

THE HORSE AS A SEARCH AND RESCUE TOOL

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Abstract

This paper presents the experiences of Greater Philadelphia Search and Rescue (GPSR) and other organizations it has been in contact with in organizing a mounted search unit within a larger multi-skilled land search organization. Much of this material is anecdotal in nature but should be considered in light of the long operational history of GPSR and the studied approach taken with regard to organizing the mounted unit.

Background

Historical Background

Greater Philadelphia Search and Rescue was founded in 1979 and became operational in 1980. By 1983 GPSR had concluded a contract with the Red Cross that provided 24-hour manned dispatch service, became a resource for the City of Philadelphia, Chester County, and the state parks and forests bureaus. By 1986 GPSR was being dispatched by the Montgomery County (PA) Fire Radio System. Average volunteer strength was 35 members during this period. During 1986 GPSR helped found the Pennsylvania Search and Rescue Council and initiated the first Managing Search Operations courses taught outside of government agencies in the area.

GPSR operates an equipment trailer and has collected a significant amount of infrastructure equipment to operate in the field. This infrastructure includes portable and fixed two way radios, generator, antenna masts, maps, an inflatable boat and motor, etc. Additionally there are 2 dog handlers and mutual aid agreements with 3 dog only search teams.

Approximately, 1987 a member was recruited who owned two horses, a Paint gelding and an Appaloosa mare. These horses were made available to interested members on a one at a time basis. Additionally, these horses were boarded at a barn that maintained a sale string and a hack string. It was thus possible for a member to gain experience with horses without committing to ownership.

By 1989 GPSR members owned 5 horses, a 4 horse and a 2 horse trailer, and proper tow vehicles. In 1991 an EIA epidemic occurred in Southeastern Pennsylvania, effectively eliminating horse movement within the several counties. This epidemic cost GPSR 2 members, 2 horses put down, and set the program back to the beginning.

As of this writing GPSR members own 4 horses, one 4 horse trailer, and are located in two barns.

Operational Concepts

The operational concept for mounted (horseback) search personnel can be determined to be one of the following:

1. Transportation only--the horse provides motive power and is equivalent to a dirt bike, ATV, or similar vehicle.
2. Logistics--the horse as truck
3. Search--the horse is used as a true search partner, equivalent to a search dog or at a higher level of efficiency.

GPSR began exploring the concept of mounted search by researching the topic Utilizing the network of emergency service communications officers known to the Chief inquiries were launched to determine if anybody knew anything about search horses. After contacting the National Park Service, Royal Canadian Mounted Police, several police units, NASAR, and one other known mounted search group referred to us by the primary contacts we concluded that all current users were using their horses for either logistics or transportation. This was considered a waste of effort as mechanical devices needed less maintenance, and were less expensive to operate in our environment.

This first exploration of the uses of horses for search and rescue resulted in an appreciation that there were two kinds of users in the horse community. The first agencies GPSR contacted owned their animals and paid all expenses from the agencies' budgets. Even where the duty was a collateral duty or the horses were owned and ridden by unpaid reserves or auxiliary units there was a public budget supporting a major portion of the mounted unit's expenses.

In GPSR's world the horses would be owned and paid for by the members. All expenses, including board, veterinary services, farrier charges, trailers, etc. would be borne by the individual member participating in the program. To justify recruiting such a unit it would have to prove beneficial to GPSR's mission capabilities. Several tests were conducted, in an unscientific manner, to determine if the horse could function as a search tool, actually conducting the search with the horse as an active partner. We believe that these tests led to an operational concept that is unique and is now being optimized.

GPSR Operational Concept for Mounted Search

The GPSR Operational Concept for Mounted Search is to use the horse as a search tool, equivalent to a discriminating air scent search dog in usefulness as a search tool, prior to assuming any benefit from logistical support or transportation value. The search

horse must be capable of detecting humans and conveying that detection (alert) to the rider in a meaningful way. The mission of the search horse is to detect humans and when encountering a human and being told to continue search does so without realerting on the previously detected human. This discrimination is needed in GPSR's primary response zone because much of the territory in the zone is public park or recreation area frequented by many humans in addition to the search subject.

The Horse Rider Combination

Further experimentation revealed that there is a unique set of circumstances for a successful Horse Rider combination. The rider must be a qualified search person. The rider should be clue aware and able to recognize clues from horseback. The rider should be sufficiently skilled as a rider so as not to endanger himself or the horse during a mission.

The horse and rider must develop a trust bordering on symbiosis. This type of relationship is frequently seen in Western working horses. The rider must be able to concentrate on the search while doing the other things people have to do on a search (take notes, navigate, talk on the radio, duck) while the horse watches his footing and the trail.

This is not the relationship a rider has with a cutting horse in that the horse is not on automatic while the rider hangs on once the process is started. Similarly, many school horses often can execute arena maneuvers perfectly no matter how poor the rider. The relationship between a search horse and his rider is trust. The rider must trust the mount not to endanger himself or the rider while believing the alerts presented by the horse. The horse similarly must trust his rider to not place the team in an untenable position yet still following the rider's hunches and trail selections.

The formation of this relationship requires long periods of time together. It also means that horses cannot easily be shared among riders or team members while retaining maximum performance. This situation creates unique problems for mounted searchers and complicates the logistics of mounted teams.

The operational concept to be employed is that of search horse. The horse is used and trained as a discriminating scent detector and tracker in conjunction with the rider developing the ability to read the alert and trust the horse's sense of where the alert is coming from.

The Search Horse

GPSR's experiments indicate that no breed tested cannot be trained as a search horse. Some breeds that do not do well as trail horses due to breed characteristics should be avoided as a general rule.

The basic search horse is a rugged, sure footed grade horse. There is no need to invest in papered horses for this endeavor. The animal should be physically fit, have good leg, and needs stamina under load. The horse should have good social graces--no kickers, no biters, easy to load, and not aggressive. The horse should be able to stand tacked at a picket line or tied to a trailer or other object for long periods of time (this is a trainable trait). He must be a willing worker, at least once he wakes up and puts his mind on it.

The optimum horse would be calvary stock, once trained. As typified by the 3 day calvary trials the search horse must be able to cross varied terrain, be well mannered, and meet obstacles without hesitation. Today, the animal chosen will be well balanced and sufficiently rugged to stay on the trail for 3-4 hours continuous work at the walk/trot and be in the field continuously at a campsite.

The horse must be sized to the rider. Search people come in all sizes but many tend to be in the higher percentiles of size. A tall searcher needs a tall horse. Additionally, searchers carry lots of "stuff" with them and the carrying capacity of the animal must be considered. A 6' 2" searcher at 275 pounds or so plus 40-50 pounds of equipment, his tack, and radio needs a bigger horse than a 5' 2" searcher at 100 pounds plus gear. There is also a consideration that the rider must be able to tack up the horse, load and unload, etc. This all affects the size of the animal chosen.

Our experience indicates that the horse should be as tall as the rider. That is, 5' riders should ride at least 15h tall horses with 9" of leg circumference. The author is 6' 2", 280 pounds and rides a 17h 2", 1700 pound Percheron cross. Police departments have proven that a tall rider on a tall horse is effective in maintaining visual contact with the population he is patrolling and similarly the search person can obtain and maintain visual contact with other searchers and possibly the subject.

Size is just one consideration. However, any significant mismatch between the rider and the horse can be disastrous. A primary criteria is that the rider must be able to mount from the **ground** without the aid of mounting blocks or equivalent. If the rider cannot regain his mount after dismounting to inspect clues he is no longer a mounted searcher but a ground searcher leading around a 1000 pound plus horse.

The search horse must have a good nose, eyes, and ears. He is being selected and then trained to smell, hear, and see objects of interest to his rider that his rider might miss. A horse that ignores his environment, that is so bombproof that nothing bothers him is a poor choice for a search horse. The search horse is attentive to his surroundings, always alert for human scent or sounds. He is not spooky but interested and wants to smell everything all the time.

There are other physical characteristics that make a good search horse. The horse should have sound hooves and legs. Shod horses should retain their shoes to avoid having to either pull shoes in the field or retire the horse until the farrier can respond.

To ease logistical support the horse should be able to forage and not reject locally obtained hay, water, or feed. Many horses will drink from free running streams but will not drink water from a different well, even in their own water buckets. Therefore, camp near a stream with a lot of fresh, high water content grass.

Confirmation is not in and of itself a factor. Lack of sound structure due to poor confirmation would rule out any horse for this type of duty. However, searching is not the show ring and horses that are not perfect examples of their breed are often adequate or superior to conformation winners. The appearance of the horse should be nonthreatening. He should really be huggable in appearance and demeanor. The idea is to use the animal to attract the subject, especially juveniles or younger subjects. If the public thinks your horse is cute, lovable, handsome, or even beautiful you probably have a good candidate for a search horse.

The best horses for this duty appear to be hack horses. These animals are usually fit, trailwise, protective of their rider, and capable of following a trail without direction. The other advantages are that hack horses tolerate green riders' mistakes and are usually mature grade horses that are easily obtainable (cheap) and good keepers.

The Search Rider

The search rider is first a searcher. The search person should be reasonably fit but need not be a perfect specimen. The rider should be able to properly tack his horse, load and unload his horse from a trailer or van and carry his tack, muck bucket, etc. Non-horse related tasks such as litter bearing, participating in rescues, erecting shelters at base camp, changing flat tires, may have to be accomplished. The physical strength needed to do these tasks must be present.

The searcher should be reasonably agile. It will be necessary to walk in the woods and to lead horses down trails at night or in other periods of reduced visibility. It will also be necessary to move around the encampment without tripping over tent ropes, guy lines for antennas or stepping in holes. Banging around during other people's rest periods is not welcome.

Search specific skills include the ability to recognize clues (clue awareness), the ability to analyze those clues and proceed based on the new information, and the ability to work within the search system. Searches are run in accordance with the Incident Command System and a hierarchy or chain of command. The searcher is expected to complete an assigned task without direct supervision of the person in charge of the search. In many instances the search operations person or planning person may not have seen the terrain (he works from topographic maps) and may not know your capabilities in detail. It is your job to provide feedback to your immediate supervisor as to the feasibility of a task assigned.

A searcher should further develop outdoor skills related to being in the woods or dessert, or whatever your primary response zone covers. These skills include land navigation, survival, camping, first aid for humans and horses, communications, and good work habits, ethics, and morals. Other related skills, such as more advanced medical training, man tracking, search management, technical rescue, or even instructor ratings may be sought out by the searcher.

Riding skills, beyond the trail rider's needs, are not always necessary. The skill level of a rider should be sufficient that he can normally mount and dismount unassisted and maintain control of his mount as to speed and direction. Searchers tend to follow the path of least resistance as the subject would do so as well. Trail obstacles up to 18" high or ditches should not be a concern to either the rider or the horse.

The most important skills for a search rider are related to safety and efficiency. Safety is foremost. The rider should have enough common sense not to attempt terrain beyond his capabilities, wear clothes appropriate for the weather and activity, and to anticipate difficulties while in the field. He should be able to read his mount and determine its fitness to continue in the field, treat minor injuries, and know when an injury should retire his mount.

Saddles

Tack is an oft discussed and hotly contested topic. First and foremost the saddle must fit the horse. It does not matter who manufactured the saddle or the style of saddle selected. Second, the tack must be rugged. This is working tack that must survive all kinds of weather: heat, cold, humidity and lack of care. Leather or synthetic does not matter but ruggedness does. Third, the tack must be comfortable for the rider. Saddles should be designed to support the rider's weight properly for long periods of time. In our experience, few search riders post and therefore a comfortable (padded) seat is useful.

The saddle should have numerous places to attach "things". The back skirt should be wide enough to keep the saddle bags' web off the horse's skin. There should be provision for saddle bags, pommel bags, canteen bags. The rider should be able to keep drinking water in reach and carry the rest of his gear where he can access it without dismounting.

The style of saddle is somewhat immaterial. There are certain types of competition saddle that will never see a search horse and rider, simply because they are not built for long rides but for short stadium events. Hunt seat, cross country, and similar saddles may work well for a rider used to that type of equitation. Plantation saddles go with Plantation horses. Australian style saddles usually have lots of places to hang things from. The author uses a modified Western roping design with a deep, padded, seat and heavy rigging and thongs to hang things from. The flank strap is also used.

The important factors are: comfort, ruggedness, and fitness for use/life cycle costing. Cheap tack that is always wearing out or needs constant repair is not cheap tack. A \$1,000 saddle that lasts 10 years cost \$100 per year to own as opposed to a \$250 saddle that lasts a single season (\$250/year).

Bridles and Halters

Regardless of how you keep your horse at the barn a halter is necessary for trailering and picketing. On the trail a convertible bridal/halter may be useful but the first broken headstall will send you back to separate halters and bridles.

It is necessary to always retain control of the horse and to have the ability to secure the horse by tying the horse to a hitching point, whether natural or man-made. Many owners use breakaway halters for horses that are kept in halter in the paddock. This is probably a good idea in an unsupervised paddock with questionable fences. In an area where the board fences are maintained or electric fence is used sturdy all weather synthetic halters are fine. Many boarding stables insist on halters being in place for the safety of the staff and therefore spend extraordinary time in maintaining a no hook environment for the horses. The horses also seem to learn how to avoid hang-ups and play with each other's halters rather than taking chunks out of each other.

In the field it is critical that a means of attaching a leadline or grabbing the horse be available. The halter provides this point of contact without requiring the same level of skill as catching a loose horse without this handle to grab on to would require.

Bridles, and associated bits and reins, must fit the horse and be comfortable for the rider. Each rider/horse combination will use the equipment that is most effective for their style of riding. If your mount does not respond to a snaffle there is no sense mandating snaffles for all members to use. It is important to remember that the objective is to find a lost person, effectively, efficiently, and safely. If a mount requires biting with a port, curb chain, or the double bit often used by English style riders this is acceptable. Whether a horse that requires that much bit is suitable for search depends on his response and controllability without having to be heavy handed.

Stirrups

Stirrups are being considered separately because they are an important comfort and safety item. The stirrup should provide a wide, comfortable base for the rider's foot. Additional protection against brush, side impact, or loss of foot can be accommodated by the stirrup design or the use of trapederos. The use of narrow irons should be avoided due to foot fatigue encountered by most riders using narrow unpadded irons.

It is extremely important that the stirrup remain attached to the saddle at all times while riding. Breakage of stirrup leathers, failure of buckles, quick releases, or parts of the tack cannot be tolerated due to safety considerations.

Search Equipment

Each search group will have a minimum equipment list for their field personnel. GPSR's recommended list is four pages long including substitutions and usage guide. Basic equipment can be grouped into categories and prioritized.

SURVIVAL:

- Proper Clothes for the Weather
- Compass
- Map of Area
- Raingear
- Aluminum foil blankets
- Whistle (loud)
- First Aid Kit
- Water (2 quarts)
- Spare Glasses
- Regularly Prescribed Medication (sting kit, allergies, etc.)

COMMUNICATIONS:

- Two-way Radio and spare battery
- Flashing light (lifestrobe, LED flasher)
- Local Requirements

SAFETY:

- Gloves, work
- Gloves, latex
- Helmet
- Reflective vest, orange
- Hat, orange, watch cap style
- Camper's survival kit in a tube
- Spare socks, boot laces, straps
- Wire cutter

Each of these categories can be further expanded. The first aid kit's contents can be simple or complex. A saddle bag sized kit could include trauma dressings, a stethoscope and blood pressure unit, wire splints, lots of tape, and those two great inventions, Velcro closure straps and Vet Wrap.

The orange gear dramatically increases your visibility to the subject and to other searchers. In many areas searchers and hunters must coexist in the same area and orange is a very important color to wear.

GPSR personnel carry two kits, one first aid and one horse oriented. The first aid kit contains the usual dressings, bandages, trauma dressings, ladder splints, tape, and

forceps, shears, a penlight, knife, electronic thermometer, and aneroid blood pressure unit.

We have found that zipper style plastic storage bags, Vet Wrap and Velcro straps hold things in place better than any thing else we have tried so the first aider can work unassisted if necessary. Most of GPSR's first aid personnel are EMT's with all personnel having to complete some level of Red Cross CPR and First Aid.

The horse side of the saddle bags contains a neck rope, a spare halter, spare clothes, rawhide boot laces to repair tack with, ear muffs for the helmet, an additional 1.5 liters of water, and a poncho. Spare eyeglasses, radio batteries go in either side depending on the rider.

The rider's preference dictates whether the radio and water bottles go in a fanny pack or pommel bags. The author's preference is for water in squeeze bottles to go in pommel bags and the radio, compass, and whistle to be worn.

Personal Safety:

Personal safety, and the safety of one's mount, are paramount when conducting search operations. To this end the use of protective equipment is strongly recommended. Frequently, riders do not desire to wear protective equipment or invest in such gear. The author can personally attest to the wisdom of wearing a helmet in the barn area and has a cracked helmet to show to any one who wishes to see it.

Protective equipment includes: helmet (SEI approved), long sleeves in Pennsylvania's tick country, full chaps or other leg protectors, and high leather boots.

The helmet, sleeves, and chaps may be self explanatory but why leather boots? Leather riding boots, particularly ones that fit properly protect you against your horse to some extent and also provide protection against snakes and other biting animals, can be worn for long periods of time without sweating, unlike rubber, and provide some insulation. Nylon or cloth boots can be extremely comfortable and warm with liners and Goretex barriers but they do rip and the weave is not always rain or snakeproof. It is also more difficult to repair many sneaker-like riding shoes due to their construction and materials as opposed to conventional leather boots.

Whatever you wear to ride in make sure it fits well, breathes well, and you can walk in it. It may be necessary to forgo the convenience of riding in favor of walking at any time during a search. Wearing boots you cannot walk long distances in or drive in if you have to will make you a very unhappy searcher.

You must protect yourself against insects, snakes, bumps, bruises, allergies, the weather, and any other threat you can think of. Remember, lost hunters got lost looking for something to shoot at and it could come after you as well.

SEARCH EXPERIENCE AND TRAINING

Greater Philadelphia Search and Rescue's (GPSR) experience has been limited utilization of our own horse section and observation of TROT Search and Rescue (SAR) of Maryland training operations. This has involved approximately 14 individual horses over the period from 1988 to date.

Experience working alone (single horse) and in groups indicates that herd behavior is a critical factor. When in groups of more than 4 horses the herd divides itself into guard horses and relaxed horses. Generally the front or lead animal is most alert followed closely by the tail end animal with the horses in the middle checking the side but primarily watching their position in the group.

The author has exercised his mount primarily as a single due to work schedules. As a single there is a heightened sense of one's surroundings and increased situational awareness on the part of the horse. There does not appear to be a problem with operating at night or in reduced visibility. The major problem is in familiarity with the terrain. An area well known to the horse is in itself less threatening and therefore the horse seems to relax a little. This experience factor may also reduce a "spook" to merely a hesitation.

Many riders train over the same ground for convenience. The rider must realize that familiarity may relax the horse but varied terrain is necessary for development of the horse and rider as an effective combination.

Search Horse versus Search Dog: Differences and Similarities

The air scenting search dog has been used in the United States for less than 50 years. Developed in Europe, the air sent search dog is trained to detect "person" as the person's scent drifts on the wind. Where a blood hound follows the track of the subject and discriminates between subjects, the air sent dog moves to windward toward the source of the scent. There is often intense debate between dog handlers as to which breed is better, which technique is better, and what conditions are easiest, and so forth.

GPSR deploys dogs as part of a three person team. There is a dog handler, a person with knowledge of the local terrain, and a trained searcher to handle maps, compass, and radio. One of the three is a first aid person also. The team works in a V shaped formation, spread wide with the dog at the vertex, upwind of the personnel. These teams are often used for hasty (rapid) searches of trails, creek valleys, gullies, and large open areas.

The horse utilizes more than just his nose. Having been preyed upon for thousands of years the horse has a very well developed sense of approaching danger. He utilizes his nose, his ears, and his sight to detect predators at maximum distances. He then can outrun the predator and remain safe. This multi-sensor approach gives the horse a much better performance potential than a single sensor system, such as a dog. The horse also

is able to shift sensor suites and change his fusion of inputs based on the environment. At night the horse tends to smell his way while during the day he may only occasionally smell the trail.

Anecdotal experience indicates the following performance can be expected of a well matched horse and rider:

Detection: Over 90 percent of newly encountered targets will be detected. Vehicles, bicycles, and other horses will be detected at long range. A possible exception is when a horse is grazing in what he considers a safe area and no intruder is considered dangerous. Following initial detection and classification as friendly the subject will usually be ignored.

Example: During several exercises subjects have been detected at ranges in excess of 1/2 mile with positive indications. In at least one case, one horse that had been told to find a paddock mate detected the track an hour after passage and then detected the horse and rider on a parallel trail 3/4 mile upwind. It should be noted that in this instance the horse and rider being tracked were well known to the search horse, the target being his paddock and barn mate and target horse's owner.

Example: During a large exercise in the Pennsylvania mountains under extreme conditions (below freezing air temperatures, rain, unfamiliar terrain) a search horse working alone alerted on an area of heavy brush. The rider reported the alert and was told by the exercise director to ignore it and proceed with her task. The brush was about 100 yards from the trail and the subject was located by ground searchers in the brush area, about 200 yards from the trail.

Both these detections occurred in public use areas, the first on the edge of a leased field in a state park, the second in a state forest area that searchers had already been through. Detection of moving targets, such as joggers or bicyclists has occurred at much longer ranges. Most targets are detected 4-5 minutes before they reach the horse's position.

Alerting: Similarly to a search dog each search horse develops his own method of alerting. The common features include ears up, swinging the head towards the target, and slowing or stopping when at the walk. Oral indications depend on the horse and his usual habits with reference to calling out to other horses. In many instances where the target may be considered hostile (dogs, bicycles) the rider may feel the tenseness of his mount even before the alert is recognized.

Fusion: The search horse may detect the target by a means other than smell and then turn several sensors to the task of identification. When working towards a subject upwind the sound of the subject may carry considerable distances. What is more remarkable is that while the nose may be essentially forward facing the ears operate over a full circle, and cover each half independently. Vehicles approaching from the rear have been detected at ranges in excess of a half mile on paved trails in wooded areas. Voices and human

sounds are detected routinely at ranges in excess of 1/4 mile and often around curves or through the woods where the subject is not visible.

Typical behavior is for the horse to detect movement, focus the eyes and ears on that movement and then lastly smell in a trail environment. This appearance of sequence is probably not correct because the horse is continuously sampling the air as he breathes. What is rare is an overt smelling activity above ground level.

The horse thus works similarly to an air scent dog that has been taught to discriminate between persons. He can work without a sent article but detects more than the generic person an air sent dog usually is trained for. There are some areas where a dog will excel if only because the horse cannot get there or it is unsafe to use a large animal, such as a horse to accomplish the task. The author doubts that horses will ever be used from boats for drowning victim recovery, in avalanche searches, or similar activities.

Search Horse: Special Considerations

The search horse has several physiological differences from the search dog. The first is obvious, size. The other differences relate to how the horse controls internal body heat buildup, muscle problems, rest and recovery, and feet.

The horse, because he is being ridden and much of his body is covered with tack, may not show obvious signs of heat buildup. The horse cools by sweating through a thick coat and by transferring heat to the fluids in the digestive tract. The horse operates best in a very narrow body temperature range which should be monitored. Where a dog will stop and pant a horse typically will continue until they cannot proceed. Each rider must establish a norm for his mount. Heart rate, skin temperature, respirations must be well know and the boundaries for each horse established. A reasonably fit mount should be able to work at the walk/trot for several hours without discomfort in the most severe weather conditions you will encounter in your search service area. If the human has a problem the horse has a problem.

Riders and search managers should refer to any of the studies recently published in the popular horse press or the studies being done in preparation for the Atlanta Olympics. Horses should be monitored for heat prostration and dehydration at all times.

Unlike dogs, injured horses cannot be carried out to the road for treatment. It is therefore imperative that the rider avoid disabling his mount in the field. It must be realized that loss of a shoe or a controllable wound is not necessarily immobilizing. The use of temporary hoof covers, bandages, or other devices to get the horse to a place where he can be treated or loaded must be practiced.

Organization of a Mounted Search Team

As with any other organization the mounted search team needs organization, mission related infrastructure, and a logistical capability.

Organization:

The mounted search should be organized to operate in the emergency service delivery system. Chains of command, the use of an incident command system compatible with local agencies' system, and similar titles and hierarchies of command are needed. There should be clear cut lines of administrative authority and financial responsibility for the organization. These need not be the same as the command hierarchy but must be as well defined.

The mounted search team can be a single-function unit or part of a larger search organization. If search is legislatively assigned to a government agency that agency may incorporate the mounted search capabilities into an existing search or other service delivery capability. This could be an existing county level SAR team, a Sheriff's Posse, or some new volunteer, auxiliary, or reserve unit.

If a new organization is formed it is advantageous for it to be nonprofit and tax exempt. The organization should meet the requirements for recognition as a rescue squad or equivalent within the governmental jurisdictions it serves. This allows volunteers to deduct expenses associated with training or missions and may convey some stature to the organization in the community.

Within the functional hierarchy of the team there needs to be a record keeper, a training officer to arrange drills, training trips, and similar activities, a financial officer to disburse funds on real searches, search managers, and a radio person. There may need to be liaison persons to meet with public officials, fire, police, and EMS personnel and to recruit new members. Not all of these jobs need be filled with a full time person or volunteer.

Mission Related Infrastructure:

The mission of a search team is to search. Some equipment to support that capability should be owned by the organization to assure its availability at every search. The primary concern is communications. It is necessary to round up the searchers for the search and then to communicate with them as they search. Portable two way radios operating on channels compatible with the public safety agencies they support are the optimum solution. Additionally, there should be a transportable high power radio for the command post, maps, lights, first aid supplies and some spares at the command post.

Search management skills are needed to run the search. These may be provided by the mounted search team through non-riding personnel or by the requesting agency. In all cases a knowledgeable person should serve as liaison between the incident commander

and the mounted unit. so that the mounted is utilized properly and in accordance with its capabilities and restraints.

There may be commonly held horse equipment as well--farrier's tools, corrals, electric fence chargers, pumps, water buckets or barrels, trailer jacks, etc. These are tools that everybody wants to have but their per unit cost is high and use is infrequent enough to justify a group purchase rather than an individual purchase.

Logistics:

Logistics is the science of moving an army from one place to another and keeping it supplied once it gets there. Logistics for mounted search teams are horrendous compared to dog handler's or individual searchers.

While the other search resources can just jump in a passenger vehicle and respond the mounted searcher must get to the horse, get the horse trailer and tow vehicle or horse van, hitch up and load up, proceed to the scene, set up a corral or other holding area for the horse, secure water and feed stocks, tack up, and so forth. Further this must be done not with one search horse but with a sufficient number that a meaningful response is possible. There should be several horses at every mounted response. For safety, teams of 3 should be deployed.

Each rider should have the skill and equipment necessary to load their horse. If several riders stable together one large trailer located at that stable will suffice if all the members know how to hitch and tow the trailer. It is also necessary that pool members allow each other to load and trailer their horses. At the search base one or more 3-4 horse trailers will be needed to transport the mounted to its starting point for each task and pick up afterward. It may also be necessary to pick up injured animals and the large open body of a stock trailer may just be the best way.

Discussing what kind of trailer and tow rig is not relevant here except to emphasize that both must be adequate to the tasks assigned. A 4x4 tow vehicle has advantages as does a winch to retrieve oneself from a bog.

Feed and water must be available. They can be loaded when you leave your barn, rotated through a trailer mounted storage unit, or delivered to the search site by a nearby dealer. Again, the arrangements should be made in advance and credit or check acceptance provisions made as well.

Provisions for waste and trash cleanup should be made as well. In some areas you must pack out whatever you brought in and its by-products. Tools and containers must be provided in many instances.

It is necessary that a sufficient number of riders, horses, trailers, and tow vehicles be available to assure a meaningful response. It is highly likely that the number of tow vehicles will be the limiting factor. Many persons have horses, fewer have trailers, and

most have no need for a tow unit capable of hauling a 4 horse load plus tack, feed, water, and riders. A typical stock trailer may cost under \$4,000 new with taxes, tags, plywood liners, and a spare tire. The horse probably cost less than \$2,000 and the associated tack under \$1,000 if off the shelf tack fits. A 1995 4x4 Suburban to tow it with starts at approximately \$25,000 and can easily reach \$40,000 depending on options and packages. This last expense often puts a crimp in the logistics of mounted units.

If you own a horse farm or keep your horses at home you probably already have a truck that can tow because you tow everywhere so you can ride. If you board next to a state park (or in a park) you may never leave the area to ride and cannot justify a trailer and tow vehicle.

Logistics is the controlling factor in deploying and operating a mounted search team. If you can consistently move 4-10 horses with their baggage train you will be successful.

OTHER EXPERIENCE

Because of its involvement with horses GPSR has been requested to provide safety services and communications for several equestrian events. These events include the Cheshire Ride (30 miles), the Liberty Belle 50 (50 miles), and the Montgomery County Equine Council's Paper Chase. GPSR also provided EMS command and control for the Philadelphia Distance Run for several years before this half marathon was privatized, and has begun to support the Freedom Valley Bike Ride (22 miles).

These events have several common elements. They are spread out, often have stretches that are not accessible to vehicles and the sponsors lack the infrastructure or resources to implement the safety plan required for all public events in Pennsylvania. GPSR provides the communications, the off road EMS capability, and some of the on course staffing.

Prevention is just as important as finding the lost person. It is also less demanding of personnel's emotions. These activities provide a somewhat controlled environment for the mounted and other personnel to work together and learn about each other's capabilities. Ground searchers man checkpoints and road crossings as if they were containment points in a real search, monitoring competitors progress and logging in and out. The command post personnel operate the radios, generators, maps, and command system just like a search mission. The mounted usually ride drag and / or maintain a presence in the area to respond to emergencies on the course. The major effort for the race administration's benefit is to account for every competitor at every accessible point on the course.

At endurance races a GPSR member's 4 horse trailer was used to pick up scratches and stage drag horses along the course. One GPSR rider manned a check point in the middle of state game lands accessible only on horseback.

GPSR first aid and EMS personnel were also called upon to treat injuries to riders and horses. Rider injuries were typically minor scrapes, bruises, strains, and sprains. Horse injuries varied but typically were more severe. Other than minor scrapes most horse injuries were disqualifying cuts or wounds, large area abrasions from falls or worst of all from our point of view, tying up.

Wound treatment for a horse is similar to wound treatment for a person. The wound is cleaned, dressed, and bandaged. If severe or in an awkward place the veterinary staff would suture the wound later. The use of boots and wraps by most competitors limit this type of injury.

Tying up involves large groups of the horse's muscles becoming immobile. It may be caused by electrolyte imbalance, dehydration, or stress and strain. The seriousness of the problem is that the horse is immobilized until the symptoms can be relieved. Any attempt to force the horse to walk will damage the muscle tissue and cause other complications in the horse's blood chemistry. First aid in the field generally consists of steadying the mount (and the rider) and placing aluminum foil blankets over the horse's rear or other tied up area to prevent additional heat loss and shock. There are several very good texts on equine first aid that will provide guidance in this area as well as the competition's veterinarian. When capable the horse should be returned to the competition's base or vetting out area for further treatment.

{Editorial Note: This draft has been accepted for presentation at the 2nd International Conference on Equine Rescue, 2/11-12/95 at the expense of the sponsors per conversation with Dr. Manasmann.}