A Whitepaper on…

The magic – and reality – of electronic ID and electronic scales and their use with AIMS

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Purpose

The purpose of this whitepaper is to give a detailed description of everything related to hooking up electronic scanners and electronic scale-heads to a computer for the purpose of entering and searching for data in the Angus Information Management Software (AIMS). This document is intended to be very detailed and comprehensive – although covering the issue to perfection is impossible – so be ready for lots of information that may or may not seem relevant to your situation. Whenever possible, an area will be boiled down to "the bottom line" so that a simplified explanation will be presented. However, it's all the details that went into that bottom line that will help you understand the overall issue.

Introduction

The area of electronic ID (EID) and electronic scales (EIS) has actually been around for over 20 years. It's not until just recently – thanks to BSE and other animal issues – that economy of scale have helped the area explode into common "coffee shop" talk. Part of the problem with the rapid growth is that there is a lot of information to absorb and understand, even on a basic level, in order to appropriately use the technology.

The term whitepaper is not new, but its use in the technology industry is rather new. Here is a definition found on the Internet (www.sharpened.net):

> Whitepaper: This term has historically been used to describe a report that states the social or political position of an organization. In recent years, however, the IT industry has adopted the term to describe articles that explain a certain technology or product. For example, a company may release a white paper to the public in order to educate consumers about one of their products. The terminology used may be somewhat technical, but the goal of a white paper is usually to describe the technology or product in terms most people can understand. That way nerds don't get to have all the fun each time a new technology is invented.

With that in mind, let's get started.

Definitions

To get started, we need to immediately include a few definitions.

EID – "Electronic Identification" – EID can actually be defined in a very broad sense to include eartags with a micro-chip, implants with a micro-chip, tags with a barcode, and any number of other technologies. But in general, EID refers to some type of tag that is applied to the animal which can be read by some type of electronic reader.

It is also important to note that EID is *not* the same as "National ID" (see below). While the two are closely related, they are independent systems.

RFID – "radio frequency identification device" – RFID is often used synonymously with EID, which is a relatively fair connection. RFID tags have a computer microchip, usually only a couple of millimeters square, embedded with an antenna in some type of plastic casing. On its own, an RFID just sits there; but if a compatible reader gets close enough, the reader activates a signal with a transponder and tells the tag to broadcast its information back to the reader. The two must be compatible technologies and the reader (or scanner) must be strong enough or close enough, or both, to generate the signal. The environment can interfere, but in general, just about any reader can get a signal back if it is within a few inches of the rag.

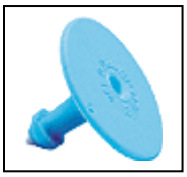
Electronic Scales – Several scale manufacturers have several generations of electronic scale heads. (For purpose of this document, the acronym EIS will be used, but this is not a common term at this point.) Even the term electronic scale is fairly broad since it refers to a system of electronics using load-cells (which measure the weight) connected to a "scale head". Old-fashioned beam scales can also be retrofitted with load cells. For purposes of this whitepaper, electronic scales refers to any system where an electronic file or connection can get into the computer; and therefore into AIMS.

Components of an EID system

Note: Most of the example images and descriptions will related to the Allflex line of tags due to their dominance in the industry and a working business relationship between Allflex and the American Angus Association. However, there are a number of companies with compatible EID systems.

The EID Tag

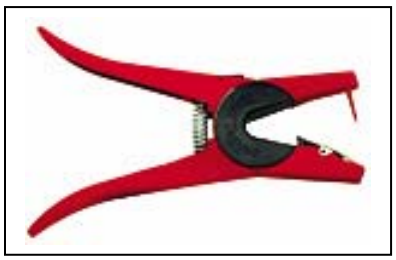
The picture at right shows the internal structure of a fairly common EID tag – which is more often referred to as a "button" tag. The copper coil is the antennae and the chip – programmed with a unique number – is at the bottom left of the coil. The right image shows the enclosed tag with its unique number printed on the surface of the plastic. This button tag also has a tamper-evident mechanism, which is the black center part of the button.



The picture at right shows the other part of the tag which actually goes through the ear and then into the back of the button.

Other types of EID tags exist, including implants, hanging tags, boluses and more, but this button tag will be our reference point due to its increasing popularity.

Tag Applicator



The tag shown above is applied similarly to standard hanging tags ("visual tags") with the applicator shown at right. The EID button tags are typically placed toward the top of the ear and closer to the head with the button on the inside of the ear. Research has shown this to be a relatively secure location with retention rates at or above 97%.

Scanner/Reader

The electronic tag, by itself cannot do much. The tag needs a reader to activate the chip so that it broadcasts its unique number. Two types of readers are shown: the left picture shows a small portable reader and the right picture is known as a "stick reader". In this case, both readers can store the information that is scanned to be imported later and they must both be relatively close to the tag in order to get a good read. The stick reader also has the capability to connect directly to the computer through the serial port.

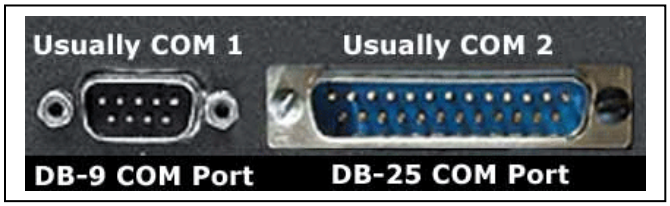
For larger-scale operations, there are also panel readers which can be fairly large; two feet square for example. The advantage of a panel reader is a much longer read-range – perhaps up to three to five feet, however, they are much more expensive and require permanent installation such as along the wall of a chute or alley.

AIMS and the use of EID

Now that we have identified the main components, let's discuss how they interact with AIMS.

Hooking up the reader

Assuming you have the tag and a reader, the first step – which sounds simple – is to hook up the reader to your computer. Some, if not most readers, can scan tags and store the data internally, therefore not requiring the use of a computer. For now, we'll assume the point is to get the data directly into the computer.



Most readers use a serial cable to connect to the computer. The photo at right shows the two most common ports, in this case labeled "COM1" and "COM2". The terms serial, COM and RS232 all refer to the same, albeit fairly old, technology for connecting peripherals to a computer. While you do not need to be an electrical engineer to hook up the devices, it helps to understand a *little* bit of the terminology, which will be described below.

The reader's cable will have a comparable plug for one of these two configurations, probably the 9-pin version on the left. The right port is a 25-pin; sometimes the cable will have both versions, either of which can be used. When in doubt use the 9-pin and if it is not labeled, assume it is COM 1.

Here's the first tricky part – what if your computer doesn't have a serial (COM) port? Newer computers, especially laptops, are not including the serial port(s) as the technology becomes fairly old. The solution is the USB port, which we'll get back to in a little bit.

Depending on the reader, you may have software that can be installed to test and/or use the reader. What follows is a generic description of what happens, but you will need to refer to the manufacturer's documentation for specific information.

USB Ports – A brief Introduction

USB (universal serial bus) ports have virtually taken over the serial port (COM) feature of computers, and that is generally a good thing. USB devices typically are much easier to hook up due to advanced installation routines that take away much of the guess work, and usually don't require a computer re-start each time they are hooked up. It seems nearly every "neat" peripheral is a USB device – to the point of extreme (as an example, there is a USB-enabled fondue pot on the market).

For our purposes, the use of an EID tag or Electronic scale may require the use of a USB port to either substitute for, or replace, the serial port. The good news is that it usually means it is much easier to hook up the device; the bad news is that some additional setup may be necessary to "teach" the computer how to read the USB device as a serial input.

The pictures at right show the typical port (top) and a cable plug (bottom). With so many USB devices on the market, the use of a USB hub (not shown) may be necessary.

Using the reader

The fact that most readers use a serial port means there may be issues of setting the correct protocol. The protocol includes several technical settings that must match between the computer (and the software it is running for the reader) and the reader itself.

Here are the common terms:

Baud Rate – The rate at which bits are transmitted over the cable. Baud is the number of transitions that take place in one second. If this system was a car and highway, baud rate would be the car's speed, i.e. miles per hour. In the *very* old days the original baud rate was 300; which quickly gave way to 600, then 1200, then 9600 and progressively faster up to fairly high numbers such as 256,000. But here's the catch, there is an upper limit for these hook-ups since both ends must be working at the same baud rate. In other words, if the reader is sending at 9600 but the computer is set for 1200, it probably won't work – the data may just look like garbage. Many factors can affect this reliability, such as the quality of the cable, nearby electronic interference, physical connections between the plug, etc. Generally, if you pick a slightly slower speed, say around 9600, they will be able to communicate. <u>For our AIMS EID system, remember a standard default baud rate of 9600.</u>

Data Bits – It's hard to believe, but we still need to revert back to one of the oldest facts of computers – they work with 1's and 0's. Actually they work with an electrical switch being on or off (represented by 1's and 0's to humans). The 1's and 0's are bits; it takes 8 bits to make up a byte…and on and on. The point here is that part of the protocol of a serial cable is that both ends must be set to the same number of data bits; usually either 7 or 8. Sometimes this will be referred to as "word length". <u>What to remember: 8 data bits.</u>

Stop Bits – These work in conjunction with data bits to finalize the word length. Usually this number will be 1 or 2 stop bits – 1 being the most common. <u>What to remember: 1 stop bit.</u>

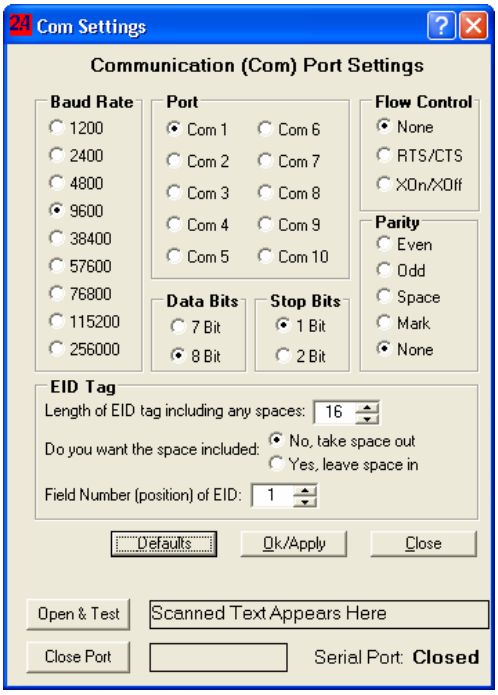
Parity – In order to help the serial system transmit accurate data, there is a way to check that data is complete and valid by using parity checking. To get technical – if the "word" being transmitted is 1011010, it has an even number of 1's. If the serial system is using Even parity, the eighth bit will be 0 to keep it even; If we're using Odd parity, a 1 is added to make it odd.

Other possibilities are Space, Mark and the most common value of None. What to remember: a parity of None.

Flow control – Flow control also relates to data validation; this doesn't seem to vary much between setups, so simply remember to use "None" unless otherwise noted.

Bottom line: 9600 baud, 8 data bits, 1 stop bit, No parity, No flow control.

Com Settings in AIMS



AIMS provides a central screen to set all relevant criteria for communication between a device and AIMS. Click on **File | EID Menu | Com Settings** to open the Com Settings dialog window shown at right. (Special note: this is a rapidly changing feature of AIMS, so please don't be alarmed if there are slight changes from this image and the latest version of AIMS.)

The image shows the default settings; you can always return to these settings simply by clicking the **Defaults** button.

The top section includes the protocol settings discussed above – Baud Rate, Port, Flow Control, Data Bits, Stop Bits and Parity.

The middle section specifies how AIMS is to handle EID tags and the bottom section allows basic testing of the device – to make sure the computer can understand the input stream.

Length of EID Tag including any spaces: An electronic tag includes more information than AIMS needs, some of which is specific to the manufacturer and/or reader. This setting tells AIMS to essentially chop off the last xx characters – in this image, 16 – when it uses any EID number.

Do you want the space included: Again, this could be dependent on the manufacturer, but there is sometimes a space after the country code (which is the first three characters). The final number of characters should be 15 for the standard USAIP system. So for example, if a reader finds that the last 16 characters are '840 123456789012', these two settings would result in a properly formatted EID number of '840123456789012'. It's a subtle difference to a human, but critical to a computer.

Field Number (position) of EID: The character string being sent by the scanner and/or scale head probably includes several pieces of data strung together with commas separating each field. AIMS needs to know which field is *the* EID number. The position can vary between scanners, scale heads, manufacturers, models of devices and even user-defined settings. (Note: this will be a key area of modifications as AIMS continues to develop in the area of EID.)

The bottom section is a combination of buttons and fields to test that the input mechanism is working. Clicking on the **Open & Test** button should result in the Serial Port being set to "Open". If an error message is received – something to the effect that "Port x is closed", you will need to make necessary changes to the computer, port settings or the protocols at the top of the window. Experience has also shown that restarting the computer is a very common solution to a setup problem – especially if using a USB device or if settings have been changed.

Once the Serial Port is shown as Open, try scanning an EID tag or sending data from an electronic scale head. If all goes well, the string of characters will be shown in the box next to the **Open & Test** button.

An example EID tag read could yield this: **A 00000 0 840 000026818834**
Notice that the last 16 characters are the key part of the number, and with the AIMS settings shown above, they would be shown as: **840000026818834**

By comparison, an electronic scale could send: **J1239,985 120008994723,461,,**
Depending on the scale head and its settings, this string represents the following:

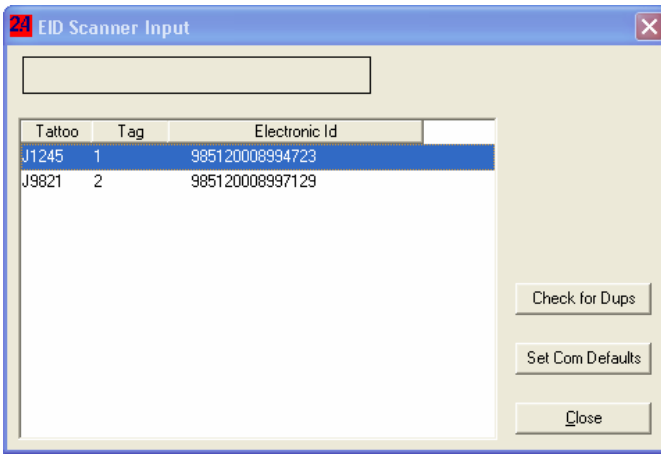
Visual ID: **J1239**
Electronic ID: **840000026818834** (which has been stripped of the space)
Weight: **461**
Plus two empty fields not yet in use.

The box next to the **Close Port** button simply indicates the length of the string being processed. This is another way to verify that everything is working properly. Experience has shown that the computer doesn't always receive the entire EID tag, so sometimes it may be necessary to re-scan the EID tag.

Getting the EID Numbers into AIMS

Before we can scan a tag and have AIMS magically look up the correct animal, it has to have something to compare against. For example, if you want to look up an animal up by its name, the name has to be in AIMS first, whether it was typed in by you, the user, or came from a file provided by the Association. The same is true for EID numbers – the number must already be stored in the Electronic ID field before scan a tag and find.

AIMS provides a screen (shown at right) to input these numbers, so let's assume that the scanner is hooked up, the protocols are correct and we're reading tags. To open the input screen, click on **File | EID Menu | EID Scanner**; then one-by-one, select the animal and scan the appropriate tag. AIMS will display and store the proper EID number according to the EID Tag settings on the Com Setting screen (discussed above).



If you need to manually input this number, simply use the normal General tab, select into the **Electronic ID** field and manually type the appropriate EID number.

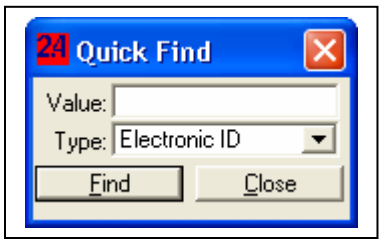
AIMS will also provide a way to import a file from a text file – perhaps provided by the tag manufacturer – which can link the EID tag to a certain animal. However, this process has not been worked out yet due to the variability of how companies provide their data.

Once the tags are input, it is a good idea to check that no duplicate tags have been entered. Theoretically, EID tags you purchase, no matter from which manufacturer, will be unique. So, again theoretically, the only way to have duplicates is by re-reading the same tag into the Electronic ID field of two animals. To find duplicates, simply click on the **Check for Dups** button on the EID Scanner Input screen.

If AIMS *does* find duplicates, either re-read the appropriate tags or use the Electronic ID field on the General tab to resolve problems.

Using the EID Tag Data to Search for Animals

Once the numbers from the tags are in the Electronic ID field of AIMS, it is a simple matter of using the Quick Find window (under the Tools menu). Be sure the Quick Find is set to Electronic ID as the search Type, then any time an EID tag is scanned, AIMS will go to that animal, using whatever tab you have open at the time.



Where will this be useful?

Although many systems are assumed to already be in place, it is also assumed that at lot of the systems which will efficiently use EID have yet to be fully developed. For now, here are some probable early uses, all of which assume the EID numbers are already in the AIMS system and linked to the actual animal with the tag in its ear; it also assumes they are completely unique.

Weighing calves

(Another assumption is that we are not yet using an electronic scale (described below), so the weights will be added manually.) You have a computer – probably a laptop – out by the scale. An EID tag reader is attached and tested with a sample tag (linked to a dummy animal).

As each calf enters the scale, the reader is put up next to the tag. Most readers will provide an audible beep, however, it may be noisy, so there may also be a small light on the reader. AIMS will also respond that a tag has been read, and it will go to the animal record with the appropriate unique number. If it cannot find the number, it will indicate that it cannot find a record and wait for you to resolve the situation by either adding the animal, adding the tag to an existing animal or re-reading the tag. To be safe, always verify that the correct animal is selected in AIMS before continuing.

Once the tag is read and AIMS finds the right animal, you will want to verify it is correct by some other means, probably the visual tag in the calf's ear. Have aims set to the appropriate tab, click into the weight field and then enter the weight as well as any other data being collected. Other data might include height, scrotal circumference, medical records and/or comments.

It is important to consider the speed that the above data entry can be done as compared to the speed your helpers want to move to the next animal. It is also highly recommended that a paper record of each weight be recorded – relying solely on the computer is a setup for disaster. If you're not sure, ask yourself if it is easier to re-weigh the entire group or reconstruct the weights from a yellow notepad? A possible future AIMS enhancement will be printing a weight record – to a small receipt-type printer – each time a weight is taken.

Electronic Scales

Introduction

The term "electronic scales" is a fairly broad term. For purposes of this white paper, the term refers to scales that have the means to electronically display the weight. This display could be the result of a retro-fit of an existing balance-beam scale or it could be a brand new unit using load cells under some type of platform.

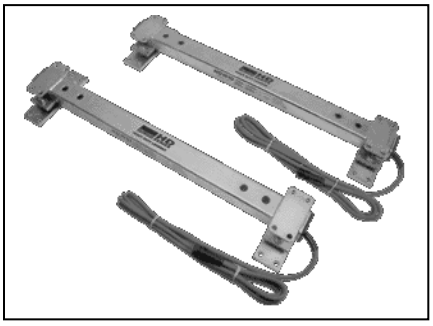
In any case, this paper will address how the electronic scale head can store and/or transmit the weight. Newer scale heads are sophisticated enough to also record the identity of the animal as well as numerous other measures and comments as entered by the operator.

The concept of electronic scale heads is actually a bigger field than electronic identification, which makes it harder to write a comprehensive description of them. The range of brands, features and complexity make it nearly impossible to cover all the relevant topics. But hopefully this will be enough to get started with the concept.

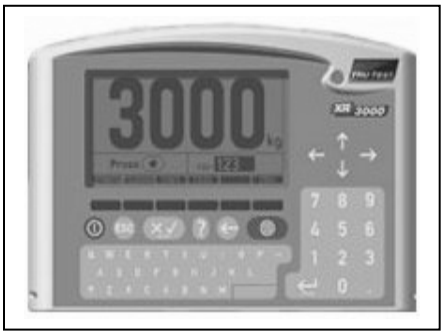
Similar to the EID section earlier, a specific brand and model of scale head will be used as an example, only out of convenience in having a unit at the Association. The scale head is a Model SR 3000 from Tru-Test. It is one of the more high-end models with a variety of features that provide a means to store and transmit a lot of data. However, more basic models will still be compatible with AIMS and the use of electronic data transfer.

Basic Features

In its simplest form, a scale is hooked up to a load cell and displays the weight on the electronic scale head.



Load Cells – The load cells, or load sensors, are usually metal bars (as shown at right) which bend very slightly when weight is applied. The amount of bend is converted to the weight which is displayed on the scale head. Their size varies depending on the largest weight to be recorded. They are often simply placed under a simple platform or existing chute, either of which adds to the need for higher capacity.



Scale head – The scale head is probably nicknamed for its position at the "head" of the scale system and for being the "brains" of the system. The Tru-Test XR3000 shown at right gets its data from various models of load cells.

While load cells pretty much do one thing (measure weight) no mater what, the scale heads vary tremendously in features, and therefore cost. The earliest scale heads simply displayed the weight, period. But early models also had the ability to send a signal to a printer and/or other connected device to record that weight.

Most scale heads have the ability to store the data and later transmit the data via a cable (usually a serial cable) to a computer or other storage device. The resulting file is usually imported into a

program like Excel by using a comma or tab-delimited file structure. Use of this file is rather simple once you locate, or figure out, the data column order. For example, the data columns may include a record number, time-stamp, user-entered ID (such as tag or tattoo), an EID number and of course the actual weight.

Advanced features include the ability to record a variety of other data such as color, breed, health information and, through the use of user-defined fields, virtually any type of information. All of these fields can then be transmitted to a computer or saved as a file and moved as a group. The XR300 shown above allows grouping of data into different files for managing groups of cattle.

Hooking up the scale head

There is really very little difference when hooking up a scale head as compared to an EID tag reader. The same issues with a serial cable and the communications protocol (baud rate, word length, stop bits, parity) still apply and are *generally* very close to the same settings as EID readers. In the case of this scale head, the only difference from the stick reader described earlier is baud rate, which for the scale is 38400.

Hooking up the scale head and an EID reader

Now things get interesting. The Tru-Test scale head shown above has two of its own serial ports. These ports can be configured for a variety of inputs *or* output. For example, CON 1 (Tru-Test uses CON, apparently referring to "connection" whereas the computer side will COM for "communications") could be used for incoming data from an EID reader and then CON 2 would go out to the computer. Or a printer could be attached (be aware that serial cabled printers are somewhat rare).

Of course all of this requires some setup on the scale head side, but the user manuals and on-screen instructions are generally easy to use and understand. For sake of this paper, assume that the computer is hooked up from CON 1 on the scale head to COM 1 on the computer with a serial cable. Be sure the two devices (computer and scale head) are communicating with the same protocol. Next, to utilize the EID reader, connect the reader's cable to CON 2 on the scale and again, be sure the protocols match.

The rest of the setup issues are a) handled through the scale head related to files, animals and the EID field *and* b) working with data file exchanges between the scale head and the AIMS software, which will be covered below.

Here are the basics points for connecting to the scale head. You will need to have a file stored that has each animal identified, which probably means some type of visual ID such as tag or tattoo as well as the EID number entered into the "EID" field. As you weigh the calves, you will have one of the scale head's files open, scan the EID tag to locate the correct animal, enter other optional data and assuming the weight has settled, push the "Weigh" button.

At this point, the scale head will automatically save the weight into the animal's record within that file. And if it is set up to do so, the scale head will also immediately send this information (through CON 1 in our example) to be received by the computer. That brings us back to AIMS setup issues that process the data.

Receiving scale data into AIMS

The final piece of the puzzle is to have AIMS receive and properly process the data coming from the scale head. In the above example (Tru-Test XR3000 scale head with EID stick reader all hooked together through serial cables), AIMS simply needs to be setup to know how to identify the animal's record and what weight you are taking.

First, the ID. The scale head sends a string of characters formatted as follows:

R1234,840 000026818834,590,,

This is considered a "comma-delimited" file, meaning the fields are separated by commas; the individual fields can be variable length.

The first field – R1234 – is assumed by AIMS to be the identification field, either tattoo or tag. On the scale head, it is the FID ("Friendly ID") field. AIMS can be set to accept this as the Tattoo or Tag. Each has their quirks – if it is a tattoo, it must include all characters stored by AIMS. For example, if AIMS knows this animal as R1234-B05, then that is what needs to be in the scale head for the FID field. This entire tattoo can be transferred to the scale head through the use of a download file so that it does not have to be manually entered. The problem with the Tag field is that it may not be unique within AIMS, however, AIMS can handle this IF the tag is unique within the pen that is open.

The second field – 840 000026818834 – is the EID number stored by the scale head. AIMS will process the EID number, specifically the space after 840, according to the Com Settings screen. This field can be used by AIMS to find the animal by selecting that option on the Com Settings.

The third field – 590 – is the weight recorded by the scale head. AIMS must be told what weight it is through the Electronic Scale window.

AIMS assumes the weigh date is that day's date, so the computer's system date is automatically used for the weigh date, relative to the weight type selected on the Com Settings.

Once you have set up AIMS for the electronic scale input and the correct type of locator and weight, you're ready to go. When all parts are working correctly, you will be able to have an animal walk onto the scale, scan its EID tag, push the button on the scale head and the weight will be recorded on the correct tab with today's date.

What can go wrong? A lot. So keep in mind all the different parts and you should be able to find the problem.

1. **EID Tag**. An EID tag needs to be in the ear of the animal and its electronics must conform to proper standards (often referred to as ISO 11784/11875).
2. **EID Tag Reader**. The reader must be compatible and hooked up to the scale head.
3. Scale Head. The scale head must be capable of receiving the EID reader information and the scale head must either already have the animal identification information stored or entered as you go. Be sure there is a way to translate the numeric ID from the tag to the number that is stored in the scale head and/or AIMS.
4. **Computer**. The computer must be hooked up by the serial port and have the proper protocol to understand the scale. If AIMS is not yet compatible with the format of the data coming from the scale head, modification may be necessary from the Association's AIMS programming personnel.
5. **AIMS**. AIMS must be set up and ready to receive the data from the scale head.

The reward is being able to scan the tag, push the "Record Weight" button and watch AIMS record the weight.

Uploading file to scale head from AIMS

AIMS can save a lot of time with this whole process of electronic weighing. The trick is to get the animal data into AIMS, then convert it to the proper type of file which can then be downloaded to the scale head. It is probable that not all scale heads have this capability, so this only applies to properly equipped scale heads.

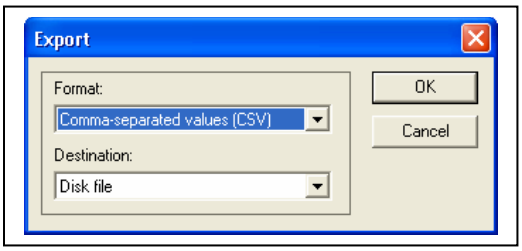
At a minimum, AIMS needs a tattoo (which along with gender is required for normal AIMS operations anyway). With only an animal record and the tattoo, you could use an electronic scale, even if you don't use EID tags. Even if you do not store EID numbers in AIMS, the scale head can still store them and use them to lookup animals and then the number can be saved in AIMS as you transfer the weights.

Ideally, you would add the animals, starting with a tattoo and their sex, and also enter their tag and an EID number as described above.

The next step is to export the data from AIMS in a form that can be transferred – "Uploaded" is the term Tru-Test's software uses – to the scale head. The AIMS department offers a simple custom report that creates a file that looks like the following:

```
FileNo: 6
Name: EID Test2
Date: 05/05/2005
F01FID(4)isID,DW2Weight(),C01Cond(10),C11Code2(4),C21Code3(4),F11EID(16)isID
FID,Weight,Cond,Code2,Code3,EID
R1234-B05,0,,,,840 123456789012
R5678-C05,0,,,,840 123456789013
```

Once you have the desired pen open, use normal AIMS procedures to open the custom report and then export the file. Change the Format field to "Comma-separated values (CSV)" (see image at right) then click OK to create the file in a location you have selected.



Now that the file exists, you are ready Upload the file to the scale head; specific instructions vary per scale head. Once the file is correctly uploaded, you are ready to select the file on the scale head and proceed with weighing.

Downloading file to AIMS from scale head

The software to transfer files to the scale head works both ways, allowing files to be downloaded from the scale head to the computer. If you have used a cable to process the weights as they happen, this is not necessary. But it does provide a way to use EID tags and an electronic scale head *without* being connected to a computer during the weighing.

Tru-Test's software makes it fairly simple to hook up, select and transfer the file(s). If the data is not already in AIMS, it would need to go through an import process which is beyond the scope of this document at this time – check with the AIMS department for details.

Conclusion

Many ranches have been using some form of electronic identification and weighing for years. It is only now becoming more popular due to changes in the industry. So, while all of this information may seem imposing, keep in mind that it *is* being done. Features like this in AIMS are simply adapting to the industry changes, especially the changes in features, availability and cost of the equipment. A complete system requires many components – computer, cables, power cords, electronic tags, tag scanners, electronic scales, software, and more – but the key component is the human operator.

Many processes used on today's ranches would take much more documentation than this white paper, but since they've been around awhile and passed along through the school of hard knocks, we don't see lengthy papers on those topics. Someday, the use of electronic tags and scales will be so common, nobody will read this paper.

Thank *you* for reading it!

If you have any questions or suggestions, please contact us at the Association:

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