	84 _____	94 _____
5_____	15 _____	25 _____	35 _____	45 ____	55 ____	65 _____	75 ____	85 _____	95 _____
6_____	16 _____	26 _____	36 _____	46 ____	56 ____	66 _____	76 ____	86 _____	96 _____
7_____	17 _____	27 _____	37_____	47 ____	57 ____	67 _____	77 ____	87 _____	97 _____
8_____	18 _____	28 _____	38 _____	48 ____	58 ____	68 _____	78 ____	88 _____	98 _____
9_____	19 _____	29 _____	39 _____	49 ____	59 ____	69 _____	79 ____	89 _____	99 _____
10_____	20 _____	30 _____	40 _____	50 ____	60 ____	70 _____	80 ____	90 _____	100 _____

Percent prod use: _____
Percent balking: _____

Notes:

_____
_____
_____
_____
_____
_____

CO_2 Systems where pigs enter a CO_2 chamber in groups and electric stunning systems where pigs are stunned on the floor in groups.

Monitor the percentage of 100 pigs prodded with an electric prod when animals are being moved into a gondola or when electric stunning occurs on the floor in a group setting. If multiple employees use prods, score 100 animals passing by each employee. Add the percentages together to come up with a final score. **Five percent or less pigs may be prodded for a passing score.**

Note whether or not a prod was used for each animal and the apparent reason for prod use:

X = moved quietly without an electric prod
P = electric prod used without apparent reason
B = electric prodded in response to balking

Animal Number:

1		11		21		31		41		51		61		71		81		91	
2		12		22		32		42		52		62		72		82		92	
3		13		23		33		43		53		63		73		83		93	
4		14		24		34		44		54		64		74		84		94	
5		15		25		35		45		55		65		75		85		95	
6		16		26		36		46		56		66		76		86		96	
7		17		27		37		47		57		67		77		87		97	
8		18		28		38		48		58		68		78		88		98	
9		19		29		39		49		59		69		79		89		99	
10		20		30		40		50		60		70		80		90		100	

Percent prod use: _____
Percent balking: _____

Notes:

_____
_____
_____
_____
_____
_____

Core Criterion 5: Vocalization and Gondola Loading

Vocalization — Electric Stunning or CO_2 Systems With a Single File Conveyer Restrainer

Monitor the number of pigs that squeal in the restrainer. Score only squeals determined to be provoked by humans or equipment. Do not count hot wanding in this section because it is a stunning measurement. For group CO_2 stunning systems, vocalization is a secondary criterion because it is difficult to count the number of pigs that are vocalizing. **Pigs that are provoked to squeal should not exceed 5%.**

It is helpful to note the possible cause of squeals using the codes below:

X = non-vocalizer
P = prod S = stun
F = fell or slipped
O = other
R = Restrainer

Animal Number:

1_____	11 _____	21 _____	31 _____	41 ____	51 ____	61 _____	71 ____	81 _____	91 _____
2_____	12 _____	22 _____	32 _____	42 ____	52 ____	62 _____	72 ____	82 _____	92 _____
3_____	13 _____	23 _____	33 _____	43 ____	53 ____	63 _____	73 ____	83 _____	93 _____
4_____	14 _____	24 _____	34 _____	44 ____	54 ____	64 _____	74 _____	84 _____	94 _____
5_____	15 _____	25 _____	35 _____	45 ____	55 ____	65 _____	75 ____	85 _____	95 _____
6_____	16 _____	26 _____	36 _____	46 ____	56 ____	66 _____	76 ____	86 _____	96 _____
7_____	17 _____	27 _____	37_____	47 ____	57 ____	67 _____	77 ____	87 _____	97 _____
8_____	18 _____	28 _____	38 _____	48 ____	58 ____	68 _____	78 ____	88 _____	98 _____
9_____	19 _____	29 _____	39 _____	49 ____	59 ____	69 _____	79 ____	89 _____	99 _____
10_____	20 _____	30 _____	40 _____	50 ____	60 ____	70 _____	80 ____	90 _____	100 _____

Percent vocalizing: _____

Notes:

_____
_____
_____
_____

Core Criterion for CO_2 Systems: Overloading of Gondolas*

Score 50 gondolas in large plants that process 500 or more pigs per CO_2 machine per hour to determine the percentage of gondolas (elevator boxes) that are overloaded. In small plants score 25 gondolas. A gondola or elevator is to be scored as overloaded if there is not sufficient space for the animals to stand or lie down without being on top of each other. **No more than 4% of gondolas may be overloaded for a passing score.**

Score on a per gondola basis:

Gondola Number:

1	_____	11	_____	21	_____	31	_____	41	_____
2	_____	12	_____	22	_____	32	_____	42	_____
3	_____	13	_____	23	_____	33	_____	43	_____
4	_____	14	_____	24	_____	34	_____	44	_____
5	_____	15	_____	25	_____	35	_____	46	_____
7	_____	17	_____	27	_____	37	_____	47	_____
8	_____	18	_____	28	_____	38	_____	48	_____
9	_____	19	_____	29	_____	39	_____	49	_____
10	_____	20	_____	30	_____	40	_____	50	_____

Percent overloaded: _____

Notes:

_____

_____

_____

_____

* For gas systems where the animals ride head to tail on a continuous conveyor that does not have separate animal compartments, do not use this scoring system. Omit this score and score the percentage of animals prodded with an electric prod.

Core Criterion 6: Effective Stunning

The Audit Forms for pigs specifically list electrical and CO_2 stunning, however, in some small plants, captive bolt stunning may be used. Score 100 pigs in plants with line speeds greater than 100 pigs per hour. Fifty pigs should be audited in slower plants processing 50 to 99 head of pigs per hour. In plants that process less than 50 per hour, score one hour of production. A point is subtracted for every animal that requires a second stun. **Regardless of species, an acceptable score for effectiveness of captive bolt stunning is 96% effectiveness or above.**

Effective Electrical Stunning

Electrodes must be applied properly to pigs to achieve effective stunning. Score 100 pigs in plants with line speeds greater than 100 per hour. Fifty pigs should be audited in slower plants that process 50 to 99 pigs per hour. In plants that process less than 50 per hour, score one hour of production. **A score of 99% accurate placement of stunning electrodes is required for a passing score.**

The following coding should be used:

X = electrode placed correctly
W = wrong placement

Animal Number:

1		11		21		31		41		51		61		71		81		91	
2		12		22		32		42		52		62		72		82		92	
3		13		23		33		43		53		63		73		83		93	
4		14		24		34		44		54		64		74		84		94	
5		15		25		35		45		55		65		75		85		95	
6		16		26		36		46		56		66		76		86		96	
7		17		27		37		47		57		67		77		87		97	
8		18		28		38		48		58		68		78		88		98	
9		19		29		39		49		59		69		79		89		99	
10		20		30		40		50		60		70		80		90		100	

Percent correct placement: _____

Notes:

_____

_____

_____

_____

Amperage

Is the stunner set at a minimum of 1.25 amps for market weight pigs and 2 amps for sows?

Yes _____ No _____

Volts: _____ Stun time (in seconds): _____ Amps: _____

Hot Wanding

Score 100 pigs in the restrainer. Measure the percentage that vocalize due to application of fully energized electrodes. **No more than 1% of animals may vocalize due to hot wanding.**

Animal Number:

1_____	11 _____	21 _____	31 _____	41 ____	51 ____	61 _____	71 ____	81 _____	91 _____
2_____	12 _____	22 _____	32 _____	42 ____	52 ____	62 _____	72 ____	82 _____	92 _____
3_____	13 _____	23 _____	33 _____	43 ____	53 ____	63 _____	73 ____	83 _____	93 _____
4_____	14 _____	24 _____	34 _____	44 ____	54 ____	64 _____	74 _____	84 _____	94 _____
5_____	15 _____	25 _____	35 _____	45 ____	55 ____	65 _____	75 ____	85 _____	95 _____
6_____	16 _____	26 _____	36 _____	46 ____	56 ____	66 _____	76 ____	86 _____	96 _____
7_____	17 _____	27 _____	37_____	47 ____	57 ____	67 _____	77 ____	87 _____	97 _____
8_____	18 _____	28 _____	38 _____	48 ____	58 ____	68 _____	78 ____	88 _____	98 _____
9_____	19 _____	29 _____	39 _____	49 ____	59 ____	69 _____	79 ____	89 _____	99 _____
10_____	20 _____	30 _____	40 _____	50 ____	60 ____	70 _____	80 ____	90 _____	100 _____

Percent hot wanded: _____

Notes:

_____

_____

_____

_____

Core Criterion 7: Bleed Rail Insensibility

All signs of return to sensibility (consciousness) must be absent. Score the same number of animals for stunning scoring. It is CRITICAL that animals showing signs of a return to sensibility be re-stunned immediately. There is *zero tolerance* for beginning any procedures like skinning the head or leg removal on any animal that shows signs of a return to sensibility. **Any sensible animal on the bleed rail constitutes an automatic audit failure.**

However, it is important to complete the audit and note observations about insensibility using the following guide:

X = completely insensible; no signs of return to sensibility
BL = blinking – do not count a vibrating eye as a blink; only natural blinks like those that might be observed in the yards should be documented
RB = rhythmic breathing
VO = vocalization no matter how small
RR = righting reflex/animal attempts to lift head while hanging on the rail

Animal Number:

1		11		21		31		41		51		61		71		81		91	
2		12		22		32		42		52		62		72		82		92	
3		13		23		33		43		53		63		73		83		93	
4		14		24		34		44		54		64		74		84		94	
5		15		25		35		45		55		65		75		85		95	
6		16		26		36		46		56		66		76		86		96	
7		17		27		37		47		57		67		77		87		97	
8		18		28		38		48		58		68		78		88		98	
9		19		29		39		49		59		69		79		89		99	
10		20		30		40		50		60		70		80		90		100	

Percent insensible: _____

Notes:

_____
_____
_____
_____

Final Scoring – Pig Audit

Core Criteria	Passing Score	Actual Score
Core Criterion 1: Willful Acts of Abuse	No willful acts of abuse	_____
Core Criterion 2: Access to Water	Yes—water provided	_____
Core Criterion 3: Falls	1% or fewer falls	_____
Core Criterion 4: Electric Prod Use	25% or less prodded (single file) 5% or less prodded (group system)	_____ _____
Core Criterion 5: Vocalization* and Gondola Loading	5% or less vocalization 4% or less overloaded gondolas	_____ _____
Core Criterion 6: Effective Stunning	99% accurate wand placement 98% effectively stunned	_____ _____
Hot wanding	1% or less hot wanded	_____
Core Criterion 7: Bleed Rail Insensibility	100% insensible	_____

*Do not count when CO_2 systems are in use.

Plant passed all core criteria? Yes _____ No _____

Auditor Signature: _____
Date: _____

Secondary Audit Items: Pigs

These items may be helpful in gathering general information about a facility. However, because they involve a high degree of subjectivity and because they are almost impossible to score objectively, they should not be used in determining whether a facility passes or fails an audit.

Secondary Slaughter Audit Items		
Documents	**Yes**	**No**
Does the facility have a documented training program for its employees or use an outside training program to teach the principles of good animal handling?		
Does the facility have a protocol that is written or widely understood for handling non-ambulatory animals?		
Does the company perform internal audits at least weekly?		
Does the company have an emergency management plan for livestock on file?		
Does the emergency plan include instructions on when/how water will be provided to animals in drive alleys/unloading docks?		
Facilities and Equipment		
Do employees inspect the facility weekly and document for repair any damage or sharp protrusions that may injure animals?		
Does the facility have a protocol for stunning equipment maintenance?		
Is non-slip flooring provided throughout the facility?		
Do crowd pens generally appear to be less than 75% full?		
Animal Handling and Training		
Are facility personnel trained in handling non-ambulatory animals?		
Does the facility provide special training to stunner operators to ensure proper equipment use and stunning efficacy?		
Does the facility train its personnel and have a written procedure or protocol about how to handle a sensible animal on the bleed rail?		
Are non-electrical devices the primary tool used to move livestock?		
Do holding pens appear to be overcrowded?		
If mounting behaviors were observed, are animals that chronically mount removed from the pen?		
Percentage of animals that slipped:		

Final Scoring

Plant passed all core criteria? Yes _____ No _____
Were any acts of abuse observed? Yes _____ No _____
Plant passed all secondary criteria? Yes _____ No _____

If no on secondary, include notes related to secondary audit items:

_____

_____

Auditor Signature: _____
Date: _____

Sheep Slaughter Audit Form

Date: _____ **Time:**_____
Plant: _____ **Auditor:** _____
Weather: _____ **Line Speed:** _____
Stunner Type: _____ **Operator:** _____
Plant Contact Name: _____ **Phone:** _____
Email: _____ **Establishment No.:** _____

**Note: Sheep naturally vocalize. Therefore, vocalization scoring is omitted as a criterion for this audit. Hot wanding is also omitted.*

Core Criterion 1: Willful Acts of Abuse/Egregious Acts — Conventional and Religious

Any willful act of abuse/egregious act is grounds for automatic audit failure.

Willful acts of abuse include, but are not limited to: 1) dragging a conscious, non-ambulatory animal; 2) intentionally applying prods to sensitive parts of the animal such as the eyes, ears, nose, anus, vulva, testicles or belly; 3) deliberate slamming of gates on livestock; 4) malicious driving of ambulatory livestock on top of one another either manually or with direct contact with motorized equipment (this excludes loading a non-ambulatory animal for transport); 5) purposefully driving livestock off high ledges, platforms, or off a truck without a ramp (driving market weight or adult animals off a low stock trailer is acceptable); 6) hitting or beating an animal; or 7) animals frozen to the floor or sides of the trailer.

Any willful act of abuse observed? Yes or No

If yes, detail incident(s) below:

_____
_____
_____

Notes:

_____
_____
_____
_____

Core Criterion 2: Access to Water — Conventional and Religious

Observe access to water.

Do animals in all holding pens have access to clean drinking water? Yes _____ No _____

Notes:

_____
_____
_____
_____

Core Criterion 3: Falls — Conventional and Religious

Count the number of sheep that 1) slip and 2) fall during handling in the crowd pen, single file chute, barns, alleys or stunning box. Falling is a core criterion and slipping is a secondary criterion. A fall is recorded if the body touches the floor. Even slight slipping should be noted. **One percent or fewer sheep may fall.**

X = no slipping or falling
F = fell
S = slipped

Animal Number:

1		11		21		31		41		51		61		71		81		91	
2		12		22		32		42		52		62		72		82		92	
3		13		23		33		43		53		63		73		83		93	
4		14		24		34		44		54		64		74		84		94	
5		15		25		35		45		55		65		75		85		95	
6		16		26		36		46		56		66		76		86		96	
7		17		27		37		47		57		67		77		87		97	
8		18		28		38		48		58		68		78		88		98	
9		19		29		39		49		59		69		79		89		99	
10		20		30		40		50		60		70		80		90		100	

Percent falling: _____
For recording as a secondary: percent slipping: _____

Note where falling occurred.

Notes:

_____
_____
_____
_____

Core Criterion 4: Electric Prod Use — Conventional and Religious

Monitor the percentage of 100 sheep prodded with an electric prod. Since OIE (2008) guidelines state the electric prods should not be used on sheep, electrical prod use must be confined to a single electric prod at the restrainer entrance. The electric prod should only be used on stubborn, large sheep that are too big to be pushed into the restrainer by a person. Electric prod use should be 5% or less and only at the restrainer entrance.

Note whether or not a prod was used for each animal and the apparent reason for prod use:

X = moved quietly without an electric prod
P = electric prod used without apparent reason
B = electric prodded in response to balking

Animal Number:

1_____	11 _____	21 _____	31 _____	41 ____	51 ____	61 _____	71 ____	81 _____	91 _____
2_____	12 _____	22 _____	32 _____	42 ____	52 ____	62 _____	72 ____	82 _____	92 _____
3_____	13 _____	23 _____	33 _____	43 ____	53 ____	63 _____	73 ____	83 _____	93 _____
4_____	14 _____	24 _____	34 _____	44 ____	54 ____	64 _____	74 _____	84 _____	94 _____
5_____	15 _____	25 _____	35 _____	45 ____	55 ____	65 _____	75 ____	85 _____	95 _____
6_____	16 _____	26 _____	36 _____	46 ____	56 ____	66 _____	76 ____	86 _____	96 _____
7_____	17 _____	27 _____	37_____	47 ____	57 ____	67 _____	77 ____	87 _____	97 _____
8_____	18 _____	28 _____	38 _____	48 ____	58 ____	68 _____	78 ____	88 _____	98 _____
9_____	19 _____	29 _____	39 _____	49 ____	59 ____	69 _____	79 ____	89 _____	99 _____
10_____	20 _____	30 _____	40 _____	50 ____	60 ____	70 _____	80 ____	90 _____	100 _____

Percent prod use: _____
Percent balking: _____

Notes:

_____
_____
_____
_____

Core Criterion 5: Vocalizations

As previously stated, Core Criterion 5, Vocalization, is not audited in the Sheep audit.

Core Criterion 6: Effective Stunning — Conventional Only

Effective Captive Bolt Stunning

Ninety-six percent or more sheep must be stunned effectively with a single shot.

It can be helpful to note observations about missed stuns using the following guide:

X = stunned correctly
G = stunning failed due to apparent lack of maintenance
A = missed stun due to poor aim

Animal Number:

1		11		21		31		41		51		61		71		81		91	
2		12		22		32		42		52		62		72		82		92	
3		13		23		33		43		53		63		73		83		93	
4		14		24		34		44		54		64		74		84		94	
5		15		25		35		45		55		65		75		85		95	
6		16		26		36		46		56		66		76		86		96	
7		17		27		37		47		57		67		77		87		97	
8		18		28		38		48		58		68		78		88		98	
9		19		29		39		49		59		69		79		89		99	
10		20		30		40		50		60		70		80		90		100	

Percent of sheep stunned effectively with a single shot: _____

Notes:

_____
_____
_____
_____

Electric stunning — proper application of electrodes to sheep

Electrodes must be applied properly to sheep to achieve effective stunning. Score 100 sheep. A score of 99% accurate placement of stunning electrodes is required for passing score.

The following coding should be used:

X = electrode placed correctly
W = wrong placement

Animal Number:

1_____	11 _____	21 _____	31 _____	41 ____	51 ____	61 _____	71 ____	81 _____	91 _____
2_____	12 _____	22 _____	32 _____	42 ____	52 ____	62 _____	72 ____	82 _____	92 _____
3_____	13 _____	23 _____	33 _____	43 ____	53 ____	63 _____	73 ____	83 _____	93 _____
4_____	14 _____	24 _____	34 _____	44 ____	54 ____	64 _____	74 _____	84 _____	94 _____
5_____	15 _____	25 _____	35 _____	45 ____	55 ____	65_____	75 ____	85 _____	95 _____
6_____	16 _____	26 _____	36 _____	46 ____	56 ____	66 _____	76 ____	86 _____	96 _____
7_____	17 _____	27 _____	37_____	47 ____	57 ____	67 _____	77 ____	87 _____	97 _____
8_____	18 _____	28 _____	38 _____	48 ____	58 ____	68 _____	78 ____	88 _____	98 _____
9_____	19 _____	29 _____	39 _____	49 ____	59 ____	69 _____	79 ____	89 _____	99 _____
10_____	20 _____	30 _____	40 _____	50 ____	60 ____	70 _____	80 ____	90 _____	100 _____

Percent correct placement: _____
Is the stunner set at a minimum of 1 amp? Yes _____ No _____

Notes:

_____
_____
_____
_____

Core Criterion 7: Bleed Rail Insensibility — Conventional and Religious

All signs of starting the process of return to sensibility (consciousness) must be absent. It is CRITICAL that animals showing signs of a return to sensibility be re-stunned immediately. There is *zero tolerance* for beginning any procedures like skinning the head or leg removal on any animal that shows signs of a return to sensibility. **Any sensible animal on the bleed rail constitutes an automatic audit failure.**

However, it is important to complete the audit and note observations about insensibility using the following guide:

X = completely insensible; no signs of return to sensibility
BL = blinking – do not count a vibrating eye as a blink; only natural blinks like those that might be observed in the yards should be documented
RB = rhythmic breathing
VO = vocalization no matter how small
RR = righting reflex/animal attempts to lift head while hanging on the rail

Animal Number:

1	11	21	31	41	51	61	71	81	91
2	12	22	32	42	52	62	72	82	92
3	13	23	33	43	53	63	73	83	93
4	14	24	34	44	54	64	74	84	94
5	15	25	35	45	55	65	75	85	95
6	16	26	36	46	56	66	76	86	96
7	17	27	37	47	57	67	77	87	97
8	18	28	38	48	58	68	78	88	98
9	19	29	39	49	59	69	79	89	99
10	20	30	40	50	60	70	80	90	100

Percent insensible: _____

Notes:

_____

_____

_____

*In sheep plants that conduct head-only, reversible electric stunning for religious reasons, it is strongly recommended that plants add an additional audit point to ensure that the animal does not shows signs of a return to sensibility before bleeding.

Final Scoring – Sheep Audit

Core Criteria	Passing Score	Actual Score
Core Criterion 1: Willful Acts of Abuse	No willful acts of abuse	_____
Core Criterion 2: Access to Water	Yes—water provided	_____
Core Criterion 3: Falls	1% or fewer falls	_____
Core Criterion 4: Electric Prod Use	5% or less prodded	_____
Core Criterion 6: Effective Stunning	96% or greater accuracy (captive bolt) 99% or greater placement (electric stunning	_____ _____
Core Criterion 7: Bleed Rail Insensibility	100% insensible	_____

Plant passed all core criteria? Yes _____ No _____

Auditor Signature: _____
Date: _____

Secondary Audit Items: Sheep

These items may be helpful in gathering general information about a facility. However, because they involve a high degree of subjectivity and because they are almost impossible to score objectively, they should not be used in determining whether a facility passes or fails an audit.

Secondary Slaughter Audit Items		
Documents	**Yes**	**No**
Does the facility have a documented training program for its employees or use an outside training program to teach the principles of good animal handling?		
Does the facility have a protocol that is written or widely understood for handling non-ambulatory animals?		
Does the company perform internal audits at least weekly?		
Does the company have an emergency management plan for livestock on file?		
Does the emergency plan include instructions on when/how water will be provided to animals in drive alleys/unloading docks?		
Facilities and Equipment		
Do employees inspect the facility weekly and document for repair any damage or sharp protrusions that may injure animals?		
Does the facility have a protocol for stunning equipment maintenance?		
Is non-slip flooring provided throughout the facility?		
Do crowd pens generally appear to be less than 75% full?		
Animal Handling and Training		
Are facility personnel trained in handling non-ambulatory animals?		
Does the facility provide special training to stunner operators to ensure proper equipment use and stunning efficacy?		
Does the facility train its personnel and have a written procedure or protocol about how to handle a sensible animal on the bleed rail?		
Are non-electrical devices the primary tool used to move livestock?		
Do holding pens appear to be overcrowded?		
If mounting behaviors were observed, are animals that chronically mount removed from the pen?		
Percentage of animals that slipped:		

Final Scoring

Plant passed all core criteria? Yes _____ No _____
Were any acts of abuse observed? Yes _____ No _____
Plant passed all secondary criteria? Yes _____ No _____

If no on secondary, include notes related to secondary audit items:

_____

_____

_____D

Auditor Signature: _____
Date: _____