

Colorado Flood

Handler and Canine Deployment Survey

September 11, 2013



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MA-TF 1 US&R

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Introduction

This is the fifth in a series of reports based on data collected from Handler and Canine Deployment Surveys sent by the author to deployed Handlers. The main purpose is to reveal canine injury and illness data. Additional information on transportation, shifts, finds, decontamination, and HazMat encounters is also included. Prior survey data is available upon request from the Moore, OK Tornado of 2013, Hurricane Sandy of 2012, Joplin, MO Tornado of 2011, and the Haiti Earthquake of 2010.

The value lies in documentation of real life events in order to affect policy in a manner as to improve the system and create best practices. These include cache items, relevant training, preventative measures, and pro-active planning for missions that range widely in their scope of weather, disaster, terrain, and search needs.

Information Collection

The survey was sent out electronically to all handlers within the FEMA US&R system that were deployed in response to the flooding event in Colorado. A copy of the survey is available from the author upon request. Federally deployed teams included NE-TF 1, UT-TF 1, MO-TF 1, and NV-TF 1. CO-TF 1, deployed as a state asset, was also included.

Data included handler and canine experience, canine signalment (age, breed, gender, weight), search capabilities and qualifications (Live Find and Human Remain Detection), transportation and billeting, examinations, shifts, search finds, injuries and illnesses, decontamination procedures, briefings, and HazMat encounters.

All information is confidential, and anonymity assured so as to invite frank but constructive comments and recommendations at the end of the survey.

Brief History

During the week of September 9, 2013, a slow-moving cold front stalled over Colorado, clashing with warm humid monsoonal air from the south. This resulted in heavy rain and catastrophic flooding along Colorado's Front Range from Colorado Springs north to Fort Collins. The situation intensified on September 11 and 12. Boulder County was worst hit, with 9.08 inches (231 mm) recorded September 12 and up to 17 inches (430 mm) of rain recorded by September 15, which is comparable to Boulder County's average annual precipitation (20.7 inches, 525 mm).

The flood waters spread across a range of almost 200 miles (320 km) from north to south, affecting 17 counties. Governor John Hickenlooper declared a disaster emergency on September 13, 2013, in 14 counties: Adams, Arapahoe, Broomfield, Boulder, Denver, El Paso, Fremont, Jefferson, Larimer, Logan, Morgan, Pueblo, Washington and Weld. By September 15, federal emergency declarations covered those 14 counties as well as Clear Creek County.

http://en.wikipedia.org/wiki/2013_Colorado_floods

Significant Data Summary, Comments, Recommendations

Survey response was 92%, giving the data high validity. Also, the surveys were collected within six weeks of demobilization, increasing the accuracy of responses.

The majority of both **handlers** (68%) and **canines** (70%) had deployed before, with an average length of handler team service of 7 years. Labrador Retrievers are again the majority of breed represented, which reflects the national majority breed as well. They averaged 5 years 7 months of age, and all were spayed or neutered.

Live find search capabilities were complimented by 2 **cross-trained and one dedicated HRD** canines. There were no survey documented live finds, and 1 HR find.

Comment

One handler-stated issue described a 2-day delay in using Live Find canines in the field, and another thought the canines could have been used more effectively. Operations issues may have been a factor, as well as transportation and safety. Local authorities may not be as well informed or experienced in the use of search canines as part of the operational missions. Task Force personnel may also be unaware how to best deploy the use of HRD canines, especially as this is a new aspect of search capabilities within the FEMA system.

Comment

HRD canines have been deployed officially since the May 2013 Moore, OK Tornado, and an increased need over the 3 deployed here was an issue for another observer. Search and rescue remains the primary mission as first responders. Additional resources, such as HRD canines, may be added as deemed necessary for the missions.

No **transportation** issues were reported, despite an average mobilization transit time of 14 hours, and demobilization transit average of 17 hours. All canines transported with their handlers, as well as billeted together. Nearly half were crated, a third free in the tent or trailer, and the rest a mix of crated and free.

Comment

Although not always possible, one handler commented that allowing handlers and canines a separate area to sleep allowed for dogs to relax and people to sleep. Care and consideration for the canine team members was appreciated by the handlers.

Bases of Operation were established and also served as a place for Veterinary medical stations to be established as well as a center for local traveling veterinarians to visit and offer assistance.

The FEMA **mandated pre-mission veterinary physical examinations** were performed for all federally deployed canines, and for none of the state deployed canines. The handlers performed the majority of shift examinations, and though 65% received no demobilization examination 70% received a post-deployment veterinary examination once home.

Comment

Education in the care and treatment of search canines by handlers, medics, doctors and veterinarians has proven essential in preventing serious conditions to develop, such as the early recognition of dehydration and prompt treatment.

Recommendation

If operations are at a considerable distance from a veterinary medical station, stationing a veterinarian deployed with their team, or the IST veterinarian (if deployed), at a forward position or BoO with a mobile K9 medical pack should be considered in the plan for operations.

Veterinary support was available in several forms: a DVM deployed with one team, Veterinary Reserve Corps in operation, and local veterinary visits to teams. There was one report of canine medical supplies unable to be located and multiple requests for veterinary support before that was accomplished.

Comment

A review of the Incident Action Plans for the Rocky Mountain IMT and the Boulder County Flood Rocky Mountain IMT2-B revealed *no information concerning veterinary hospital availability in the Medical Plan.*

Recommendation

Emergency Veterinary Hospital information should be a standard part of every IAP Medical Plan at deployments where search canines are in theater.

Injuries were minor, and did not interfere with search operations. **Illnesses**, of which dehydration was the most concern, were recognized early and treated appropriately so that no canine was required to stop search operations. A possible snake strike was of most concern.

Comment

Several handler comments, included at the end of this report, state the advantage and appreciation for veterinary care, as well as others where this was lacking but requested. The possible snake strike was of particular concern.

Recommendation

Snake strike injury education, especially for medical and handler personnel unfamiliar with this injury, is recommended.

An average of 4 **shifts** for handlers with their canine, for an average of 9 hours per shift, were conducted over an average of 7 days on site. Half of the handlers had 1-4 shifts without their canine. The military provided a variety of transports, including helicopters. There were no reported canine issues with land transport or flights.

Decontamination was performed at some point for 96% of the canines. Several handlers mentioned decontamination was not needed for every shift. Soap, cold water, and towel drying

were most common. Simple Green was also used for 2 canines. Many persons helped the handlers with the process - TF members, fire fighters, and HazMat.

Comment

A review of the Incident Action Plans for the Rocky Mountain IMT and the Boulder County Flood Rocky Mountain IMT2-B revealed *no information concerning decontamination procedures for search canines*. Simple Green is not approved for use on live tissue.

Recommendation

Decontamination procedures relevant to canines should be a standard part of every IAP HazMat Plan at deployments where search canines are in theater.

Comment

Decontamination is a recognized safety protocol for canines. Increased awareness and additions to the cache list have contributed to awareness and use in the field.

Caution

Simple Green is not approved for use on people or animals. Use of this product as a decontamination solution for canines cannot be officially recommended at this time. Several other approved products, both commercial and military, are available. At the very least, proper dilution, copious rinsing, and complete drying are needed to minimize any potential contact or ingestion-related illness.

Recommendation

Until Simple Green is evaluated by the medical and HazMat group for safety as a decontamination product for dogs, it should not be used in such a manner.

Half of the handlers recalled receiving **HazMat and safety briefings** specific to canine issues. Stated issues of concern recalled from memory that were actually encountered included swift water, snakes, mountain lions, sewer-contaminated water, sharp objects (cacti). In addition, gas and propane leaks, fuel and oil pools were encountered.

Comment

When deploying to an unfamiliar area, local hazards are an important part of briefing, and relevant information can be passed on to the next shift or another team through daily reports. In this and prior reports, canine-specific hazards are recalled by the handlers less than half the time. This may be due to a recall lapse, or information being passed on informally.



Search K9 Phoenix and members from MO-TF 1 and NV-TF 1 along Big Thompson River. Photo courtesy Handler E. Chamberlain

Colorado Flood Data

ESF #9 Advisory Series of Events - Summary

Advisory #1: 09-12-2013 @ 0900

- Flash floods in Boulder, CO area from rains the day prior
- CO-TF 1 activated as a state resource

Advisory #2: 09-13-2013 @ 1600

- Flooding Denver, Boulder metro area; 6-12" rain past 48 hours; >12" in Boulder, Colorado Springs
- White IST activated
- UT-TF 1 and NE-TF 1 activated as Type I to Boulder Municipal Airport
- MO-TF 1 and NV-TF 1 on alert
- Denver MERS providing communications and IST support
- CO National Guard with Light-Medium Tactical Vehicles for US&R ops in high water

Advisory #3: 09-14-2013 @ 1830

- CO-TF 1 is state resource operations
- White IST, UT-TF 1 and NE-TF 1 BoO at Boulder Municipal Airport
- Type II IMT Operations are in this area

Advisory #4: 09-15-2013 @ 1300

- Coordination with CO National Guard and DoD for air operations
- UT-TF 1 and NE-TF 1 flying into 2 valleys for S&R operations
- MO-TF 1, NV-TF 1 activated last night Type I; both have water ops capabilities and are en route to Larimer County
- CA-TF 2, TN-TF 1, and FL-TF 2 placed on alert

Advisory #5: 09-16-2013 @ 1400

- CO-TF 1 engaged as state resource operations in Lyons
- MO-TF 1 and NV-TF 1 operating in Larimer County, BoO in Loveland
- UT-TF 1 and NE-TF 1 BoO at Boulder Municipal Airport

Advisory #6: 09-17-2013 @ 1500

- CO-TF 1 engaged as state resource operations in Lyons
- UT-TF 1 and NE-TF 1 BoO at Boulder Municipal Airport
- MO-TF 1, NV-TF 1 operating in Larimer Co, BoO in Loveland
- CA-TF 2, TN-TF 1, and FL-TF 2 taken off alert status

Advisory #7: 09-18-2013 @ 1600

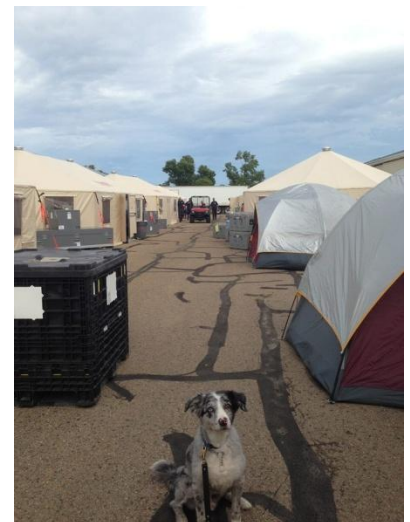
- Operations continue with CO-TF 1 state resource in Lyons, UT-TF 1 and NE-TF 1 in Boulder; MO-TF 1 and NV-TF 1 operating in Larimer County, BoO in Loveland

Advisory #8: 09-19-2013 @ 1200

- UT-TF 1, NE-TF 1, and enhanced portion of White IST demobilized today

Advisory #9: 09-24-2013 @ 0900

- NV-TF 1 demobilized 09-21-2013; MO-TF 1 and remaining White IST on 09-22-2013



UT-TF 1 Search K9 Bandit at BoO. Photo N. Bogenschutz

Handler Information

24 Handlers from 5 FEMA US&R Task Forces deployed with 25 canines.

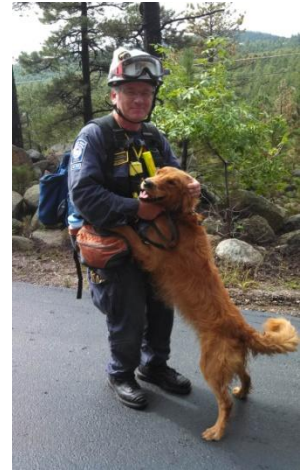
- 4 Handlers (5 canines) deployed as state resource with one team
- 20 Handlers (20 canines) deployed as federal asset with 4 teams

Survey Response

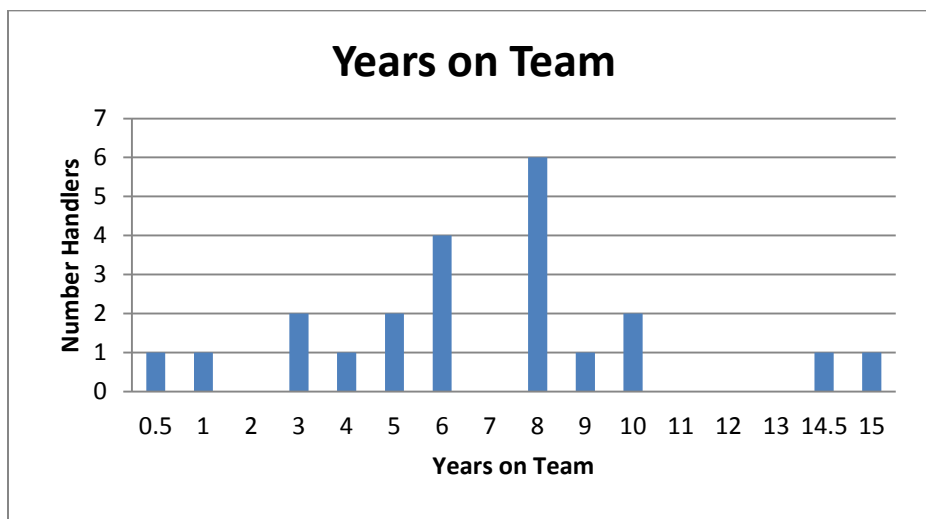
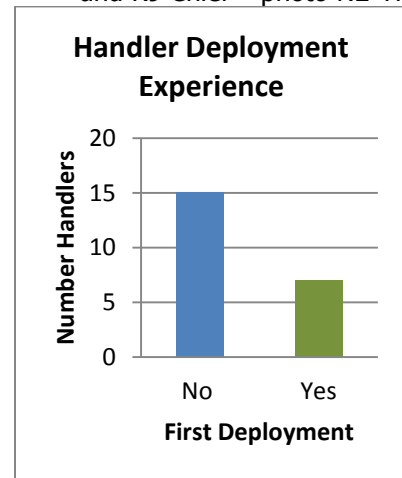
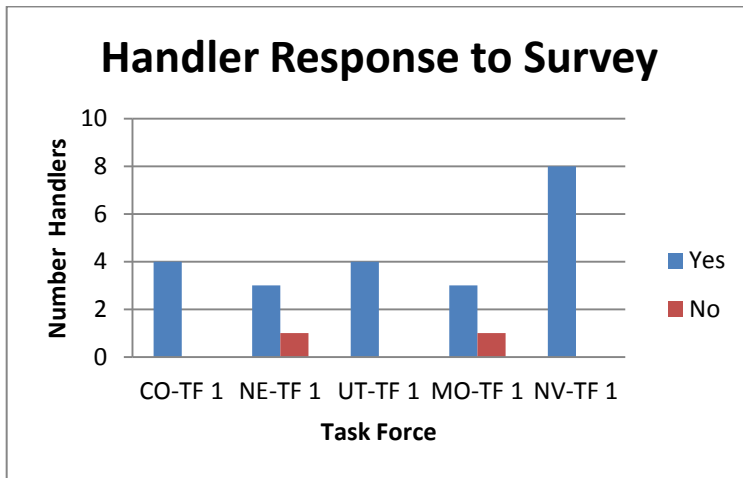
- 22 of 24 handlers responded to the survey - 92%
- 23 of 25 canines had data entered - 92%

Deployment Experience

- Handlers length of team membership ranged 0.5 to 15 years
- This was first deployment for 7 of 22 surveyed handlers - 32%
- 15 of the 22 had deployed before - 68%



NE-TF 1 Handler Andrew Pitcher and K9 Chief – photo NE-TF1



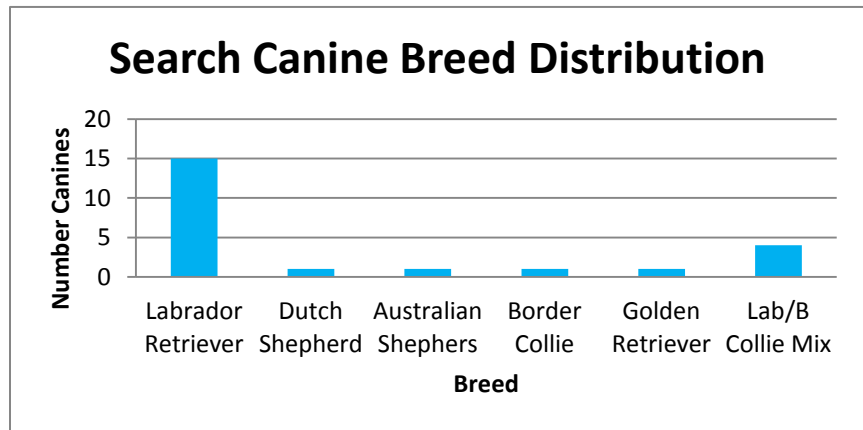
Mean = 6.9 years, Median = 7 years, Mode = 8 years

Canine Information

22 surveyed handlers responded to the survey on 23 deployed canines (one handler had 2 K9s).

Breeds

- 15 Labrador Retriever - 65%
- 4 Mixed breeds (Labradors and Border Collies) - 17%
- 1 each Border Collie, Golden Retriever, Dutch Shepherd, Australian Shepherd - 4% each



CO-TF 1 Search K9 Panache searching.
Photo courtesy Jim Houck.

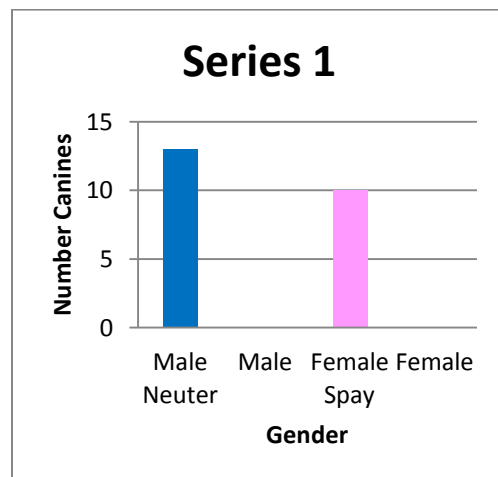
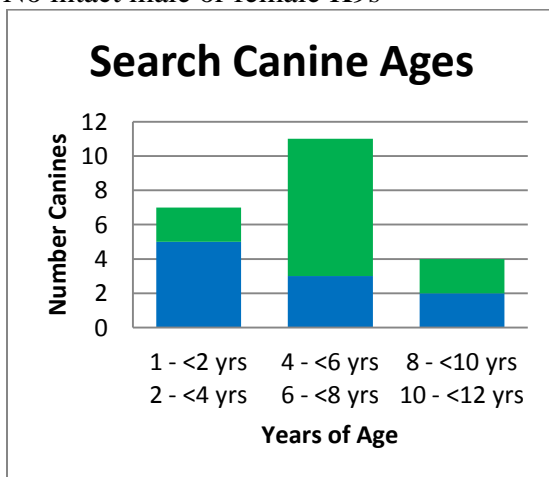
Age

Canines' ages ranged from 21 months to 121 months (1 year 9 months to 10 years 1 month)

- | | | |
|--|---|--|
| <ul style="list-style-type: none"> - Young: 1.5- 4 years old: 7 - 30% - Mature: >4 - 8 years old: 11 - 48% - Older: >8 to 11 years old: 5 - 22% | } | <p>Mean = 67 months (5 years 7 months)</p> <p>Median = 58 months (4 years 10 months)</p> |
|--|---|--|

Gender

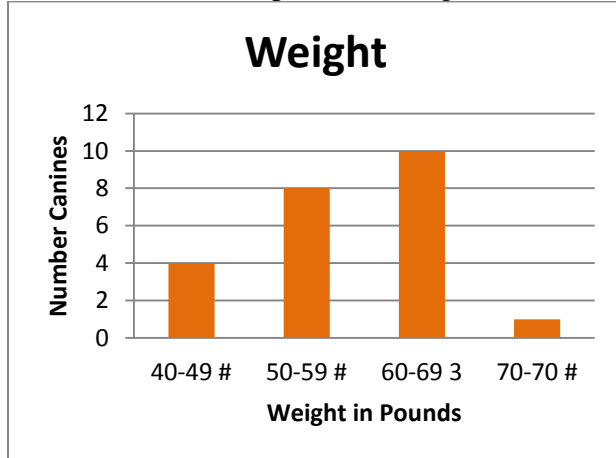
- 13 Male Neuter - 56.5%
- 10 Female Spay - 43.5%
- No intact male or female K9s



Weight

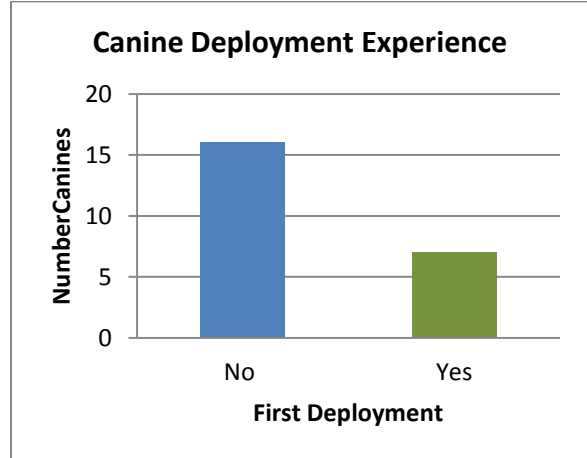
Weights ranged 40 to 70 pounds (18-32 kg)

- Mean = 58 pounds (26 kg)
- Median = 58 pounds (26 kg)
- Mode = 60 pounds (27 kg)



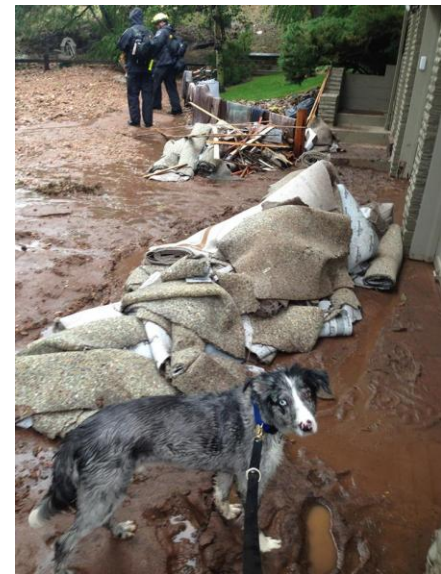
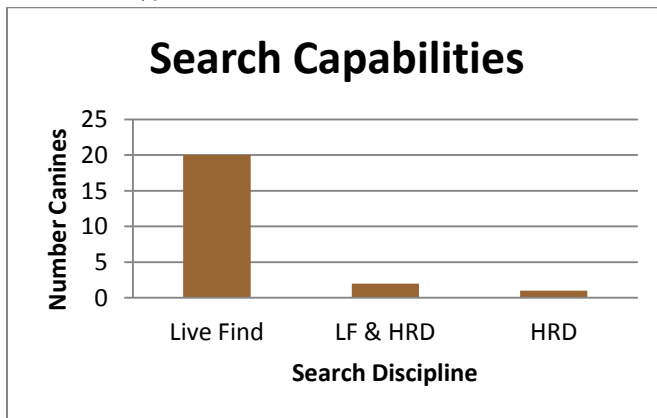
K9 Deployment Experience

- First deployment for 7 canines - 30%
- Prior deployments for 16 canines - 70%



Search Discipline

- 20 Live Find - 87%
- 2 LF & HRD - 9%
- 1 HRD - 4%



UT-TF 1 Search K9 Bandit
Photo courtesy N. Borgenschutz

Alerts

- All 20 LF had a Bark alert, as mandated by FEMA
- One cross trained canine had Bark for LF and Sit for HRD
- One cross trained had Bark for both LF and HRD
- The HRD only canine had a sit as the alert

Certifications

- All LF and both LF cross trained canines had FEMA CE
- 2 of the 3 HRD trained canines had additional local and national certifications including NASAR, AIRIE HR, and SARDA HR

Activation and Demobilization Transportation

All handlers were transported in the same vehicles with their canines to and from the deployment. There were no reported transportation issues or problems at any time.

Deployment Transit

Teams were activated from September 12 to 14, leaving home base from September 12-15.

- They left home bases at various times, ranging from 0200 to 2300.
- They arrived on site at various times, ranging from 0900 to 2300.
- Transit times, including rest periods of up to 3 hours ranged from 1 hour to 17.5 hours
Mean = 12 hours, Median = 14 hours, Mode = 17 hours

Teams were demobilized between September 19 and 21, leaving the sites from September 20-22.

- They left site at various times, ranging from 0930 to 2000
- They arrived at home bases at various times, ranging from 1500 to 2330
- Transit times, including some overnight hotel stays, ranged from 1 hour to 30 hours
Mean = 17 hours, Median = 13 hours, Mode = 27 hours

Billeting during deployment

Billeting

- 18 Handlers (82%) and their 18 canines (78%) billeted in tents
- 4 handlers (18%) and their 5 canines (22%) billeted in trailers
- One of the handlers also billeted in a garage, another in a room
- This does not include hotel stay when headed home for 2 TFs.

Canines - All canines (100%) stayed with their handlers

- 11 were in a kennel/crate - 48%
- 7 were free - 30%
- 5 were a mix of both free and in a crate - 22%

Base of Operations

- At Boulder Municipal Airport, Boulder, CO were NE-TF 1 and UT-TF 1
- At the Budweiser Event Center in Loveland, CO were MO-TF 1 and NV-TF 1
- At Life Bridge Church in Longmont, Boulder City Fairgrounds, and a Forward Ops Base at the Lyons Fire Station was CO-TF 1

UT-TF 1 Personnel @ BoO. Photo courtesy Dr. Laura Madsen



Veterinary Medical

Physical Examinations

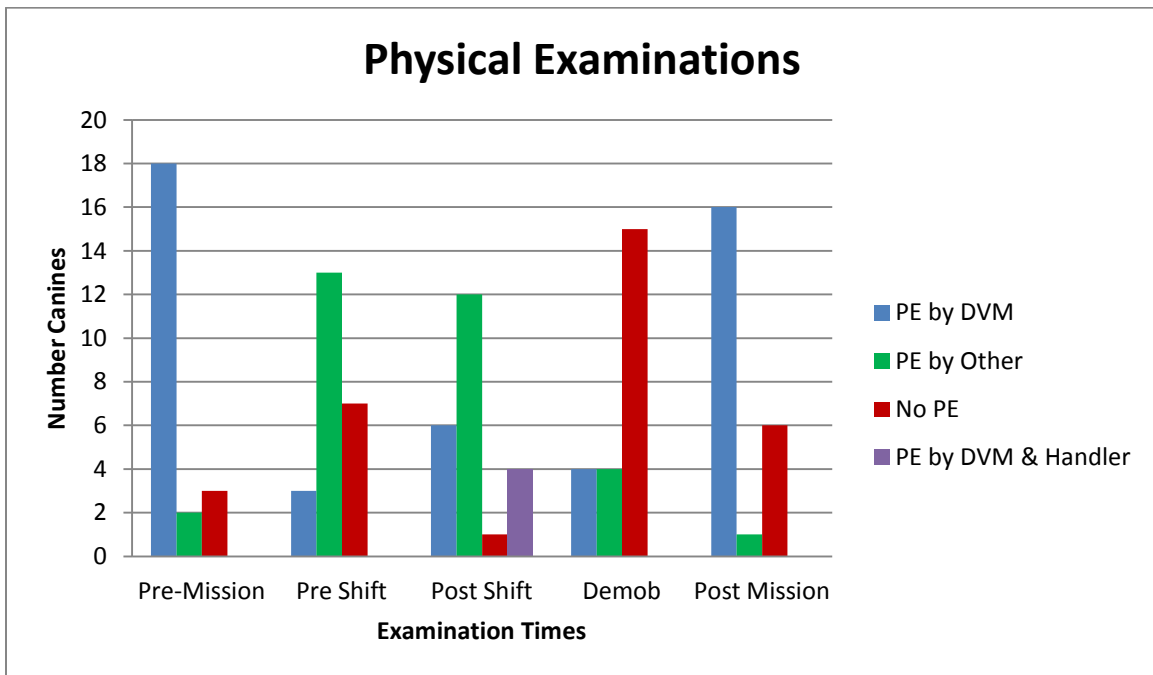
Pre-Mission: 18 of 18 (100%) federally deployed survey canines; by DVM
 2 of the 5 (40%) state deployed canines by a paramedic (the handler)
 The other 3 state deployed canines had no pre-mission examination

Pre-Shift: 13 of 23 (57%) by the handler, one of whom did PEs throughout the shift
 3 of 23 (13%) by TF DVM
 7 of 23 (30%) did not

Post-Shift: 12 of 23 (52%) by the handler, one of whom did PEs throughout the shift
 6 of 23 (26%) by DVM (TF and local)
 4 of 23 (17%) by both self & DVM (TF and local)
 1 of 23 (4%) did not

Demobilization: 4 of 23 (17%) by the handler
 4 of 23 (17%) by DVM (TF & local)
 15 of 23 (65%) did not

Home: 16 of 23 (70%) by DVM (TF and local)
 ▪ 14 of these 16 were routine post-deployment checks
 ▪ 2 were for medical: one a wounding, the other for blood value recheck
 1 of 23 (4%) by handler
 6 of 23 (26%) no examination



Injury and Illness

- 7 of 23 canines (30%) experienced an injury or illness
- None had more than one injury or illness



MO-TF 1 Search K9 Phoenix. Photo by E. Chamberlain

Injury

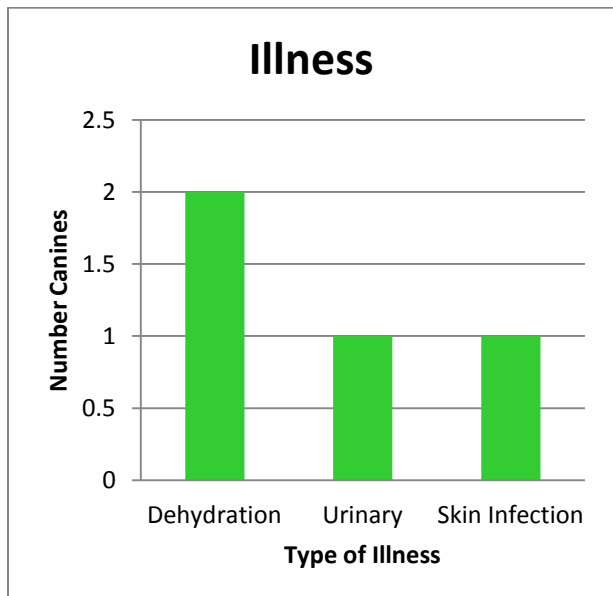
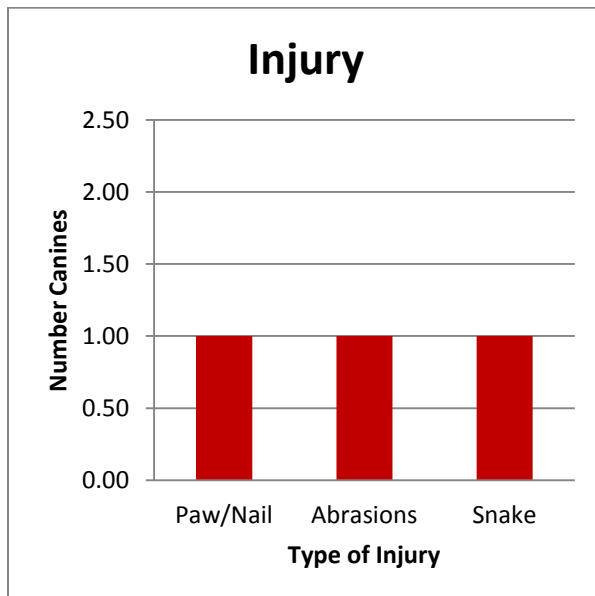
3 of 23 (13%) canines had an injury

- One canine cracked a rear paw nail that was initially glued but the nerve became exposed and the nail had to be removed by DVM. Bandaging and antibiotics were used and the K9 was back on the pile in 2 weeks.
- One canine had abrasions to the hind legs - these were cleaned by the handler. When home the primary care veterinarian prescribed antibiotics
- One canine was attacked by a 3 foot Bull Snake, but bite wounds were not found and no swelling or infection or lameness developed. It is unsure if the snake made contact, but the canine cried out.

Illness

4 of the 23 (17%) canines had an illness

- 2 Canines were dehydrated, one with accompanying lethargy and faltered gait. Subcutaneous fluids were administered by a paramedic, doctor, and the handler. Both recovered. One canine received subcutaneous fluids after each shift as they were not drinking enough water to keep up the pace for the long hard shifts.
- One canine had hematuria (bloody urine) and was placed in antibiotics. It is unsure if the blood was from an infection or previous catheterization.
- One canine had an abdominal skin infection. Once home, antibiotics prescribed.



Veterinary Medical Station - 4 of the 5 teams reported having veterinary care available

- CO-TF 1 state asset had no official vet med station; local DVM intermittently available
- NE-TF 1 and UT-TF 1 both based at Boulder Airport had a veterinary medical station at the BoO; DVM deployed with UT-TF 1 and a local DVM was also available
- MO-TF 1 utilized a veterinarian at airport, helibase, and a local DVM came around with a truck and offered services to the dogs
- NV-TF 1 had a CO DVM at the BoO, possibly from the Colorado Veterinary Medical Reserve Corps



UT-TF 1 Laura Madsen, DVM with Search K9 'Z'

Search Shifts and Experiences

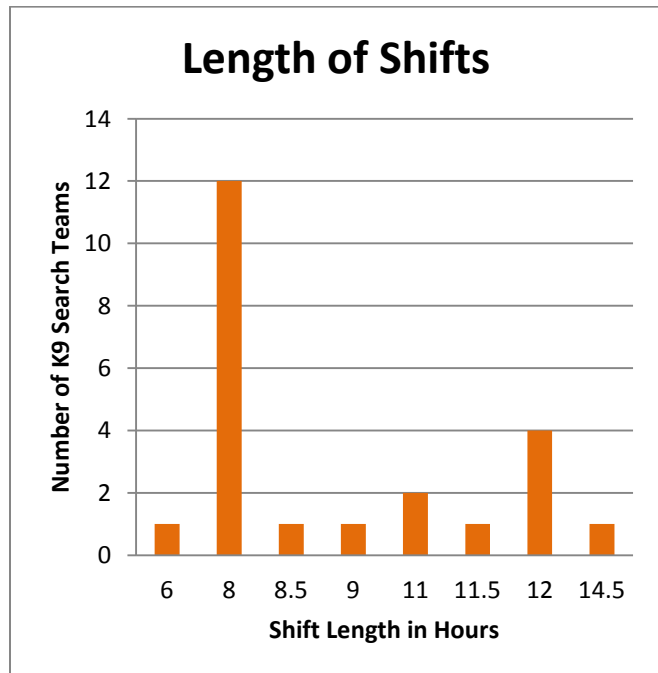
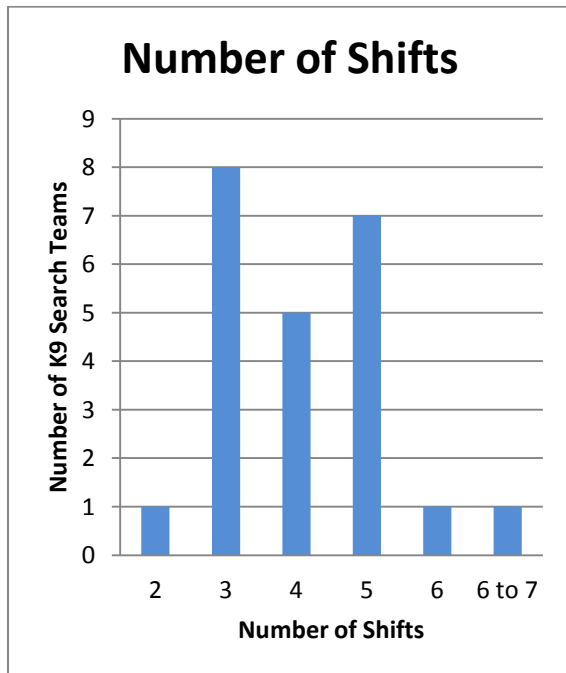
All shifts were day shifts, beginning from 0600 to 0900 and ending from 1500 to 2100

Number of shifts with 23 canines

- Range = 2-7
- Mean = 4
- Median = 4
- Mode = 3

Length of search shifts

- Range = 3-15 hours
- Mean = 9 hours
- Median = 8 hours
- Mode = 8 hours



11 Handlers did 1-4 shifts without their canine

- 5 did 1 shift, 4 did 2 shifts, 1 did 3 shifts, and 1 did 4 shifts

Finds

- There were no live finds
- There was 1 Human Remains find

Search Shift Transportation

A variety of transports was used for the search teams: Task Force vehicles, military light tactical trucks, gators, Blackhawk and CH-47 Chinook helicopters, ATVs, privately owned trucks.

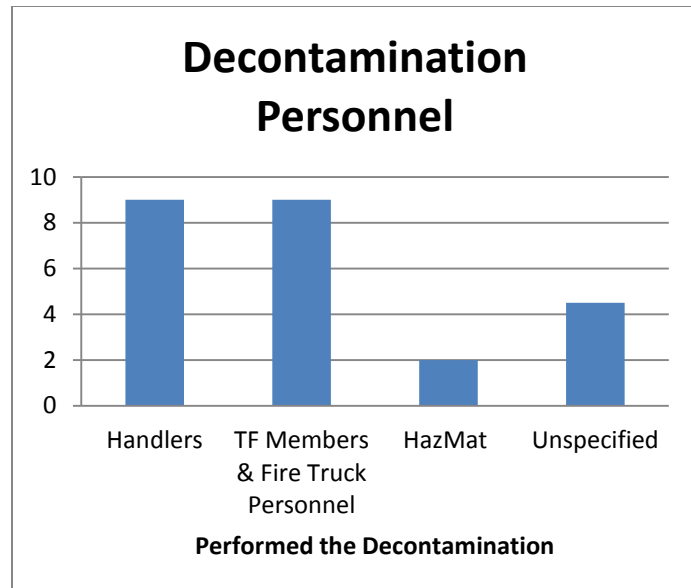
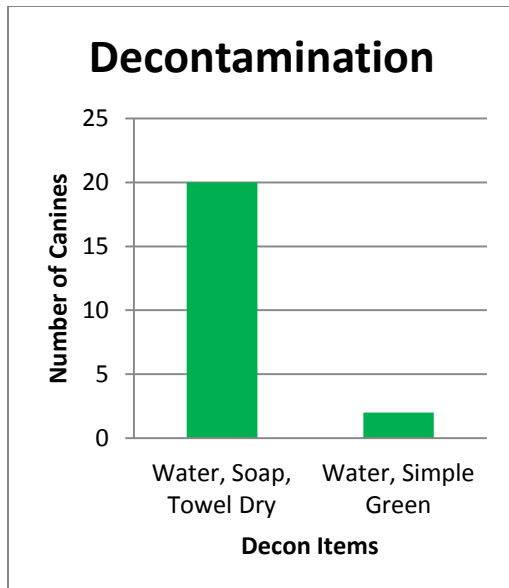


UT-TF 1 search K9 Bandit
Photo courtesy N. Borgenschutz

Decontamination

22 of 23 (96%) canines had decontamination. It was not necessary for all canines after every shift. In total, there were 62 decontaminations for 92 shifts (67%).

- 20 received water, soap, some towel dry (15 cold water, 1 warm water, 4 did not specify)
- 2 received water and Simple Green (1 warm water, 1 did not specify)
 - 9 Handlers performed the decontamination themselves
 - 9 had help from other TF member and fire truck personnel
 - 2 had HazMat do the decon
 - 2 did not specify



HazMat and Safety Briefings

11 of 22 Handlers (50%) recalled receiving Safety and HazMat briefings related to search canine issues, 11 of 22 did not.

Safety Officer, K9 Coordinator, Veterinarian, STM, TFL, Briefing Officer, Rescue Squad Leader, and other local authorities gave these briefings.

Issues of concern included:

Swift water

Free-roaming pets

Wildlife (snakes, bears, mountain lions)

Structure collapse

Weather

Sharp objects

Water back-ups

Quick sand

Water and soil contamination.

Hazardous encounters included:

Sewer-contaminated water

Snakes

Mountain lions

Swift water

Gas/propane leaks

Standing water concern

Small cacti embedded in soil (sharp object)

Raw sewage

Fuel/oil pools

Deployment Duration

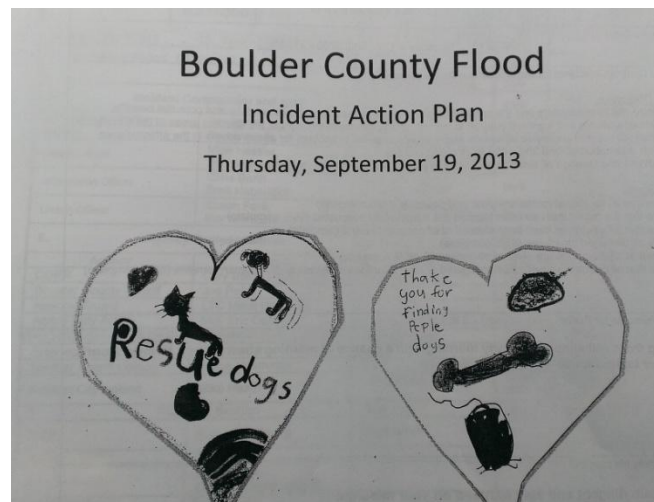
Total - leaving home base to returning to home base ranged 7 days 13 hours to 8 days 17 hours

- Mean = 8 days 3 hours
- Median = 8 days 12.5 hours
- Mode = 8 days 15 hours

Site - arrival on site to demobilization from site ranged 6 days 12 hours to 8 days 11 hours

- Mean = 7 days 1 hour
- Median = 6 days 18.5 hours
- Mode = 6 days 18.5 hours

(Note: state deployed site time averaged 1.5 days longer than federally deployed teams)



After Action Handler Comments

Events that Went Well

- DVM had experience with search canines
- Separate sleep quarters allowed dogs to relax, people to sleep
- Dogs worked well in dangerous environment
- Good find with HR dog in Jamestown
- We were all taken care of
- K9s were considered when setting up transportation and housing
- IST gave warning of HazMat area so dogs were kept out of that
- Good experience, lots of hiking
- Good wide area search mission
- First time K9 flew in a Chinook and a Blackhawk, and did a stellar job! I protected her ears with silicone and a stretchable bandana that was tied around her head
- Improvements since Moore, OK like medics getting more K9 hands on experience
- Nice having a DVM next door; would be nice to have one on our team but steps being taken is great news
- Dogs did great and handled travel and miles of hiking very well; good socializing and moral building for the team
- DVM visited each day and was on call
- Vet came to see us each evening

Items for Improvement

- K9 medical supplies not at ICP, could not be located; took multiple requests to get DVM
- Public requested their pets visit with search dogs but one was a recent rescue from fighting ring and became aggressive
- Dogs could have been worked more, especially earlier in the deployment
- Delay in using Live Find dogs for first 2 days; suspect management unsure or unaware of K9 abilities
- K9s could have been used more effectively
- There was a great need for HR dogs over live find dogs
- K9s were an afterthought when developing missions
- K9s were not included on all recon and search missions
- The snake attack was frightening, no one knew if it was a rattler or not, and it kept attacking but eventually caught and identified

Recommendations

- Bark alert is a definite need for this type of deployment; passive alerts can be missed
- Need snake bite awareness training
- Increase K9 medical capabilities within our team
- More education for TFLs and up about K9 capabilities
- Every time search is sent, K9s should be a part of the team; if search cams taken then canines should be attached

Appendix

Definitions for Reference

Mean = the average; the numbers are added and then divide by the number of numbers

Median = the middle value in the list of numbers

Mode = the value that occurs most often; if no number is repeated, there is no mode

Range = is the difference between the largest and smallest values

Abbreviations

AERIE HR -Alliance for Emergency Response Instructors & Evaluators Human Remains

BoO - Base of Operations

CE - Certifying Examination

DoD - Department of Defense

DVM - Doctor of Veterinary Medicine

ESF - Emergency Support Function

FEMA - Federal Emergency Management Agency

FOB - Forward Operational Base

HazMat - Hazardous Materials

HRD - Human Remains Detection

IPWDA - International Police Working Dog Association

IMT - Incident Management Team

IST - Incident Support Team

LF - Live Find

LMTV - Light-Medium Tactical Vehicles

NASAR - National Association Search and Rescue

NSAID - Non-Steroidal Anti-Inflammatory Drug

PE - Physical Examination

SARDA HR - Search and Rescue Dog Association Human Remains

STM - Search Team Manager

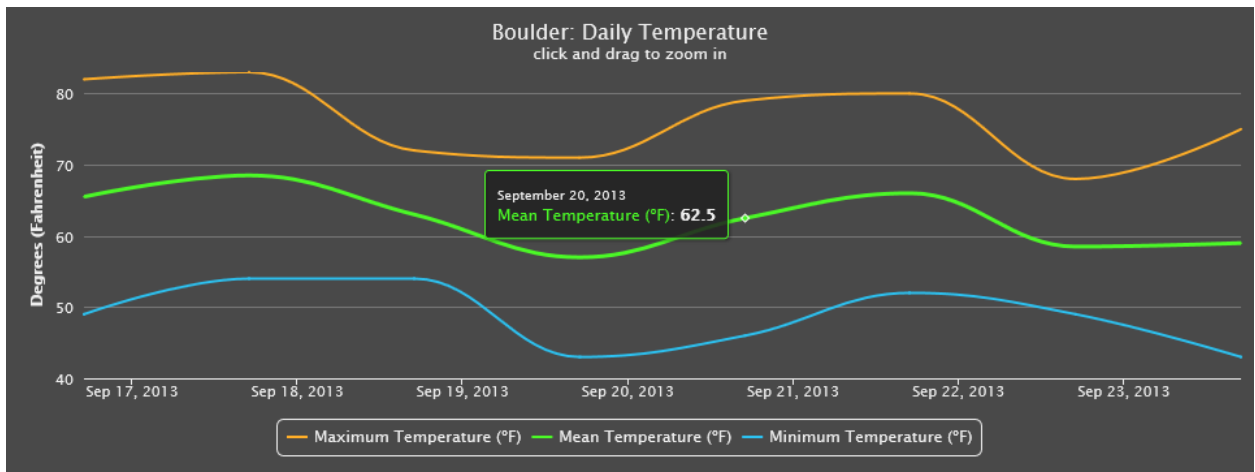
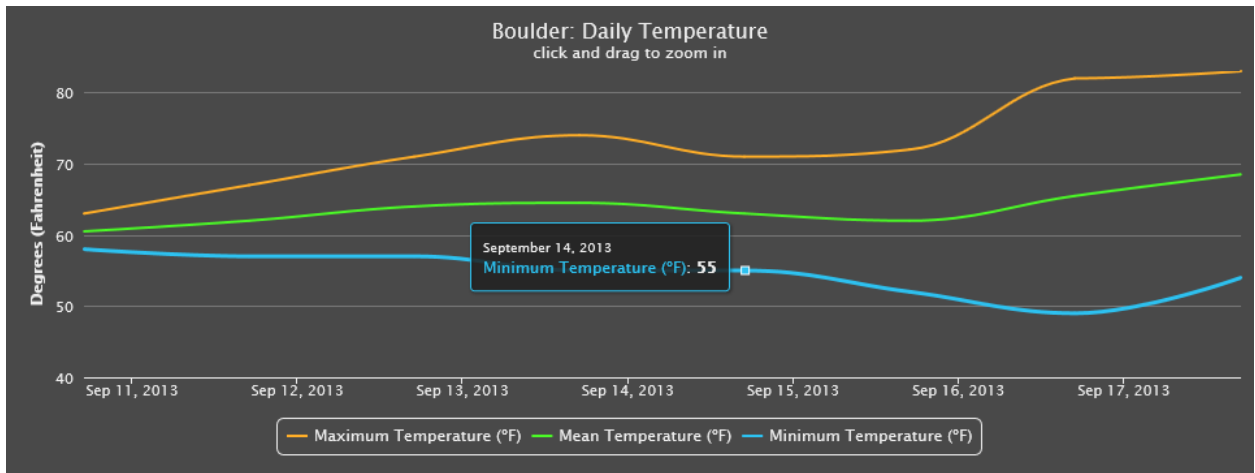
TF - Task Force

US&R - Urban Search & Rescue



Panoramic from where a fire station once stood. Photo courtesy Jim Houck, CO-TF 1

Boulder, CO Temperature Log - September 11-23, 2013



<http://weathersource.com/past-weather/weather-history-reports/free?location=Boulder%2C+CO&start-date=09%2F12%2F2013&end-date=09%2F22%2F2013&subscription-demo=1&sid=48312jqnajpltnqq7sa49lou93&search=1>

Thank You

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