PURPOSE:
The Swine Unit located at New Deal Teaching and Research Facility, consists of approximately 80 sows producing approximately 1,600 pigs per year. There are currently two full time staff and a variable number of student workers. To produce high quality commercial swine used in student centered teaching and research, in a safe, clean and humane environment.

FACILITIES
A. Breeding/Gestation
   1. Measures 35’ x 100’ and can accommodate 80 adult swine
      a. There are eight 18’ x 14’10” pens with 8’ slatted floors (5” concrete with 1” slots).
      b. There are 16 pen areas; half the pen areas are 5 individual breeding pen /gestation crates and 5 are group pens (each holding 5 sows).
   2. Ventilation is by fans, producing 10 to 60 air changes per hour that are thermostatically controlled, according to the air temperature.
      a. Preferred Range 50-77 ° F
      b. Four pit exhaust fans operating at 1150 cubic feet per minute (cfm).
      c. There are also four side-wall exhaust fans on each wall operating at 7500 cfm. The fans are accompanied by four manually-operated louvers, on the west wall, and one heater.
   3. Waste disposal system
      a. Two flush tanks at the north end of the pit constitute the waste disposal system.
      b. Water washes the manure from under the slatted floor.

B. Farrowing/Nursery
   1. Consists of two farrowing wings, a central area, and two nursery wings.
      a. The 2 farrowing wings are maintained at 70 to 75° F, and each have a 16-sow capacity.
      b. Each room is 25’ X 52’ and contains 16 farrowing crates.
      c. Each crate is 7’ x 5’ and is equipped with a self-feeder and automatic waterers.
      d. Piglet supplemental zone heating is provided by heat lamps.
   2. The two nursery rooms have 18 and 24 pens with tenderfoot flooring respectively.
      a. Preferred temperature range 64 to 90° F
      b. Starting temperature of 85 to 90° F can gradually be lowered to 70° F by 6 weeks post weaning.
c. The maximum capacity of each pen is 8 pigs in East wing 6 pigs in West wing.

d. Each pen has one nipple waterer and one 3-hole feeder.

3. Ventilation is by fans, producing 10 to 60 air changes per hour that are thermostatically controlled, according to the air temperature.

4. Waste disposal system
   a. Two flush tanks at the end of the pit constitute the waste disposal system.
   b. Water washes the manure from under the slatted floor.

C. Growing/Finishing
   1. Measures 30’ x 275’ and consists of two wings and a central section for feed storage and weighing.
      a. Preferred temperature range 50 to 77° F
      b. Each wing is 30’ x 115’ with a total capacity of 620 pigs at 220 lbs.
      c. Each wing has two rows of 15 pens, 7’ x 12’4”, and 1 pen 4’ x 12’4”.
      d. The maximum capacity of each pen is 9 pigs at market weight of 240 lbs.
      e. The flooring is 5’ wide concrete slats with 1’ slots.
      f. Each pen has one nipple waterer and one 2-hole feeder.
   2. Ventilation is by fans, producing 10 to 60 air changes per hour that are thermostatically controlled, according to the air temperature. There is thermostatically controlled natural ventilation in the east wing.
      a. There are two unit heaters suspended from the ceiling in each wing, at opposite ends.
      b. Each wing has six 6,000 cfm summer fans, and six winter louvers, 28” x 34”.
      c. There are four 3,000 cfm winter fans and eight summer louvers, 48” x 28”.
      d. A 3350 cfm pit fan, with a high or low setting, is located at the end of the plenum under the aisle of each wing that continuously exhausts air from below the floor.
      e. Two misting systems are installed.
      f. One sprays water to cool pigs when the air temperature is above 85 F, and one can spray an odor control mist or fly control products as needed.
   3. Waste Disposal
      a. Two flush tanks at the end of the pit constitute the waste disposal system.
      b. Water washes the manure from under the slatted floor.

MANAGEMENT/PRODUCTION
   A. The New Deal Swine Breeding Unit operates as an all-in, all-out six week rotational system.
   B. Nutrition
      1. All pigs will be fed age-appropriate diets that contain sufficient levels of essential nutrients to meet the most recent NRC Swine nutrient requirements guidelines.
   C. Gilt Management
1. Replacement breeding gilts are purchased from a commercial breeder, and are quarantined for 30 days upon arrival.
2. Gilts are dewormed in their feed and vaccinated with a combination vaccine containing Parvo, Erysipeles, and Lepto,
3. Gilts will be group housed for 21 days on full feed after quarantine period.
4. Once moved to the Breeding/Gestation barn, gilts will be visually exposed to a boar so they will begin to cycle.
   a. Any gilts remaining open after their second heat will be culled.

D. Sow Management
1. All females originate from a commercial seed stock source.
2. Each sow is expected to produce at least 2.2-2.4 litters per year.
3. Gilts and sows are vaccinated with a combination vaccine containing Swine Influenza and Mycoplasm 2 weeks prior to farrowing.
4. Sows are transported to the farrowing building 5-7 days before their expected farrowing date.
5. Sows are weighed, and dewormed before they are put into the farrowing crates.
   a. Two days after entry to the farrowing unit, crates are cleaned to remove any internal parasites which may have been expelled.
6. Sows are checked at least twice daily and made to stand and drink water as soon after farrowing as possible.
   a. If a sow does not eat right after farrowing, she is offered wet feed or forage to stimulate her appetite.
   b. Sows are routinely checked for mastitis and are treated if clinical signs appear.
   c. All treatments and observations are recorded on daily observation sheets.
7. At 18-30 days post farrowing,
   a. Sows are weighed and their total feed consumption measured.
   b. Sows and gilts are vaccinated with a combination vaccine Parvo, Erysipeles, Lepto.
   c. Sows are retagged if necessary and moved to the breeding-gestation building.

E. Breeding
1. Sows are moved into the breeding-gestation and checked for heat.
2. Sows are housed individually or 5 per pen.
3. Each sow is hand mated.
   a. At this point, group housed sows may be sorted by size rather than by group.
   b. Sorting by size allows all sows to have an equal chance to get feed.

F. Feeding
1. Breeding stock females are fed 4-5 lbs. of feed daily in individual stalls.
G. Piglet Management

1. Piglets may be transferred to another sow for up to three days post farrowing to equalize litter size if needed.

2. Litters are processed at 1-10 days of age (3 days preferably).
   a. Piglets are given Penicillin G and Iron by injection.

3. Needle-teeth trimming-
   a. Routine needle clipping is not required. Selective teeth trimming may be performed when piglets damage each other or the sow.
   b. The eight needle teeth are trimmed (top 1/3 removed) with side cutting pliers. When piglets faces’ are injured or sows’ teats cut, then that litter may have their teeth clipped.
   c. The needle teeth are clipped to prevent injury to the sow caused by nursing and injury to the piglets themselves when fighting.

4. Ear notching-
   a. All piglet ears are notched, using the Universal Ear Notch System as a way to permanently identify them.
   b. The right ear is notched with the litter number.
   c. The left ear is notched with individual pig number.

5. Tail docking-
   a. All piglet tails are docked to help prevent tail biting which often leads to cannibalism.
   b. The tails are amputated 1” to 3” from the base of the tail; the tail is then sprayed with iodine.

6. Naval Cord Dipping-
   a. If the herdsman observes parturition and if the procedure does not interfere with a research or teaching protocol, each piglet’s naval cord may be sprayed with iodine to prevent bacteria from entering and causing disease.

7. Castration-
   a. Male piglets are castrated at 10 days of age or less.
   b. The skin is cut in 1 or 2 places from the top of the testicle to the underside of the testicle to allow for drainage.
   c. The cord is pulled or cut until it breaks.
   d. The skin between their hind legs is disinfected with iodine.

8. At weaning (18-30 days of age),
   a. All piglets are vaccinated with combination vaccine containing Bordetella, Pasturella, Erysipeles and Circovirus and boostered 21 days later.
   b. The farrowing house is emptied and cleaned.
   c. New piglets are weaned and moved to a clean and disinfected nursery.
   d. The feeders and waterers are checked to make sure they are working properly.
e. The feeders are filled every other day or as needed to insure that the pigs always have feed.
f. The alleys are washed and cleaned as needed.
g. Pigs may be weighed every few weeks for progress.
h. The nursery is cleaned soon after the piglets are removed to allow for the longest possible down time (this is thought to reduce disease incidence).

9. Grower Finisher Management
   a. Pigs are transported from the nursery, weighing around 50 lbs. and 7-10 weeks old, enter the growing-finishing building.
   b. These pigs remain in the building for 112 days or until they reach market weight (220 to 250 lbs. body weight).
   c. Pigs of appropriate weight are shipped to market, may be sold to private buyers or TTU researchers during any phase of production.
   d. Pigs may additionally be shipped to the Texas Tech University Meat Lab for classroom and judging purposes.

10. Boar Management
    a. Because we use artificial insemination, boars are not always needed on site. 1 to 4 boars may be present to aid breeding or for teaching purposes.
    b. Boars are generally fed 4 lbs. of feed daily.
       1) Boars are limit-fed to limit body size and to maintain libido.
    c. Boars are vaccinated semi-annually with a combination vaccine containing Erysipeles, Lepto, and Parvo.

OBSERVATION/HEALTH
Data may be collected on herd performance while under the different management practices.
   A. Daily observation-
      1. All pigs are observed twice daily for illness or injury.
      2. The swine herd manager or staff makes the decision to treat sick, diseased, injured, etc. pigs or to call the veterinarians for further diagnosis or treatment regimen.
         a. Pigs that are sick are treated according to their size and how many days until they are to be shipped to market.
            i. This is due to withdrawal periods specified by the antibiotics, steroids, etc..
      3. All treatments are recorded in the treatment records and observed on veterinarian rounds.
      4. Pigs may be treated within their home pen or moved to a separate treatment pen at the discretion of the swine staff or veterinarians based on the illness/injury and treatment regimen.
      5. Animal Care Services staff (technician or Veterinarians) observes all stages of pigs monthly.
B. Emergency Contact
1. The emergency/disaster plan located in the unit manager office should be consulted for specific details.
2. During instances of natural weather elements that may cause power outages, disruption in water supply etc. contact:

   Stanley Harris  
   Cell: 806-786-1624

   Edward Carrasco  
   Cell: 806-543-6785

   John McGlone  
   Cell: 806-392-1891

ANIMAL HEALTH
A. Dystocia-
1. Sows exhibiting signs of dystocia are given 2-3 ml of oxytocin every 20 to 30 minutes.
2. If a sow does not respond to oxytocin, offending piglet(s) will be removed vaginally with a lubricated glove over the hand.
3. If a sow shows signs of milking complications she is given Oxytocin, B-12, and Penicillin G.

B. Scours-
1. Piglets are treated on an individual basis with Neomycin (one dose orally per day).
2. Severe scours may require two doses daily for three to four days.
3. Most enteric diseases are treated with Tylan 200 in water.
4. Respiratory problems are initially treated with Tetracycline.
5. If any of the common diseases do not respond in a predictable time, then the advice of the University Veterinarians will be sought.

C. Vaccinations (as recommend by the Attending and consulting veterinarians)
1. Gilts: 6 Months to pre-breeding
   a. Leptospirosis, parvovirus and Erysipelas. (5 and 2 weeks prior to breeding)
   b. Mycoplasma hyopneumoniae/PCV2 (5 and 2 weeks prior to breeding)
   c. Clostridium perfringes Type C and E.Coli (5 and 2 weeks prior to farrowing)
2. Replacement Gilts
   a. Same as above
   b. Ileitis
3. Sows:
   a. Swine Influenza Virus (SIV)
b. Leptospirosis, parvovirus and erysipelas (At weaning)
c. Clostridium perfringes Type C and E.Col (5 and 2 weeks prior to farrowing)
d. Optional vaccinations: Mycoplasmal pneumonia, Transmissible Gastroenteritis (TGE)

4. Nursery
   a. Bordetella, Pasteurella and erysipelas (At weaning)
   b. Mycoplasma hyopneumoniae/PCV2 (At weaning and again 3 weeks post weaning)

5. Boars
   a. Leptospirosis, parvovirus and Erysipelas (2 times yearly)

D. Deworming
   a. Routine treatment of adult pigs should be carried out every six months, and if possible either moved to clean pen or the pen steam cleaned
   b. Growing pigs should be treated at 8 wks then every 2 months until maturity.
   c. Sows and gilts should be treated 14 - 21 days before farrowing.
   d. Gilts should also be treated 7-14 days before going to the boar.

E. Enrichment
   a. Forms of enrichment (i.e. chains, balls, spinners, etc.) are provided at the pen or crate level, to reduce stereotypic behaviors and reduce stress.

F. Quarantine
   1. All pigs from an outside source must be quarantined prior to entering the TTU herd including:
      a. Replacement breed stock (gilts and boars)
      b. Pigs brought in specifically for research projects
   2. Pigs will be housed in a location approved by the veterinary staff prior to acquisition.
   3. Quarantine must last a minimum of 30 days
   4. Specific personnel must be designated to observe and feed/water quarantine pigs and must not enter TTU swine facilities or the feed mill
      a. If separate personnel cannot be designated as the case with the swine staff then:
         i. special attire and equipment must be designated for the quarantine area
         ii. quarantine pigs should be taken care of at the end of the day to avoid re-entering the herd

G. Biosecurity
   1. Any persons who have traveled internationally will be restricted from entry into the TTU Swine Unit for a minimum of 10 days after arriving back into the United States.
   2. All persons, if they have been in contact with pigs not housed at the TTU swine farm, must wait a minimum of 72 hours to enter TTU swine facilities, or enter through the shower in facility on the East side of the building. Examples of contact with non-TTU swine would include:
a. Entering other swine facilities but not handling pigs  
b. Going to stock shows, judging contests, etc. 
c. Owning pigs yourself 

3. All persons: visitors, students, faculty, staff and personnel must change into TTU owned coveralls and boots to enter the facilities  
   a. Swine Unit personnel are required to shower out of the facilities and may be required to shower in if they are deemed to be at risk. 
   b. Persons other than swine unit personnel shall follow the requirements set out in IACUC Policy 01: Biosecurity at the New Deal Swine Unit and SOP063: Outside Sourced Swine 

4. If equipment has been used at another swine farm and then to be used in the TTU Swine farm then it must be sanitized with a bactericidal agent prior to being taken into the facilities 

VETERINARIAN-CLIENT-PATIENT RELATIONSHIP 
   A. The farm staff agrees to receive advice and implement herd health programs recommended by the University Attending Veterinarian 
   B. The farm staff will additionally seek the advice of a swine veterinary specialist 
   C. A routinely updated list of Animal Health Products approved by the Veterinary Staff will be kept onsite, in the unit manager’s office. 

EUTHANASIA 
When properly conducted using the appropriate firearm, euthanasia by gunshot produces immediate loss of consciousness and rapid death. 
   A. Gunshot is an effective, low-cost method of euthanasia when properly performed. 
      1. Firearms are readily available in most areas. Human safety is the primary concern with the use of gunshot for euthanasia. 
         a. Proper training on firearm safety and use is imperative and gunshot should only be performed by personnel who have had appropriate training. 
         b. This form of euthanasia is intended for larger pigs such as the grower pigs, finishing pigs, sows and boars that weigh more than 12 lb 
         c. Only the Swine Unit Supervisor or his designee may dispatch pigs by lethal gunshot. 
      2. There are three possible sites (but one preferred) for conducting euthanasia in swine by gunshot or captive bolt: 
         a. Frontal, temporal, and from behind the ear toward the opposite eye. 
         b. The preferred frontal site is in the center of the forehead slightly above a line drawn between the eyes. The projectile should be directed toward the spinal canal. 
         c. The temporal site is slightly anterior and below the ear. 
         d. Specific sites may vary slightly according to breed.
e. When the alternate site behind the ear is chosen, a .22 caliber firearm loaded with a solid-point bullet may be used.

B. Carbon Dioxide Gas
1. Piglets and nursery pigs less than 10 weeks of age or less than 70 lb can be euthanized by placing the pigs in a chamber filled with CO2 gas.
2. Pigs will be left in the chamber for a minimum of 5 minutes or longer as needed for effective euthanasia. Death will be visually confirmed by lack of breathing, movement or eye blink reflex.

C. Blunt force trauma
1. Is an acceptable form of euthanasia in suckling piglets weighing less than 12 lb.

TRANSPORTATION
A. The swine unit transportation system consists of:
   1. Three gooseneck trailers,
   2. Two pickup trucks (one for hauling and one for farm use only),
   3. Two hydraulic trailers
B. Onsite animal movement (i.e. from barn to barn or pen to pen)
   1. Pigs moving between farrowing and nursery will be transported in deep well cart for the short distance that they are transported.
   2. Pigs moving between buildings will be placed on the hydraulic trailer.
C. Offsite animal movement
   1. The only time a pig will enter a gooseneck trailer will be when it is leaving the farm. Be aware of the weight limits of the trailers.
   2. A maximum number of pigs (based on TQA space requirements) are placed on a gooseneck trailer at a time.
   3. Loading and unloading procedures may also consist of moving pigs from trailer to trailer or by herding them out (by using herding boards) from the sides of the trailer.
D. Normal/Routine repairs of the vehicles and trailers are done by the swine herd manager or staff when possible, or the personnel who last used the trailers or vehicles.
E. Whenever one of the trailers is taken off site and/or has hauled non-herd pigs or other livestock, the trailer will be cleaned according to SOP089 Swine Trailer Bio-Security Procedures, before it is brought back onsite by the personnel using the trailer.

HEALTH CARE

Everyone with access to the animal facility is responsible for informing the Animal Care Services Veterinarian staff when an animal becomes ill or a change in behavior is noted. Seriously ill animals should be reported IMMEDIATELY to the veterinarian. When an investigator, technician, or animal care personnel requires veterinary assistance, they
should:

A. Complete the “Animal Treatment Record” in the Notebook. Indicate the date, room number/pen number/animal number/cage or animal ID, the problem observed, and ensure that the name (or initials) of the person making the report is recorded.

B. Contact the University Veterinarian or the Swine Unit Manager at:

   Dr. Tiffanie Brooks, ACS Attending Veterinarian  
   806-834-8588 Office  
   806-239-2120 Cell

   Dr. Paul Stonum, ACS Clinical Veterinarian  
   806-834-7373 Office  
   660-562-4425 Cell

   Stanley Harris, Swine Unit Manager  
   806-746-5170 Office  
   806-786-1624 Cell

C. Provide all the above information to the individual contacted above, who will give advice and authorization for the action(s) that should be taken.