

Canine SARTECH™ Type III

Workbook

Course Description

The Canine SARTECH™ Type III course was developed as an entry-level course of instruction designed to introduce the fundamentals of canine handling. This course will combine both classroom and practical instruction to prepare the **Canine/Handler** team (crew) for Canine SARTECH™ Type III certification.

Course Schedule

The Canine SARTECH™ Type III course will consist of 20 hours of instruction.

Course Objectives

1. To instruct the student in the fundamentals of canine search and rescue operations.
2. To prepare canine handlers to successfully pass the Canine SARTECH™ III certification examination.
3. The student should be prepared to demonstrate an understanding of the following:
 - a. Canine obedience
 - b. Canine Health, Agility and Fitness
 - c. Expectations of working canine
 - d. Canine First Aid
 - e. Canine Handler Responsibilities/Expectations
 - f. Legal aspects of training and search work
 - g. Scent theory
 - h. Knowledge of the following disciplines:
 - i. Tracking/Trailing
 - ii. Airscent
 - iii. Cadaver
 - iv. Avalanche
 - v. Disaster
 - vi. Evidence/Article Search
4. Directionals
5. Canine alerts and refinds
6. Helicopter/Aircraft operations with a canine
7. Rappelling with a canine
8. Canine equipment

9. Handler equipment
10. Search techniques and Tactics
11. Interfacing Support team and Canine team
12. Terminology

Course Requirements

1. Student must have successfully completed NASAR SARTECH™ II
2. Must show written proof of the canine having successfully completed a nationally recognized obedience evaluation which meets or exceeds the American Kennel Club's Canine Good Citizen test
3. Must possess all of the equipment as listed in Attachment I of the certification.

(Note on certification)

The Canine SARTECH™ III certification is only valid for the canine-handler team evaluated. Additional canines trained by the handler must undergo the entire evaluation process.

Workbook Objectives

The workbook is designed to assist the handler in better determining what areas they should further research and study prior to taking the written exam.

At the end of each chapter the handler will have several problems and/or questions to complete.

Table of Contents

Lesson One.....	7
I. General Health of the Working Canine.....	7
Nutrition:	7
Physical Fitness:	7
II. Assessment of a Canine	7
Assessing a Canine for Life-threatening Injuries.....	8
Performing CPR on a canine:	8
Secondary assessment:	9
III. Are Human Medications Safe for Canines?.....	9
IV. Handling various canine injuries	9
Student Study Guide - Lesson One.....	13
Lesson Two	15
I. Canine Obedience & Agility.....	15
Student Study Guide - Lesson Two	18
Lesson Three	19
I. Handler Training Issues	19
Records	19
Canine Alerts.....	19
II. Search Scene Issues.....	20
Handler Liabilities	20
Search Scene Procedures.....	21
Student Study Guide - Lesson Three	23
Lesson Four	24
I. Scent Theory	24
Olfactory Senses.....	25
Environmental Factors Affecting Scent	25
Scent transport	26
Air scenting vs Tracking and Trailing	28
Scent Discrimination	29
Training Trails and Air scent Problems.....	29
Scent Articles	29
Lesson Five.....	33
I. Helicopter Safety	33
Side-loadins helicopters (i.e. Dolphins).....	33
Back-loading helicopters (ie.Chinook).....	33
II. Canine Equipment:	34
Student Study Guide - Lesson Five	36
Lesson Six	37
I. Search strategy	37
Hasty	37
II. Search Variables	38
Student Study Guide - Lesson Six	40
Lesson Seven	42
I. Interfacing the Support Team and Canine Team.....	42
II. Lost-Person Behavior	42

III. Communications.....	43
IV. Terminology	44
Student Study Guide - Lesson Seven	45
Attachment I	47
Personal/Canine First Aid and Survival Kit	47
Personal/Canine SAR Equipment.....	48
Optional Equipment (Recommended. but not required)	49
Attachment II.....	50
References.....	50

Lesson One

Objective:

This lesson is to help students who are associated with the working canine to better understand how to respond to a health issue, assess and treat injuries and illnesses which could occur during a search or training exercise.

The goal of this lesson plan is to provide useful information on recognizing a potential health problem, how to treat the **injury/illness**, knowing the nonnal and abnormal vital signs, along with better understanding canine nutrition and fitness. By having an understanding of these and other health related issues, the student will be able to better sustain their canine partners health and well being. It should be noted however, that this lesson only briefly discusses numerous health issues that could occur to a canine in the field. It is strongly suggested that the student seek additional knowledge through courses taught by veterinarians or books specifically written on canine first aid.

I. General Health of the Working Canine

Nutrition:

A working canine needs a balanced diet along with exercise in order to perform at the highest degree of mental and physical capability. It is vital to the health and well being of the canine to have the essential nutrients and vitamins, which promote stamina and endurance, found in quality canine foods. During long searches, the canine's body will rely on these factors to keep them going.

It is also recommended that special canine endurance products along with plenty of fresh water be made available to the canine during long searches. A canine should be monitored for factors affecting its work such as dehydration.

Physical Fitness:

In order to develop a canine's working stamina, it is important that daily exercise be included as part of their training. It should not be expected that a canine receiving very little exercise, to work for long periods of time in the field. A canine is very similar to a human athlete. The athlete maintains a diet specifically geared to improve their stamina and endurance along with stretching exercises before going out to compete. The canine should be provided the same considerations.

II. Assessment of a Canine

It is suggested that the handler take the time to learn their canine's normal vital signs during rest as well as after a workout. This will better assist the handler in determining when their canine's vital signs are not within a safe limit. The normal vital sign ranges for a canine are listed below.

Heart Rate – 80 to 120 beats per minute

Respirations – 12 to 30 per minute

Rectal Temperature – 101 to 102.5 degrees

Capillary Refill Time – less than 2 seconds

To check a canine's heart rate, place your fingertips or palm against the left side of the canine's chest just behind the elbow.

To check the canine's pulse, place the tips of your fingers gently on the femoral artery located on the inside of the thigh where the leg joins the body.

To check the canine's Capillary Refill Time, quickly press under the canine's upper lip (mucous membrane) to see how long it takes for the lip to go from white to pink. It should take no more than **2** seconds to refill.

Assessing a Canine for Life-threatening injuries

The initial assessment of a canine is to identify a life-threatening injury by implementing the ABC's - Airway (A), Breathing (B) and Circulation (C).

Airway – Is the canine's airway blocked causing difficulty in breathing or lack of breathing? To open an airway line up the tongue in the mouth and extending the head and neck. Check inside the mouth and clear any debris or foreign materials with a sweep of your finger.

Breathing – Observe for breathing for ten seconds.

Circulation – Check for a heartbeat - put your hand on the sternum or place your hand on the chest. Check the femoral pulse.

Performing CPR on a canine:

First check the breathing. Pull the tongue forward and wipe out any excess saliva or vomit (clear the airway). If breathing is not observed, begin artificial resuscitation. To perform mouth-to-mouth or mouth-to-nose resuscitation, pull the canine's tongue forward over the lower teeth. Hold the canine's mouth shut—trapping the tongue will keep it from obstructing the airway. Cover the canine's nose with your mouth and force air down the canine's nostrils. As the air is forced into the nostrils, look for the canine's chest to rise. Take your mouth off the canine's nose and allow the air to flow out of the lungs. Give two to four full breaths at a rate of **25** to **30** times per minute, and then recheck the canine's pulse and heartbeat.

If no pulse or heartbeat, begin chest compressions. In medium to large breeds, compress the chest wall using two hands. Place canine on his right side on a firm surface, place your hands over the heart on the left side of his chest and begin compressions. Do **5** chest compressions for every breath with a rate of **80** to **120** times per minute.

Secondary assessment:

After determining the ABCs, a secondary survey should be performed. Examine the canine from head to tail. Use a methodical approach in order to check the entire canine. It is recommended that the handler survey their canine partner on a regular basis. This will help the handler develop a methodical approach to the survey as well as assisting in detecting injuries.

III. Are Human Medications Safe for Canines?

There are times when it is easier to administer human medication, as they are more readily available. The question is, are they always safe? It is important to know whether or not the more common human medications are also safe for the canine. Although this section will discuss a few medications, the student is encouraged to talk with their veterinarian to see what other human medications may be safe or unsafe for their canine.

Buffered aspirin – 5 mg per pound every 12 hours for pain relief or anti-inflammatory

Benadryl – is widely used for allergic reactions to insect bites such as bee stings. It is a safe drug to administer to canines. 1-2 mg per pound every 12 hours.

Ibuprofen – Not recommended

Pepto Bismol – 1 tablespoon per 15 pounds every 6 hours for vomiting and diarrhea

Tylenol – Not recommended

IV. Handling various canine injuries

For each injury listed below, how it occurs will be followed by the symptoms and treatment.

Arthritis – Typically affects larger breeds. Obesity can aggravate the condition.

The symptoms and treatment include: canine experiences pain, lameness and stiffness of the joints. Pain relievers, moderate activity, warm/dry environments help keep the joints from stiffening.

Bicipital tenosynovitis – inflammation of the biceps brachii tendon and the surrounding synovial sheath from direct or indirect trauma, repetitive injury or overuse. This results in intermittent or progressive forelimb lameness that worsens after exercise.

The symptoms and treatment include: Usually presents as a forelimb lameness, showing pain on flexion of the elbow and direct palpation of the biceps tendon. Treatment involves rest and non-steroidal anti-inflammatory medication (NSAID) such as aspirin.

Bloat – Typically occurs when a canine eats a big meal, drink lots of water and then exercises within two to three hours after eating. The stomach fills with gas and/or fluids, swells, and may become twisted. Bloat is a very serious, life-threatening situation that could cause death within just a few hours if not treated by a veterinarian. Handlers should be aware of the possibility of this taking place as it is never known when your canine will be pressed into action.

The symptoms and treatment include: extreme restlessness, salivation, drooling and dry heaves. The abdomen will be distended. If the conditions continue for a long period of time, the canine may go into shock. Immediate intervention to decompress and reposition the stomach provides the best chance for survival.

Cranial Cruciate Ligament – Typically occurs when the cranial cruciate ligament, which is located in the knee joint, tears abruptly during exercise.

The symptoms and treatment include: sudden limping and pain. Requires surgery to repair.

Dehydration – Decrease in total body water to less than normal.

The symptoms and treatment include: sunken eyes, dry mucus membranes and slow capillary refill time . Slowly provide the canine with water.

Dysplasia – Faulty development of the hip or elbow joint characterized by degrees of joint laxity that permit subluxation. As the condition progresses, deformation of the acetabulum and femoral head is accompanied by the development of degenerative joint disease (arthritis).

The symptoms and treatment include: presents as a lameness and/or irregular gait such as "bunny hopping" in the rear. Other similar anatomical growth abnormalities affect the shoulders, elbows, stifles, and hocks. These types of lamenesses are treated with rest and antiinflammatories. Diet and nutritional supplements (glucosamine & chondroitin sulfate) can aid in the prevention of most forms of dysplasia. If signs do not improve with rest and antiinflammatories, referral to a veterinarian for radiographs and further treatment is recommended.

Fractures – Typically occurs as a result of a trauma, and are classified as either open or closed. Open fractures are more serious since the end of the bone breaks through the skin, causing tissue damage and possibly promoting infection.

The symptoms and treatment include: disfigurement and/or open wound with bone exposed. Using splints, restrict movement of the area and transport to a veterinarian. If bone fragments or the end of the bone can be seen, place a clean bandage over the area to help prevent further contamination.

Frostbite – Occurs following exposure to a cold environment, with body temperatures going below 93 degrees Fahrenheit, following freezing of any exposed body surface, or contact with cold liquid, glass or metal. Most commonly affected areas are the ears, tail, external genitalia and footpads.

The symptoms and treatment include: pale skin, cool to the touch. As the area(s) are thawed, the canine will experience pain and localized swelling. Affects the circulation in the affected area. The area(s) should be slowly thawed out. Do not rub a frozen area as tissues are easily bruised or torn. If at all possible, bring the canine into a warm shelter, cover with a blanket or other material or use your own body heat if nothing else is available.

Heat Exhaustion – Typically occurs when the canine is left inside a closed car or poorly ventilated area on a hot day or when over-worked during hot weather.

The symptoms and treatment include: canine experiences fast, shallow breathing and rapid heartbeat. Temperature will be 104 degrees Fahrenheit or above, and the canine may go into shock. Immediately spray the canine with cool water, pack the groin, neck, and around the head in ice, and seek veterinarian care at once.

Heat Stroke – Occurs from exposure to excessive heat without adequate ventilation or cooling mechanisms in place.

The symptoms and treatment include: elevated body temperature (over 103 degrees Fahrenheit), seizures, depression, coma and congested mucous membranes. Begin oxygen administration, slowly cool the body down by rinsing in cool water--concentrate on the neck over the jugular veins and the abdomen. Monitor the body temperature, and stop rinsing the body with cool water when the temperature reaches 103.0 – 103.5 degrees Fahrenheit in order to avoid hypothermia.

Hypothermia – Occurs from exposure to a cold environment with inadequate shelter. When the rectal temperature goes below 82 degrees Fahrenheit the canine will lose the ability to return its body temperature to normal. Canine hypothermia should be treated as aggressively as human hypothermia.

The symptoms and treatment include: symptoms are similar to those humans experience - place the canine in a warm setting and wrap with warm blankets; apply warm water bottles using a towel or blanket between the bottle and the canine's skin to avoid thermal burns; immerse in warm water. It is important to slowly bring the canine's core body temperature up.

Shock – Typically occurs after major traumas that affect circulation.

The symptoms and treatment include: lethargy, labored breathing, pale gums and elevated heart rates, canine becomes weak and depressed; pupils may be dilated; pulse is weak and rapid; capillary refill is slow to occur. If the canine has suffered a

bleeding wound, apply pressure to the wound and keep the canine quiet and warm. Seek veterinarian care immediately.

Snake Bites – Snake venom typically functions as a way of immobilizing the victim and pre-digests the body tissues. In many cases, the victim's blood pressure will drop. In canines, the majority of bites occur on the head.

The symptoms and treatment include: marked edema, swelling, redness, and immediate pain, subsiding after a couple of hours. Several hours after the bite, low blood pressure often occurs and in some cases respiratory distress. Bites occurring on the torso or neck should be considered more serious. Upon receiving the bite, subdue and immobilize the canine, place gentle compression on the area, and transport immediately to a veterinarian.

Sprain – Typically occurs when ligaments suddenly stretch or tear slightly. Joint injury can occur when fibers of supporting ligament are torn or ruptured.

The symptoms and treatment include: joint swelling and pain. Will normally heal within four weeks with rest.

Strain – An overstretched or overexertion of some part of the muscle-tendon unit.

The symptoms and treatment include: This usually presents as a vague and painful lameness. Often there are no visible radiographic changes seen. Rest and anti-inflammatories are required for as long as 6-8 weeks.

Porcupine Quills – If the quills are not removed promptly and completely, the canine could experience from infection to death. When removing the quill be sure that the entire quill is removed. If the base of the quill breaks off, it could cause an abscess or migrate to a major organ, killing the canine. Be sure to include gums, tongue, ears and underbelly as you thoroughly and methodically check your canine for additional quills.

The symptoms and treatment includes: Signs of this problem are the visible quills protruding from the skin, with inflammation and swelling. Because of the barbs found on the quills, removal is done similarly to that of a fishhook, involving redirection and exposure of the barb for trimming. This may require sedation. Aspirin may be given for the inflammation, and an antibiotic may be needed for infection.

Student Study Guide - Lesson One

The following questions are based on the lesson plan you just studied. There are fill-in-the-blanks, multiple choice, and true and false questions. Take a few moments to complete the questions. This will offer the student the opportunity to see how much they have learned and what areas additional study may be necessary.

1. When a canine experiences heat stroke, the handler should immerse the canine in cool water?
 - a. True
 - b. False

2. Capillary Refill Time in canines is less than 2 seconds.
 - a. True
 - b. False

3. The signs for canine bloat include:
 - a. distended abdomen
 - b. dry heaves
 - c. restlessness
 - d. all of the above

4. What are the ABC's when assessing a canine to identify a life-threatening injury?
 - a. Airway, blood, capillary refill
 - b. Airway, breathing, circulation
 - c. Airway, blood, circulation

5. To treat a _____, immobilize the area and carry the canine out of the field.

6. _____ is the best place to take a canine's pulse.

7. What is a normal temperature for a canine?
 - a. 98.6F
 - b. 99.7F
 - c. 101-102.5F
 - d. 103-105F

8. Snakebites that occur on the torso or neck should be considered more serious.
 - a. True
 - b. False



9. The proper nutrition both at home and in the field are vital to the health and well being of the canine providing the nutrients and vitamins essential for stamina and endurance.
 - a. True
 - b. False

10. Canine hypothermia
 - a. Seldom occurs
 - b. Must be treated as aggressively as human hypothermia
 - c. Manifests with symptoms similar to human symptoms
 - d. Requires minimal treatment
 - e. A, D, C
 - f. B,C

11. A _____ is an injury where fibers of supporting ligaments are torn or ruptured but ligament remains intact.

12. A _____ is an injury to the muscle-tendon unit.

13. Lethargy, labored breathing, pale gums and elevated heart rates are signs of _____

14. It is safe to give your canine-buffered aspirin?
 - a. True
 - b. False

15. Which of the following is NOT safe for your canine? ('circle all that apply)
 - a. Benadryl
 - b. Ibuprofen
 - c. Pepto Bismol
 - d. Tylenol

16. Bicipital tenosynovitis results from:
 - a. Direct trauma
 - b. Indirect trauma
 - c. Overuse
 - d. Is a chronic problem
 - e. All of the above

Lesson Two

Objective:

This lesson will help students better ascertain the importance of obedience and agility in the field. It is not intended to place one type of training method over another. It will provide information on safety issues the student should consider during training. Additionally, the student will become better prepared for how obedience and agility transfer from training directly into the field.

I. Canine Obedience & Agility

You and your canine partner have just completed working a scene. You take him to a grassy field to toss a Kong. As the canine goes to retrieve the Kong for the third time, his body language changes and he stops several feet from where it landed. Having observed the change in body language, you call the canine back to you. Once the canine is back at your side, you place the canine on a sit stay and walk over to the area the Kong landed in. Upon reaching the area, you see that the Kong is lying next to a rattlesnake. Your ability to read your canine's body language and your canine's response to your obedience commands prevented a possible snakebite.

Obedience is an important facet of search and rescue work. No matter what discipline(s) a handler decides to pursue, a certain level of obedience training enhances the canine/handler's capabilities in the field. Even if a canine is to be worked on lead, a certain level of obedience is necessary. Often time's handlers only see the necessity of obedience work for those canines working off lead. However, even the simple exercise of taking your canine out of your vehicle to go to work can leave either a positive or negative impression on the agency that has requested you. A canine that comes barreling out of the vehicle on-lead pulling its handler down the road prior to starting its work will not impress many agencies.

If that same canine came out of the vehicle and quietly walked alongside its handler to where the search is to begin, and then, released to work shows a focused and determined behavior—that will truly impress agencies. They will see a canine that is totally under control when not working, but when given the command will immediately go into action. It is important to note that search and rescue canines are always under the microscope, as they are supposed to be extremely well-trained and well-mannered.

Control and directability are two important benefits gained from obedience. Without these, search areas might not be effectively covered in a methodical fashion. Often times, handlers have a vision of a canine working a rubble pile after a major disaster. While on the pile, the canine works in a controlled directional manner. It is the handler that works with the canine to cover the area effectively without taking the canine's focus away from their work. The canine should still be able to work independently to maneuver over the rubble and problem solve to successfully get themselves to that point where scent is breaking through.

Disaster work is not the only area where control and directability come into play. When working a canine off lead, it is necessary to have control and directability. Whether working a homicide investigation in a small, specific area, working a "missing person" in a high traffic neighborhood, or a lost hunter on several thousand acres—all require the canine to be under control with direction as necessary to cover the area effectively.

Obedience training also comes into play when a canine is asked to demonstrate for law enforcement agencies or the general public. During these demonstrations, the canine must display its socialization skills as well as its search and rescue capabilities. In addition, the canine should be friendly and non-aggressive around crowds, loud noises, and being petted by numerous young people. It is during these situations that the canine's behavior will represent all other search and rescue canines in the eyes of the general public.

During demonstrations the handler is provided with opportunities to expose their canine to different types of distractions. The more the canine is exposed to during training, the better prepared the canine will be to deal with the distractions it will face during an actual search. Sirens, cameras, people hustling back and forth, or simply being followed by numerous people as the canine works in the field could cause a canine to lose the necessary focus it needs to do its job. By exposing the canine to these distractions during demonstrations and training, it will be better able to focus and work through distractions in the field. A canine that trains in a sterile setting may not be prepared for the distractions that occur during a search.

Just as obedience is an important factor in search and rescue work, agility training also plays an important role. Unlike American Kennel Club (AKC) agility, search and rescue training is not done for showy or rapid movement over apparatuses. Instead, the search and rescue canine is taught to make slow and deliberate movements. It is important to understand that the areas where agility will most likely come into play is during disaster or burned building searches. In order to keep the canine safe, it should slowly maneuver through the different obstacles it comes into contact with during its search. The canine should take its time to cover the area, and the handler should be able to give the canine directionals to avoid unsafe areas.

Many different types of apparatuses should be considered when training. The canine should experience but not be limited to: un-sure footing, climbing different types of stairs and ladders, crawling through an object, and going over an object. When setting up an agility course, be sure that each apparatus has a specific purpose to your training. A canine taught to jump through a window-type apparatus could inadvertently jump through a window while searching a building and plunge to its death. Therefore, the purpose and design of the agility apparatus should be taken into consideration. Ask yourself how each apparatus could be found at a search scene and how the canine would be expected to negotiate the object.

In summation, the working canine should possess excellent health and nutrition, be friendly and non-aggressive, be focused and able to work through distractions, trained

in a variety of terrain and weather conditions, and make slow and deliberate movements when working agility. Not all canines will be able to pass all of these standards, but they most effectively define a **true** search and rescue canine.

Student Study Guide – Lesson Two

1. Rapid and showy movements are considered important in training a canine for SAR related agility.
 - a. True
 - b. False
2. The type of agility apparatus you use in training should relate to what the canine will see on an actual search.
 - a. True
 - b. False
3. Having visual contact with the canine at all times is important when working off-lead?
 - a. True
 - b. False
4. It is always good to teach a canine to indiscriminately jump over or **thru** "open windows."
 - a. True
 - b. False
5. When training, the handler should:
 - a. work only when the weather is cool enough not to stress the canine
 - b. train only in early morning or early evening
 - c. train in a variety of terrain's and weather conditions
 - d. train a minimum of three times per week
 - e. both b and d
6. Agility practice can be a fun way to work on canine control as well as keeping your canine physically "tuned-up."
 - a. True
 - b. False
7. A well-socialized canine should:
 - a. accept all strangers
 - b. be willing to play with other canines
 - c. be friendly and non-aggressive
 - d. both a and b
8. Obedience training is only for those search and rescue canines that work off-lead.
 - a. True
 - b. False

Lesson Three

Objectives:

This lesson plan will help the student better understand training logs, reading and building your canine's alert, private property issues and crime scene preservation. It is suggested that students study how the "Good Samaritan" law applies as often times, the law states specific stipulations that may prevent a handler and their canine being protected by this law.

I. Handler Training Issues

Records

It is the responsibility of the handler to maintain the canine's training records. These records could be admissible in court should the handler ever be called upon to testify regarding the canine's work at a scene. The more searches a handler is involved in the greater the potential that they may end up in court. It is best to document training exercises as if planning to be called to take the witness stand.

When an attorney looks over training records, he should not only see what problems the canine had with the exercise, but also what solution the handler will work on to help the canine work through the problem. Therefore, the training record should contain not only what the canine did right but where the canine had problems and how those problems will be addressed in future training. Training records that only show what the canine did right could be quickly turned against the handler as the prosecuting attorney will address the fact that there is no such thing as the perfect search and rescue canine. This could affect a handler's credibility.

Canine Alerts

The handler should also be able to read his/her canine's body language and recognize the canine's alert. In court, the handler could be asked to explain what type of alert their canine gives. They may also be asked to demonstrate the canine's alert in the courtroom.

Since there are several different types of alerts that a canine can give, the handler should be knowledgeable regarding the different types. A **different** alert can be used for each type of discipline. There are several different types of alerts a canine can give: a scratch, bark, bringsel or re-find. It should be noted that there are times when one type of alert is more advantageous than another. When a canine locates a weapon, clothing or other items dropped by a lost person, it is preferred that the canine either bark or down at the item. In a wilderness setting, where the canine is worked off lead, the canine might be taught to do the re-find. The re-find will train the canine to return to the handler after the victim has been found. It is important that the handler can intelligently

explain what type of alert their canine gives and has it documented throughout their training records.

Additionally, it is extremely important that the handler know if the canine has given a "false alert." In the event the canine does give a "false alert" the handler should document this and work toward correcting this issue. It is important that the handler make sure they are not causing the "false alert" by hand or body movements or by talking their canine into an alert. There are times on a scene when a handler believes the subject is located in a specific area because a previous proven canine indicated there, or the agency strongly believes the subject will be located there. While working their canine, the handler may talk the canine into alerting or make body movements, which will prompt the canine to alert. There are times when a handler wants their canine to be right by alerting where they "believe" the subject will be located. Unfortunately, this is when a "false alert" is most often called. The handler should allow their canine to work the area and only call an alert if the canine truly indicates one. One of the best ways to avoid having the canine give a false alert is to allow the canine enough time to work out the problem. If after the canine works out the problem and does not alert, the handler should stand behind their canine and state that the canine does not have anything. This is especially true if the handler knows the canines training has been built on a solid foundation and that they have the confidence not only in their canine but also in their training that the canine will not alert if nothing is there. A handler that tries to find a justifiable reason why the canine gave a "false alert," (i.e. the subject might have been there, maybe there is another subject in that location, etc.) is only setting themselves and their canine up for future failure.

Document everything, the good, the bad and the ugly and your paperwork will be looked upon as a viable training record in court. However, keep in mind that you want to be short and to the point. Descriptions that are too long can be confusing and misinterpreted, and will work against you in court.

II. Search Scene Issues

There are important issues a handler will deal with at a search scene. One of those issues is protocol when working with law enforcement agencies. The agencies that call upon the volunteer search and rescue handler, expect a certain level of professionalism and knowledge when working a scene.

These issues will range from handler liability, the proper use of the radio, to how to deal with crime scene preservation. A handler should obtain training in these areas before responding to a scene for the first time.

Handler Liabilities

It is important to understand that the "Good Samaritan" law does not prevent lawsuits but is intended to give legal protection for volunteer emergency services. Handlers

should know the limitations of the "Good Samaritan" law as it pertains to their services. In some instances, handlers who claim expertise could find themselves not covered by the "Good Samaritan" law. Search and rescue personnel should be very careful in any situation in which they may be providing services for which they have not been trained or certified. It is the responsibility of the handler to know the laws that govern this issue as they apply in the state they are providing services.

Handlers might be able to limit their liability to exposure by training to a known standard, documenting all activities and maintaining current liability insurance. A verifiable standard and documentation that the handler and canine successfully completed the designated requirements can help reduce the handler's liability.

When on a scene, the handler is not automatically covered against any threat of a lawsuit by the agency requesting them. The handler is responsible for maintaining proper documentation, proper training and maintaining a professional manner.

Search Scene Procedures

Handlers are responsible for understanding what is expected of them by the requesting agency. In addition to specific agency procedures that should be followed in the field, there are some general procedures that should **always** be observed, as follows:

When working in the field, there are two acceptable ways a handler could enter private property during a search: (1) they may enter that property in the event there is reasonable certainty that life or property may be in danger; or (2) the responsible agent explicitly assumes responsibility for SAR personnel actions. A handler could be considered as trespassing on private property if one of these criteria's are not met.

While working a scene, if the handler locates a possible clue, they should radio in the clue location and description to base, mark the clue on a map and flag the area with three (3) pieces of flagging tape marked with your name, the date and time, and task assignment number if applicable.

This brings us to the issue of the "chain of evidence"—the documented series of individual's and agencies that come in contact with a piece of evidence. In order for the evidence to be considered viable, the date, time, individual's name, rank and agency affiliation are indicated on the evidence log sheet each time the evidence changes hands. The chain begins with the original individual locating the evidence to the time it is finally logged in at the agencies evidence room. Finding a clue, then abandoning it, for any length of time, could mean the difference between accepting and refuting certain evidence in court. A handler locating a piece of evidence in the field should turn the item over to the controlling agency's law enforcement officer. The handler's notes should reflect what the piece of evidence was, the time located, and the officers' name the evidence was turned over to. This will begin the chain of evidence. It is then up to the agency to maintain the proper documentation as the evidence makes its way to its final destination.

Handlers should be aware that if they locate the subject and there is the slightest belief that there may be foul play involved, the handler should back out of the area as close to the way they entered as possible, in an effort not to damage the area any more than necessary, control the area by keeping others out, **turn** the scene over to the proper authorities, and document the officer's name and time the scene was turned over to them. The handler will also be responsible for specifying where they walked, what they touched and whether they left anything within the crime scene.

Student Study Guide – Lesson Three

1. The maintenance of training records is the responsibility of the team secretary.
 - a. True
 - b. False

2. It's all right to leave a clue unattended if only for a short time.
 - a. True
 - b. False

3. Procedure when finding a clue does not include:
 - a. Flagging the area with 3 pieces of flagging tap marked with your name, the date and time, and task assignment number if applicable
 - b. Radioing the clue location and description to base
 - c. Noting the wind direction
 - d. Marking the clue on a map

4. Your training records should only show what your canine does proficiently.
 - a. True
 - b. False

5. The "Good Samaritan" law prevents lawsuits for all volunteers.
 - a. True
 - b. False

6. Your exposure to liability can be reduced by
 - a. Training to a known standard
 - b. Documenting all activities**
 - c. Maintaining current liability insurance
 - d. All of the above

7. A canine handler should be well-trained and proficient in:
 - a. reading his/her canine and recognizing its alert
 - b. be confident enough to send the canine ahead to search while taking a break
 - c. use proper search terms
 - d. both a and c

8. Entry onto private property may be justified on a search when:
 - a. The responsible agent explicitly assumes responsibility for SAR personnel actions
 - b. SAR teams are in uniform and have responded as a state resource
 - c. There is a reasonable certainty that life may be in danger
 - d. A and C

Lesson Four

Objectives

The student shall be able to demonstrate the capability to explain scent theory and how environmental factors affect scent. The student shall also be able to explain the differences between air scenting, **tracking/trailing**, scent discrimination and how to best utilize each. Finally, the student shall be able to explain how scent articles are gathered and used.

I. Scent Theory

The generally accepted theory of scent transport developed by Bill Syrotuck describes "scent particles" as "rafts" of shed skin cells, respiratory, and digestive tract cells. The shape and size of a raft allows it to float on air currents. On average, they **carry** four microbial passengers. The scent picture has often been illustrated by the character Pigpen in the popular Peanuts comic strip. Just as Pigpen walks around with a cloud of dust surrounding him, we humans have a cloud of skin rafts surrounding us. It is these rafts, with their passenger bacteria, that produce signature odors enabling canines to discriminate between one human being and another. This is called **discriminatory-humanoid** evidence.

Studies have shown that humans have a current of air next to the skin surface, which has been estimated to be traveling at a rate of 125 feet per minute or 1.42 miles per hour (affected by outside air temperature). It begins at the feet and travels up the body until it comes off the top of the head. Some of the rafts will fall where a person walks while the rest will be carried on air currents some distance from the source. The distance the rafts travel depends upon the wind velocity, vegetation and terrain features. It is these rafts that the canine will detect while locating the subject.

The scent components of a particular individual--cells, skin secretions, and **bacteria**—combine to produce a scent identity unique to that person. **Environmental factors**—temperature and humidity affect the bacteria decomposing the raft, and thus the scent (vapor cloud) it produces. Distribution of rafts about the individual's path is affected by atmospheric factors producing wind currents both close to and at some distance above the ground. All of these combine to present a dynamic scent-picture the canine uses to locate a subject. Condition of the subject, environment, and atmosphere must be considered together for the handler to understand the scent picture and how it is changing.

When looking at the human factors in scent, a handler should recognize that there are variations in heredity, race, culture and personal hygiene.

Syrotuck states that heredity provides individual differences on the cellular level. With the possible exception of identical twins, each human has a unique genetic scent component.

Sweat glands differ between races. African-Americans have a greater number of total sweat glands and larger-sized apocrine glands. Caucasians have fewer total sweat glands and apocrine secretions vary from one individual to another between clear and turbid. Asians have the least number of sweat glands.

Customs and dietary habits of a culture will also have an effect on scent. Bathing habits, types of perfumed toiletries, type and amount of spices used in the diet, and types of clothing worn will all play a part in the individual's scent picture.

Olfactory Senses

The olfactory system is comprised of the nasal chambers and sinuses. It gathers scent while the olfactory nerves carry signals to the olfactory lobe that is located in the brain. It is the olfactory lobe that actually recognizes the odors. Almost an eighth of the canine brain, and over 50% of the internal canine nose is committed to olfaction.

The canine has the ability to keep multiple scents separate whereas man is unable to do so. When a person enters a bakery, they are inundated with the sweet smells. However, after a few moments the person becomes accustomed to the smells and will no longer smell it as they did when first walking into the bakery. The canine however, can smell each ingredient being used in the bakery and will never become accustomed to the smell. This is why the canine can smell a scent article belonging to one individual and follow that specific scent through all other scents in the search area. It is this innate sense of smell that allows canines to work so well in search and rescue work.

Environmental Factors Affecting Scent

Several environmental factors can affect the canine's capability to detect scent: wind, temperature, time of day, rain/snow, humidity, ground-level temperature, and the subject's body temperature. The handler should keep in mind these factors when working a problem during training or dealing with them during actual searches.

Scent-picture strategies to consider when working should include the following: (1) during hot weather, working at first light will help the canine as the temperatures have not had an opportunity to rise and the night's dew will help enhance scent; (2) if the search area is experiencing heavy rain, the scent will be washed away; (3) wind will transport scents along a path of least resistance. If a subject is hidden in a wooded area just off a roadway and the prevailing wind is blowing from the woods toward the roadway, the roadway will tend to channel air and scent along its path. Scent will rise in the morning and fall in the afternoon. Therefore, if you are working a hilltop or mountainous area, you will want to work the hilltop in the morning and the valley in the evening. This will provide your canine with the best-case scenario for picking up scent. This effect can be seen on area ponds and waterways. In the early morning hours note the fog that may be coming off of the top of the water. As the morning progresses, it will stop rising and begin moving with the wind before dropping and finally dissipating altogether.

Temperature can either promote or destroy the rafts. During hot weather, the moisture within the raft cells quickly dries up causing the bacteria on the raft to die. Bacteria-laden rafts are surrounded by a minute vapor cloud, resulting from the bacteria using the raft as a nutrient. Once that vapor cloud is destroyed by heat, the bacteria no longer have the nutrients needed to survive. Therefore, in hot, dry weather, ground scenting is poor. An infusion of humidity will rehydrate the rafts allowing the bacteria to begin multiplying rapidly, producing a stronger scent intensity.

Humidity affects scent by generally increasing its availability--reviving scent that has "fried out" by restoring bacterial activity. The time of day the trail is laid is important. As humidity and temperature change during the day, the rafts—and scent--on a trail are affected. If the trail is laid in the early afternoon on a hot day, the rafts will quickly begin drying up. As dew forms in the evening hours, the moisture will reactivate the bacterial activity, thus rehydrating the rafts providing them with their food supply. The bacteria will multiply quickly and will provide more scent than when the trail was originally laid. The level of scent would be at its highest during the late evening when the dew and lower temperatures promote higher scent intensity.

If the trail is laid during the evening hours, the bacterial process is slowed down by the lower (below-optimum) temperature at night. The following morning the raft is regenerated from the dew, and as the temperature rises, the bacterial activity also increases, generating greater scent intensity.

Scent transport

There are many factors that affect the transportation of scent. By better understanding of how weather affects transportation of scent, handlers can better plan search strategy. Utilizing Julie L.S. Weibler's "Wind Behavior and Scent Detection" a general explanation of how these issues affect canines in the field will be discussed.

Stability of the atmosphere is determined by the cooling rate of air as it rises into the atmosphere, humidity levels, and the presence of inversions. Simply stated, if the rising surface air temperature matches the atmospheric temperature quickly, the air is stable. If the rising air remains warmer and lighter than the surrounding air so that it keeps rising, the air is unstable.

Humidity will affect air stability because moist air loses heat less rapidly than dry air. As a result, the rising parcel of humid air tends to remain warmer than the surrounding atmospheric air for a longer interval of elevation gain.

Inversions create an extremely stable air situation that can block air movement, and therefore, scent transport. Inversions occur when warm air moves over the top of cold air, which occurs generally at night, and are usually terrain-associated with a valley bottom. A good indicator that an inversion is present is the temperature gets warmer rather than colder when moving uphill. Because there is little air movement, scent will pool in the bottom of the inversion and it will be difficult to determine where the scent is

originating. The inversion will lift when the sun comes up but the timing is unpredictable. However, when the inversion breaks up, the winds will be erratic as the cool and warm air layers begin mixing.

When the air is stable, stratus-type clouds in layers without vertical motion may be visible. It may be foggy or hazy if the wind speed is slow, and the winds will be steady. Depending on wind speed, the wind will follow contours of obstacles it encounters. When the air is unstable, clouds will grow vertically and cumulus-type clouds may be visible. Dust devils indicate surface air instability. Instability is also indicated by the presence of lines of clouds.

Sandy Bryson describes five general scent-plume patterns that are dependent on what the wind is doing. The scent-plumes may be subtle and may occur at transition times between primary wind patterns.

Looping occurs when there is a high degree of convective turbulence because there is instability both at the surface and aloft. The surface air rises rapidly, cools quickly, and falls back to the surface repeating this pattern.

Scent transport at sunrise is characterized as fumigating. Fumigating occurs when stable air aloft and unstable air at the surface combine as the surface air quickly warms, and the scent plume diffuses down through the warmer air. It is this condition that offers the best scent at daybreak.

Lofting occurs when the surface experiences stable air while the unstable air is aloft. This happens after sunset as the ground is cooling. Because the unstable air aloft is pulling the surface air upwards, on calm evenings it may be best to try working ridges if there is no prevailing downslope wind.

Coning occurs on cloud-covered days or nights. The air moves about in a cone-like fashion. Coning is an ideal scent condition where scent stays low to the ground forming a cone shape with the subject located at the point of the cone and spreading out from the subject based upon the wind. It should be noted that the term "Coning" is also used to describe the zigzag pattern a dog follows to the victim once it has detected scent.

Fanning occurs in stable air as a result of an inversion layer on calm clear nights just before sunrise. The scent cone compresses vertically, but is spread horizontally. Scent may be out of the dog's range if the dog is at a lower elevation than where the scent is fanning out, or is above it.

When scent funnels straight up from a subject located at the base of a tree or depression, this is called the "chimney effect." If you and your canine are walking down a road at 1300 and the wind is coming out of the woods where the subject is hidden 30 yards inside the wood line, your canine might fail to locate the subject because of the chimney effect. The handler should train to recognize this phenomenon to effectively help the canine work through the problem.

Finally, the **Beaufort** scale can assist a handler in determining the wind factor in the field. The scale provides the handler with a description of how the environment reacts to different wind speeds as indicated in the table below.

	Light Air	Wind direction indicated by smoke but not wind vanes	1 - 5	1 - 3
2	Light breeze	Wind noticeable, leaves move, wind vane moves.	6 - 11	4 - 6
3	Gentle breeze	Leaves and small twigs in constant motion.	12 - 19	7 - 10
4	Moderate breeze	Wind raises dust and loose paper. Small branches are moved.	20 - 29	11 - 16
5	Fresh breeze	Small trees in leaf start to sway. Crested wavelets form on inland waters.	30 - 39	17 - 21
6	Strong breeze	Large branches in motion, wind whistles. Umbrellas used with difficulty.	40 - 50	22 - 27
7	Near gale	Trees in motion, awkward to walk against wind.	51 - 61	28 - 33
8	Gale	Twigs break, hard to walk.	62 - 74	34 - 40
9	Strong gale	Some structural damage may occur, slates removed etc.	75 - 87	41 - 47
10	Storm	Trees uprooted, considerable structural damage.	88 - 101	48 - 55
11	Violent storm	Widespread damage.	102 - 117	56 - 63
12	Hurricane	Widespread damage.	118+	> 63

A trailing canine will follow the scent from rafts that have fallen to the ground around, but not necessarily on the track. He will normally follow at some distance lateral to the track, where the rafts/scent have drifted depending on wind strength. The **tracking/trailing** canine should follow a relatively fresh trail in the direction of travel, or in other words, from older, less-intense scent to younger, more-intense scent.

Scent Discrimination

Whether air scenting, trailing, or tracking, a canine can be considered as human "detecting" if it is trained to look for any human, while the "discriminating" canine is taught to make use of a scent article and will only locate the person whose scent is on the article.

When a person makes an impression in the earth with his foot crushed vegetation releases fluids, vapor enshrouded rafts come to rest on the ground and bacterial decomposition of the crushed plant cells begins. It is the dead plant vapors that are considered non-discriminatory evidence.

Training Trails *and* Air scent Problems

When setting up training trails exercises, the handler should make sure to start the canine from different direction from the path of the subject in order to teach the canine that they must work from the start to locate the trails. On "Heated Aged Trails," it is best to lay the trail in the morning and work the canine in the late afternoon. A trail laid in the morning that bakes during the midday sun and run in the late afternoon before cooling ages the track. A trail laid in the evening and run in the morning may age in time, but is regenerating scent through the cooler parts of the day.

When setting up air scenting problems, the problem should be set up to encourage the canine to air scent rather than track (i.e. starting the canine from a different direction from where the subject walked). To increase the likelihood of picking up scent in the field, the handler should train the canine to range back and forth in the field, such as by zigzagging back and forth during practice until the canine gets the idea.

Both air scenting and tracking/trailing canines are useful in the field. The search strategy should be designed to best utilize the type of scenting to which the dogs are oriented.

Scent Articles

A canine can be trained to use a scent article to locate a specific individual. It is important for the handler to know how the scent article was obtained, who may have handled it, etc. They should determine whether or not the scent article actually belongs to the subject and if they were the last to wear or touch the item. Be sure that the subject's scent article did not come out of the family clothes hamper. How was the scent article handled? Was it picked up by a family member in their hands and placed in a bag, was it picked up by a volunteer or deputy who placed the article under their arm to carry it out of the home, or was the article picked out by someone other than a family member after going into the subject's room and deciding what to use? The answers to these questions are all important in determining the quality of the scent

article. An item belonging to the subject and properly bagged could mean the difference between success and failure.

The scent article should be picked out with the family present to make sure the missing individual last wore the article selected. Look for items with which other family members have not come in contact. When picking up the article, make sure gloves are worn and a bag is available in which to place the article. All attempts should be made to keep the scent article as pure as possible. It is always best if handlers are allowed to pick and bag the scent articles they use.

Some of the best scent articles are made of natural fibers, are worn close to the skin and have been packaged without being touched. By keeping these factors in mind when looking for the perfect scent article, the handler will be providing their canine with the best-case scenario for picking up the correct scent.

During training, the scent articles initially used should be made of cloth, as they tend to hold a higher level of scent than many other materials. As training progresses, the handler should include scent articles made of metal, wood, plastic, etc. Some materials will hold less scent than others--however, the canine should be trained to work using all types, as one never knows what will be available at the actual search scene.

Student Study Guide – Lesson Four

1. _____ and _____ are two pieces of evidence present when a person walks through a vegetated area?
2. Temperature can either promote or destroy rafts.
 - a. True
 - b. False
3. Wind, temperature and humidity are considered:
 - a. environmental factors
 - b. human make-up factors
 - c. none of the above
4. Generally, increased humidity revives and increases the availability of scent.
 - a. True
 - b. False
5. Terrain and man made obstacles affect how scent is carried/distributed by the wind.
 - a. True
 - b. False
6. During the middle of a hot sunny day, scent will tend to:
 - a. Rise straight up
 - b. Collect in low places
 - c. Stick to leaves and grass
 - d. All of the above
7. Scent transport at sunrise is characterized as fanning.
 - a. True
 - b. False
8. The **Beaufort** Scale measures
 - a. Distance on a **topo** map
 - b. Relative humidity
 - c. Air temperature
 - d. Wind velocity
9. A *human discriminating* canine is oriented to:
 - a. a specific human being without any clues
 - b. a specific piece of evidence
 - c. a specific human being via some clue, such as an article of clothing

Lesson Five

Objectives:

The student should know protocol for safely approaching and loading, a helicopter, flight protocol, and departure safety, and be able to discuss equipment for both the handler and their canine partner.

I. Helicopter Safety

Before a handler and canine consider flight time on a helicopter, they should first have a clear understanding of the rules in place for the safety of the helicopter crew and those flying with them. It is the pilot of the helicopter that is in control of the entry and departure of the crew and passengers. Prior to flight time, a handler and canine should go through specific training with the pilot and ground crew regarding signals and other safety measures.

We will take a few moments to discuss some of the key safety and training issues a handler should understand. Since the pilot is in control of the craft, they have total say in how crew and passengers load and unload from the helicopter. The ground crew will indicate the position in which each handler and canine will stand while waiting for the pilot's signal to load.

Side-loading helicopters (i.e. Dolphins)

Loading position usually is located at the 3:00 position from the front of the helicopter (The front of the helicopter is the 12:00 position while the rear of the helicopter is the 6:00 position). It is a position where the pilot is able to see the handler, and the handler can approach from the front of the helicopter instead of the rear. At no time should a crew or passenger ever enter or depart from the rear. This is one safety issue that is strongly expressed by both the ground crew and pilot.

Back-loading helicopters (i.e. Chinook)

Loading position is at 6:00. On signal from the pilot, the crew will in turn signal the handler when to load.

The pilot will explain where each handler should sit and how to buckle up. It is up to the handler to make sure that their canine is totally under control and placed in a position that will not affect the function of the crew or interfere with the other handlers and their canines. Once everything is explained and questions are answered, then each handler and canine should practice loading on and off the helicopter without the engines and rotors engaged. It is at this time that the handler should be observing their canine's behavior in the cramped quarters they will be expected to remain in sit or down position for the length of the flight.

In the next phase of the helicopter training the engines and rotors should be engaged with the handlers and canines positioned approximately **100** feet from the helicopter. It

10. A *human detecting* canine is cued to:
- a specific human being
 - specific articles
 - "any" human being
11. When using a scent article, the handler should know the following:
- Type of scent article
 - How article was packaged
 - Who obtained the scent article
 - How it was determined that the article belongs to the subject
 - All of the above
12. Fanning is best described as:
- A treatment for K-9 heat stroke
 - A ground team search pattern for covering a triangular search area in high winds
 - Occurs in high wind conditions on cloudy days just before sunset
 - Occurs in stable air as a result of an inversion layer on calm clear nights just before sunrise
13. An air scent canine is:
- A search canine that will locate the scent of a specific individual
 - A canine that will detect airborne human scent
 - A search canine that will follow almost exactly the ground scent track of a person.
14. One way to teach a canine to loop around you or to range back and forth in front of you is to:
- Zigzag back and forth yourself until the canine gets the idea
 - Walk the canine, on leash, in circles or in a zigzag pattern
 - Teach a zigzag command
15. To encourage a canine to **airscent** rather than track, search problems should be arranged so that the canine runs in a different place from the track of the victim.
- True
 - False
16. A _____ canine works with a scent article and ranging several feet from the actual track.
17. A _____ canine does not vary more than two feet from the victim's footsteps and works with head down.

is advantageous for the handler to kneel down next to their canine when the engines and rotors are initiated. The handler should observe their canine's behavior. If the canine attempts to pull away, the handler should gently try to encourage the canine to settle down and accept the noise and wind caused from the helicopters engines and rotors. If the canine will not settle down, the handler should take the canine out of the area. This particular canine is just not mentally ready for this type of training. The handler might try again several weeks or months later, and never force the canine to accept the helicopter. If forced, the canine will never be comfortable, and could possibly cause a problem during a flight in the future.

If all goes well, the handler and canine are ready for the final step, the actual loading, flight time and unloading. As the handler steps forward to the predetermined position, they should have a short grip on their canines lead and be prepared for the canine's reaction to the downwash, that occurs halfway between the tips of the rotors and the entrance to the helicopter. Normally, if the handler moves confidently forward to the helicopter, the canine may pause briefly under the downwash and then continue forward. Should the canine react too negatively to the downwash, the handler should attempt getting them through it as quickly as possible.

Once inside of the cockpit, the handler should continue monitoring their canine for stress and anxiety. If either of these conditions occur, the handler should take every step possible to assure and calm down their canine. If the situation shows signs of worsening, the handler should make the pilot aware and request that they return to base. Under no circumstances should the handler wait too long to make this call in hopes that they can get their canine to relax. The pilot and crew will have more respect for you as a handler to make this call than to possibly allow the canine to become so stressed that the canine goes into an aggressive stance. Nothing makes a pilot more nervous than a stressed out canine in his cockpit.

Upon landing, the pilot will give you the signal when it is safe to depart the helo. Each handler on the flight should be prepared to depart in a controlled and safe manner. Keeping a good grip on your canine's lead, the handler should exit the cockpit moving straight out from the doorway making sure they move in the correct direction from the helo. Once again the handler should be aware of the downwash.

Helicopter training offers a wonderful opportunity for both the handler and canine, but it is also one more situation in which the search and rescue canine will be under the magnifying glass. It is extremely important that the handlers know that their search and rescue canine's temperament and comfort zone in tight, noisy environments will not be an issue. A search and rescue canine that attacks a crewmember or other passengers is totally unacceptable and could result from *all* search and rescue canines being permanently refused for future training.

II. Canine Equipment:

Just as a handler would not consider going into a wooded area under three feet of snow in summer clothing, neither should they allow their canine to enter the field without

proper equipment. In wilderness or urban settings, the canine may wear a properly fitted tracking harness or shad rack. In the disaster setting it is safer for the canine not to wear any equipment at all, as it may end up getting caught on a piece of the debris.

The items a handler carries in the 24-hour ready pack should include extra food and water should they be going into an area where there is the possibility that they may be required to stay out all night. In all situations, the handler should carry extra water, as there are times the canine may need to be cooled down using some of the water you are carrying—especially true when working during very hot weather. Along with food and water, your pack should contain necessary first aid, change of clothing and items that can be used for shelter and basic survival needs. A periodic check of your pack contents should be done in order to replace those items used during a previous search. A list of items that the handler should carry into the field is provided in the Attachment I of this workbook. It is this list that the handler will have to show to the evaluator during their classroom session as part of the courses requirements.



Student Study Guide – Lesson Five

1. Prior to exiting the helicopter, the handler should:
 - a. Wait for a signal from the pilot
 - b. Wait for the rotors to stop
 - c. Wave to everyone on the ground waiting for their departure

2. In a wilderness or urban setting, the handler may opt to have their canine wear a properly fitted harness or shad rack.
 - a. True
 - b. False

3. When will the handler and canine experience downwash from a helicopter?
 - a. When the helicopter is sitting idle on the runway
 - b. As the helicopter takes off
 - c. As the helicopter lands
 - d. As the handler and canine reach the midway point under the moving rotor blades

4. The ground crew and pilot are in charge of helicopter loading and departure.
 - a. True
 - b. False

5. The proper distance that one should maintain from the helicopter when not loading is:
 - a. **100** feet
 - b. 200 feet
 - c. 300 feet
 - d. **25** yards

6. The 24-hour ready pack should include the following:
 - a. clothing, food and first aid
 - b. snacks, games and reading materials
 - c. water, clothing and books

7. It is all right for a canine to growl at the crewmembers when loaded into the helicopter or during a flight.
 - (a) True
 - (b) False

Lesson Six

Objectives:

The purpose of this lesson is to discuss search strategies that a handler should consider during training and actual searches. How wind and other factors affect the scenario will also be discussed. It is important that handlers train under different weather conditions, terrain features and times of day. In some cases, the handler may want to invest in attending training seminars outside their area in order to experience and learn how to work in a totally different type of terrain or weather condition.

I. Search strategy

There are several strategies a handler can utilize to cover the area they are assigned—hasty, grid, and contour. Refer to Environmental Factors Affecting Scent, p. 25, for additional discussion of coning, lofting, fumigating, fanning, and other conditions that affect distribution of scent.

Hasty

Often times, a handler will begin a search by doing a hasty search. The hasty search offers a good way of covering an area rapidly. It is also a great way to allow high drive canines to work off some of their edge before being asked to settle down to a methodical work ethic. Searching trails, roads, pathways, the area of point last seen (PLS), and the area of lowest probability of detection (POD) are all areas where a hasty search should be considered. When clearing a small grid, the handler may opt to do a hasty search of the grid in an effort to provide them with the terrain features of their area when a topographical or aerial map is not available. This will help the handler better determine how they should cover the area in a more methodical manner.

It is the terrain features and time of day that will directly affect how an area should be covered. In areas where the terrain is flat and featureless, a hasty **and/or** grid is best. Let's take a look at a scenario and what would be the best search strategy.

You have been asked to cover 70 acres of flat, featureless terrain. It is 0730 hours and the temperature is 50 degrees F. The wind is out of the west at 5 MPH. The handler should take into account the wind and temperature factors. With the low wind and temperature factors, it would be more advantageous to use a grid pattern working North to South. Scent will travel a short distance from the subject and will not be affected by any terrain features that could serve as a catch (such as a drainage feature or ridge).

In comparison, if you were asked to cover **40** acres with well-defined ridges and drainages at 0200 hours with temperatures in the **50's** F and light variable winds, you would want to take into account the terrain features. The drainages would serve as a catch feature for scent. With variable winds, a hasty search starting in the drainages would be the most beneficial search strategy. At that time of day, scent will be traveling down from the ridges gathering in the drainages. By working the drainages, the handler will be able to determine if the subject is above on the ridge.

You are presented with an area having well-defined ridges and drainages, it is 1000 hours, temperature is 60 degrees F with light and variable winds. The handler should take into account the terrain and time factors. In this scenario, the best search strategy would be to do a contour, starting on the ridges, since scent should be traveling upward. Start on the high ground where the canine can pick up the scent as it rises.

Generally, in early morning as the air on the top of ridges or hilltops warms, it will rise, to be replaced by the cooler air from the drainages and valleys. (As is often the case, variations can occur on east slopes versus west slopes and in other cases.) Therefore in the morning, scent will travel upward to the tops of the ridges. In the afternoon, the opposite happens, the hot valley air rises and is replaced with cooler air from the ridges. Up in the morning, down in the evening. It is this effect that handlers should consider when setting up their search strategy in that type of terrain.

Lofting occurs after sunset when the surface experiences stable air while the unstable air is aloft. When this occurs, the canine should be worked at sunset on top of ridges to better pick up scent.

In fumigating conditions, which is the opposite of lofting, when stable air aloft and unstable air at the surface combines, the surface air quickly warms, and the cooler scent plume diffuses down through the warmer air. It is advantageous to work the canine at sunrise, as the scent will gather along the bottom of the ridges and in drainage areas. Additionally, scent could gather along power lines, roadways, rivers, or fence lines, as each of these will help hold scent for the canine.

II. Search Variables

This section is designed to touch upon different variables a handler could encounter during a search. Each paragraph will detail a different scenario and how best to handle the issue.

There will be times when your canine will alert and circle an area several times, but is unable to work out the problem. If you are on an actual search, you should consider working the canine out in ever widening circles from the alert area. If the canine is still unable to work it out, the handler should mark their map with the location of the alert and include the wind direction and time of the alert. The handler should complete the search. Upon arriving at base, the Incident Commander (IC) should be made aware of the alert.

The only times when a handler should discontinue coverage of their assigned grid, is when the subject has been located or if the area becomes too dangerous for the handler and canine to continue. If a handler hears over the radio that another handler has strong alerts or has picked up scent, the other handlers should not stop searching until the subject is actually located. Nor should the handlers in the adjacent grids move to the grid where the alerts or scent is being picked up. There is always a probability that the subject crosses over from one grid to another. Therefore, if the handlers leave

their grid uncovered, the subject could later be found in the area of the grid that was left undone.

Finally, if you are working on the east ridge of a valley and another team is working ahead of you on the west ridge across the valley from your sector and they are experiencing strong alerts that they cannot work out, you as a handler should consider the following. If the general direction of the other team is downwind. You may be able to help your fellow handler determine whether or not their canine is alerting on you. Remember, we are all there to work together to assist in locating the missing subject.

Student Study Guide – Lesson Six

You are below a 60 foot cliff area in your sector. Your canine is alerting 20 yards from the cliff but as you get close to the cliff the canine loses the scent. You have determined the wind is coming from the direction of the cliff face. What is the most likely location of the subject?

- a. On top of cliff
 - b. Between where your canine is alerting and the cliff
 - c. You have passed them and they are behind you
 - d. There is no subject the canine is alerting on
2. Searching trails, roads, pathways, the area of point last seen, and the area of lowest probability of detection are all areas where a hasty search should be considered.
 - a. True
 - b. False
 3. Fumigating conditions should be worked early in the evening.
 - a. True
 - b. False
 4. In areas that have flat and featureless terrain, it is best to:
 - a. Use a contour search pattern
 - b. Hasty search
 - c. Grid pattern
 5. Hasty, contour and grid, N-S are considered what?
 - a. Search strategies
 - b. Map readings
 - c. Topographical map markings
 6. In the morning, scent travels _____
 7. In the evening, scent travels _____
 8. Lofting conditions should be worked at sunset.
 - a. True
 - b. False

9. If a handler's assigned grid is too dangerous to cover, the handler should:
 - a. Slowly back out in order not to disturb anything
 - b. Finish clearing the grid anyway, so people don't think the handler is not capable of clearing their grid
 - c. Radio to the Incident Commander to make them aware of the danger
 - d. Clear the area, but think safety while doing so

10. As a canine handler, you are the most important part of the search operations. Therefore you should be given special treatment at the scene.
 - a. True
 - b. False

11. Scent rises at sunrise and flows downward at sunset.
 - c. True
 - d. False

11. Drainages, rivers and fence lines are all considered what?
 - a. Natural grid borders
 - b. Catching features
 - c. Obstacles to cross

Lesson Seven

Objectives:

This lesson will discuss the importance of working as a team on a search. Better understanding of the interfacing of all teams and the terminology commonly used at a scene will assist handlers in their efforts to be team players. Additionally, lost person behaviors and the importance of knowing as much as possible about the subject will be discussed.

I. Interfacing the Support Team and Canine Team

There are times when canine handlers will need to work with **backups/flankers/walkers** that have never before worked a search. In this circumstance, it is the responsibility of the handler to quickly educate these individuals on their responsibilities in the field. Develop a working relationship by taking a few moments to explain such things as not walking ahead of the canine, being on the lookout for clues and signs and assisting with navigational issues, including marking alerts on a map. There are times when they may be asked to assist in **carrying** extra water or handle radio operations. Since the **backups/flankers/walkers** are part of the canine field team, the handler should make sure that they are never abandoned in the field.

It is the responsibility of the canine team to assist in locating the subject, locating clues, and clearing areas. There are times when a canine will not locate the subject because they were not assigned to the grid where the subject was located. If the canine is able to affectively clear their area, they have done their job, whether or not they directly locate the subject. Not everyone on a scene will make the find, however it takes all parties working together to bring about a successful conclusion to a search.

II. Lost-Person Behavior

Upon **arriving** at a scene, the handler should obtain as much **information** regarding the incident and the missing subject(s), in order to ascertain the likely behavior of the subject, and thus decide how best to search the area. By using a Lost Person Questionnaire (LPQ), the handler will have a predetermined set of questions to ask of the requesting agency. The questionnaire will cover such things as the person's physical description, circumstance of the disappearance, and the health and mental status of the subject.

According to William Syrotuck, the five basic fears of a lost person are: being alone, darkness, animals, suffering and death. Children between the ages of 1-3 years of age and those individuals which are despondent will not generally realize that they are lost, and so by definition do not experience those five basic fears. In most cases, the subject will tend to literally take the path of least resistance. An exception is the Alzheimer's patient, who will tend to walk until restrained by some object.

A despondent/suicidal person is likely to be found near their home, in a scenic area, on high ground or at a location that means something special to them. When working this type of scene, it is very advantageous for the handler to find out where the person tends to go when upset and how mobile the person may be.

III. Communication

Every handler should possess knowledge of basic radio terminology and manners. The minimum power level that enables effective communications should be used(it is not always necessary to have the highest-powered radio available). If you are having difficulty "closing the link", you should consider moving to higher terrain, changing the battery, using a higher power level, or request a relay. (Note that the volume control does not have an effect on the transmit power).

Handlers should know certain basic codes or phrases used by the law enforcement agencies in their area. If you are working with an agency for the first time, you may want to go over their basic codes/phrases prior to departing base operations. In the event the agency uses codes instead of phrases, the handler should ask the agency to write pertinent codes and their means down before leaving base operations.

One of the most important codes at a scene is when the subject has been located deceased. Should the handler be placed in a position to contact base operations to report this situation, they should state, "secure the net" and wait for clearance before proceeding with information. This tells the agency that all family and press should not be in a position to hear further radio communications, and is done out of respect for the deceased as well as family.

Note: After backing out of the area, the handler should then close it off to all parties until a representative from the requesting law enforcement agency arrives to take over the investigation. Under no circumstances should the handler move the body for any reason. One should assume that the case has changed from a missing person to a possible homicide investigation, and protect the scene from disturbance until arrival of the appropriate law enforcement personnel. It is not the job of the handler to determine whether or not the subject died as the result of an accident or foul play.

Finally, the agency in charge at the scene should handle outside communications. Should the press ask a handler to do an interview, the handler should first address the request with the agency in charge. Let the agency decide whether or not the handler should be interviewed. If the agency agrees to the interview, the handler should find out what information should not be provided to the press. Once the interview begins, the handler should answer questions based on what their canine did in the field.

IV. Terminology

The following is a listing of terminology most commonly used in search and rescue operations.

- RA Responsible Agency (agency in charge of the scene)
- TAF Task assignment form (form provided outlining area of responsibility)
- IC Incident Commander (person over entire search scene)
- LPQ Lost person questionnaire (questionnaire used when gathering info)
- PLS Point last seen (place subject was last seen)
- LKP Last known point (place subject was known to be last)
- DES Department of Emergency Services
- CISD Critical incident stress debriefing (program helping those responding to a major incident deal with their feelings and thoughts)
- POD Probability of detection (probability of finding the subject in the specific area or place)
- ICS Incident Command System (system implemented by the IC to run a scene)

Search strategy – a plan or objective to cover a specific area

Search tactics – implementation of the strategy

Walkaway – type of missing person with some mental or cognitive deficiency who has wandered away from a care facility

Pre-plan – a document, which provides incident managers with information, instructions, resource lists, checklists, Standard Operating Procedures, and technical data that will be used during a search incident.

Student Study Guide – Lesson Seven

1. Regardless of direction, lost persons usually:
 - a. Go downhill
 - b. Seek paths of least resistance
 - c. Go to high ground

2. "Secure the net" means to:
 - a. Move towards the location of the find
 - b. **Turn** off the radio
 - c. Return to base
 - d. Ensure no unauthorized people can hear the radio traffic

3. IC stands for:
 - a. **In**competent Canine
 - b. Irresistible Canine
 - c. Incident Command
 - d. Incurable Canine

4. **Children** 1-3 years old always know when they are lost.
 - a. True
 - b. False

5. The handler should not worry if their backups/flankers/walkers become separated from them in the field.
 - b. True
 - c. False

6. LKP stands for:
 - a. Lost K-9 Personnel
 - b. Last Known Point
 - c. Least Knowledgeable Person
 - d. Local K-9 Police

7. When a deceased subject is found you should NOT:
 - a. Move the body
 - c. Back away from the body
 - d. Report anything that you or the canine may have disturbed
 - e. Check for identification of subject

8. LPQ stands for:
 - a. Last Person Questioned
 - b. Lost Person Questionnaire
 - c. Lost Person Question
 - d. Last Person Questionnaire

9. A despondent/suicidal person is likely to be found near their
 - a. Home
 - b. In a Scenic Area
 - c. Location that means something to them
 - d. **All of the above**
 - e. None of the above

10. Handlers should know basic law enforcement codes prior to departing from base camp to begin searching.
 - a. True
 - b. False

11. It is the job of the handler to do everything possible to position themselves in front of the press and cameras,
 - a. True
 - b. False

12. RA stands for
 - a. Reasonable Access
 - b. Rain Area
 - c. Responsible Agency
 - d. Reference Azimuth

13. TAF stands for
 - a. Terrain Analysis Facility
 - b. Training Aid, Forensic
 - c. Track and Field
 - d. Task Assignment **Form**

Attachment I

Personal/Canine First Aid and Survival Kit

Ten	Acetaminophen, ibuprofen or aspirin tablets
Four	Antacid tablets
Ten	Antihistamine doses such as 25 mg Benadryl
Six	Antiseptic cleansing pads
One	Antiseptic ointment
Six	Band aids, various sizes
One	Candle, long burning
Two	Cotton swabs, non sterile
One	Duct tape, 5-10 feet
One	Eye wash bottle (Normal Saline)
Ten	Immodium tablets or equivalent
One	Leaf bag, large
Eight	Matches in waterproof container
One	Moleskin
One	Muzzle or other item to improvise one
One	Plastic bag, zip-locked, qt. size, for kit
One	Change for two phone calls
Two	Pair of latex gloves
One	Razor blade, single edge
Two	Roller gauze bandage
Two	Rolls of 2 inch "Vet" wrap
Four	Safety pins, large
One	Scissors, multi-purpose
One	Space type blanket and space type sleeping bag
One	Splinter forceps, tweezers
Four	Sterile dressings (4x4 gauze pads)
One	Super glue (bottle, tube)
Two	Towelette, clean
One	Whistle
Six	Water purification tabs in sealed container or commercially approved purification device
One	Instant cold or heat packs (based on environment)

Personal/Canine SAR Equipment

Four	Bags, various sizes, zip-locked
One	Bandanna, handkerchief
One	6 foot canine lead
One	Cap or other headgear
Two	Carabiner, locking gate
One	Clothes bag, waterproof
One	Clothing, adequate for climate and environment
One	Clothing, extra set, suitable for climate
One	Compass, mirror sighting
Two	Extra leaf bags
One	Flagging tape, roll
One	Flashlight or lantern
One	Flashlight extra, extra batteries and bulb
One	Footwear, sturdy, adequate for climate
One	Gloves, even in summer
One	Grid reader
One	Food 1 day's worth of food in sealed bag/can for canine
Two	ICS 214 Forms
One	Knife, multi-purpose
One	Lip balm, with sunscreen
One	Measuring device, 18 in minimum
One	Metal cup or pot
One	Mirror, small
One	Nylon twine or small rope, 50 feet
One	Pack, 1800 cubic inches (minimum)
One	Pad and pencil
Two	Prussik slings (suitable for 9mm to 11mm)
One	Rainwear, durable
One	SAR personal identification
One	Shelter material, 8x10 plastic or coated nylon
One	Socks, extra pair
One	Sunscreen lotion
One	Tissue paper or baby wipes (recommended)
One	Tracking stick, minimum 42" long
One	Accurate method of telling time (watch, GPS, etc.)
Two	Water container, at least liter size
One	Webbing, 1 in tubular-length suitable for harness
One	Wire, 5-10 ft., woven steel
Eight	Wire ties, plastic self locking

Optional Equipment (Recommended, but not required)

- | | |
|-----|--------------------------------------------|
| One | Foam pad |
| Two | Food, nonperishable |
| One | Gaiters |
| One | Goggles, clear |
| One | Canine harness with optional bell or light |
| One | Rain cover, pack |
| One | Sun glasses, 97% UV protection |
| One | Trail snack |

Attachment II

References

Pearsall, M. D. & Verbruggen, H. MD. *Scent Training to Track, Search, and Rescue*. (Alpine Publications, Inc. – 1982), pps 1-44.

Syrotuck, W. G. *Scent and the Scenting Dog*. (Arner Publications, Inc. – 1972), ppg 1-81.

Bryson, S. *Search Dog Training*. (The Boxwood Press – 1991), ppg 68-94.

Bulanda, S. *Ready! The Training of the Search and Rescue Dog*. (Doral Publishing – 1994), ppg 30-36.