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**A STUDY OF POLICE CANINE SEARCH TEAMS**

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**A Study of Police Canine Search Teams as Compared To Officer Search Teams**

This study was done by Officer Marie Wolfe of the Lansing Police Department K-9 Unit. Officer Wolfe has been a Lansing Police Officer for over four years. She has been a K-9 handler for three years . Officer Wolfe is a graduate of Michigan State University with a Masters Degree in Criminal Justice. Officer Wolfe is also a graduate of the Michigan State University K-9 Academy along with her partner "Cagney." Officer Wolfe and "Cagney" are assigned to the Uniform Division, Patrol Bureau.

**Question:** Does the utilization of police K-9 units enhance the Department's efficiency and effectiveness through the reduction of time needed to perform certain tasks?

**Theory:** Police K-9 units, by virtue of the canine's olfactory ability, are able to perform certain tasks with a higher degree of efficiency and accuracy than a police officer.

**Research Method:** Search scenarios were set-up in several buildings in the Lansing area with "suspect(s)" hidden inside. Both police K-9 units and officer units (2 to 4 officers depending on the building size) performed building searches. Elapsed time and accuracy of the results were measured for comparison.

**Results:** The police K-9 units outperformed the officer units both in terms of time required to search buildings and in accuracy of locating the suspects."

**Implications:** The utilization of trained police K-9 units for building searches can represent a considerable advantage in time/cost savings to the Lansing Police Department. As the building size increases, the K-9 units' time savings and accuracy far surpasses that of searching officer units. The utilization of police canines provides a multitude of other

benefits, e.g., handler protection, enhanced public perception of safety through greater apprehension of criminal suspects, tracking and location of evidence, criminals and lost persons, crowd control, narcotics and explosives detection, arson detection, cadaver detection and asset seizure.

Recommendation: The Lansing Police Department should continue the current program of maintaining the K-9 Unit within the Uniform Division as support for patrol activities.

## **I. Problem**

Throughout the country there continues to be an apparent increase in the rate of reported crime, while there is a concomitant decrease in the personnel resources available to police agencies. Police departments nationwide have used trained canines as an effort to "take a bite out of crime" with the canines providing a variety of services to these agencies.

A. Purpose---The purpose of this study will be to evaluate the effectiveness and accuracy of a police canine unit in one of its potential uses (building searches). Tests will determine if use of such a unit would reduce the amount of time and personnel needed to search a building. Additional measurements regarding accuracy and certainty of results will be gathered.

B. Importance---It is important to be able to see if a canine team would actually result in savings in terms of time and personnel as resources available to police agencies seem to be decreasing in the face of an increasing crime rate. If, in this singular use of canine unit, greater efficiency can be realized, as well as a greater degree of accuracy in their results, it will result in a reduction of the public's fear of crime through the enhanced rate of apprehension of criminals.

C. Limitations---The use of police canines is limited in this study to an evaluation of their efficiency and effectiveness in searching buildings. Canines are also capable of being utilized for handler protection, tracking and location of evidence, criminals and lost persons, crowd control, narcotics and explosives detection, arson detection, cadaver detection, and asset seizure.

An additional limitation occurs with the degree of certainty measurement that I have used. As this is a subjective measure, there is an inherent problem with reliability. Individuals have a variety of perceptions and experiences, and without a common reference point on which to base a response, objectivity is impossible.

## **II. A. Research Questions**

1. How much time and personnel are required to conduct a building search for officer teams and for K-9 teams?

2. What is the accuracy of suspect location when a building search is conducted by officer teams versus K-9 teams?
3. Are there any significant differences in officers' self-reported certainty levels following a building search by officer teams versus K-9 teams?

#### Definitions

Building search---In this study, a building search involves the active searching of the inside of a building to detect the presence of any persons(s) hiding inside, such as a burglar.

Time and personnel---refers to elapsed time while a building is being searched and the number of people and canines conducting the search.

Officer teams---refers to two or more police officers (the exact number to be determined by the size of the building).

Canine teams---refers to a trained police canine and its officer/handler.

Suspect location---refers to locating a suspect (s) hiding inside the building.

Self-reported certainty level---the subjective response of the officer on a five-point Likert scale as to his/her degree of certainty as to the results following a building search.

### **III. Review of the Literature**

In reviewing related literature concerning the effectiveness of police canines, widely recognized expert Samuel G. Chapman aptly described the situation when he stated that in this field, "...data were lacking and written documentation didn't exist in several places." (Chapman; 1979,78)

Much has been written, however, concerning the strengths of some of the canine's sensory abilities relative to humans which assists in rendering them highly useful for some types of police assignments. Syrotuck (19?) reported that a comparison of olfactory cell counts between humans and canines indicates that a dog's sense of smell should at least 44 times better. Several studies that this author has reviewed indicate that a canines olfactory sensitivity is anywhere between 10-100 times greater than that of human's. There is a certain variability present depending on the odiferous material used and the ability and motivation of the canine. (Syrotuck; 19??) For example, Hehuas (1953) discovered that a canine's sensitivity to butyric acid was 100 thousand to 100 million times greater than human's. Moulton (1969) believes the most probable advantage canines'

possess given this increased olfactory area is the enhancement of scent discrimination or the ability to distinguish one scent from others He continues to report that even a small increase in this ability will enhance the detection of subtle differences in odors. Additionally, Watson (1963) reported that the average German Shepherd's hearing ability has been proven to be ten times greater than that of human beings.

Various experts and lay people with great experience in the criminal justice system report the tremendous advantages to using canines in police work. (Chapman; 1960) In terms of crowd control, Watson (1963) stated that a canine team can effectively perform the job that might typically require the services of 15 to 20 police officers. In terms of drug detection, numerous studies have shown that trained canines are generally ten times better than any instrument. (Watson; 1963), (Chapman; 1960), (Bond ;1978) has reported that canine teams have excelled in the area of bomb detection with a "96% surety rate" while lowering search times for airport terminals, baggage areas, cargo areas and aircraft considerably.

Chapman (1979) stated that, "Police dogs can do what man and his machines cannot: locate the presence of suspects by sensory means, at all times, anywhere, and under some of the worst conditions." Their speed, thoroughness and accuracy in "...searching sterile areas to detect the presence of unauthorized persons..." has often been demonstrated. (Chapman;1979) The economic benefit of police canines in terms of their effectiveness, has been noted by police executives. (Chapman; 1979)

While much has been written about police canine effectiveness, including figures similar to the above, it is hoped that this study would provide some concrete data to the above contentions, filling the void to which Chapman referred.

**IV. Method**

A. Design

The design utilized has been conceptualized below. An explanation of the symbols follows.

Officer teams

- B1 X S C
- B2 XX S C
- B3 X S C
- B4 XX S C

K-9 teams

B1 X S C  
B2 XX S C  
B3 X S C  
B4 XX S C

Symbols

B = Building to be searched (there will be four different ones and each will be searched five times).

X = The number and occurrence of "suspects" hiding in the building.

S = The active searching of the interior of the building in the attempt to locate the suspects.

C = The officers' response on the degree of certainty scale.

As the number and occurrence of "suspects" hiding in the various buildings will be consistently varied for each searching group, this will serve the experiment well. Additionally, the locations of the hidden "suspects" will be the same for both searching groups.

This design should control for any anticipated extraneous (non-experimental) factors in this situation.

B. Population and Sampling --- The canine teams population will consist of all the police canine teams from the Lansing Police Department, with the exception of the author, and the canine teams from the Michigan State University Police Department, the East Lansing Police Department and the Eaton County Sheriff's Department for a total access to 15 police canine teams.

The officer teams will consist of officers from the Lansing Police Department's Uniform Division with the particular assistance of the Crime Suppression Unit, Crime Scene Investigators, and the Helicopter Unit.

C. Facilities Utilized --- The buildings utilized for this study were all located in Lansing. They varied in use, content, and size. A brief description and square footage approximation follows.

1. Lansing Uniform Company--Is a commercial retail store that sells police uniforms, footwear, equipment, etc. and does on-site tailoring. Approximate square footage 5,445.
2. St. Mary's multi-purpose--An outbuilding for a downtown church that has a gymnasium, social/recreational areas and a complete kitchen set-up. Approximate square footage 11,000.

3. Board of Water and Light Water Department--A local utility company building which houses the steam and engineering departments, offices, classrooms, a water meter repair facility , and garage area. Approximate square footage 40,500.

4. Board of Water and Light Stores Warehouse--A local utility company warehouse containing offices, and equipment for both the electrical and water departments ranging from outlets, valves, and hoses to mastarms, luminaries, and coils of steel. Approximate square footage 138,995.

D. Instrumentation -- Measurements of elapsed time will be kept and analyzed for each of the searching groups in the four different buildings used. The number of officers and canines utilized to conduct the specific search and the estimated square footage of the buildings searched will also be recorded. A five-point Likert scale has been developed to record the officers' reported degree of certainty level as to their results following their search of a building.

E. Treatment -- Search situations will be set-up in four buildings differing in size and use (e.g., two warehouse-type buildings, a church recreational building and a commercial store). Both officer teams and canine teams will search these buildings with the purpose of locating suspects or clearing the buildings.

In each of the scenarios, outer perimeter security will be given as it is consistent for both officer teams and canine teams searching buildings in terms of the number of officers needed for exterior security.

There will be total of 20 trials for officer teams for canine teams. In these situations, a "suspect(s)" will hide in the same places for the searching officer teams and the searching canine teams. Elapsed time will be kept for each group searching the building. Also recorded will be the number of personnel and number of canines utilized to search each building. Records will be kept to determine the success rate in locating "suspects."

Uniformed officers and officer/handlers will be asked to indicate their degree of certainty as to their results on a five-point Likert scale.

F. Data Analysis--Data will be analyzed to compute the accuracy and efficiency of both officers and canine teams' results, elapsed time required for the various searches, number of personnel and canines utilized, as well as the results relative to each group. The self - reported degree of certainty scale responses will also be examined to see if there is any statistical significance in the responses of searching officers and officer/handlers.



**V. Results**

The data, represented in Tables 1-4 below, illustrate a considerable savings in time expended and accuracy of searching when canine teams are utilized for building searchings.

One of the first measures that this study evaluated was a comparison of the number of suspects located by the respective searching teams to the number of suspects located by the respective searching teams to the number of suspects hidden. The resulting percentage was calculated to determine the difference in "accuracy" between the canine teams and the officer teams.

In Table 1 below, it can be observed that the canine teams had a higher degree of accuracy than the officer teams. Canine teams successfully found 27 out of 29 suspects hidden or 93 percent. This is compared to the much lower accuracy percentage of the officer teams which was 59 percent, or 17 out of 29 suspects located.

Table 1 -- Comparison of Suspects Found to Suspects Hidden By Type of Team

<b>Team</b>	<b>Suspects Hidden</b>	<b>Suspects Found</b>	<b>Accuracy Percentage</b>
Canine Teams	29	27	93%
Officer Teams	29	17	59%

In the two circumstances where the canine teams failed to locate suspects in the BW&L Water Department building, it should be noted that there were many chemical/gasoline odors present which may have affected the canines. Additionally, the canine teams were not sent into "clean" buildings in these scenarios. A clean building would be that which was devoid of human scent for an hour or so. Time constraints necessitated each canine team searching buildings relatively back to back with perhaps 15 minutes between searches.

It also appears that as the square footage of the buildings increased, the accuracy of the officer teams decreased. This is supported by the data in Table 2.

Table 2 -- Searching Units' Accuracy by Building.

<b>Building</b>	<b>Square Footage</b>	<b>Officer Teams' Accuracy</b>	<b>Canine Teams' Accuracy</b>
Lansing Uniform	5,445	83%	100%
St. Mary's	11,000	100%	100%
BW&L Water Dept.	40,500	45%	82%
BW&L Stores	138,995	28%	100%

A second measurement of this study consisted of the average time (in minutes) it took for each unit to locate the suspects. Canine Teams outperformed the officer teams by a wide margin. As indicated in Table 3, the canine teams cleared the various buildings from a low of 1 min. 24 sec. to a high 15 min. 51 sec. The officers teams' clearance times ranged from a low of 18 min. 9 sec. to a high 148 min. 15 sec. It should be noted that the time calculated for the officer teams was multiplied by the number of officers actively searching the building (2 to 4 depending on building size) to establish an "officer/hour" time figure. Additional, a time limit of one hour was established per building search. The table below indicates that average time over the five searches performed by each team in each of the four buildings.

Table 3 -- Average Time (minutes) to Locate Suspects by Type Unit

<b>Location</b>	<b>Square Footage</b>	<b>K-9 Teams</b>	<b>Officers Teams</b>
Lansing Uniform	5,445	1 min. 24 sec.	20 min. 52 sec.
St. Mary's	11,000	4 min. 20 sec.	18 min. 9 sec.
BW&L Water Dept.	40,500	14 min. 15 sec.	60 min. 30 sec.
BW&L Stores	138,995	15 min. 51 sec.	148 min. 15 sec.

An additional consideration in cost factor analysis is the time expended by perimeter security that is necessary while the searches are being conducted. Perimeter security typically would involve the assistance of at least two additional officers. It is apparent that perimeter security time will also



multiply as searching time increases.

Table 4 presents data on the officers and officer/handlers' self - reported certainty levels as to the results of their searches. A five-point Likert scale was utilized with 1 being the most certain and 5 being the least certain.

Table 4 -- Average Degree of Certainty Results

<b>Location</b>	<b>Square Footage</b>	<b>K-9 Teams</b>	<b>Officers Teams</b>
Lansing Uniform	5,445	1	2.3
St. Mary's	11,000	1	2.1
BW&L Water Dept.	40,500	1.6	3.8
BW&L Stores	138,995	1.3	4.75

**VI Conclusion**

The utilization of trained police canine teams for building search situations can represent a considerable benefit to police agencies (through a reduction in officers' time spent to search various locations) as well as a reduction in the fear of crime (through an enhanced apprehension rate of criminals). As the building size increases, the canine teams' time savings, accuracy, and subjective reported certainty far surpasses that of searching officers teams. When coupled with the safety factor, the utilization of canine teams is an outstanding addition to police agencies.