Caveat Emptor – Let the Buyer Beware

The Latin phrase "Let the Buyer Beware" has always been appropriate but never so much as in this time of conversions to digital imaging. This text will inform you of how the systems function and the reasoning behind the development of many of the systems in place today.

This paragraph will, hopefully, encourage each potential purchaser of digitized radiography to research the product thoroughly prior to purchasing the system.

The following are the ten commandments of digital imaging purchase. This was taken from a leaflet distributed by a physicist several years ago. It reflects upon every experience that he had dealt with during his time of consultation. I fully concur.

1. **First Reviews –** Researching the possibility of changing to digital imaging is a fascinating look into possibilities. Just like everything else it is vital that the researcher remains fully grounded in reality. The vendors are all very pleasant and agreeable. They, too, have to buy groceries and send their children to school. They have a vested interest in your clinic. It is vitally important not to allow emotions to cloud your objectivity. At the end of the day one of the vendors will win the contract and the others will not. That is your decision based on the best interests of your clinic and your staff.
2. **Narrow the possibilities** – Research first on the internet. Find out what is out there and where all the vendors are located. Remember this is much like internet dating. If you

decide to purchase a digital system you will be married to your vendor and your happiness will very much depend on the system and the expertise that that company has to offer. You will also depend very much on the commitment of the individual that the company provides. You will deal with him/her on a daily basis initially.

3. **Visit the sites which have systems installed.** It is worth the drive, or the flight, to see the potential system in which you are interested. Visit competitor's sites and ask the purchaser why this system was chosen over all the others. Ask to see images... a lot of images. Request extremity and bony anatomy. Abdomens will always be impressive unless the system is very bad. Check out contrast on chest images, play with the windowing and leveling. Decide whether a hairline fracture will be visible. It is a rare digital system that demonstrates a hairline fracture in bony anatomy.
4. **Check out the service, cost and location.** An assurance of "we will look after you" is not enough. Does the vendor have a service department or company near where you are situated? Are they even in the same country? If the head office is in a different country or across the continent is there a qualified service engineer who can service not only the digital system but also the xray generator? If the system breaks down (and they all do) what is the guaranteed down time? How will they service the unit? Will they supply a replacement product while yours is being serviced? Is there any warranty on the part that is being serviced or on the replacement part? Ask to speak with a client who has

had their unit serviced. Discuss holidays and weekends. Is the service department available 24/7?

5. **Warranties**. Discuss the warranties in depth. No system is infallible. Most are very reliable but if the system breaks down or the image is unsatisfactory from the start find out the service record of the company. The price of a digital system is very expensive to be used as a backup computer if the images are pixilated from the first day and there is no one to service it. Also, again is there a warranty on any part which has had to go out for service... This is vitally important and worth repeating.
6. **Licences and Upgrades to the software**. This is where a number of digital system vendors add on to the cost of the original system. Also, the cost of licencing two, three, or four computers within the same clinic. Extra work stations should be billed only for the price of the computer. This is not a separate system, it is piggy backed to the main system. Separate computers are merely slaves to the main system. There is no reason why the clinic should be invoiced for slave computers feeding from the same software. Upgrades should be automatically added during the period of the warranty. Once the warranty is finished, an agreement may be reached as to the price of future software upgrades.
7. **Service Contracts.** The vendor has sold you the digital equipment. The only way that more money is to be made is through service contracts. A service contract with any xray

company will be designed to cover the most expensive piece of equipment that needs to be replaced during the time of the contract. Typically, service contracts do not cover 'glassware' (This is the xray tube). Any service contract that covers the digital imaging plate is going to be prohibitive cost wise and probably unnecessary. Read and discuss any service contract very thoroughly. Make very sure you are aware of what is, and is not, covered.

8. **Lease to own or time payment plans.** The technology is moving forward quickly and imaging is improving as the competition in this field is fierce. It is not the veterinary market that drives the technology but rather the medical market. The veterinary market benefits from the research. However, it is also important that the digital unit pays for itself in a timely manner. A five year loan on a piece of equipment five years ago has now been paid off and the veterinary clinic is left with a paid-for dinosaur in technology. Speak to your vendor about trade ins or upgrades to your unit.
9. **Remember that the digital unit is the image receptor.** A correctly calibrated radiography unit of any age is quite capable of delivering the radiation necessary to produce digital images. The clinic does not need to upgrade the radiography unit if it is correctly calibrated and serviceable. The digital system is replacing only the detector portion of the radiography system.
10. **The Golden Rule of Business** – Make sure that the unit that is purchased is a good

business decision for the clinic or hospital. Does it make good business sense to purchase a unit and can the number of radiographs that are produced each month pay for the monthly payment on the equipment. It is unwise to expect the other areas of the hospital to contribute to the purchase of a digital radiography unit.

P2P A Veterinarian purchased a busy 24 hour clinic that had installed a digital radiography unit 2 years before. The number of radiographs each day justified the digital radiography unit. They were averaging about 20 cases a week from five veterinarians. The unit functioned perfectly for the following year and then disaster. There was no image on the monitor one Monday morning. The unit was serviced out of the country but the company assured the veterinarian that they could service everything through the software. It was not to be. The digital plate itself was faulty. This was now Wednesday. An Engineer would be sent on Thursday to remove the plate and send it out of the country to be serviced.

The Veterinarian asked what her options were and how much all this would cost. She had already lost a week and it was looking like the patients would have to be sent out to another clinic for the balance of the following week. She was told that if the plate was repairable it would cost $50,000 to repair or replace it. Since it was now a repaired plate it would not be warrantied. The plate would be returned by overnight courier service and the engineer would reinstall it.

The veterinarian then asked the credentials of the engineer that was sent out to remove and then reinstall the plate. He was a local electrician that had no xray training. When the plate was reinstalled the company would come in online and reregister the plate to the software. The holiday weekend was now one day away. That meant that the plate would be held up at the border since overnight for the courier did not include holidays.

The original system, since it was now three years old, had been purchased for $125,000. The veterinarian still had $63,800 to pay for the system. She was now looking at another $50,000 invoice to service the digital plate which would be returned with no warranty.

At this point she called a local vendor who offered to install a brand new system, warrantied for 5 years with current software and local service support. His system would cost $55,000 installed

The point 2 ponder. This is actually a true case history.

A Comparison of protocols			
Traditional Film/Screen	**Computerized Radiography**	**Direct Digital Imaging**	
Load Cassette	Prepare the Cassette		
Prepare Photo Identifier	Enter Patient's data	Enter Patient's data	
Position Patient	Position Patient	Position Patient	
Measure Patient	Measure Patient	Measure Patient	
Set Technique/Make Exposure	Set Technique/ Make Exposure	Set Technique/ Make Exposure	

Process Film	Process Film		
Reload Cassette			
Hang the Film	Hang The film		
Read the film	Read the image	Read the image	
	Post Process Image	Post Process the Image	
Archive the film	Archive the image	Archive the image	

Table 9-1 *The Steps of Producing an image through three different systems. In the patient time line only one step is removed from the traditional process with CR. Four steps are removed with DDI . There is an additional step available with CR and DDI.*

Noise is greatest in CR at the lower levels due to background fog and scattered radiation

Sources of noise in the CR image	**Results from:**
Mechanical Defects	Slow Scan Driver
	Fast Scan Driver
Optical Defects	Laser Intensity Control
	Scatter of stimulating laser
	Light quanta emitted by the screen
	Light quanta collected by the optics
Computer Defects	Electronic Noise
	Inadequate Sampling
	Inadequate Quantization

Table 9.2– Sources of Noise within the Computed Radiography System