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Recommended Animal Handling Guidelines & Audit Guide:

A Systematic Approach to Animal Welfare

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With

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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 and covered all livestock slaughtered in federally inspected meat plants. As a result of the Act, federal veterinarians are in meat packing plants continuously, monitoring compliance with humane slaughter regulations. Additional guidance is found in the Code of Federal Regulations and in specific USDA regulations, directives and notices.

The North American Meat Institute (NAMI) has a demonstrated commitment to voluntary animal handling programs that go above and beyond regulatory requirements.

In 1991, the 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 and 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, 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 tool for use voluntarily by meat companies. In the years that followed, major restaurant chains began developing animal welfare committees and conducting audits of their meat suppliers. They utilized the AMIF *Good Management Practices* as their audit tool. Beginning in 1999, compliance with the GMPs became part of many customer purchasing specifications.

In 2004, the 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. Official forms can be recognized by the use of the official NAMI logo. The forms can be reformatted to suit corporate needs, but any change to the numerical criteria on the forms would make the audit inconsistent with the official audit. The merged document was released in 2005. In 2007, the document was updated based upon feedback from the field and key clarifications were added. Since that time, three new editions of the guidelines have been released.

Relative to other areas of scholarly research, only limited basic research has been conducted in the area of animal welfare. The objective criteria in the document were developed based on survey data collected over time in plants throughout the United States. 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.

The Institute's audit guidelines recommend that companies conduct both weekly internal (self-audits) and annual third party audits using the following Core Criteria:

- **Effective Stunning**
- **Hot Wanding (Pigs only)**
- **Bleed Rail Insensibility**
- **Falls**
- **Vocalizations**
- **Electric Prod Use**
- **Most critical: Willful Acts of Abuse (Egregious Acts).**

Any willful act of abuse 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.

The Committee acknowledges, however, that audits represent a “snapshot in time.” Many variables can impact audit outcomes, especially when live animals are involved. These can include:

- **Change in plant personnel.** It may take time for a new employee to become as skilled an animal handler as 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 at the farm level.** Animals that are accustomed to seeing people generally are 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 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.

The numeric criteria in the audit were developed based upon pooled audit data and the professional judgment of the author with input from the reviewers. 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.

Just as plants strive for continuous improvement based on new practices and information, so, too, the Institute will strive for continuous improvement and refinement of this document. The general recommendations and the audit criteria are based on real data and observation. However, as additional research is completed and new information is generated, the Institute will seek to improve and update these documents.

Ethical, Regulatory and Economic Benefits

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 mean the difference between profit and loss. Research clearly demonstrates that many meat quality benefits can be gained through careful, quiet animal handling.

In addition, the Humane Slaughter Act of 1978, the regulations that evolved from it, as well as more than two decades of FSIS Directives and Notices, 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. Top 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 (See Chapter 2).
- Regular, internal training and providing opportunities to attend outside training programs.
- Recognition and/or rewards for jobs well done. These can take a variety of forms such as mentions in a company newsletter, a congratulatory email or memo, the opportunity to attend the NAMI Animal Care & Handling Conference, a pizza party or a small cash award for actions above and beyond the call of duty.

This manual 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 also ensure that the industry operates safely, efficiently and profitably.

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.

Chronology of Changes and Updates

The Animal Care and Handling Guidelines & Audit Guide is a living document that seeks to embrace new research, industry practices and practical feedback. The 2012 version was the first revision since the new transportation audit was released in 2010. While the transportation audit was field tested prior to its release, we received extensive feedback about it once it was truly in a commercial test. As a result, in 2013, the scoring for Set up, Loading and Alignment were changed so that individual trucks are scored and the total score is averaged. The new score requires 80 percent to pass (90 percent was the previous passing score). We chose this number because it permits a plant to miss one point on that criteria and still pass the audit. We made similar adjustments to Timeliness of Arrival and Animal Unloading, where 85 percent is now required to pass (90 percent was the previous passing score).

We strive to focus outcomes, yet realized that our criteria that evaluated condition of trailer were not outcome focused. We were requiring bedding to pass the criteria and in turn the audit, yet plants in some very warm areas do not use bedding at any time of the year. As a result, we moved those criteria to the secondary items section with one exception: proper alignment of the trailer with the loading dock. That item was moved to the Set Up and Loading criteria because we believe that proper alignment of trucks with docks is critical and that failure to align can have serious and immediate consequences for animal welfare.

The Transportation Audit may be challenging for some very small plants that only receive one truck per day. When that occurs, the plant should aggregate data from multiple days for internal audits. For third party audits, the plant must work with its third party audit firm and the requesting customer to reach a workable solution using aggregated data when insufficient truck numbers are available. On the beef transport audit, we clarified that winter slats and plugs are required for dairy cattle and some cull cattle only. We recognized the Canadian Livestock Transporter (CLT) Certification Program as an acceptable certification program for livestock haulers.

In 2013, we edited the Transportation Audit and clarified that farrowing on pig transport trucks should be counted (we had included calving and lambing, but omitted farrowing). We added farrowing on trucks to the Pig Transportation Audit and lambing on trucks to the Sheep Transportation Audit. Under Core Criteria 2 of the Sheep Transportation Audit, we corrected an inadvertent omission of “compartments gated.” In addition, we simplified scoring by using round numbers as opposed to decimal points.

In 2017, in the Handling Section, we expanded our definition of egregious acts to include the purposeful driving of livestock off high ledges, platforms or off a truck without a ramp. We also added guidance about the proper use of vibrating prods and noted that they can be used successfully with pigs. We noted that lead sheep should have access to water when they are not working and emphasized that ambulatory livestock should never be moved over non-ambulatory livestock.

In the Stunning Section, we include the findings of new French research on insensibility by stunning method and discuss the signs of a possible return to consciousness as a transition phase before full consciousness.

In the Stunning Section on the Slaughter Audit, we recommend that plants that use CO₂, but have a shorter exposure time, as well as plants that use head-only reversible electric stunning should consider auditing insensibility both prior to bleed and on the rail. Also in the Slaughter Audits, we added a secondary question that asks if the holding pens appeared overcrowded. Previously, the audit only asked about crowd pens. When captive bolt is used, we increased the acceptable stunning accuracy score from 95 to 96 percent. An excellent captive bolt stunning score continues to be 100 percent.

In the Transportation Chapter, we added clarifying language that body condition may impact mobility. In the previous edition we suggested that low body condition scores are always correlated with low mobility, but our own data collection efforts revealed that was not case. We clarified that an animal's head or back should not touch the roof of the trailer. We noted that unless there is an emergency situation, trailers should not be warehoused at off-site locations to prevent backups. We also provided specific language about how to euthanize animals on trucks or in the yards properly.

In the Transportation Audit, we clarified the definition of severely lame and began to track severely lame livestock arriving at plants in Core Criteria 6. We also added a question under Core Criteria 1 to probe whether the plant had documented training for its employees in properly receiving animals. The acceptable level of prodding at unload was decreased on the Transportation Audit from 25% or less to 10% or less.

Approved June 2017 by:

Temple Grandin, Ph.D.

and the

Animal Welfare Committee

Chapter 1: Transportation Practices

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

“You manage what you measure.” That is certainly true when it comes to assuring optimal animal welfare. A number of objective criteria can be used to measure animal welfare in packing plants. By measuring welfare indicators regularly, problems can be detected and continuous improvement achieved. 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. Please refer to the appropriate industry transportation program guidelines the establishment that is being audited utilizes as a standard. 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

Species	Average BW		Area per animal			
	(kg)	(lb)	Horned		Hornless	
			(m ²)	(ft ²)	(m ²)	(ft ²)
Cattle (calves)	91	200	0.32	3.5		
	136	300	0.46	4.8		
	182	400	0.57	6.4		
	273	600	0.80	8.5		
Cattle (mature fed Cows and Steers)	364	800	1.0	10.9	0.97	10.4
	455	1,000	1.2	12.8	1.1	12.0
	545	1,200	1.4	15.3	1.4	14.5
	636	1,400	1.8	19.0	1.7	18.0
Small Pigs	4.54	10	0.060	0.70		
	9.07	20	0.084	0.90		
	13.60	30	0.093	1.00		
	22.70	50	0.139	1.50		
	27.20	60	0.158	1.70		
	31.20	70	0.167	1.80		
	40.80	90	0.177	1.90		
Market Swine/Sows	45	100	0.22	2.4	0.30	3.0
	91	200	0.32	3.5	0.37	4.0
	114	250	0.40	4.3	0.46	5.0
	136	300	0.46	5.0	0.55	6.0
	182	400	0.61	6.6	0.65	7.0
Sheep	27	60	0.20	2.1	0.21	2.2
	36	80	0.23	2.5	0.24	2.6
	45	100	0.26	2.8	0.27	3.0
	55	120	0.30	3.2	0.31	3.4

Source: Federation of Animal Science Societies (FASS) 2010

To view a larger chart, see page 130. Source: Federation of Animal Science Societies (FASS) 2010

acceleration increase injuries and stress and ultimately lead to decreased carcass value. Selecting routes that are the most direct, minimizing time on unpaved roads, and ensuring the avoidance of potholes will also provide benefits. 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 keep loads moving.

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 a light layer of bedding can assist with keeping a trailer clean and provides 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. Trailers must be loaded at the proper industry recommended level. 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 condition (i.e. cull animals) or physical attributes such as horns. Animals that are not compatible by nature (i.e. intact males, highly agitated animals) must be segregated and all gates closed on loads that require segregation during transport. **All animals presented for transport must be fit for transport. The loading of unfit animals is unacceptable.**

Receiving - The plant is responsible for ensuring that the facility is prepared to receive of 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. Extreme weather management tools must be provided and loads scheduled to prevent truck line ups and allow for timely unloading of trailers. Policy and a means for handling of non-ambulatory animals must be provided, including well-maintained euthanasia equipment.

Section 1: Temperature Management

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

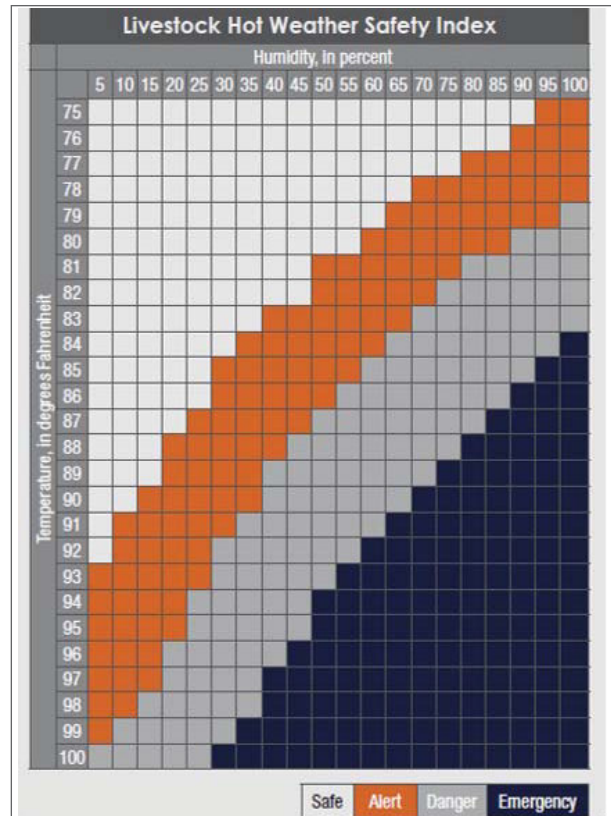
Cold Weather Temperature Management for Pigs

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 should be provided according to the species-specific industry standard in use by the facility. Older, cull swine are very vulnerable to cold stress and need to be bedded and boarded.

Cold Temperature Management for Cattle, Veal and Sheep

While cattle and sheep are less sensitive than pigs to cold weather, 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 insulating bedding for sheep, veal calves and sometimes cull cows as these animals are all likely to lie down during transport. Extra room is also required to ensure no animal is forced up against the sides of the trailer.

Veal calves are particularly temperature-sensitive and require special care during transport. Take care in cooler temperatures to provide straw bedding and plug or cover ventilation holes in trucks so the calves do not become too cold and remain dry. They must be handled with



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.

Recommended Truck Set-Up Procedures Based on Air Temperatures (Market Pigs)

Air Temp (F)

- 11 or less
- 11 – 20
- 21 – 30
- 31 -- 40
- 41 – 50
- 51 - 60
- 61 -- 90
- 90 or greater

Bedding (50 lb. bags)

- Heavy (6 bags)
- Medium (4-6 bags)
- Medium (4-6 bags)
- Medium (3-4 bags)
- Medium (3-4 bags)
- Medium (3-4 bags)
- Medium (3-4 bags)
- Light (1-2 bags)

Side Slats

- 90 - 95% closed
- 75 - 90% closed
- 50 - 75% closed
- 50 - 75% closed
- 25 - 50% closed
- 0 - 25% closed
- 0% closed
- 0% closed

Source: National Pork Board, Transport Quality Assurance Handbook Version 6

extreme consideration and checked often during cold weather transport. Cull cows also need appropriate boarding in extreme temperatures.

Hot Weather Management for Pigs

Ensuring that pigs are hydrated prior to transport is extremely important. Hydration can also help prevent heat stress. Hot weather and humidity are deadly to pigs because they do not have functioning sweat glands. Therefore, special precautionary measures must be taken in hot weather conditions. Problems with heat stress may start to occur at 60°F (16°C). At 90°F (32°C) death losses almost double compared to 60°F (16°C).

Use the following procedures to keep animals cool and eliminate unnecessary transport losses during extreme weather conditions:

Pre-Transport and Loading

- Schedule transportation early in the morning or at night.
- Open nose vents.
- Unplug ventilation holes/slots.
- Do not bed pigs with straw in hot weather.
- The combination of high heat and humidity is especially dangerous if animals must be transported in the 'danger zone' of the emergency index. Good judgment should be used by reducing loading densities by 10--20% and deliveries should be planned during cooler times of the day. Adjust loading density of pigs in truck by loading fewer pigs per load. For example, provide 300 lb. pigs with 5 feet, 2 inches.
- Load promptly to avoid heat buildup.
- If the temperature is over 80° F (27° C), wet pigs for 5-10 minutes during or after loading.

Guidelines for Misting/Wetting Pigs

- Avoid over-wetting to prevent excess humidity build-up or runoff. Use a large droplet spray, not a fine mist to avoid increasing humidity.
- Water should be cold but do not pour large amounts of cold water on an overheated pig as the shock may kill it.
- For wetting to work, animals should be made damp and then allowed to dry. The wetting process should be monitored to prevent excess humidity build-up.
- Air movement is needed for evaporative cooling to work. Trucks should be in motion or have access to fans or crosswinds.
- Allow time for evaporation of the water to remove body heat from the animal.
- Pigs should not be wet again until evaporation has occurred.
- Continual wetting with insufficient time for evaporation can increase heat stress by creating a sauna effect.

During Transport

- Be prepared to adjust to rapid temperature fluctuations such as the first warm day(s) of Spring.

- Do not stop for extended periods of time. When stopping to check pigs, be sure it is for a short period of time to prevent overheating and to keep air moving.

Arrival at Plant

- Lairage at packing plants should have sufficient capacity 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
- If possible, you may need to wet pigs while waiting at the plant.

Developing an Emergency Livestock Management Plan

It is essential that plants have an emergency livestock management plan in place. Each plant should assess potential vulnerabilities based on geographic location, climate and other issues that would require swift action to assure animal welfare. In the event of an extended plant breakdown, snow storm, motor vehicle accident, natural disaster, building damage, fire, tornado or other line stoppage, procedures should be in place to stop additional truckloads of animals from arriving at the plant. 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, etc. where animals can be unloaded and provided adequate facilities.

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

- How food and water will be provided during an emergency.
- How electricity can be provided through back-up generators, should power be lost.
- What 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, like fire or flood,

In situations of short term emergencies that plant staff can feasibly expect to recover from in a timely manner (i.e. minor plant breakdown, minor weather event, scheduling errors), the plant should still develop a contingency plan for transporters that may, for example, state that trucks should 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 regulate an optimal internal trailer temperature.

Timeliness of Arrival and Unloading

The time that animals spend on trucks is directly correlated to animal well-being and ultimately, final meat quality. 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 trailer.

In order to mitigate the occurrences of 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 well-being, 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 well-being, 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 (ex: 2 p.m.) or a window of time (ex: 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.

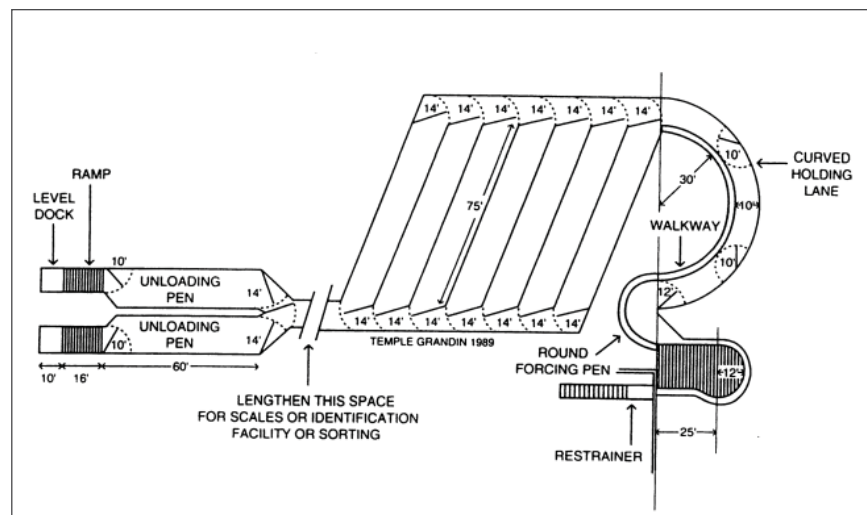
Producers, buyers, and transporters need to work together to plan a reasonable loading time at the site of origin. The amount of time it takes to load animals (site design and animals temperament), drive time to the plant, weather, traffic, road conditions, etc. are all factors that need to be taken into account when determining a loading time. Transporters should always leave immediately after loading—this will 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. Outside factors may include: weather, miscommunication of scheduled appointment time at the site of origin and/or plant, plant breakdown/shutdown resulting in lairage being filled to capacity, truck arriving before/after receiving hours with no staff available, etc. If a transporter is delayed and will be arriving outside of his/her scheduled appointment time, he/she 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 an Emergency Livestock Management Plan.

Section 2: Pen Space and Facility Layout

To improve meat quality, livestock should be rested two hours prior to stunning. When possible, animals should be kept in their transport groups. In large plants, pens should be designed to hold one or two truckloads. A few smaller pens will also be required for small lots.

Pen space allocations may vary depending upon weather conditions, animal sizes and varying holding times. As a rough guideline, 20 sq. feet (1.87 sq. m) should be allotted for each 1,200-pound (545 kg) steer or cow; 22 sq. feet (2.04 sq. m) should be allotted for each 1,400-pound (635 kg) steer; 23 sq. feet (2.13 sq. m) should be allotted for each 1,500-pound (680 kg) steer; 24 sq. feet (2.22 sq. m) should be allotted for each 1,600-pound (720 kg) steer; and six sq. feet (0.55 sq. m) per 250-pound pig (114 kg). Sows will require 11-12 sq. feet (1.03 – 1.12 sq. m). Mature cull breeding boars may require up to 40 sq. feet (3.74 sq. m) per boar to reduce fighting. Another alternative is to pen them individually. (Source: Swine Care Handbook, National Pork Board, 2003). Small sheep require five sq. feet (4.6 sq. m) and large sheep require six sq. feet. These stocking rates will provide adequate room for “working

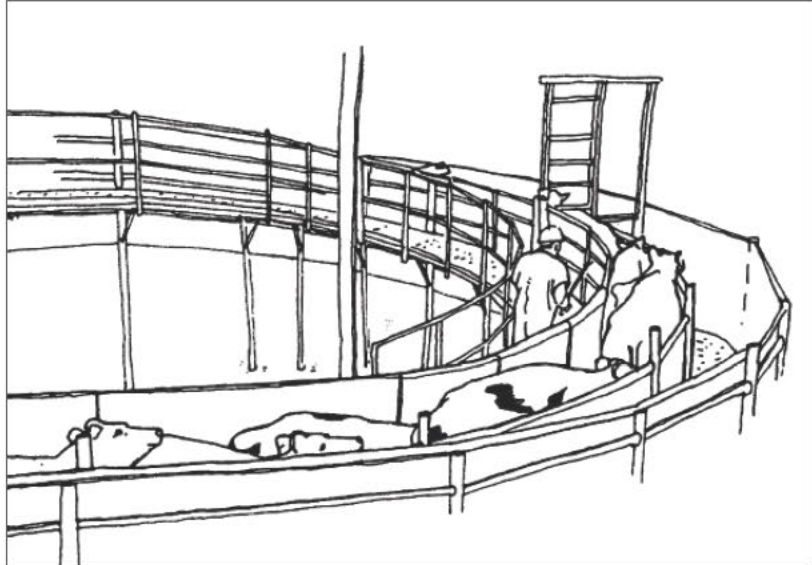


space” when animals are moved out of the pen. If the animals are stocked in the pen more tightly, it will be difficult for the handler to empty the pen. Adequate pen space is important because not only do animals need room to move away from the handler and out of the pen, but federal rules require that they must have room to move to available water (9CFR313.2(e)). **They also should be able to lie down if held overnight.**

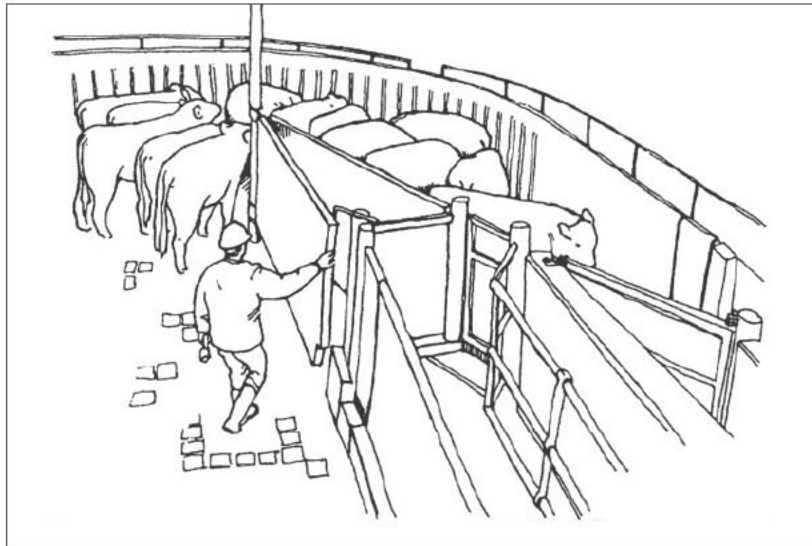
Recommended Handling Facility Layout

The diagram on page 11 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 cattle to the stunner. Modern cattle 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. 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.

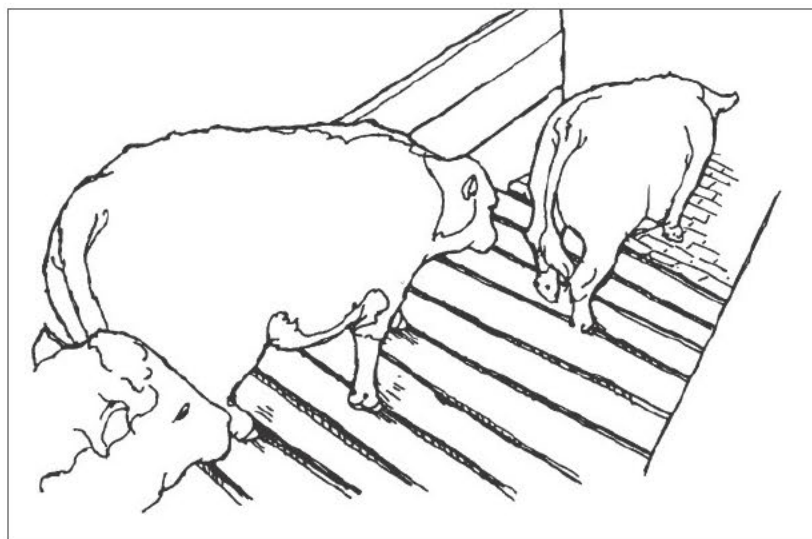
The round crowd pen and curved single file chute take advantage of the natural tendency of cattle to circle. It also prevents them from seeing the other end while they are standing in the crowd pen. A curved chute should be laid out correctly. Too sharp a bend at the junction between the single file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



Well-designed curved chute with solid sides for cattle.



Round crowd pen with correct number of cattle



Well-designed unloading ramp

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 feet (3.5 m); pigs, 8 feet (2.5 m); and sheep, 8 feet (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. Pork facilities should be designed on the level with the slope or grade sufficient for drainage only.

Unloading Facilities

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.

Rushing livestock during unloading can be a major cause of bruises, particularly loin bruises. Management should closely supervise truck unloading. For cattle, the recommended stair step dimensions are 3 ½ inch (10 cm) rise and a 12-inch (30 cm) long tread. If space permits, an 18-inch (45 cm) long tread will create a more gradual ramp. For market pigs, a 2 ½ inch (6.5 cm) rise and a 10-inch (26 cm) tread works well. On adjustable ramps, cleats with 8 inches (20 cm) of space between them are recommended. All flooring and ramp surfaces should be non-slip to avoid injury.

Euthanizing Animals on Trucks or In the Yards

When an animal has to be euthanized on a vehicle or in the yards and a secondary step such as bleeding is not used to ensure death, extra care must be taken to ensure that it does not recover sensibility. All signs of return to sensibility that are specified on page 57 must be absent.

In addition, it is strongly recommended that plant personnel perform one of the following actions to ensure death: 1) security knocking with either captive bolt or firearm; or 2) 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 animals that will be used for food.) The plant should recheck the animal before moving or disposing to ensure that euthanasia was effective.

CHAPTER 2: RECOMMENDED ANIMAL HANDLING GUIDELINES

Section 1: Recommended Livestock Handling Principles

The principles of good livestock handling are similar for the different species. All livestock are herd animals and will become agitated when separated from the others, so handling in groups is always preferable.

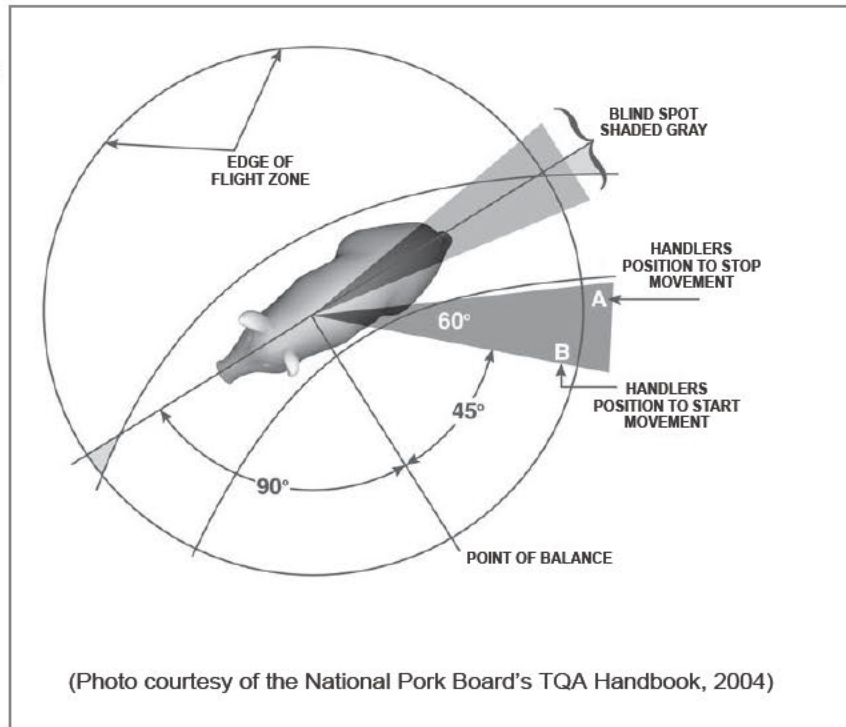
If a lone animal becomes agitated, place it with other animals where it is likely to become calmer. Never enter the crowd pen or other confined space with one or two agitated, excited livestock.

Understanding Flight Zone and Point of Balance

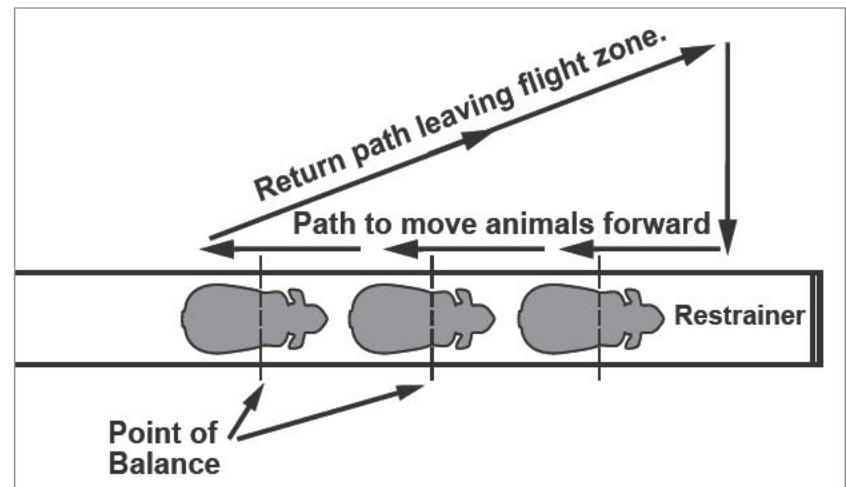
Handlers who understand the concepts of flight zone and point of balance will be able to move animals easily. The flight zone is the animal's personal space and the size of the flight zone is determined by the wildness or tameness of the animal. Completely tame animals have no flight zone and people can touch them. Other animals will begin to move away when the handler penetrates the edge of the flight zone. If all the animals are facing the handler, the handler is outside the flight zone.

To keep animals calm and move them easily, the handler should work on the edge of the flight zone. The handler penetrates the flight zone to make the animals move, and he backs out of the flight zone if he wants them to stop moving. The best positions are shown on the Flight Zone Diagram (above right). The handler should avoid the blind spot behind the animal's rear.

Deep penetration of the flight zone also should be avoided. Ani-



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



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.

imals become upset when a person is inside their flight zone and they are unable to move away.

If cattle turn back and run past the handler while they are being driven down a drive alley in the stockyard, overly deep penetration of the flight zone is a likely cause. The handler should back up and increase 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 leader to cross the shadow. The other animals will follow.

If cattle rear up in the single file chute, back away from them and don't touch them or hit them. They are rearing in an attempt to increase the distance between themselves and the handler and will usually settle down if left alone.

Point of Balance

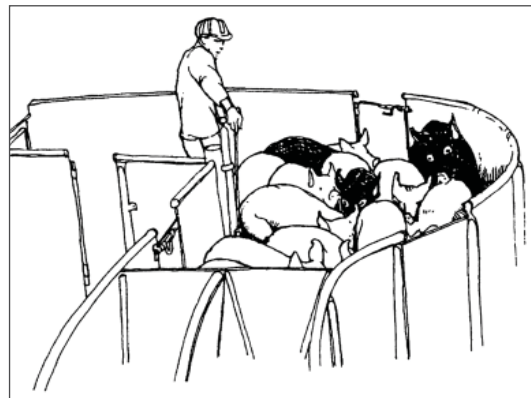
The “point of balance” is at the animal's shoulder and the handler's position in relationship to the point of balance can cause livestock to move forward or backward. All species will move forward when the handler stands behind the point of balance and will back up if the handler stands in front of the point of balance (See Point of Balance Diagram, page 14).

Many handlers make the mistake of standing in front of the point of balance or placing 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 run alley and this is a mistake. 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 the animals are moving through the chute by themselves, leave them alone. It is not necessary or recommended to prod every animal; often they can be moved by lightly tapping.

Moving Animals

Livestock naturally follow the leader and handlers need to take advantage of this behavior. Cattle and pigs also will move more easily from the crowd pen into the single file chute when the chute is partially empty. This provides space for the animals to immediately enter the chute and reduces the frequency of animals turning around in the crowd pen.

Partially empty chutes provide room to take advantage of following behavior. Handlers are often reluctant to do this because they fear gaps will form in the line and slow the process, but once a handler learns to use this method, he will find that as animals enter the crowd pen, they will head right up the chute. One of the most common mistakes 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



Pig crowd pen with an abrupt entrance to prevent jamming.



Cattle move into a single file, following the leader.

should never be filled more than 75 percent full (half full is ideal) so that animals have room to turn around.

Handlers must also be careful not to push the crowd gate too tightly on the animals. It often works best to leave the crowd gate on the first notch and to let the animals 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 and should never be used to forcibly push them. The handler should concentrate on moving the leaders into the chute instead of pushing animals at the rear of the group because once the leader enters, 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 cattle will balk at a closed gate. One-way flapper gates can be equipped with a rope to open them by remote control from the crowd pen. When the crowd pen is operated correctly, electric prods can usually be eliminated and non-electric driving aids such as flags, paddles and flexible shafts with streamers can be used. Animals can easily be turned with these aids by blocking the vision on one side of its head with the aid. If the leader balks at the chute entrance, a single touch with the prod may be all that is required.

Finally, it is against federal rules to drive ambulatory livestock over non-ambulatory livestock.

Handling Excitable Animals

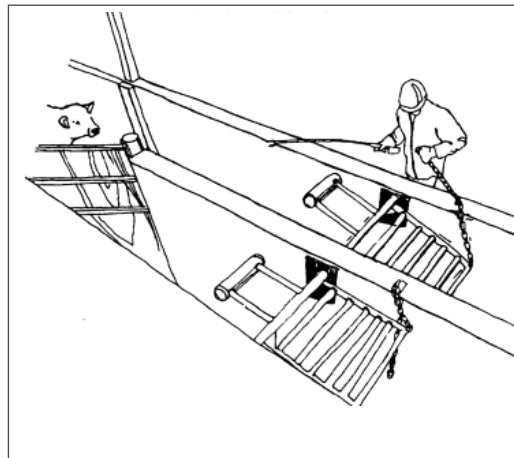
Calm animals are easier to move than excited animals. Livestock hauled for a short, 15-minute trip may be more difficult to unload because they have not had sufficient time to calm down after being loaded on the farm. It takes 20 to 30 minutes for excited pigs or cattle to calm down.

Some highly excitable pigs are difficult to drive at the packing plant. These animals squeal, bunch and pile up, and it can be difficult to make these pigs separate and walk up the chute. But careful, quiet handling during the last few minutes before slaughter is very important. Highly excitable pigs can have severe pale, soft, exudative (PSE) tissue due to agitation during handling, even though these pigs are negative on the genetic test for the halothane gene. Research also shows that excessive use of electric prods in the stunning chute increases tough meat in beef and lowers meat quality in pigs.

Excitability problems can be reduced and pigs will be easier to drive if people walk through the finishing pens at the farms at least once a week. The person should walk quietly in a different random direction each time to train the pigs to get up quietly and flow around them. This can be done during a routine task like checking feeders. Playing a radio in the finishing barn also gets the animals accustomed to different kinds of sounds.

Preventing Injuries, Bruises and Falls

All areas where livestock walk should have a non-slip surface to prevent falls and crippling injuries. Humane, efficient handling is very difficult on slick floors because animals can become agitated and excited when they lose their footing. Existing floors can be roughened



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



A good sample of non-slip flooring.

with a concrete grooving machine as long as the pattern is sufficiently deep. Grooves that are $\frac{1}{4}$ " x $\frac{1}{4}$ " have proven successful though other approaches also may be used. For all species, steel bars may be used as long as the steel mat lies flat on the floor. Do not criss-cross the rods on top of each other. Grooved concrete flooring also can be used on weigh scales to prevent slipping.

For cattle on scales, crowd pens and other high traffic areas, a grid of one-inch steel bars will provide secure footing. Construct a 12-inch (30 cm) by 12-inch (30 cm) grid and weld each intersection. To prevent damage to the hooves, do not cross the steel bars on top of each other at each intersection; the bars must be welded so that the grid lies flat. Use heavy rod to prevent the grid from bending. Non-slip flooring is particularly important in stunning boxes and restrainer entrances. Examples of non-slip flooring include textured concrete, grooving and rubber mats.

New concrete floors for cattle should have an 8-inch (20 cm) diamond or square pattern with deep 1-inch (2.5 cm) grooves. For pigs and sheep, stamp the pattern of raised expanded metal into the wet concrete. A rough broom finish is not sufficient as it will become worn smooth. It is also essential to use the right concrete mix for maximum resistance to wear.

Smooth Edges and Surfaces—Gates, fences and chutes should have smooth surfaces to prevent bruises. Sharp edges with a small diameter, such as angle irons, exposed pipe ends and channels will cause bruises. Round pipe posts with a diameter larger than 3 inches (8 cm) are less likely to bruise. Vertical slide gates in chutes should be counterweighted to prevent back bruises. The bottom of these gates should be padded with cut tires or conveyor belting. The gate track should be recessed into the chute wall to eliminate a sharp edge that will bruise.

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 conveyor belting. The pigs will not attempt to go through the curtain. This change will prevent back injuries if the gate is closed on a pig. Pressing up against a smooth flat surface 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. Contrary to popular belief, livestock can be bruised moments before slaughter until they are bled. The entrance to the restrainer/knock box should be inspected often for broken parts with sharp edges.

Horned Cattle — Surveys show that groups of horned cattle will have twice as many bruises as polled (hornless) cattle. A few horned animals can do a lot of damage. Cutting off the horn tips will not reduce bruising because the animal still has most of its horn length.



Hose may cause balking.



An animal looks at a sun spot and stops.



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



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

Improving Animal Movement

Calm animals will move naturally through well-designed systems with a minimum of driving and prodding. Animals can become agitated very quickly, but it can require 20 to 30 minutes for them to become calm again. To keep animals calm, take the following steps:

Handlers should be quiet and calm. Yelling, banging on walls with paddles and arm-waving may excite and agitate animals, but each group of animals is different and should be handled according to their level of reaction. The use of low stress handling techniques is always recommended.

Use lighting to your advantage. Animals tend to move from a darker area to a more brightly lit area and may refuse to enter a dark or shadowy place. Lamps can be used to illuminate the chute up ahead and attract animals. It should never glare directly into the eyes of approaching animals. Another approach is illuminating the entire chute area. This approach eliminates patches of light and dark which may confuse animals. Animals may be difficult to drive out of the crowd pen if the pen is brightly illuminated by sunlight and the chute is inside a darker building. Another common lighting problem is that a handling system may work well when lamps are new, but the animals will balk more and more as the lamps dim with age. Experiment with portable lights to find the most efficient and consistent lighting.

Eliminate visual distractions. Get down in the chutes to see them from the animal's perspective. Livestock balk at shadows, puddles of water or any object that stands in their way, from a coffee cup to a piece of paper. A drain or a metal plate running across an alley can cause animals to stop and should be located outside the areas where animals walk. Flapping objects, such as a coat hung over a fence or a hanging chain, will also make livestock balk. Install shields or strips of discarded conveyor belting 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.

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 outside the fence – such as people. Cattle 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 stockyard pens they just left.

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

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 filled more than 75 percent full; 50 percent is ideal. Do not push crowd gates up tight against the animals as cattle and pigs need room to turn. For sheep, large groups may be moved and the crowd pen can be filled all the way up. When a group of animals is particularly difficult to move, reduce the group size.

Spray water from above or behind. When wetting animals in the chute, be sure not to spray the animal's face with water because they will back up.

Section 2: Livestock Driving Tools

Electric Prods

Electric prods should be used sparingly to move livestock and should not be a person's primary driving tool. A well-designed plant that has eliminated distractions and other handling impediments detailed above can greatly reduce electric prods, though they may not be entirely eliminated.

Cattle and pigs can often be moved along a chute when the handler walks by them in the opposite direction of desired movement, taking advantage of the point of balance at the animal's shoulder. 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. Certainly, the need for electric prod use can vary depending on breeds of animals, production practices on the farm, gender (cull dairy cows versus cull beef cows), the group of animals, the day and the handling system used.

Many well-managed plants have eliminated electric prods in the holding pens and the crowd pen that leads to the single file chute. In beef plants with well-trained handlers, survey data showed that up to 95 percent of the animals could be moved through the entire plant without the use of an electric prod. Plants should strive to use the electric prod on 25 percent or fewer cattle and pigs. Plants that use prods on five percent or fewer cattle and pigs are achieving excellent scores.

International standards from the World Organization for Animal Health (OIE 2016) OIE also recommends against the use of electric prods on sheep. 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 a willful act of abuse. Additionally, the application of the electric prod can cause damage to the pelt.

As a result, electric prods should be a tool of last resort and used only when absolutely necessary (typically limited to large rams at the entrance to the restrainer) after all other driving tools have been exhausted. This is the only area where the NAMI Audit permits prods on sheep. Prod use with sheep should be limited to 5 percent or fewer sheep.

Electric prods also should not be used on horses, on calves less than two weeks of age or on piglets (OIE 2016).

Using Proper Electric Prod Voltage

USDA regulations require that electric prods have a voltage of 50 volts or less. For pigs, they should use between 18 and 32 volts. Electric prods should have the voltage low enough that it does not consistently produce a "bark" or "squeal" in pigs or a "moo" or a "bellow" in cattle, but still enough of a voltage to be a persuasion. Prods which have sufficient power to knock an animal down or paralyze it must not be used. Electric prods must never be applied to sensitive parts of the animal such as the eyes, ears, mouth, nose, genitals, udder or anus. In practical terms, the prod should not be used on the animal's head. Prods also must not be used on an animal that has been identified as non-ambulatory or disabled.

When used, electric prods must never be wired directly to house current; a transformer must be used. Fifty volts is the maximum voltage for prods hooked to an overhead wire. The prod voltage for pigs should be lower than for cattle, which can help reduce both PSE and blood spots in the meat. The voltage required to move an animal will vary depending on the wetness of the animal and the floor.

International standards (OIE 2016) state that electric prods should be limited to battery operated prods. Battery-operated prods are best for livestock handling because they provide a localized directional stimulus between two prongs. Prods also should have an on/off switch and remain off when not being used.

Other Driving Tools

Substitutions for electric prods are possible in many instances. They include plastic paddles, witches capes, flexible shafts with nylon flags on the end, or large flags for pigs. 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 the streamers near their heads.

For moving pigs, a large flag on a short handle or rattle paddle work well. Rattles work well for moving sheep. Some plants may use “lead” animals which include other sheep or goats 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. Note: when lead animals are not working, they should be housed in pens with access to water.

Flags can be made from lightweight plasticized tarp material and can vary in size from 20 inches x 20 inches to 30 inches x 30 inches (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.

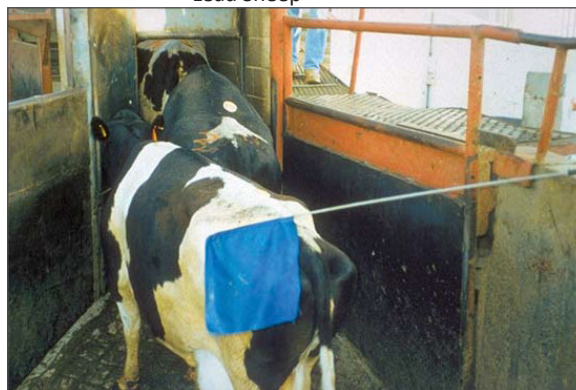
Vibrating or air prods are relatively new driving tools that can move cattle or pigs without applying electrical current. Because they are often made by modifying tools like engravers, it is critical that any pointed end be worn down and smoothed before the tool is used to handle cattle. Vibrating prods 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. They should never be used to strike or forcefully jab an animal or used in any other manner deemed to be egregious.

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

Finally, motorized vehicles should never be used to drive livestock due to the risk of injury to the animal.



Lead Sheep



Moving cattle with a flag.



Moving pigs with a plastic paddle and a large flag.



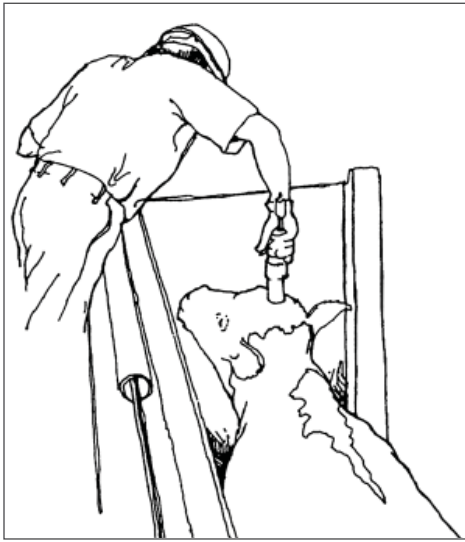
Sort Board

Section 3: Proper Design and Use of Restraints

Pigs and cattle should enter a restraint device easily with a minimum of 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 which will minimize vocalization and agitation are:

Field of Vision:

► Cattle, pigs and sheep may balk at the restrainer entrance if they can see people or moving conveyors through the end of the restrainer. Block the animals' vision with shields so that they do not see people or objects that move while they are entering the restrainer. Install metal shields around the animal's head on box-type restrainers to block the animal's vision. If the restrainer exit faces a blank wall, a curtain will usually not be needed.



Well-designed cattle stunning box.

► Block the animal's vision of an escape route until it is fully held in a restraint device. This is especially important on restrainer conveyors. A flexible curtain made from discarded conveyor belts at the discharge end of the conveyor works well. Cattle, often become agitated in a conveyor restrainer if they can see out from under the solid hold down cover before their back feet are off the entrance ramp. 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. A solid hold down may not be needed.

Facilities -- Flooring, Lighting and Air Flow:

- Provide non-slip flooring in box-type restrainers and a non-slip, cleated entrance ramp on conveyor restrainers. Animals tend to panic and become agitated when they lose their footing. Stunning boxes should have a non-slip floor.
- The restraint device must be properly lighted. Animals will not enter a dark place or a place where direct glare from a light is blinding 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 it must not glare 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."
- Restraint 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 should not press on the animal's back because it is intended as a visual barrier.
- Restraint devices should not have sharp edges. Any parts that contact the animal should have smooth rounded surfaces and be designed so that uncomfortable pressure points are avoided.
- Eliminate air hissing and other distractions such as clanging and banging. Refer to the section on distractions on page 117.

Optimum Pressure

- ▶ The restraint device must apply sufficient pressure to provide the feeling of being held, but excessive pressure that causes pain should be avoided. 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 reduced.
- ▶ A restraint device must either fully support an animal or have non-slip footing so the animal can stand without slipping. Animals panic if they 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.
- ▶ 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: www.Grandin.com (see Religious Slaughter Section).
- ▶ 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.
- ▶ Parts of a restrainer device 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.
- ▶ 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. Head restraint is much more aversive (disliked by the animal) than body restraint. Animals can be held in a comfortable body restraint for longer periods. The animal's reaction should be observed. If the animal struggles or vocalizes, it is an indication that the device is causing discomfort.
- ▶ On V conveyor restrainers, both sides 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 different or the width of one slat.

General Handling at Restraint

- ▶ 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. Workers need to break the “automatic prod reflex” habit. Prods should be a tool of last resort, not a primary driving aid.
- ▶ It is possible to modify existing restraint devices to lower vocalization and agitation scores. Balking at the entrance is also easy to reduce. Most of the modifications that would reduce animal agitation and vocalizations can be installed at a minimum expense. Non-slip floor grating, lighting and shields to block vision are examples of some relatively inexpensive, but effective, modifications.
- ▶ If a stunning box is used, it should be narrow enough to prevent the animal from turning around. The floor should be non-slip so the animal can stand without losing its footing. Pressure that causes pain should be avoided. 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 reduced.
- ▶ Using electrical devices that restrain an animal, but do not cause insensibility is not acceptable. Several scientific studies have shown that it is highly aversive. Vocalization scoring is impossible in electrically immobilized animals because paralysis prevents vocalization.

Electrical immobilization must not be confused with electric stunning. Properly done, electric stunning passes high amperage current through the brain and induces instantaneous insensibility by inducing a grand mal epileptic seizure.

Electrical immobilization keeps a sensible animal still by paralyzing the muscles. It does not induce epileptiform changes in an electroencephalogram (EEG) which would indicate that a grand mal epileptic seizure had occurred, as is the case with electric stunning.

Section 4: Recommended Stunning Practices

Good stunning practices are required to achieve compliance with federal humane slaughter regulations. Good stunning also promotes animal welfare and meat quality. When stunning is done correctly, the animal feels no pain and it becomes instantly unconscious. Stunning an animal correctly also prevents stress, which results in better meat quality.

Reduce Noise in Stunning Area

Because animals are so sensitive to noises, it is important to reduce noise in the stunning area in particular. Calm animals facilitate accurate and effective stunning. 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 improve safety and reduce noise. People should not yell when handling livestock.

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 that is installed in animal holding or stunning areas should be engineered for quietness.

Captive Bolt Stunning

The penetrating captive bolt consists of a steel bolt with a flange and piston at one end and is housed in a barrel. 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 and keep it within the barrel. 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.

The two main factors contributing to the effectiveness of the captive bolt gun is bolt velocity and accurate placement. To be effective, the bolt must have sufficient bolt velocity for the weight class and animal type it is being used on. 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. This involves placing the gun perpendicular to and flush with the skull. To produce instantaneous unconsciousness, the bolt of a penetrating bolt gun must penetrate the brain with a high concussive impact. The correct positions for stunner placement are shown in the diagrams on page 24. 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 (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 very critical to achieve instantaneous insensibility. A head-holding device may be needed to position the head for non-penetrating captive bolt.

For sheep, a captive bolt is placed on the top of the head. This position is more effective for sheep because they have a very thick skull over the forehead. For pigs, the captive bolt is placed on the forehead. A



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

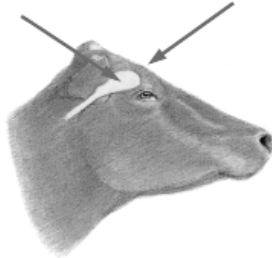


Diagram 4

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 (5 cm) above the intersection of the X. (Diagram 3) The “X” formed between the eyes and the base of the horns. Holstein can also be shot with a firearm behind the poll. (Diagram 4) .

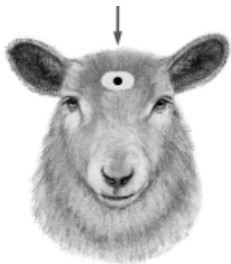


Diagram 5

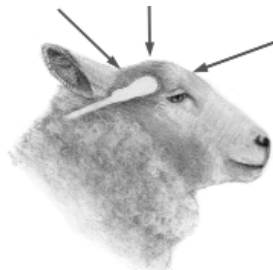


Diagram 6

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.

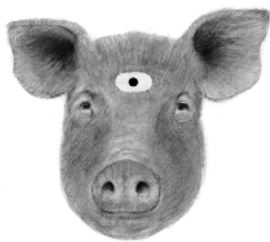


Diagram 7

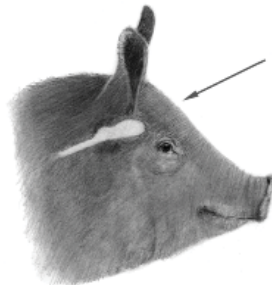


Diagram 8

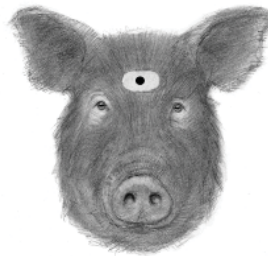


Diagram 9

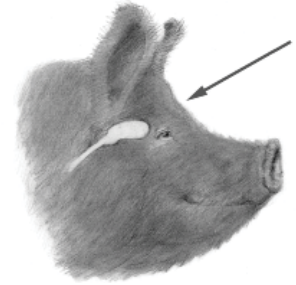


Diagram 10

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

For mature boars and sows, the captive bolt shot should be located 1.5-2 in. (3-4 cm) above the eyebrow. Mature pigs with exaggerated skull structures may require a slightly lower (1 cm) 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.

second application of the stunner is acceptable as a security measure provided that the auditor has had the opportunity to confirm insensibility after the initial stunner application.

A good stunner operator learns not to chase the animal's head. He takes the time to aim and get one good, effective shot. The stunner must be placed squarely on the animal's head. In addition, pneumatic stunners must have an adequate air supply. Low air pressure is one cause of poor stunning. The pressure gauge on the compressor should be checked to make sure that the stunner is receiving the air pressure recommended by the manufacturer for the species, sex and weight class of the animal being stunned. All equipment manufacturers' recommendations and instructions must be followed.

Captive Bolt Gun Maintenance and Design

The most common cause of poor captive bolt stunning is poor maintenance of the captive bolt stunners. 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 use is strongly recommended for plants that use captive bolt stunners. For small plants, periodic, but not daily testing, is acceptable.

A verified maintenance program where a mechanic signs off each day that he/she has tested the stunners is recommended. If a plant shoots a captive bolt stunner on a particular day, it has to be taken apart and cleaned. If parts show signs of wear, they should be replaced. A gun should be cleaned every week even if it is not shot.

It is important to keep stunner cartridges dry and the correct cartridge strength must be used. For long-term storage beyond a day's supply, store cartridges in a room with low humidity such as an office. Damp cartridges which have not been stored properly will cause poor stunning. A day's supply of cartridges may be stored in the stunning area.

Another major cause of failure to render animals insensible with one shot is a poor ergonomic design of bulky pneumatic stunners. Aversive methods of restraint, which cause five percent or more of the cattle or pigs to vocalize, must not be used as a substitute for improvements in gun ergonomics. Ergonomics for stunning in a conveyor or restrainer can be improved with a handle extension on the stunner and hanging the pneumatic stunner on an angle. Fatigued operators can also be a cause of ineffective stunning. Scoring at the end of the shift will pinpoint this problem. In some large plants two stunner operators may be required. Rotating the stunner operator to other jobs throughout the day may help prevent errors caused by fatigue. The balancer device that reduces the weight of a heavy pneumatic stunner must be well-maintained so that it works freely and easily.

Electric Stunning of Pigs and Sheep

To produce instantaneous, painless unconsciousness, sufficient amperage (current) must pass through the animal's brain to induce a grand mal epileptic seizure. Insufficient amperage or a current path that fails to go through the brain will be painful for the animal. It will feel a large electric shock or heart attack signs, even though it may be paralyzed and unable to move. Animals that are dehydrated may have high electrical resistance and be difficult to stun, so proper hydration is important. When electric stunning is done correctly, the animal will feel nothing.

There are three distinct types of electric stunning:

Head only stunning: Electric current is passed through the brain only and causes a temporary period of unconsciousness and the animal 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 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.

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. Other systems use two separate wands that are applied to the brain and the heart at the same time. When correctly done, unconsciousness is permanent. However, bleeding within 60 seconds is recommended.

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

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

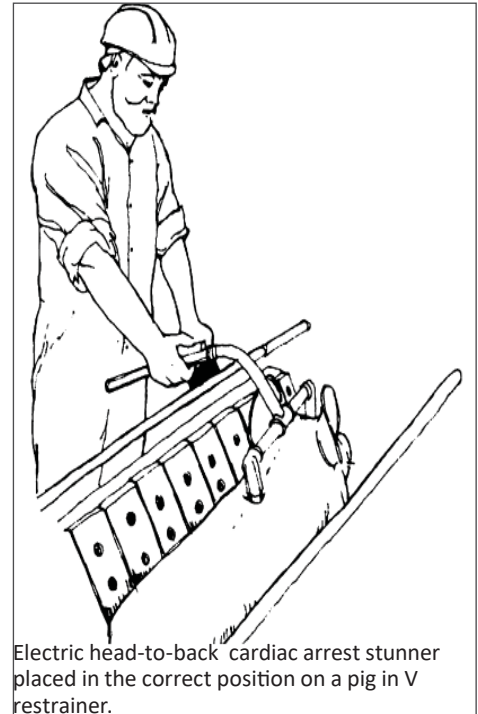
In all three types, the electrode must be placed properly to ensure that the electric current passes through the brain.

When “head only” stunning is used with scissors type tongs, the electrodes may be either placed on the forehead or clamped around the sides of the head like ear muffs. Animals should be wetted prior to stunning. Electrodes also may be placed in a “top to bottom” position on top of the head and below the jaw.

When a wand with two stationary electrodes is used, they may be placed either on the forehead or in the hollow behind the ears. Stunning tongs and wands must never be placed on the neck. The stunning wand must be applied to the animal for at least two to seconds for pigs and three seconds for sheep to stun properly. Stunners should be equipped with a timer.

Most large plants use cardiac arrest head to body stunning which kills the animal by electrocution. It produces a still carcass that is safer and easier to bleed. 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.

Meat packers should use amperage, voltage and frequency settings, which will reliably induce unconsciousness. Both properly and improperly stunned cardiac arrested animals can look similar. Current flow through the spine masks the epileptic seizure and a clear, rigid and kicking phase cannot be easily observed. Properly stunned cardiac-arrested animals sometimes have kicking back legs and this is normal and acceptable.



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

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:

- 1) Wrong position of the electrode;
- 2) amperage that is too low;
- 3) poor bleed out; or
- 4) 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 and long hair or wool. Interrupted contact during the stun may also be a problem. For all species, processing plants with an excessively long stunning to bleed time are more likely to have return to sensibility problems. Electrodes must 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 bloodspots in the meat, the wand must be pressed against the animal before the button is pushed to energize the electrodes. The operator must be careful not to break and re-make the circuit during the stun. This causes the animal's muscles to tense up more than once and bloodspots may increase. If the stunning wand is energized before it is in full contact with the pig, the pig will squeal. This is called "hot wanding" and is detrimental to pig welfare and likely to increase blood spots in the meat. Stunning wands and wiring should be checked often for electrical continuity. A worn switch may break the circuit enough to cause bloodspots. Electrodes must be kept clean to provide a good electrical contact. Operators should never use the stunning wand as a prod.

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

Preventing Bloodsplash (Bloodspots in Pigs)

- 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 and 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 stun should be done only when there is a question about the efficacy of the initial stun or if routine second stuns – "security stuns" – are part of plant's systematic approach to animal welfare. Note that additional stuns can increase bloodsplash.

- Do not slide the wand on the pig when the wand is energized.
- The slats on the V restrainer and hold-down rack and chutes should be insulated to prevent current leakage, which can cause bloodsplash. Rapid temperature fluctuations and periods of extremely hot weather can greatly increase the incidence of bloodsplash. In these circumstances, plants should take extra care in handling animals to minimize bloodsplash problems.

Electrical Specifications for Electric Stunning of Pigs and Sheep

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 pig or sheep'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. The distance between the head electrode and the back electrode should not exceed 14 inches (35 cm.). The most modern sheep stunners from New Zealand use water jets to conduct electricity down through the wool.

Amperage—The flow of electricity is called the current and it 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. Research on market pigs weighing 180 – 200 lbs/85 kg. shows that a minimum of 1.25 amps is required. Market pigs weighing more than 220 lbs/100 kg will require 2 amps. Current average market pigs in North America weigh 280 lbs/125 kg or more and may require more than 2 amps. Ultimately, the plant must establish sufficient amps to render the animal insensible.

Large sows (more than 350 lbs/more than 160 kg) also will require more than 2 amps. If lower amperages are used, the stunner may induce cardiac arrest, but the animal will feel the shock because the seizure was not induced. For sheep a minimum of one amp is required. In general, larger animals may require higher amperages.

The Council of Europe (1991) and the OIE (2016) recommend the above minimum amperages. Amperage is the most important variable to measure. Some plants stun animals below the Council of Europe recommended minimum amperages in an attempt to reduce blood spots in the meat, but this may compromise welfare. The electrical stun should be applied for a minimum of two seconds for pigs and three seconds for sheep.

It is the author's opinion that 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. Both practical experience and research has shown that these types of circuits greatly reduce petechial hemorrhages (blood spots).

Voltage—The force or pressure of the current is known as voltage and is measured in volts. There must be sufficient voltage to deliver the recommended minimum amperage; 250 volts is the recommended minimum voltage for pigs to ensure insensibility. The voltage that will be required will depend on the type of stunner, the wetness of the animal and whether or not it 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. This is important for head and back stunning. Electricity that is supplied at a frequency of 50 Hertz (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). Research has shown that too high an electrical frequency will fail to induce insensibility and is most effectively induced at frequencies of 50 Hz. Frequencies from 2000 to 3000 Hz failed to induce instant insensibility and may cause pain. 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. 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.

Electric Cattle Stunning

Unlike pigs and sheep, electrical stunning of cattle may require a two-phase stun. Due to the large size of cattle, 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. A single 400 volt, 1.5 amp current passed from the neck to the brisket failed to induce epileptic form changes in the brain. 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. Research is needed to verify this. To insure that the electrodes remain in firm contact with the 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.

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 are not recommended that would result in higher initial frequencies. 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).

CO₂ Stunning Parameters

According to CFR 9, Section 313.5, CO₂ stunning may be used in swine to induce death or to result in a state of surgical anesthesia. These states are dependent upon the relationship between exposure time and CO₂ concentration, and systems will produce pigs in both states. Research and the manufacturer recommendations show that the concentrations of CO₂ for pigs should be at least 90 percent and never less than 80 percent. Lower levels of 70 percent CO₂ were stressful to pigs, particularly at induction. Concentration and dwell time in CO₂ must be documented (9CFR313.5). If concentrations are lower, then dwell times must be longer.

Handlers must be careful not to overload the gondolas (elevator boxes) that hold groups of pigs. In a properly loaded gondola, the pigs must have sufficient room to stand without being on top of each other. Roughly 0.019 ft. (.001765 sq. m.), which is approximately .019 x 265 lbs. average weight, of usable gondola space/lb. body

weight should approximately determine the maximum number of animals loaded into the gondola at various body weights. This will ensure that pigs can stand without being on top of one another. Handlers must never overload the gondolas by forcing pigs to jump on top of each other. Pigs should not be overcrowded, but gondolas or other conveyances should also not be under-filled.

Some automated CO₂ units use powered (automatic) gates. Powered gates may be used to move animals by making contact with them. Powered gates for moving animals must never cause an animal to fall and they should never be used to skid or slide animals.

In the scientific literature, there are conflicting results on how pigs react to the induction of CO₂ anesthesia. Some genetic types of pigs actively attempt to escape from the container when they first sniff the gas and others respond with a calm anesthetic induction. Other research has observed that the reaction of pigs to CO₂ was highly variable. A Dutch researcher found that the excitation phase occurred prior to the onset of unconsciousness. Australian researchers found that being shocked with an electric prod was more aversive (disliked) than inhaling CO₂. Another study has shown that pigs with pietrain genetics may have more problems with induction.

EXAMPLE

For example, for a gondola measuring 9' 1.5" x 4' wide, a good, approximate target for loading densities would be:

240 lbs. and less	= 8 head
240-275	= 7 head
275-320	= 6 head
320-385	= 5 head

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 may reduce problems with stressful anesthetic induction. The gas parameters for each plant should be evaluated by gas concentration and 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. It is normal to have vigorous kicking and convulsions after the pig falls over.

In evaluating gas stunning, one must look at the entire system, which includes the handling system and the gas mixture. One advantage of gas stunning is that these systems can be designed to eliminate the need for pigs to line up in single file chutes, which is contrary to their natural behavior.

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 in different species (and what they don't mean) 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 (touching the eye response to touch), eyelash reflex in response to touch, 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. **When a prompt, second stun is administered during the transition phase, a return to consciousness can be prevented, which also prevents a violation of humane slaughter rules.**

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.

In both captive bolt and electrically stunned animals, kicking will occur. Ignore the kicking (the head should be your focus). Research now indicates that kicking movements can occur in unconscious cattle where the corneal reflex is absent.

Paddling movements also will continue even when the spinal cord is severed. The reason for this is that the walking circuit is located in the middle of the spine.

Limb Characteristics: CO₂ Stunning

When pigs are stunned using CO₂ to induce insensibility, some animals may have slow limb movement. This is permissible.

Back and Neck Characteristics: All Stunning Methods

A post-stun spasm is normal and may cause some neck flexing, generally to the side, but 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 when a back leg kicks, but this should not be confused with a righting reflex.

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 the anatomy, sheep that are properly stunned and are insensible may not hang with their neck straight down. However, their heads should be limp and floppy.

Tongue Characteristics: All Stunning Methods

The tongue should hang out and 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.

Eyes 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. Corneal reflex 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.

Eyes Characteristics: 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. Instead, a hand should 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.

Eye Characteristics: CO₂

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 CO₂ stunned pig, and when this occurs, it often is associated with short CO₂ 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 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.

Response to Pain: All Stunning Methods

There should be no response to a nose pinch or a needle prick to the nose. It is important that the painful stimulus be applied to the nose to avoid confusion with spinal reflexes. Though effective stunning should be confirmed before the bleeding process, pigs entering a scald tub must not make a movement that is in direct response to contact with the hot water.

Vocalizations: All Stunning Methods

There should be no vocalizations such as a moo, bellow or squeal.

Refer, also, to the chart on page 34 Note that the chart is based upon a French study that uses the term “unconsciousness,” which is the same as insensibility.

Order of the events indicating return to sensibility:

Unconscious but beginning to transition back to consciousness and 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 sensibility and the animal should be immediately re-stunned:

Spontaneous natural blinking without touching like live animals in the yards.

Menace or threat reflex present (the eye will blink when a hand is waved in front of the eye without touching).

Response to a painful stimulus such as pricking the nose with a pin.

Righting reflex and raising the head.

Fully conscious and sensible. Complete return to sensibility can occur within 15 to 20 seconds.

<h2 style="text-align: center; color: #A52A2A;">Assessing Unconsciousness in Livestock During Slaughter</h2>		
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
<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • Eyelash reflex in response to touch • Rhythmic breathing where the ribs move in and out at least twice • Corneal reflex* 	<ul style="list-style-type: none"> • 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
<p style="color: #A52A2A; font-size: small;">*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.</p>		

Stunning to Bleed Interval

Captive Bolt—Both penetrating and non-penetrating captive bolts, also called “mushroom head stunners,” are effective if used and maintained correctly. However, non-penetrating stunners will cause less damage to the brain (Finnie et al., 2000). Practical experience has shown that for non-penetrating captive bolt stunners to be effective, the aim must be extremely precise. 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 2008).

CO₂—No maximum stun to bleed interval for large machines with long duration immersion. The maximum stun to bleed interval for short duration immersion is 30 seconds.

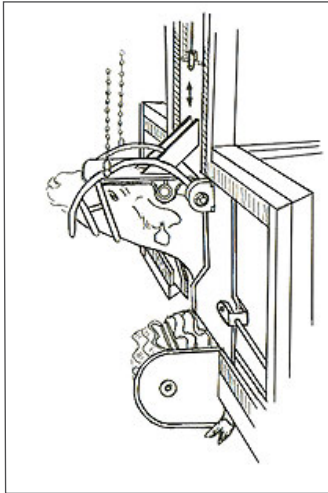
Electric Cardiac Arrest—Sixty seconds maximum. All large plants are already using less than this interval.

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 is used.

To view a larger version of the chart below, see page 131.

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; nystagmus absent	Uncoordinated kicking of hind legs 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 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 acceptable, no righting reflex present	None	Agonal gasping like a fish out of water 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 nose only and no response should be observed.
Pigs CO ₂	Must appear dead, hang straight and floppy	Straight and limp	Hanging straight, no righting reflex	No natural blinking	Uncoordinated kicking of hind legs acceptable, no righting reflex present	None	Agonal gasping like a fish out of water normal. Rhythmic breathing (ribs moving in and out at least twice) absent.	Relaxes shortly after being on the rail	A pinch or pinprick may be applied to 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 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 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; nystagmus absent	Uncoordinated kicking of hind legs 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 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 acceptable, no righting reflex present	None	Agonal gasping like a fish out of water 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 nose only and no response should be observed.

Section 5: Religious Slaughter (Kosher and Halal)



Center track restrainer being used for religious slaughter.

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

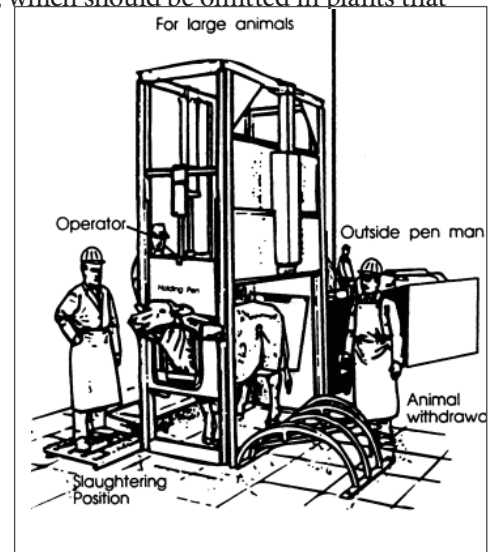
Shackling and hoisting, shackling and dragging, trip floor boxes and leg clamping boxes should never be used. In a very limited number of glatt Kosher plants in the United States and more commonly in South America and Europe, restrainers that position animals on their backs are used. For information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

The throat cut should be made immediately after the head is restrained (within 10 seconds). Small animals such as sheep and goats can be held manually by a person during religious slaughter. 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.

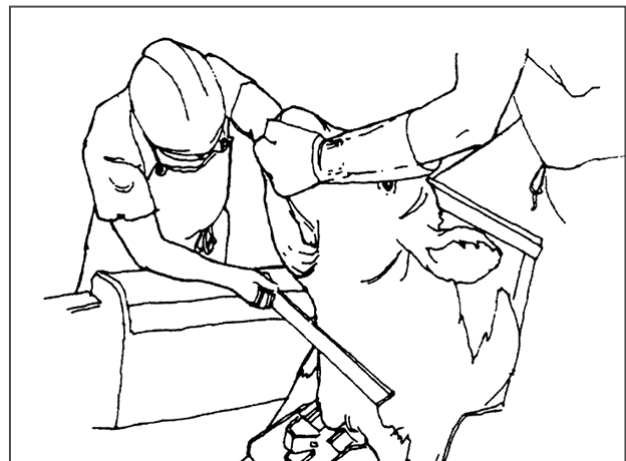
By evaluating the humane handling processes, communicating expectations, establishing measures, monitoring and providing feedback on results, even the most challenging of operations can meet or exceed industry standards. Stun efficacy does not apply to unstunned religious slaughter; however, Dr. Temple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

Signs of insensibility are quite different for un-stunned, religiously slaughtered livestock. If held in an upright box, loss of posture occurs, usually within 6-8 seconds in sheep and goats or 12-15 seconds in cattle, closely followed by eye roll and loss of an alertness in the ears. Often the head will flex back as well. Auditors can 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 breath after the eye roll for a period of several seconds. Shackling and hoisting can occur once the animal is completely insensible; however 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.

Halal slaughter has fewer specifications for the type of knife that is used compared to Kosher slaughter. In Halal 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



Upright Pen for religious slaughter of cattle



Restrainer system for religious slaughter of calves and sheep

Total Animals	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	Number of cattle evaluated N =1810	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	13	1	13	Percent	1.97%	0%

Table 1. Bleed Efficacy Data: Dec. 2010 to Dec. 2014 Table 1 at left 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 animal 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 wound open.

Table 2 below from weekly unannounced reviews (188 total audits) 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 availability 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.

Total animals	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
N=7718	0	208	48	0	346
AMI Pass Limit %	0	25	3	1	5
Plant Avg. Percent	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. Audit Data Summary (NAMI Measures) Dec. 2010 to Dec. 2014. 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).

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.

Cattle vocalization percentages should be five percent 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 five percent 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.

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 not be removed from the restraining box until after collapse (LOP – Loss of Posture) and eye roll in an upright box or eye roll 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 are performed, such as skinning, dehorning, leg removal or severing the spinal cord, ALL signs of brain death must be observed. The 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 rollback within 30 seconds (Grandin, 2015). (See charts on page 36 that detail data from one well-managed kosher slaughter plant:)

The OIE (2016) guidelines 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. The following criteria must be met for a Kosher or Halal plant that does not practice pre-cut stunning to pass a NAMI audit:

1. Restraining to position conscious animals for the throat by hoisting by the limbs, dragging a leg, clamping boxes or trip floor boxes will result in an automatic audit failure.
2. Upright restraint is preferred.
3. Vocalization score of 5% or less in cattle entering and while in box. Do not score vocalizations in sheep.
4. Falling score is the same as conventional slaughter: 1% or less.
5. Electric prod use score is the same as conventional slaughter: 25% or less
6. Shoot with captive bolt if collapse (LOP = Loss of Posture) and eye rollback do not occur within 40 seconds.
7. Before invasive dressing procedures are started, the following indicators of brain death **MUST be absent**: a:) corneal reflex; b:) eyelash reflex; and c:) rhythmic breathing

Upright Pen—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 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 pusher 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.

Head restraint is the last step. The operator should avoid sudden jerking of the controls. Many cattle will stand still if the box is slowly closed up around them and less pressure will be required to hold them. Ritual slaughter should be performed immediately after the head is restrained (**within 10 seconds of restraint**).

An 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.

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 Shehita 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 locker 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.).

Section 6: Recommended Handling of Disabled or Compromised Livestock

Aggressive handling can lead to injured, stressed or fatigued livestock. Although non-ambulatory animals (sometimes called “downers,” “fatigued,” “slows” or “subjects”) represent a small fraction of all livestock arriving at packing plants, they are significant because they require special attention in the areas of handling, transporting, holding pens and inspection areas.

Since December 30, 2003, all non-ambulatory cattle arriving at packing plants in the U.S. are to be condemned. Non-ambulatory pigs, sheep and goats may be slaughtered if inspected and passed by a USDA veterinarian.

Non-Ambulatory Cattle

Many incidents of non-ambulatory cattle can be prevented by good management at the loading site. Producers need to be diligent in ensuring that all animals are fit for transport and will be able to withstand the vigors of transport. Non-ambulatory cattle should be euthanized with a captive bolt stunner on the truck and disposed of. 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, they must be protected from injury caused by other animals and they must be stunned before being loaded onto any moving device.

Cattle that become non-ambulatory must be euthanized and condemned. If after euthanizing, blood gets on the chute, wash it off to prevent other animals from balking as they approach.

Mounting activity and animal fights can lead to injuries that can cause animals to become non-ambulatory. This can be a problem, especially with bulls. Bulls and steers that are mounting other animals should be placed in separate pens. Mounting is a common cause of bruises and crippling injuries on cows.

Non-Ambulatory Pigs, Sheep and Goats

There are two basic types of non-ambulatory pigs. The first type are those pigs that are in a poor physical state before leaving the farm, often older breeding stock. Another type is a fatigued pig that becomes non-ambulatory. According to the National Pork Board, a fatigued pig is defined as having temporarily lost the ability to walk, but has a reasonable expectation to recover full locomotion with rest. Many of these animals can recover and walk independently if given time to rest.

Trucks carrying non-ambulatory animals should unload ambulatory animals first, taking care not to compromise the non-ambulatory animals. If a non-ambulatory animal impedes unloading, it should be properly removed before continuing with the unloading process. Ambulatory pigs must not be driven over non-ambulatory animals. Delayed unloading can cause death losses and downer animals due to extreme temperatures, exposure and stress.

To off load a non-ambulatory animal from a truck, unloaders should use the process that creates as little stress as possible on the animal. Live animals must never be dropped to the ground from a truck. In some cases, a slide board or cripple cart may be helpful. Animals may be rolled onto a wide piece of conveyer belting that has been stiffened on one end



A well-designed cart for moving compromised livestock.

with metal bars to prevent curling when the belting with the animal on it is dragged. The board can then be dragged off the truck and the animal loaded into a suitable mechanical device for transport to an inspection area. Note: Plants based in Canada 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.

Federal humane slaughter regulations prohibit dragging of downed or compromised livestock in the stockyards, crowd pen or stunning chute. This also includes pushing, pulling and scooting (if the animal has been euthanized, it may be dragged). By using slide boards, sleds and cripple carts, animals can be transported humanely and efficiently to a pen or other area where they can be examined by an inspector, stunned and moved to slaughter. 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. In pork plants, the single file lead up to the stunning chute or restrainer should be equipped with side doors so that non-ambulatory pigs can be easily removed.

Inspection and Slaughtering Regulatory Considerations

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.

Cattle that are non-ambulatory must be euthanized and may not be slaughtered for human consumption. At cattle plants, non-ambulatory cattle arriving on trucks should be humanely euthanized on the truck and removed from the truck for disposal. 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 are 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 (9CFR309.2).

Once the USDA inspector has examined the animal, plants should identify the earliest possible point during production when that animal may be slaughtered “separately.” This separation point should be discussed with the USDA inspector. It should be noted that plants need not always wait until the end of a shift to slaughter a segregated animal. Waiting can prolong a disabled animal’s suffering. Plants and inspectors should cooperate to ensure non-ambulatory animals are slaughtered as soon as possible after arrival.

CHAPTER 3: TRANSPORTATION AUDIT GUIDELINES

This chapter and the one that follows detail the objective criteria to use in evaluating humane handling livestock during transport to meat plants by analyzing factors once trucks arrive at plants. The Institute recommends conducting internal audits at least weekly and varying 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 chapter on transportation of livestock covers the principles of good animal handling practices during the receiving and unloading of livestock at processing facilities for beef, 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:

1. Arrange with plant management the best time to perform the audit to ensure the plant will be receiving animals and a representative audit sampling can be acquired.
2. Establish with plant management which industry transportation program guidelines the establishment utilizes as a standard. These are the guidelines that the auditor will audit against. Plants may use National Pork Board's "Transport Quality Assurance" (TQA™) program (swine), the Beef Quality Assurance "Master Cattle Transportation" (TBQA) program (cattle), or the Canadian Livestock Transporter (CLT) Certification Program (swine, cattle, poultry, horse and sheep), or a combination of standards. Note: TBQA is expected to be renamed "Transport Quality Assurance" in Fall 2017.
3. Establish with plant management the location of the unloading area and to what areas the audit will be limited. The unloading area parameters would 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 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 respected by the auditor. The balance of the handling and stunning areas will be covered in the facility audit.
4. The auditor must in no way impede the unloading of animals. The auditor must find a place to stand that will not cause the animals to balk and where the auditor will be safe. The auditor must not enter the trailer while the animals are being unloaded.
5. It is recommended that all auditors participate in the National Pork Board's "Transport Quality Assurance" (TQA™) program (swine), the Beef Quality Assurance "Master Cattle Transportation" (TBQA) program (cattle), the Canadian Livestock Transporter (CLT) Certification Program (swine, cattle, poultry, horse and sheep) or a similar program that covers other species to educate themselves on the current transportation practices and guidelines for that species.
6. There may be core criteria points that will not be applicable 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.

7. Some of the 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.

8. 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.

9. The number of trailers 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.

10. Observation of an egregious act of abuse always results in a failed audit.



Straight Trailer



Gooseneck Farm/Livestock Trailer



Pot Belly/Drop Center Trailer

Completing the Transporter Audit form

Trailer Number. In this space, enter the sequence number of the trailers audited and the truck 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. Once this number is obtained there is no need to count the animals as they come off the trailer.

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 other recognized swine training program.

Section 2: Scoring the Audit

Core Criteria 1 applies to the plant only. It is to be 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.

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

This Core Criteria 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:

1. 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™, TBQA, CLT or a combination of recognized specie-specific programs.

2. Plant provides extreme temperature management tools (water, fans, protection, etc.).

As stated in Chapter 1, transportation and temperature extremes can be detrimental to animal well-being and meat quality; thus, it is crucial to mitigate environmental temperature related stress during the process of animal transportation. Temperature extremes can be a result of both hot and cold weather; consequently, plants must have appropriate accommodations and action plans to address each extreme. The tools provided may vary depending on the infrastructure and geographical location of the plant, current weather conditions, and species. Temperature management should be in compliance with and audited against the industry transportation program guidelines the establishment utilizes as a standard. Some plants may choose to create their own processes to minimize temperature related stress in animals that exceeds proposed industry guidelines. Temperature management tools must be available to transporters to assist in alleviating temperature related stress in all species. Refer to Chapter 1 and the establishment's selected industry standard for verification of compliance.

3. Arrival management process minimizes waiting time at the plant. Plants should have a policy in place that will assist in minimizing 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.

4. Emergency plans 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 that will not be unloaded within 60 minutes of arrival. 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 disposition
- Requesting that crews postpone loading of animals at the source
- Requesting that transporters unload animals at an alternate facility

5. 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. 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. 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. In the case of fatigued pigs, they 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.

*An animal should be considered non-ambulatory if it cannot get up or if it can stand with support, but is unable to bear weight on two of its legs. (Source: National Pork Board).

** 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).

6. Acceptable handling tools available and utilized as needed. The plant must have handling tools available for plant staff and transporters to aid in the movement of animals off of trailers. As part of internal training for plant staff and listed expectations of transporters, plants should have a procedure in place describing the proper use of handling tools. These tools may include but are not limited to, rattle paddles, sort boards, witches capes, or nylon flags. Handling tools may not be used to aggressively strike or injure animals. For sheep, some plants may use “lead” animals which include other sheep or goats as an animal handling tool. These animals are trained to go on the trailer and lead the other sheep off the trailer.

7. Availability of acceptable euthanasia tools. For use in the lairage (yards/barns) for euthanizing animals, the following tools are acceptable: for cattle, firearms and captive bolt may be used. For pigs and sheep, firearms, penetrating captive bolt and a handheld cardiac arrest electric stunner may be used. One of these appropriate euthanasia tools and an employee(s) trained on the use of these tools must be available at all times when animals are being received. A prudent establishment will always have two appropriate euthanasia tools immediately available when euthanasia is performed.

8. Maintenance records for euthanasia equipment, proper storage and employee training for euthanasia. 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. Ammunition should be stored in a moisture proof container because moisture, even humidity, can make the ammunition ineffective. 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. Proper cleaning and maintenance of equipment will result in effective stunning. Documentation of cleaning and maintenance must be provided for each piece of equipment.

9. Gates in unloading area swing freely, latch securely and have no sharp protrusions. Only gates that are 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 directly injure the animals in any way. Gates should swing freely and latch securely to keep animals in the pen. Gates should never be slammed shut on an animal passing through it. Gates should be constructed such that it will not allow for an animal’s head or limb(s) to become wedged under or stuck through a gap or opening (hole).

10. Non-slip flooring. Examples of non-slip flooring include textured concrete, grooving, steel bars, rubber mats, wood shavings/chips, sand, and salt. Manure and urine build up should be kept to a minimum so that it will not cause slips and/or falls. The unloading area should have non-slip flooring to allow the animals to maintain good footing and to prevent slipping and falling.

11. Unloading area and ramps in good repair (e.g. no broken cleats, holes or gaps). The unloading area should be properly maintained and in good repair. The unloading area should have no 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 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 and to ensure the plant’s compliance to timely unloading. In winter weather conditions, the unloading area must be free of ice.

12. Adequate lighting. The unloading area must have lighting sufficient to observe animals during the unloading process.

13. Staff 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.

14. Properly Trained Staff. Verify that the plant has a training program and that staff handling animals at unloading are 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 – 10 to 11 of the criteria met

Serious Problem – 9 or fewer of the criteria met

Core Criteria 2: Set-up and Loading of Trailer

1. Compartments gated. Swine, sheep and veal calves. 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 there are questions regarding the type of gating in the trailer, please discuss with the driver. 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).

2. Trailer 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 pigs, injured pigs, EOA or DOA. 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, EOA or DOA. If any of these indicators of overcrowding are present, the auditor may assess the loading density based on industry standards to determine if the load was not in compliance. Gates should be able to be closed easily without squeezing animals. Animals must have enough room to stand without climbing on top of each other and lay down (if they choose) without laying on each other.

3. Incompatible animals segregated when required. This prevents the 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 other aggressive, intact males and significantly larger animals separate from smaller ones.

4. Trailer 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 as squarely and flush as possible with the unloading ramp/dock. It may be necessary for a driver to realign his/her trailer if it is not aligned properly. 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 that 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 for legs/feet to get caught/injured or for animals to get wedged or escape.

SCORING:

Swine, sheep and veal calves apply to all 4 core criteria: gating, loading density, animal segregation, and proper alignment (worth 1 point each, for a total of 4 points possible). Cattle apply to 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 score or greater

Not Acceptable – Less than 90% average score

Serious Problem – Less than 80% average 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 particular establishment. Corrective actions should also include communication with 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 would include, but not be 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 insure 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, the floor or ramps - anywhere that the animal may come in contact with the 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 criteria. 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 be in compliance with and audited against either the establishment's written policy or the industry transportation program guidelines that the establishment utilizes as a standard.

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

Core Criteria 3: Timeliness of Arrival of the Truck and Trailers and Animal Unloading

This Core Criteria audits the timeliness of truck arrivals and the length of time trucks spend in line waiting to unload. As discussed in Chapter 1, the time that animals spend on trucks is directly correlated to animal well-being and final meat quality.

SCORING:

For scoring the unloading process at the plant, the scoring 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 of the trailer is started within 60 minutes of its arrival at the plant. Points will then be deducted for each 30 minutes past the 60 minutes it takes to start unloading. Actual arrival time and time to unload (from when the first animal steps off the trailer until the last animal walks off) will be noted separately as secondary items. All species should be unloaded within 60 minutes.

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

The totals for all trailers audited will be added up at the end of the audit to determine the final score.

- Excellent – 95% or greater score
- Acceptable – 85% or greater
- Not Acceptable – Less than 85%
- Serious Problem – Less than 80%

If any individual 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; timing ends when the last animal is removed from the trailer.

Core Criteria 4: Falls

Falls are to be scored in the unloading area only after all 4 of the animal's limbs are on the unloading ramp or dock. Slips will be scored as a secondary criterion and tallied under this core criterion. Please refer to Chapter 4, Core Criteria 3 for additional information and a scoring guide for falls. Additional secondary criteria for the transportation audit are below and should be noted on the audit form accordingly.

Excellent – No falling

Acceptable – 1% or fewer falling (body touches floor)

Not acceptable – More than 1% falling down

Serious Problem – 5% or more 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.

Core Criteria 5: Electric Prod Use

Electric prod use is to be scored in the unloading area only after all 4 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. In fact, 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. When a plant chooses to use an electric prod to assist in the unloading process, it should be viewed as a tool of last resort. 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 sensitive areas is a willful act of abuse.

Excellent – 0%

Acceptable – 10% or less

Not acceptable – More than 10%

Serious Problem – 25% or more

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 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 Criteria 1 for 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. Aggressively striking may include but not be limited to:

1. Handling tools may not be brought over handler shoulder height multiple times
2. Excessive number of contacts of handling tool on animals
3. Continually using both hands to hold handling tool to cause more physical force
4. Aggressively utilizing 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 prod, sort sticks/rods, etc. are considered contact driving aids)

Handling tools may not be used in a way that deviates from the manufacturer’s intentions. Deviations may include but not be limited to:

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

Core Criteria 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. Animals that are compromised are more likely to become fatigued, injured, non-ambulatory, or die during transport. Non-ambulatory compromised animals include severe lameness where an animal is not able to bear weight on two legs. Other factors that may affect fitness during transport include weather, trailer condition, other animals, driver skill, genetics, footing and length of journey. Compromised*, unfit** animals are scored in this core criterion.

***Compromised Animal:** A compromised animal is an animal with reduced capacity to withstand transportation but where 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.

****Unfit Animal:** 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. Unfit animals if transported would endure unjustified and unreasonable suffering. Unfit animals may only be transported for veterinary treatment or diagnosis.

Non-Ambulatory Pigs, Cattle and Sheep - An animal that is unable to bear weight on two legs or to move without being dragged or carried, regardless of size or age. This includes, but is not limited to, acutely split animals (i.e. having a ruptured pre-pubic tendon) and animals that require hobbles to assist in the healing of injuries or to prevent further injury.

Severe Injuries/Conditions in Pigs, Cattle and Sheep – Examples of severe injuries in pigs include broken legs, bleeding gashes or deep, visible cuts, prolapses (larger than a baseball or dark in color and necrotic), and body pressure sores. Severe injuries in cattle and sheep include broken legs, bleeding gashes or deep, visible cuts, necrotic prolapses and severe cancer eye. For sheep, be sure to exclude superficial shearing cuts in the skin layer. Animals with broken limbs should not be loaded.

Severely Lame Pigs, Cattle, and Sheep – Severely lame animals are defined as injured, crippled, or physically disabled animals that appear to have 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. Severe lameness is indicated by an animal’s inability to support itself on two legs. 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 (Source: National Pork Board). Cattle and sheep experiencing heat stress will exhibit open-mouthed panting and may be reluctant to move.

Frostbite (SWINE 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 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.

SWINE:

- 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.
- Serious Problem – More than 4% compromised animals on the trailer at arrival.

Swine Example: 5 trailers are audited. 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:

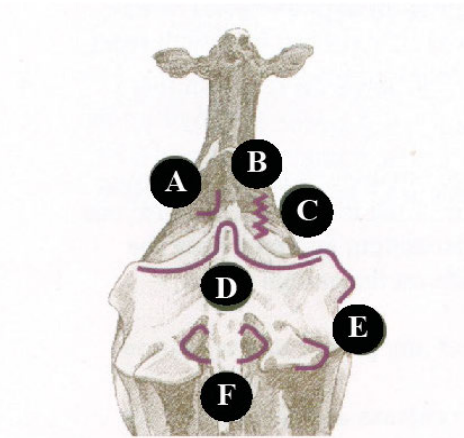
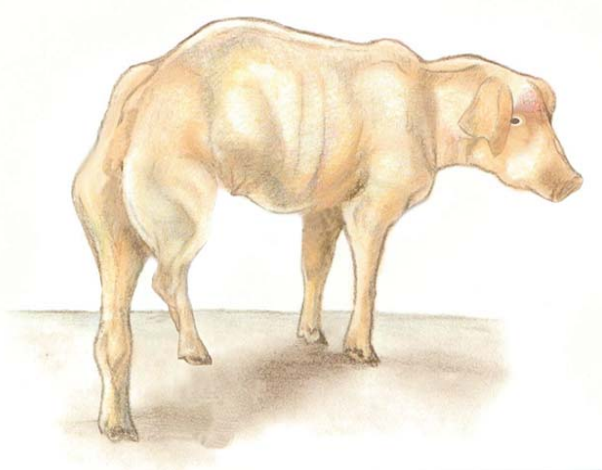
- Excellent – 1% or less compromised animals on the trailer at arrival.
- Acceptable – 2% or less compromised animals on the trailer at arrival.
- Not Acceptable – More than 2% compromised animals on the trailer at arrival.
- Serious Problem – More than 3% compromised animals on the trailer at arrival.

Secondary Items for Core Criteria 6

Secondary Item: Number of dead animals on the trailer. Dead on Arrivals (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.

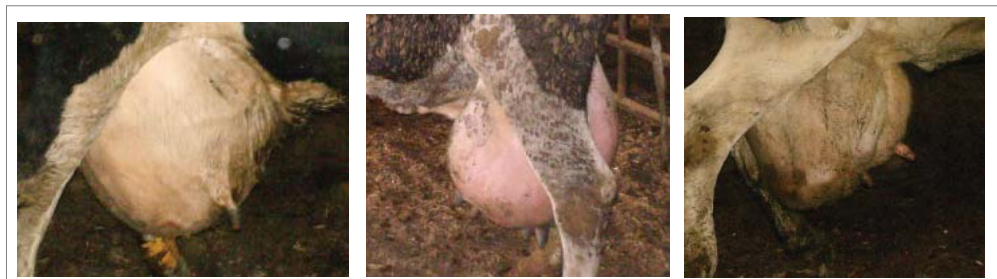
Secondary Item: Does the plant have a method for communicating back to the site of trailer loading? Infrequently, trailers arrive at plants containing excessive number of DOAs or animals in other such compromised situations. Plants should have a practice of communicating these issues back to the producer 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 specific 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 in poor body condition will be extremely thin and emaciated; their ribs and backbones can be easily seen. 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. 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.



A – Sharp angle between vertebrae, saw-like topline
 B – Individual vertebrae distinct, saw-like topline.
 C – Ends of short ribs very prominent
 D – Distinct depression between the hooks and spine
 E – Hooks and pins very sharp, no tissue cover
 F – Deep cavity under tailhead
Humane Handling Guide of Dairy Cattle, Alberta Milk

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 Criteria 7: Willful Acts of Abuse/Egregious Acts

Any willful act of abuse 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 animal's mouth, eyes, ears, nose, anus, vulva, testicles or belly;
3. **Deliberate slamming** of gates on animals;
4. **Malicious driving of ambulatory animals** 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 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);
6. **Hitting or beating** an animal;
7. **Animals frozen** to the floor or sides of the trailer;
8. In sheep operations, **lifting an animal by the wool or throwing a sheep**.

CHAPTER 4: AUDITING ANIMAL HANDLING AND STUNNING

This chapter covers auditing animal handling and stunning in packing plants and includes the NAMI transportation, pig, cattle, and sheep slaughter audit forms that can be used as part of a corporate animal welfare program.

Core Criteria 1: Effective Stunning

Plants are evaluated on the effects of a single application of captive bolt, gunshot or electric stunning or exposure to CO₂. An animal displaying any signs that it is starting the process of returning to sensibility must receive a second stun to prevent return to full sensibility. This second stun will result in one point subtracted from the stunning score. Use the chart on page 33 to determine signs of returning to sensibility.

Effective Captive Bolt or Gunshot Stunning

When evaluating the effectiveness of captive bolt or gunshot stunning, the auditor monitors whether or not an animal is rendered insensible with a single shot.

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 percent or more instantly rendered insensible with one shot

Acceptable – 96 percent or more instantly rendered insensible with one shot

Not Acceptable – less than 96 percent instantly rendered insensible with one shot

Serious Problem – less than 95 percent instantly rendered insensible with one shot

If one-shot efficacy falls below 96 percent, 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 with the outer housing that surrounds the bolt does not count as a missed shot.

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 return to sensibility before the second shot is applied. This is necessary to ensure that the stunner is capable of rendering 96 percent or more of the animals insensible with a single shot.

Electrical Stunning Systems for Pigs and Sheep

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

If head-only stunning is used, the tongs must be placed so that the current passes through the brain. Tongs may be placed on both sides of the head or one tong on the top and the other on the bottom of the head. Another scientifically verified location for head-only stunning with a stunner with two fixed prongs is to place the prongs on either the hollow behind both ears or on the forehead. Stunning tongs or wands must never be placed on the neck because the current will bypass the brain.

For cardiac arrest stunning of pigs and sheep with a single stunning current, one electrode must be placed on the body and the other one must be placed either on the forehead, side of the head, top of the head, or in the hollow behind the ear. The head electrode must never be placed on the neck because this would cause the current to bypass the brain, or to sensitive areas such as inside the ear or in the eye or anus. Electrodes must be placed firmly against the animal because breaking electrical contact during the stun may reduce the effectiveness of the stun.

In addition, 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 squeal. This is called “hot wandering.” No more than one percent of animals should vocalize due to hot wandering. Hot wandering should not be measured for sheep because they do not vocalize when they are hurt.

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. Use whole numbers for 100 and 50 animal audits. For data collection on large numbers of animals, the fractional percentages can also be used.

Electrical Stunning System Operation for Pigs and Sheep

Rating	Placement Criteria	Vocalization due to placement of energized wand
Excellent	100 percent correct placement	No vocalization
Acceptable	99% correct placement	1% or less
Not Acceptable	Less than 99% correct placement	More than 1%, up to 4%
Serious Problem	Less than 96% correct placement	More than 4%

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 that fall into this category 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.

Before bleeding: 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 percent of the animals show no signs of starting the process of return to consciousness

Acceptable – 98 percent or more of the animals show no signs of starting the process of return to consciousness

Not Acceptable – less than 98 percent of the animals show no signs of starting the process of return to consciousness

Serious Problem – less than 95 percent of the animals show no signs of starting the process of return to consciousness

CO₂ Stunning System Operation for Pigs

The efficacy of CO₂ and other types of gas stunning methods is determined when insensibility is scored. The core criterion is that the animal remains insensible after exiting the chamber. However, the gondola or other conveyance for moving animals into the gas system must also be evaluated for animal handling. The gondolas, elevator boxes or other apparatus used for moving the animals in and out of the gas must not be overloaded.

Score 50 gondolas in large plants that process more than 500 pigs per hour per CO₂ machine 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. Score on a per gondola basis:

Excellent – No gondolas are overloaded on a 50 gondola audit

Acceptable – Four percent or less of gondolas are overloaded

Not Acceptable – More than four percent are overloaded

Serious Problem – The person moving the animals forces one or more pigs to jump on top of the other pigs in the gondolas with an electric prod or by hitting, shoving or kicking.

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

Special Audit Point for Plants With CO₂ Systems With Shorter Gas Exposure Times: Plants with CO₂ systems that have shorter gas exposure times may need to check insensibility on the shackle table in addition to checking it on the rail. Plants that fall into this category should consider adding an audit point to their regular audits.

When evaluating the effectiveness of CO₂ in plants with short CO₂ exposure times, the auditor monitors whether or not an animal is rendered insensible when it emerges from the CO₂ chamber as evidenced by the absence of signs that an animal is starting the process of a return to consciousness.

Score a minimum of 100 animals on the bleeding table before bleeding 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 percent of the animals show no signs of starting the process of return to consciousness

Acceptable – 98 percent or more of the animals show no signs of starting the process of return to consciousness

Not Acceptable – less than 98 percent of the animals show no signs of starting the process of return to consciousness

Serious Problem – less than 95 percent of the animals show no signs of starting the process of return to consciousness

Stunning to Bleed Interval

This parameter does not have to be measured for welfare reasons unless non-penetrating captive bolt or head only reversible electric stunning is used. To avoid return to sensibility, animals stunned with a non-penetrating captive bolt should be bled promptly, but no longer than 15 seconds after stunning. Pigs should be bled within 15 seconds and cattle and sheep should be bled within 10 seconds when head only reversible electric is used.

Core Criteria 2: Bleed Rail Insensibility

Auditors should monitor a minimum of 100 animals in large plants and look for signs of consciousness, such as eye reflexes, vocalization or the righting reflex. When a 100 animal audit is performed, 100 percent must be rendered insensible. There is a zero tolerance for beginning any slaughter procedure such as skinning the head, leg removal or scalding on an animal that shows any sign of return to sensibility.

All species should have a limp, floppy head. Animals will sometimes have a sideways neck flexion that relaxes in a few seconds. This should not be confused with a righting reflex. Cattle and pigs should hang straight on the rail and have a floppy head. Sheep may hang with a raised head due to differences in anatomy, but their heads must be floppy. A head that flops upward for a brief moment when the legs kick should not be confused with a righting reflex in which an animal is clearly trying to remove itself from the rail.

Uncoordinated limb movements should be ignored after all types of stunning. If the tongue is hanging straight out and is limp and soft, the animal is definitely insensible. Gasping like a fish out of water is a sign of a dying brain and should be ignored after electric or CO₂ stunning. However, twitching noses, or the tongue moving in and out, are signs of possible movement into the transition phase before a return to consciousness. The animal must immediately be re-stunned. With certain types of electric stunners, the seizure may mask the limp and floppy head for up to 60 seconds in properly stunned animals.

Waving the hand in front of the eye to test for the “menace” reflex is a good method for determining insensibility in electrically stunned animals; touching an electrically stunned pig’s eye may cause it to pop open suddenly, which may be misinterpreted as a blink. When captive bolt or gun shot is used, it is acceptable to touch the eye to check for corneal reflex. The person scoring insensibility should look for spontaneous, natural blinks. An animal that blinks spontaneously would be scored as sensible. Nystagmus, or vibrating eyelids, is a sign of a poor stun in captive bolt stunned animals. However, in electrically stunned animals, it is permissible to have some animals with vibrating lids or eyes. (See chart on page 57)

While no sensible animal should be observed hanging on the bleed rail during a 100 head audit, on rare occasions, it is possible that an animal with partial return to sensibility will be observed. Use these figures when evaluating plant performance over time by averaging the scores of many audits. When a second application of the stunner is done in any location before the animal is hoisted, it is counted as a second shot. It is not counted as a sensible animal on the bleed rail.

Cattle Insensibility

Shows one or more signs of return to sensibility:

Excellent – 1 per 1,000 or less

Acceptable – 1 per 500 or less

Pig and Sheep Insensibility

Shows one or more signs of return to sensibility:

Excellent – 1 per 2,000 or less

Acceptable – 1 per 1,000 or less

For all of the species: Dressing procedures such as skinning, scalding, limb removal, etc. must never be performed on an animal showing any sign of a return to sensibility. The animal **MUST** be re-stunned.

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
<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • Eyelash reflex in response to touch • Rhythmic breathing where the ribs move in and out at least twice • Corneal reflex* 	<ul style="list-style-type: none"> • 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
<p><i>*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.</i></p>		

Core Criteria 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, and if slipping or falling is observed, steps should be taken to correct the problem. Because survey results indicate that the greatest slipping and falling problems were in the stunning chute area, scoring should be done in this area.

It is important to be clear about the definitions of falls. They are as follows:

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. All falls that occur in a stun box or restrainer before stunning or religious slaughter are counted as falls. Equipment that is designed to cause falling before stunning or religious slaughter should not be used.

Scoring of Falling in the Stunning Chute Area (All Species)— 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. Formal scoring should be done if falling is observed.

Score in the restrainer entrance, stunning box, lead up chute, crowd pen and in the final loading pen where pigs move into a gondola or other conveyance for gas stunning. Observation without formal scoring should be made in the stockyard pens and scales. For all species, falls caused by powered gates are counted.

Excellent – No falling

Acceptable – Fewer than one percent falling

Not Acceptable – More than one percent falling

Serious Problem – Five percent or more falling

For scoring of very small plants, see page 62.

Core Criteria 4: Vocalization

Cattle Vocalization Scoring in the Crowd Pen, Lead-up Chute, Stunning Box or Restraint Device. Vocalization is an indicator of cattle discomfort during handling, restraint and stunning. Score a minimum of 100 animals in large plants and 50 in smaller plants. Very small plants should score an hours of production. For data collection on large numbers of animals, the fractional percentages can be used. A single animal that vocalizes more than once is counted as one vocalization.

Excellent – One percent or less of the cattle vocalize

Acceptable – Three percent or less of the cattle vocalize

Not Acceptable – More than three percent vocalize

Serious Problem – More than 10 percent vocalize

Where a head holder is used, five percent vocalization is acceptable.

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

When vocalization is being evaluated, cattle from more than one feedlot or ranch should be observed.

There are variations in the tendency of some cattle to vocalize. To make the scoring simpler, each animal should be classified as either a vocalizer or a non-vocalizer.

Cattle vocalizations are tabulated 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 occurring in the yards should not be tabulated because cattle standing quietly in the yards will often vocalize to each other.

Vocalization Scoring of Pigs. Because it is impossible to count individual pig squeals 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. A group of pigs that excessively squeals should be assessed to identify the cause. An

animal should be scored as vocalizing if the vocalization is determined to have been provoked by handling or equipment.

It is important to count squeals only and not grunts. The U.S. Department of Agriculture (USDA) defines a squeal as an extended sound (0.5 - 2.0 sec.) of both high amplitude and high frequency produced with an open mouth, indicative of a high level of excitement, fear, or pain. Score only the squeals that can be determined to be provoked by equipment or humans. 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. If there is no way to identify the cause of a vocalization, it should not be counted.

During handling, there are six major causes of provoked squeals/vocalizations that include, but are not limited to:

Electric prod use

Sharp edges

Sores or poor body condition

Pressure from the hold-down rack

Sides of a v-restrainer moving at different speeds, and

Hitting or poking livestock.

If you cannot determine a cause, the squeal should be treated as unprovoked and not counted. 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.

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.

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.

When CO₂ stunning is evaluated, a stunning cycle consists of the time to fill a gondola. Because vocalization scores can vary by auditor, number of pigs and by 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.

Criteria for Vocalization of Pigs in Conveyor Restrainers

Do not score grunts or squeals that can be attributed to a misapplied stun wand or squeals that appear unprovoked by humans or by equipment. Score a minimum of 100 pigs in large plants and 50 pigs in smaller plants.

Excellent – Two percent or less of the pigs squeal in the restrainer; none due to a misapplied stunner.

Acceptable – Five percent or less of the pigs squeal in the restrainer; none due to a misapplied stunner.

Not Acceptable – More than five percent squeal in the restrainer; none due to a misapplied stunner.

Serious Problem – More than 10 percent squeal in the restrainer; none due to a misapplied stunner.

When 50 or less pigs are scored, a single squealing pig is acceptable. When more data is collected and averaged, use the five percent level for an acceptable rating.

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 smaller plants.

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

Note: Vocalizations are not scored on sheep due to species differences.

For scoring very small plants, see page 62.

Core Criteria 5: Electric Prod Use

Reducing the use of electric prods will improve animal welfare. Shocking livestock with 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.

Core Criteria 5: Electric Prod Scoring Criteria for Cattle

	Percentages of Animals Prodded
Excellent	5 percent or less
Acceptable	25 percent or less
Not Acceptable	more than 25 percent
Serious Problem	50 percent or more

Core Criteria 5: Electric Prod Scoring Criteria for Pigs Entering In Single File in Either Electric or CO₂ Systems

	Percentages of Animals Prodded
Excellent	10 percent or less
Acceptable	25 percent or less
Not Acceptable	more than 25 percent
Serious Problem	50 percent or more

Core Criteria 5: Electric Prods Scoring for Pigs With CO₂ /Group Stunning Systems– (No Single File Chute) or Systems Where Pigs Are Stunned on the Floor in Groups

	Percentages of Animals Prodded
Excellent	0 percent
Acceptable	5 percent or less
Not Acceptable	more than 5 percent
Serious Problem	10 percent or more

Core Criteria 5: Electric Prod Scoring of Sheep

	Percentages of Animals Prodded
Excellent	0 percent
Acceptable	5 percent or less
Not Acceptable	more than 5 percent
Serious Problem	10 percent or more

Note: Electric prods should only 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.

Core Criteria 6: Willful Acts of Abuse/Egregious Acts

Any willful act of abuse 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 animal's mouth, 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.
8. In sheep operations, lifting an animal by the wool or throwing a sheep.

Core Criteria 7: Access to Water

All livestock must have access to clean water in holding (lairage) pens in plants. Each pen must have a water trough, water nipples (in the case of pigs) or other water source. If livestock are non-ambulatory, plants should provide shallow water pans, buckets or water sources within easy reach of livestock. Active handling areas such as unloading pens, staging alleys and crowd pens do not require access to water unless livestock are held for more than 30 minutes in those areas.

Auditing Multiple Factors Simultaneously

In many plants, it is possible to score more than one core criteria at a time. 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 criteria is audited separately. Due to variance in plant layout and design, auditors must determine where they can stand to observe multiple criteria. It is essential that views be unobstructed.

When auditing, if a steer vocalizes when it is poked with an electric prod, it is scored as one point for use of the prod and one additional point for the vocalization. Vocalization scoring is per animal. If the same steer moos three times, it is still one point for vocalization. A series of moos in very rapid succession should be scored as a single animal. A single distressed cow or steer will often vocalize with several short moos that are closely spaced.

When slips and falls are scored in the crowd pen, all slips and falls that occur in the crowd pen and in the groups of animals entering the crowd pen are counted. If a slip or a fall is observed in a group of animals that is outside this area, it 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.

When stunning is being scored, all slips, falls, and electric prod use that can be observed are scored; slips are only counted as a secondary criteria. In cattle, all vocalizations that occur in the stun box or religious slaughter box are scored. In pigs, only vocalizations provoked by electric pods or equipment problems are scored.

If you have already observed 100 animals to count prod scoring 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 prod, for example, that is an egregious act of abuse, that should be documented as an egregious act even if you have already prod scored 100 animals. Egregious acts always count and they always result in a failed audit.

Scoring of Very Small Plants

Small beef plants that process 25 or fewer beef cattle per hour may need adjustments in scoring due to small sample size and differences in cattle behavior. Ideally, 50 or more cattle should be scored, but this is often not practical in a plant that processes 5 to 10 cattle per hour.

Typically, even in very small pig plants, a larger number of pigs will be available. If larger numbers are available even in very 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. Pooled small data sets can be scored per the North American Meat Institute 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 98 percent 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 percent first shot efficacy score must be maintained. On small data sets of 10 to 20 cattle, all cattle (100 percent) must be rendered insensible prior to hoisting to pass the audit.

In very small beef plants with line speeds of less than 25 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.

Conclusion

An acceptable level of animal welfare can be maintained if scores for the core criteria for stunning, animal insensibility, falling, vocalization and electric prod use are in the acceptable ranges. Scoring performance on these variables is simple and easy to do under commercial plant conditions.

In conclusion, managers must be committed to good 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 that you measure, which is why auditing is important. Maintaining good handling and stunning practices requires continuous measurement, monitoring and management.

CHAPTER 5: OFFICIAL NORTH AMERICAN MEAT INSTITUTE AUDIT FORMS

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

TRANSPORTATION AUDIT FORM: CATTLE

Date: _____

Name and auditing company: _____

Plant location: _____

Plant contact: _____

Number of trucks audited: _____

Temperature/weather conditions: _____

Core Criteria 1: Plant transportation policy and preparedness for receiving animals.

- | | |
|---|-----------|
| 1. Plant has 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 and 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 Criteria 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

Serious Problem – 9 or fewer of the criteria met

COMMENTS FOR CORE CRITERIA 1

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

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

- 1. Trailer loaded at proper density. _____ / 1
 - 2. Incompatible animals segregated when required. _____ / 1
 - 3. Trailer properly aligned with the unloading area to prevent extremities from being caught in gaps. _____ / 1
- Total for Core Criteria 2:** _____ / 3

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
- Serious Problem** – Less than 80% average score

COMMENTS FOR CORE CRITERIA 2

Core Criteria 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 Criteria 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%

Serious Problem – Less than 80%

COMMENTS FOR CORE CRITERIA 3

Core Criteria 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

Serious problem – 5% or more falling down

COMMENTS FOR CORE CRITERIA 4

Core Criteria 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%

Serious problem – 25% or more

COMMENTS FOR CORE CRITERIA 5

Core Criteria 6: Condition of Animal

Non-ambulatory animals (tally here): _____

Severely injured animals (tally here): _____

above that were severely emaciated (tally here for transfer to secondary criteria): _____

Severely lame animals (tally here): _____

Heat-stressed animals (tally here): _____

Calving (tally here): _____

Total for Core Criteria 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.

Serious Problem –More than 3% compromised animals on the trailer at arrival.

COMMENTS FOR CORE CRITERIA 6

Core Criteria 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

COMMENTS FOR WILLFUL ACTS OF ABUSE

Cattle Transportation Audit Form - Final Scoring

Core Criteria	Total on all trucks	Total number of animals audited or total points available	Actual %	Pass or Fail
Core Criteria 1 Plant Audit		14		
Core Criteria 2 Set up, loading and alignment of trailer		(# of trucks x 3 points divided by # of trucks)		
Core Criteria 3 Timeliness of arrival and unloading		(# of trucks x 4)		
Core Criteria 4 Falls		(Total # of falls)		
Core Criteria 5 Electric Prod Use		(Total # electrically prodded)		
Core Criteria 6 Condition of Animals		(Total # of compromised animals)		
Core Criteria 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 Cattle Audit

Secondary Items Within Core Criteria 2

- | | |
|--|-----------|
| 1. Non-slip, solid flooring. | Yes or No |
| 2. Gates and doors open freely and can be secured shut. | Yes or No |
| 3. Internal ramps function properly and extend all the way to the floor. | Yes or No |
| 4. No sharp or protruding objects that can injure the animals. | Yes or No |
| 5. If transporting dairy cows, veal calves and some cull beef cows: Winter side slats or plugs are in place at recommended levels? | Yes or No |

Comments on Secondary Items Within Core Criteria 2:

Secondary Item within Core Criteria 3:

Time first animal unloads: _____ Time last animal unloads: _____

Total unload time: _____

Provide comment on trailers that may have experienced problems or lengthy unloading times:

Secondary Items within Core Criteria 4:

- Total number of slips (tally slips here): _____
- Temperament of livestock (circle one): Excitable Normal Docile

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:

- Did the person doing the unloading do so quietly and calmly? Yes or No

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:

Secondary Items within Core Criteria 5:

- 1. Does the plant have a “No Electric Prod Use” policy posted? Yes or No
- 2. Do the people unloading have electric prods in their hands? Yes or No
- 3. Did the driver use an electric prod in or through the sides or roof of the trailer? Yes or No
- 4. Were rattle paddles, sort boards, flags, or other handling tools used incorrectly? Yes or No

Comment on the use of electric prods here and if acceptable handling tools were used incorrectly:

Secondary Items within Core Criteria 6:

- 1. Number of dead animals on the trailer (tally animals here): _____
- 2. Does the plant have a method for communicating back to the site of trailer loading? Yes or No
- 3. Were any of the animals unloaded considered severely emaciated? Yes or No
If yes, tally the number of animals here: _____
- 4. Did any of the cattle have poor udder conditions? Yes or No
If yes, tally the number of animals here: _____
- 5. Were severely injured/severely lame animals promptly euthanized? Yes or No

Comment on the number of dead or emaciated animals or animals with poor udder conditions on the trailer:

Auditor Signature: _____ Date: _____

TRANSPORTATION AUDIT FORM: SWINE

Date: _____

Name and auditing company: _____

Plant location: _____

Plant contact: _____

Number of trucks audited: _____

Temperature/weather conditions: _____

Core Criteria 1: Plant transportation policy and preparedness for receiving animals.

- | | |
|---|------------|
| 1. Plant has 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 and 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 Criteria 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

Serious Problem – 9 or fewer of the criteria met

COMMENTS FOR CORE CRITERIA 1

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 Criteria 2: Set-up, loading and alignment of trailer.

- 1. Compartments gated. _____ / 1
 - 2. Trailer loaded at proper density. _____ / 1
 - 3. Incompatible animals segregated when required. _____ / 1
 - 4. Trailer properly aligned with the unloading area to prevent extremities
from being caught in gaps. _____ / 1
- Total for Core Criteria 2:** _____ / 4

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

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
- Serious Problem** – Less than 80% average score

COMMENTS FOR CORE CRITERIA 2

Core Criteria 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 Criteria 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%
- Serious Problem** – Less than 80%

COMMENTS FOR CORE CRITERIA 3

Core Criteria 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
- Serious problem – 5% or more falling down

COMMENTS FOR CORE CRITERIA 4

Core Criteria 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%
- Serious problem – 25% or more

COMMENTS FOR CORE CRITERIA 5

Core Criteria 6: Condition of Animal

Non-ambulatory animals (tally here): _____
 Severely injured animals (tally here): _____
 # above that were severely emaciated (tally here for transfer to secondary criteria): _____
 Heat-stressed animals (tally here): _____
 Severely lame animals (tally here): _____
 Frostbitten animals (tally here): _____
 Farrowing animals (tally here): _____
Total for Core Criteria 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.
- Serious Problem –More than 4% compromised animals on the trailer at arrival.

COMMENTS FOR CORE CRITERIA 6

Core Criteria 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

COMMENTS FOR WILLFUL ACTS OF ABUSE

Swine Transportation Audit Form - Final Scoring

Core Criteria	Total on all trucks	Total number of animals audited or total points available	Actual %	Pass or Fail
Core Criteria 1 Plant Audit		14		
Core Criteria 2 Set up, loading and alignment of trailer, compartments gated		(# of trucks x 4 points divided by # of trucks)		
Core Criteria 3 Timeliness of arrival and unloading		(# of trucks x 4)		
Core Criteria 4 Falls		(Total # of falls)		
Core Criteria 5 Electric Prod Use		(Total # electrically prodded)		
Core Criteria 6 Condition of Animals		(Total # of compromised animals)		
Core Criteria 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 Items Within Core Criteria 2

- | | |
|--|-----------|
| 1. Non-slip, solid flooring. | Yes or No |
| 2. Gates and doors open freely and can be secured shut. | Yes or No |
| 3. Internal ramps function properly and extend all the way to the floor. | Yes or No |
| 4. No sharp or protruding objects that can injure the animals. | Yes or No |
| 5. Trucks follow plant bedding requirement or industry best practice. | Yes or No |
| 6. Winter side slats or plugs are in place at recommended levels* | Yes or No |

*See discussion in NAMI Recommended Animal Handling Guidelines, page 8

Comments on Secondary Items Within Core Criteria 2:

Secondary Item within Core Criteria 3:

Time first animal unloads: _____ Time last animal unloads: _____

Total unload time: _____

Provide comment on trailers that may have experienced problems or lengthy unloading times:

Secondary Items within Core Criteria 4:

1. Total number of slips (tally slips here): _____

2. Temperament of livestock (circle one): Normal Moving Difficult to Move

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:

3. Did the person doing the unloading do so quietly and calmly? Yes or No

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:

Secondary Items within Core Criteria 5:

- 1. Does the plant have a “No Electric Prod Use” policy posted? Yes or No
- 2. Do the people unloading have electric prods in their hands? Yes or No
- 3. Did the driver use an electric prod in or through the sides or roof of the trailer? Yes or No
- 4. Were rattle paddles, sort boards, flags, or other handling tools used incorrectly? Yes or No

Comment on the use of electric prods here and if acceptable handling tools were used incorrectly:

Secondary Items within Core Criteria 6:

- 1. Number of dead animals on the trailer (tally animals here): _____
- 2. Does the plant have a method for communicating back to the site of trailer loading? Yes or No
- 3. Were any of the animals unloaded considered severely emaciated? Yes or No
If yes, tally the number of animals here: _____
- 4. Were severely injured/severely lame animals promptly euthanized? Yes or No

Comment on the number of dead or emaciated animals on the trailer:

Auditor Signature: _____ Date: _____

TRANSPORTATION AUDIT FORM: SHEEP

Date: _____

Name and auditing company: _____

Plant location: _____

Plant contact: _____

Number of trucks audited: _____

Temperature/weather conditions: _____

Core Criteria 1: Plant transportation policy and preparedness for receiving animals.

- | | |
|---|------------|
| 1. Plant has 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 and 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 Criteria 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

Serious Problem – 9 or fewer of the criteria met

COMMENTS FOR CORE CRITERIA 1

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 Criteria 2: Set-up, loading and alignment of trailer.

- 1. Compartments gated. _____ / 1
 - 2. Trailer loaded at proper density. _____ / 1
 - 3. Incompatible animals segregated when required. _____ / 1
 - 4. Trailer properly aligned with the unloading area to prevent extremities from being caught in gaps. _____ / 1
- Total for Core Criteria 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
- Serious Problem** – Less than 80% average score

COMMENTS FOR CORE CRITERIA 2

Core Criteria 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 Criteria 3: _____ / 4

- Excellent** – 95% or greater
- Acceptable** – 85% or greater
- Not Acceptable** – Less than 85%
- Serious Problem** – Less than 80%

COMMENTS FOR CORE CRITERIA 3

Core Criteria 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

Serious problem – 5% or more falling down

COMMENTS FOR CORE CRITERIA 4

Core Criteria 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%

Serious problem – 25% or more

COMMENTS FOR CORE CRITERIA 5

Core Criteria 6: Condition of Animal

Non-ambulatory animals (tally here): _____

Severely injured animals (tally here): _____

above that were severely emaciated (tally here for transfer to secondary criteria): _____

Severely lame animals (tally here): _____

Heat-stressed animals (tally here): _____

Lambing (tally here): _____

Total for Core Criteria 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.

Serious Problem – More than 3% compromised animals on the trailer at arrival.

COMMENTS FOR CORE CRITERIA 6

Core Criteria 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

COMMENTS FOR WILLFUL ACTS OF ABUSE

Sheep Transportation Audit Form - Final Scoring

Core Criteria	Total on all trucks	Total number of animals audited or total points available	Actual %	Pass or Fail
Core Criteria 1 Plant Audit		14		
Core Criteria 2 Set up, loading and alignment of trailer, compartments gated.		(# of trucks x 4 points divided by # of trucks)		
Core Criteria 3 Timeliness of arrival and unloading		(# of trucks x 4)		
Core Criteria 4 Falls		(Total # of falls)		
Core Criteria 5 Electric Prod Use		(Total # electrically prodded)		
Core Criteria 6 Condition of Animals		(Total # of compromised animals)		
Core Criteria 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 Items Within Core Criteria 2

- | | |
|--|-----------|
| 1. Non-slip, solid flooring. | Yes or No |
| 2. Gates and doors open freely and can be secured shut. | Yes or No |
| 3. Internal ramps function properly and extend all the way to the floor. | Yes or No |
| 4. No sharp or protruding objects that can injure the animals. | Yes or No |
| 5. Winter side slats or plugs are in place at recommended levels. | Yes or No |

Comments on Secondary Items Within Core Criteria 2:

Secondary Item within Core Criteria 3:

Time first animal unloads: _____ Time last animal unloads: _____
 Total unload time: _____

Provide comment on trailers that may have experienced problems or lengthy unloading times:

Secondary Items within Core Criteria 5:

- Total number of slips (tally slips here): _____
- Temperament of livestock (circle one): Excitable Normal Docile

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:

- Did the person doing the unloading do so quietly and calmly? Yes or No

Comments on the attitude and behavior of those unloading the livestock here. As an example, their temperament may be correlated to the number of slips and falls:

Secondary Items within Core Criteria 5:

- 1. Does the plant have a “No Electric Prod Use” policy posted? Yes or No
- 2. Do the people unloading have electric prods in their hands? Yes or No
- 3. Did the driver use an electric prod in or through the sides or roof of the trailer? Yes or No
- 4. Were rattle paddles, sort boards, flags, or other handling tools used incorrectly? Yes or No

Comment on the use of electric prods here and if acceptable handling tools were used incorrectly:

Secondary Items within Core Criteria 6:

- 1. Number of dead animals on the trailer (tally animals here): _____
- 2. Does the plant have a method for communicating back to the site of trailer loading? Yes or No
- 3. Were any of the animals unloaded considered severely emaciated? Yes or No
If yes, tally the number of animals here: _____
- 4. Were severely injured/severely lame animals promptly euthanized? Yes or No

Comment on the number of dead or emaciated animals or animals with poor udder conditions on the trailer:

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 CRITERIA 1: 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. Ninety-six percent accuracy is required for a passing score. If audit is conducted in a religious slaughter facility, skip to Core Criteria 2. A point is subtracted for every animal that requires a second stun.

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 CRITERIA 2: BLEED RAIL INSENSIBILITY — Conventional and Religious

Any sensible animal on the bleed rail constitutes an automatic audit failure. All signs of starting the process 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. 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

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 criteria above in order to fail this criteria)

Note signs of sensibility observed by 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:

CORE CRITERIA 3: ANIMALS FALLING DOWN — Conventional and Religious

3A: If you are also using the transportation audit the same day, you may transfer your score here. Count the number of cattle that slip or fall during unloading. Falling is a core criteria slipping is a secondary criteria. In large plants where multiple vehicles are continuously unloaded, 100 cattle from three different vehicles are scored. For all species, an equal number of animals from each deck should be scored. Vehicles should be scored in the order of arrival at the unloading ramp. In small plants where vehicles are not continuously unloaded, a single vehicle should be scored. If no vehicle arrives, the score sheet is marked “unloading not observed.” One percent or fewer cattle should 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: _____

3B: 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 criteria and slipping is a secondary criteria. 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 audit item: Percent slipping _____

Note where falling occurred:

Notes: _____

CORE CRITERIA 4: 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 five percent vocalization is acceptable for a passing score. It is helpful to note the possible cause of vocalization using the codes below:

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

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 CRITERIA 5: ELECTRIC PROD USE — Conventional and Religious

Monitor the percentage of 100 cattle prodded with an electric prod at the restrainer entrance. Twenty-five percent or fewer cattle should be prodded for passing score. If multiple employees use prods, score 100 animals passing by each employee. Add the percentages together to determine final 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 CRITERIA 6: 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 CRITERIA 7: ACCESS TO WATER — Conventional and Religious

Observe access to water. Do animals in all holding pens held for 30 minutes or longer have access to clean drinking water?

Yes _____ No _____

Notes:

Final Scoring – Cattle and Calves Audit

Core Criteria	Passing Score	Actual Score
Core Criteria 1: Effective Stunning	96% or greater accuracy	_____
Core Criteria 2: Bleed Rail Insensibility	100% insensible	_____
Core Criteria 3: Falls		
3A: Truck Unload	1% or fewer falls	_____
3B: In Plant	1% or fewer falls	_____
Core Criteria 4: Vocalization	3% or less	_____
	5% or less with head-holder/ritual	_____
Core Criteria 5: Prod Use	25% or less prodded	_____
Core Criteria 6: Willful Acts of Abuse	No willful acts of abuse	_____
Core Criteria 7: Access to Water	Yes – water provided	_____
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.

1. 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?

Yes _____ No _____

2. Does the facility have a protocol that is written or widely understood for handling non-ambulatory animals?

Yes _____ No _____

3. Are facility personnel trained in handling non-ambulatory animals?

Yes _____ No _____

4. Do employees inspect the facility weekly and document for repair any damage or sharp protrusions that may injure animals?

Yes _____ No _____

5. Does the facility provide special training to stunner operators to ensure proper equipment use and stunning efficacy?

Yes _____ No _____

6. Does the facility have a protocol for stunning equipment maintenance?

Yes _____ No _____

7. Does the facility train its personnel and have a written procedure or protocol about how to handle a sensible animal on the bleed rail?

Yes _____ No _____

8. Is non-slip flooring provided throughout the facility?

Yes _____ No _____ Slipping score (3% or less):

9. Are non-electrical devices the primary tool used to move livestock?

Yes _____ No _____

10. Do holding pens appear to be overcrowded?

Yes _____ No _____

11. Do crowd pens generally appear to be less than 75 percent full?

Yes _____ No _____

12. If mounting behaviors were observed, are animals that chronically mount removed from the pen?

Yes _____ No _____ NA _____

13. Does the company perform internal audits at least weekly?

Yes _____ No _____

14. Does the company have an emergency management plan for livestock on file?

Yes _____ No _____

14. The percentage of animals that slipped: _____

Percentage in stunning area: _____

Percentage during truck unloading: _____

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:

PIG SLAUGHTER AUDIT FORM

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

CORE CRITERIA 1: STUNNING

Effective Electrical Stunning – Pigs

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 percent 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 two amps for sows?

Yes _____ No _____ Volts _____ Stun Time in Sec. _____ Amps _____

Hot Wanding

Score 100 pigs in the restrainer. Measure the percentage that vocalize due to application of fully energized electrodes. No more than one percent 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 CRITERIA FOR CO₂ SYSTEMS: OVERLOADING OF GONDOLAS*

Score 50 gondolas in large plants that process 500 or more pigs per CO₂ 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 four percent 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 _____	3 _____	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 CRITERIA 2: INSENSIBILITY ON THE BLEED RAIL

Any sensible animal on the bleed rail constitutes an automatic audit failure. All signs of starting the process 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 restunned 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. 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

Note signs of sensibility observed by animal number:

Note signs of sensibility observed by 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: _____

CORE CRITERIA 3: ANIMALS FALLING DOWN

3A: If you are also using the transportation audit the same day, you may transfer your score here.

Count the number of pigs that slip or fall during unloading. Falling is a core criteria and slipping is a secondary criteria. In plants where a large truck holds more than 100 animals, a minimum of two vehicles should be observed. For all species, an equal number of animals from each deck should be scored.

Vehicles should be scored in the order of arrival at the unloading ramp. In small plants where vehicles are not continuously unloaded, a single vehicle should be scored. If no vehicle arrives, the score sheet is marked "unloading not observed." One percent or fewer pigs should 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: _____

3B: 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 criteria. If flooring results in slight slipping for most animals, this can result in fear or agitation and should be corrected. Falling is a core criteria and slipping is a secondary criteria. Falls caused by powered gates are counted.

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 CRITERIA 4: PIG VOCALIZATION DURING ELECTRIC OR CAPTIVE BOLT STUNNING

Vocalization — Electric Stunning or CO₂ Systems With a Single File Conveyor Restrainer

Monitor the number of pigs that squeal in the restrainer. Score only squeals determined to be provoked by humans or equipment. Pigs that are provoked to squeal should not exceed 5%. It is helpful to note the possible cause of squeals using the codes below. Do not count hot wandering in this section because it is a stunning measurement: For group CO₂ Stunning Systems, vocalization is a secondary item because it is difficult to count the number of pigs that are vocalizing.

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: _____

Room Vocalization – All Stunning Systems — FOR INTERNAL AUDITS ONLY:

Count the number of stunning cycles where squealing is heard. Count 100 stunning cycles. Note: there is a high degree of variability due to room acoustics and human factors. This criterion cannot be compared across plants, but is effective in monitoring internal performance. Fewer than 50 percent of the stunning cycles should have squealing.

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 CRITERIA 5: ELECTRIC PROD USE

Electric or CO₂ Stunning Systems Where Pigs Enter in Single File

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

X = moved quietly without an electric prod
 B = electric prodded in response to balking

P = electric prod used without apparent reason

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: _____

CO₂ Systems where pigs enter a CO₂ 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. Five percent or less of 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. If multiple employees use prods, score 100 animals passing by each employee. Add the percentages together to come up with a final score:

X = moved quietly without an electric prod
 B = electric prodded in response to balking

P = electric prod used without apparent reason

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 CRITERIA 6: 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 CRITERIA 7: ACCESS TO WATER

Observe access to water. Do animals in all holding pens held for a period of 30 minutes or longer have access to clean drinking water?

Yes _____ No _____

Notes:

Final Scoring – Pig Audit

Core Criteria	Passing Score	Actual Score
Core Criteria 1: Effective Stunning	1% or less inaccurate wand placement and	_____
	1% or less hot wanded or	_____
	4% or less overloaded gondolas	_____
Core Criteria 2: Bleed Rail Insensibility	100% insensible	_____
Core Criteria 3: Falls	3A: Truck Unload	_____
	3B: In Plant	_____
Core Criteria 4: Vocalization*	5% or less	_____
Core Criteria 5: Prod Use	25% or less (single file)	_____
	5% or less (group system)	_____
Core Criteria 6: Willful Acts of Abuse	No willful acts of abuse	_____
Core Criteria 7: Access to Water	Yes – water provided	_____
Plant passed all core criteria?		Yes _____ No _____

Auditor Signature: _____ Date: _____

*Do not count when CO₂ systems are in use

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.

1. 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?

Yes _____ No _____

2. Does the facility have a protocol that is written or widely understood for handling non-ambulatory animals?

Yes _____ No _____

3. Are facility personnel trained in handling non-ambulatory animals?

Yes _____ No _____

4. Do employees inspect the facility weekly and document for repair any damage or sharp protrusions that may injure animals?

Yes _____ No _____

5. Does the facility provide special training to stunner operators to ensure proper equipment use and stunning efficacy?

Yes _____ No _____

6. Does the facility have a protocol for stunning equipment maintenance?

Yes _____ No _____

7. Does the facility train its personnel and have a written procedure or protocol about how to handle a sensible animal on the bleed rail?

Yes _____ No _____

8. Is non-slip flooring provided throughout the facility?

Yes _____ No _____ Slipping score (3% or less): _____

9. Are non-electrical devices the primary tool used to move livestock?

Yes _____ No _____

10. Do holding pens appear to be overcrowded??

Yes _____ No _____

11. Do crowd pens generally appear to be less than 75 percent full?

Yes _____ No _____

12. If mounting behaviors were observed, are animals that chronically mount removed from the pen?

Yes _____ No _____ NA _____

13. Does the company have an emergency management plan for livestock on file?

Yes _____ No _____

14. The percentage of animals that slipped:

Percentage in stunning area: _____ Percentage during truck unloading: _____

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:

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 also is omitted as a criterion.

CORE CRITERIA 1: EFFECTIVE STUNNING — Conventional Only

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 percent 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 CRITERIA 2: BLEED RAIL INSENSIBILITY — Conventional and Religious

Any sensible animal on the bleed rail constitutes an automatic audit failure. 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. 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

Note signs of sensibility observed by 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 show signs of a return to sensibility before bleeding. (See page 54).

CORE CRITERIA 3: 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 by a person into the restrainer. Electric prod use should be 5% or less and only at the restrainer entrance.

- 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 CRITERIA 4: ANIMALS FALLING DOWN — Conventional and Religious

3A: 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 criteria and slipping is a secondary criteria. One percent or fewer sheep may fall. A fall is recorded if the body touches the floor. Even slight slipping should be noted.

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:

3B: If you are also using the transportation audit the same day, you may transfer your score here. Count the number of sheep that slip or fall during unloading. In plants where a large truck holds more than 100 animals, a minimum of two vehicles should be observed. For all species, an equal number of animals from each deck should be scored. Vehicles should be scored in the order of arrival at the unloading ramp. In small plants where vehicles are not continuously unloaded, a single vehicle should be scored. If no vehicle arrives, the score sheet is marked “unloading not observed.” One percent or fewer 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 CRITERIA 6: 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 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; 7) animals frozen to the floor or sides of the trailer; or 8) lifting an animal by the wool or throwing a sheep.

Any willful act of abuse observed? Yes or No

If yes, detail incident(s) below:

Notes:

CORE CRITERIA 7: ACCESS TO WATER — Conventional and Religious

Observe access to water. Do animals in all holding pens held for a period of 30 minutes or longer have access to clean drinking water?

Yes _____ No _____

Notes:

Final Scoring – Sheep Audit

Core Criteria	Passing Score	Actual Score
Core Criteria 1: Effective Stunning	96% or greater accuracy — captive bolt	_____
	99% or greater accurate placement electric	_____
Core Criteria 2: Bleed Rail Insensibility	100% insensible	_____
Core Criteria 3: Falls	3A: Truck Unload	_____
	3B: In Plant	_____
Core Criteria 4: Prod Use	5% or less	_____
Core Criteria 5: Willful Acts of Abuse	No willful acts of abuse	_____
Core Criteria 6: Access to Water	Yes – water provided	_____
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.

1. 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?

Yes _____ No _____

2. Does the facility have a protocol that is written or widely understood for handling non-ambulatory animals?

Yes _____ No _____

3. Are facility personnel trained in handling non-ambulatory animals?

Yes _____ No _____

4. Do employees inspect the facility weekly and document for repair any damage or sharp protrusions that may injure animals?

Yes _____ No _____

5. Does the facility provide special training to stunner operators to ensure proper equipment use and stunning efficacy?

Yes _____ No _____

6. Does the facility have a protocol for stunning equipment maintenance?

Yes _____ No _____

7. Does the facility train its personnel and have a written procedure or protocol about how to handle a sensible animal on the bleed rail?

Yes _____ No _____

8. Is non-slip flooring provided throughout the facility?

Yes _____ No _____ Slipping score (3% or less):

9. Are non-electrical devices the primary tool used to move livestock?

Yes _____ No _____

10. Do holding pens appear to be overcrowded??

Yes _____ No _____

11. Do crowd pens generally appear to be less than 75 percent full?

Yes _____ No _____

12. If mounting behaviors were observed, are animals that chronically mount removed from the pen?

Yes _____ No _____ NA _____

13. Does the company perform internal audits at least weekly?

Yes _____ No _____

14. Does the company have an emergency management plan for livestock on file?

Yes _____ No _____

15. The percentage of animals that slipped:

Percentage in stunning area: _____

Percentage during truck unloading: _____

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:

CHAPTER 6: TROUBLESHOOTING GUIDE

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 these 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 ceiling lamp.
- **Reflections** on smooth metal that can be minimized through 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**, which 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.** Install 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**, which can be made uniform.
- **Drain grate** on the floor, which 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 remote controlled rope so that they 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. Weld rods to floor to provide a non-slip floor. The entrance ramp into the restrainer must be non-slip.

Entrance ramp missing – Reinstall entrance ramp. See diagrams on www.Grandin.com. Forcing an animal to jump into a restrainer frightens it.

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 six inches (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. Plant should do pre-operations check daily on restrainers to ensure 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 it. Workers need to break the “automatic prod reflex” habit.

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

Problem: Animals struggle in the restrainer

Causes:

1. **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" different or the width of one slat.
2. **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.
3. **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. Slat must line up and provide a smooth continuous surface.
4. **Hold-down too high.** This is most likely to be a problem when small animals are handled. Install a rubber curtain made from conveyor belting on the discharge end of the hold down rack to block the vision of smaller animals.
5. **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.

Resolving Electrical Stunning Problems

Problem: Animal blinks within five seconds after stunning

Possible Causes:

1. **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 a grand mal epileptic seizure that is required to induce instant insensibility.
2. **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.
3. **High electric resistance of the animal.** This is especially a problem in old sows or dehydrated animals.
4. **Electrode contact area is too small or the electrodes are dirty.** Increase surface area of electrode or clean them.
5. **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.

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:

1. **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.
 2. **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.
 3. **Poor initial contact results in the animal receiving a stunning time that is too short.** A common cause is a fatigued operator.
 4. **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. An other cause can be an overloaded stunner operator who is stunning more animals than he can easily handle.
 5. **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

Possible Reasons for Poor Stunning

1. **Stunner has not been maintained.** A dirty stunner will lose bolt velocity. High bolt velocity is required for an effective stun.
2. **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.
3. **An overheated cartridge fired stunner will lose bolt velocity.** Rotate cartridge fired stunners to prevent overheating.
4. **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.
5. **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-degree angle.
6. **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.
7. **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.
8. **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.
9. **Slick floor in stunning box causes cattle to become agitated.**
10. **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 (poll) and the eye.

Resolving CO₂ Stunning Problems

Problem: Stunning Ineffective, animals not completely insensible

Possible Causes:

1. **Low CO₂ concentration. Increase the gas concentration.**
2. **Exposure time is too short.** Slow down the number of pigs which are moved through the system.
3. **The time between the exit from the CO₂ 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 CO₂ machines that have a short gas exposure time.
4. **Poor bleeding technique.** If animals show signs of return to sensibility after bleeding, the person doing the bleeding may need more training.

CHAPTER 7: WORKER SAFETY TIPS FOR ANIMAL HANDLERS AND STUNNERS

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. Below are a series of safety tips that can help protect employees.

Livestock Facility and Trucking

1. If prods are wired into the house current, they must always be wired through a transformer.
2. 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.
3. Be alert around the unloading dock. A truck driver backing in may not be able to see you.
4. Handle cattle quietly. Excited animals are more likely to cause accidents.

Electric Stunning of Sheep and Pigs

1. The stunner operator's station must be kept dry.
2. The operator should wear rubber boots and stand on non-conductive plastic grating.
3. The restrainer frame and worker walkway structure should be grounded to a perfect ground. However, the side of the restrainer that the stunner operator can touch should be covered with heavy insulating materials such as a plastic meat cutting board.

Captive Bolt Stunning

1. Cartridge-fired stunners must ALWAYS be un-cocked before they are set down.
2. NEVER, EVER throw a cartridge-fired stunner to another person.
3. 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.

4. 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.
5. Cartridge-fired stunners must always be kept unloaded when they are carried away from the stunning area.
6. Good maintenance is essential with pneumatic stunners to prevent excessive recoil, which can strain and injure the operator's hands, arm or back.
7. The use of a cartridge gun holder is considered a best practice. Do not lay a gun on the edge of a stun box.

Safe Livestock Handling

1. A single, 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.
2. 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.
3. Stay out of the blind spot behind the rear end of large livestock. If they cannot see you, they are likely to kick you.
4. Install a safety fence consisting of upright posts around the cattle shackling area to prevent cattle from entering other parts of the plant.
5. Do not try to stop an animal that is running back from a group as a person may be injured.

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.

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Appendix

Recommended Minimum Area Allowances for Livestock During Transport

Species	Average BW		Area per animal			
	(kg)	(lb)	(m ²)	(ft ²)	(m ²)	(ft ²)
Cattle (calves)	91	200	0.32	3.5		
	136	300	0.46	4.8		
	182	400	0.57	6.4		
	273	600	0.80	8.5		
Cattle (mature fed Cows and Steers)			Horned (m ²)	(ft ²)	Hornless (m ²)	(ft ²)
	364	800	1.0	10.9	0.97	10.4
	455	1,000	1.2	12.8	1.1	12.0
	545	1,200	1.4	15.3	1.4	14.5
	636	1,400	1.8	19.0	1.7	18.0
Small Pigs	4.54	10	0.060	0.70		
	9.07	20	0.084	0.90		
	13.60	30	0.093	1.00		
	22.70	50	0.139	1.50		
	27.20	60	0.158	1.70		
	31.20	70	0.167	1.80		
	36.30	80	0.177	1.90		
	40.80	90	0.195	2.10		
Market Swine/Sows			Winter		Summer	
	45	100	0.22	2.4	0.30	3.0
	91	200	0.32	3.5	0.37	4.0
	114	250	0.40	4.3	0.46	5.0
	136	300	0.46	5.0	0.55	6.0
182	400	0.61	6.6	0.65	7.0	
Sheep			Shorn		Full Fleece	
	27	60	0.20	2.1	0.21	2.2
	36	80	0.23	2.5	0.24	2.6
	45	100	0.26	2.8	0.27	3.0
	55	120	0.30	3.2	0.31	3.4

Source: Federation of Animal Science Societies (FASS) 2010

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; nystagmus absent	Uncoordinated kicking of hind legs acceptable, no right- ing reflex present	None	Rhythmic breathing (ribs moving in and out at least twice) is absent. Agonal gasp- ing not acceptable.	Relaxes shortly after being on the rail	A pinch or pinprick may be applied to 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 (ny- stagmus), but no natural blinking	Uncoordinated kicking of hind legs acceptable, no right- ing reflex present	None	Agonal gasping like a fish out of water normal. Rhythmic breathing (ribs mov- ing 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.
Pigs CO ₂	Must appear dead, hang straight and floppy	Straight and limp	Hanging straight, no righting reflex	No natural blinking	Uncoordinated kicking of hind legs acceptable, no right- ing reflex present	None	Agonal gasping like a fish out of water normal. Rhythmic breathing (ribs mov- ing 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.
Pigs electric	Must appear dead, hang straight and floppy	Straight and limp	Hanging straight, no righting reflex	Eyes may vibrate (ny- stagmus), but no natural blinking	Uncoordinated kicking of hind legs acceptable, no right- ing reflex present	None	Agonal gasping like a fish out of water normal. Rhythmic breathing (ribs mov- ing 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.
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; nystagmus absent	Uncoordinated kicking of hind legs acceptable, no right- ing reflex present	None	Rhythmic breathing (ribs moving in and out at least twice) is absent. Agonal gasp- ing not acceptable.	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 (ny- stagmus), but no natural blinking	Uncoordinated kicking of hind legs acceptable, no right- ing reflex present	None	Agonal gasping like a fish out of water normal. Rhythmic breathing (ribs mov- ing 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.



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