Integrating Technology into a Modern Cattle Handling Facility

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Development of a modern cattle handling facility was initiated at Northern Agricultural Research Center (NARC), near Havre, MT, in the summer of 2007. The objective of the project was to integrate modern technologies of Electronic Animal Identification (EID) with seamless computer integration for data collection and sorting. The facilities were based on designs from Dr. Temple Grandin, of Colorado State University, with some influences coming from Bud Williams' low stress handling techniques (Fig. 1).

The facility was built to handle 400 pairs of cattle. Design techniques were used for not only increasing the safety of the people and cattle while the cattle were being processed but to achieve this with as little stress as possible to the animal and worker alike. Cattle move through the facility easily in a calm flowing manner (Fig. 2). At a research facility such as this, cattle in finishing trials are weighed and have data collected on them every 28 d for up to a 210 d period. Cattle's learning experiences, both good and bad, take place each time the animal is processed. The design allows the workers to increase the number of positive experiences the cattle have through the facility. The corrals were constructed of 1.625" 6- rail continuous

Figure 1. Aerial view of Northern Agricultural Research Center's entire cattle handling facility, constructed in summer 2007. Cattle handling capacity is 400 pairs.

fence panels hung on 2.875" re-utilized #1 oilfield pipe (Fig. 3). A top rail of matching 2.875" oilfield pipe was added for increased stability.

Twelve foot alleys facilitate working cattle on foot or horseback. Overhead braces were constructed from 3.5" #1 oilfield pipe. The overhead braces are 10' above the ground to facilitate truck/tractor traffic. A center lane was built into the design to allow easy access to smaller holding pens that have water tanks. Smaller pens could be used for isolation purposes (increased bio-security from disease, either within our herd or if NARC imports novel cattle), more intensive research collections, or for holding smaller numbers of cattle.

Figure 2. Curved alley, crowding tub and single file race with adjustable backstops and catwalk on the inside of the curve.

A Silencer™ hydraulic chute for both the animals' and handlers' safety was installed. A single cow isolation area prior to the chute allows easier EID reading. Concrete floors from the tub to the chute have deep grooves for better cattle footing (Fig. 4).

Figure 3. Pipe overheads and posts with 6-rail continuous fence.

Through EID integration and computer data collection, the researchers can sort cattle and collect data from several sources at one time from various locations within the working facility via bluetooth wireless communications (Fig 5). Seven sorting pens are set on diagonals to make cattle move naturally away from the sorting alley. Programming is taking place to interface several communication devices concurrently. Cattle can be manually sorted with hydraulic levers located on the chute, with electric push buttons on the data table, or from computer programming automatically via remote solenoids (Figs. 6 and 7).

Figure 4. Silencer™ chute, isolation cage, and deep grooving of concrete.

Figure 5. Computer interface for EID and multiple data sampling stations

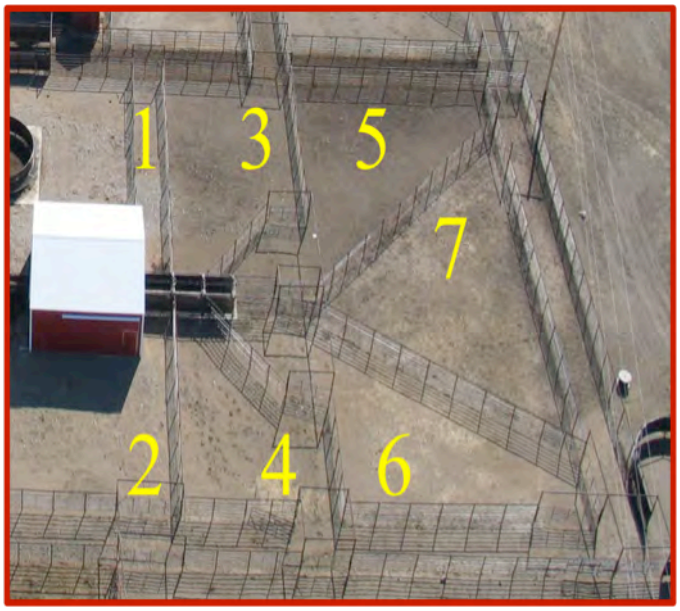

Figure 6. Seven pens available, sorted to pens manually or by computer.


Figure 7. Hydraulic sorting with computer interface.

Life records of cattle are initiated at birth. At NARC, cattle birth records are recorded prior to the calf reaching 24-hours in age. The NARC calf processing wagon was developed for both the technicians' safety and the welfare of the dams. The tagging wagon is pulled behind a vehicle to any calving lot or pasture. After the calf is caught, the wagon prevents over-protective dams from having to be "backed off" by the technician while processing the calf (Fig. 8). Data collected at this time include birth weight, calf sex, DNA and BVD tissue samples, dam body condition score and docility. All data is digitally integrated with seamless communication between the scale head and toughbook computer. The beta version is currently being attempted. After the initial weight and EID placement, the animal will have three forms of identification (panel tag, EID tag and ear tattoo). Following an independent source and age verification audit, producers who have the ability to record and supply this information can receive a $25.00 premium over any carcass grid price when marketing finished cattle. Seed stock producers can more rapidly e-mail data collected directly to the breed associations for registration. Commercial producers can also collect electronic records safely and rapidly to begin making better, more informed culling decisions.


Figure 8. Calf processing wagon to collect data just after birth.

The cattle working facility was developed not only to enhance beef cattle research for Montana State University, but to demonstrate options and alternatives for the producers of Montana and the Pacific Northwest as new technology and working facilities are developed on producers' ranches. This facility is available for tours. Please contact NARC, Darrin Boss, for information or to schedule a tour (406-265-6115).

Have you registered for the Cattle Buyers Summit?

May 14th -15thh

Holiday Inn Grand Hotel, Billings, MT

Call 406.994.4323 for more details

Cattle Buyers Summit Agenda

May 14 – Early Arrivals Reception

6:30-7:30 – BVD-PI Screening Programs –Dr. Bruce Hoffman, DVM, Animal Profiling International, Manhattan, MT

May 15 – Agenda

8:00 – Registration

8:30 – BQA Strategic Plan / New Initiatives

9:00 – Beef Checkoff Overview

9:15 – The Cattle Supply Chain

10:00 – Break

10:30 – Managing the #@*%& Paperwork

11:00 – 2005 & 2007 Beef Quality Audits

Noon-1:15 – Lunch / Market Outlook

1:15 – Value of Beef Verification Programs

2:00 – Round Table Breakouts

3:00 – Round-Table Reports

4:00 – Adjourn

Speakers:

- Clint Peck, Montana State University
- Charlene Rich, Montana Beef Council
- Jim Warren, 101 Livestock, Aromas, CA
- Kristen Larson, Prewitt & Co., Sidney, MT
- Dr. Gary Smith, Colorado State University
- Jim Robb, Livestock Marketing Information Center, Lakewood, CO
- Andy Kellom, Verified Beef, Bozeman, MT
- Dr. John Paterson, Montana State University
- Dr. Eric Moore, DVM, Schering-Plough Animal Health