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**Canine Detection of Humans: An Aged Trail Using
Pre-scented Canines**

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Canine Detection of Humans: An Aged Trail Using Pre-scented Canines

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Foreword

Pre-scented canines not trained specifically for detection of aged trails may result in increased inaccurate and inconsistent results. Since there are no consensus standards for canine teams (canine and handler), this document is specifically dedicated to specialized protocols for trailing canines, to be used when trails are 24 hours or older. This standard determines that initial training, certification, and documentation standards should be established for Pre-Scented Canine - Aged Trail Search as no industry standards currently exist.

This document provides requirements for training, certification and documentation pertaining to Canine Detection of Humans: An Aged Trail Using Pre-scented Canines within the detector dog community. This document serves as the progression of that effort. Prior to the start of the search, the canine is “scented” on an object (scent article) containing the target’s scent. The canine works from an article to either a person or a location associated with that person. The goal is for the canine to detect and use a specific person’s scent on a scent article to either search for and follow an associated scent trail to this specific person or a location connected with this person while discriminating from all non-associated scent trails, or to correctly demonstrate the absence of an associated scent trail. Canines used in this discipline are typically deployed in search and rescue and forensic investigative functions, and typically not in immediate apprehension functions.

This document was revised, prepared, and finalized as a standard by the Dogs and Sensors Consensus Body of the AAFS Standards Board. The draft of this standard was developed by the Dogs and Sensors Subcommittee of the Organization of Scientific Area Committees (OSAC) for Forensic Science, based on the Scientific Working Group on Dog and Orthogonal detector Guidelines (SWGDOG) approved SWGDOG SC 9 – Human Scent Dogs Pre-Scented Canine - Aged Trail Search¹.

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the term ‘**should**’ indicates that a provision is not mandatory, but recommended as good practice.

All hyperlinks and web addresses shown in this document are current as of the publication date of this standard.

Key Words: *initial training, canine team assessments, canine certification, maintenance training, mantrailing, record keeping and document management, terms and definitions, references, cases and legal references, alert, change of behavior, disclosure, certifying official, scent article, olfactory.*

¹ https://www.nist.gov/sites/default/files/documents/2018/04/25/swgdog_human_scent_dogs_-_pre-scented_canine_-_aged_trail_search.pdf

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Canine Detection of Humans: An Aged Trail Using Pre-scented Canines

1 Scope

This document provides the requirements for training, certification and documentation pertaining to pre-scented canine-aged track/trail search. Pre-scented canine aged trail searches use a canine team (canine and handler) to search for and follow aged trails of a specific person's (target) scent over different surface types. An aged track/trail is a human scent pathway that has been present for some period of time, typically expressed with a time frame associated with the track/trail (e.g., a 24 hour or older track/trail).

2 Normative References

The document contains no normative references. See Annex B, Bibliography for other references.

3 Terms and Definitions

For purposes of this document, the following discipline specific definitions apply. Please refer to ASB Technical Report 025, *Crime Scene/Death Investigation – Dogs And Sensors – Terms And Definitions*, First Edition, 2017 for a comprehensive listing of detailed general canine detection definitions.

3.1 active alert

A type of response that the canine displays/indicates in a manner that may disturb the environment and or forensic evidence (i.e., dig, bark, scratch, paw, jump, and bite after the detector canine has detected a trained odor/scent).

3.2 aged scent

Specific human scent that has been present for a period longer than 24 hours.

3.3 aged trail

A specific human scent pathway that has been present for a period longer than 24 hours.

3.4 alert

A characteristic change in ongoing behavior in response to a trained scent, as interpreted by the canine handler. The components of the alert may include: change of behavior (COB), interest, and final response or indication. (See [3.21 final response](#).)

3.5 article

(1) A particular item or object, typically one of a specified type used to present to the canine for scent discrimination.

(2) Scented objects left on the track or in a search area at various intervals to which the canine is expected to indicate.

**3.6
associated scent trail**

A pathway laid by a human subject whose scent associates the scent on the article presented to the canine.

**3.7
blank search**

A training or certification exercise in which the target scent is not present.

**3.8
canine**

A dog, *Canis familiaris*, more commonly used to denote a working dog and sometimes abbreviated as K-9.

**3.9
canine handler**

A person who has successfully completed a recognized course of canine handling in a specific discipline and maintains those abilities through field applications, maintenance training, certification, recertification and agency or program required continuing canine education.

**3.10
canine handler error**

Any action or cue by the handler that causes the canine team to perform incorrectly.

**3.11
certification**

A process that attests to the successful completion of an examination of relevant skills for the canine team.

**3.12
certifying authority**

The organization authorizing the certification of a canine team.

**3.13
certifying official/assessor**

A person who has been delegated the authority to conduct an evaluation (assessment and/or certification) and/or sign certificates on behalf of an organization or entity, that recognizes a canine team has been trained to a particular standard within the organization.

**3.14
Change of Behavior
COB**

A characteristic pattern of behaviors, as interpreted by the canine handler that occurs when the canine detects a trained scent. This differs from other olfactory interest that otherwise are exhibited by the canine in response to the daily environment. The initial change of behavior typically leads to following the scent to its source/target. The pattern of behavior may be unique to each canine. (See [Error! Reference source not found.](#) **interest.**)

3.15**competent canine trainer**

A person having suitable or sufficient skill, knowledge, and experience to train canines and canine handlers, who has demonstrated, through education, training, and operational experience, extensive skills and knowledge in the subject field or discipline. This person would normally perform the maintenance training and proficiency training in the field and may train canines in preparation for a formal course of instruction.

3.16**confirmed operational outcome**

Verification of search results following a deployment of a canine team(s).

3.17**controlled search**

An experiment/training/testing exercise in which any defined variable(s) is consistent within specific parameters.

3.18**corrective action plan**

A training course of action to remediate performance deficiencies with a canine team.

3.19**distractor**

Non-target stimuli placed within a search area. These can include: humans, toys, food, animal odor, etc.

3.20**double-blind assessment/double-blind testing**

Scientific usage: This condition occurs when neither the experimenter/canine handler, nor the observer/evaluator, knows which treatments/manipulations are given to which subjects.

Operational usage: In the evaluation of a canine neither the assessor nor the canine handler knows the location of the target scent or whether target scent is present (i.e., a blank/null search).

3.21**final response**

A behavior that a canine has been trained to exhibit in the presence of a target scent source. This behavior may be either passive (sit, stare, down, point, etc.) or active (bite, bark, scratch, jump, etc.). Also known as a trained final response. (See [3.4 alert](#).)

3.22**handler error**

Any action or cue made by the handler that causes the canine to perform incorrectly. (See [3.10 canine handler error](#).)

3.23**human distractor**

Non-target person placed within a search area.

3.24

human scent evidence

A particular person's scent collected for use for investigative purposes.

3.25

human target

Individual that laid a track/trail for a canine to follow to the exclusion of all other trails.

3.26

initial training

The fundamental training associated with detector canine training which consists of, but not limited to: bonding/relationship building, obedience, basic scent discrimination, and basic search techniques.

3.27

mission requirement

Performance demanded of a person or canine team in accordance with certain fixed regulations, needs of the department or agency. Compulsory pre-requisites needed before deployment.

3.28

negative control

A known odor/scent sample that is used to assess the canine's proficiency in a non-associated odor/scent scenario. The canine is expected to give a negative response.

3.29

negative response

A behavior exhibited by a canine showing no association to target scent, i.e., no associated target trail. This may be a specifically trained behavior or the absence of a positive response.

3.30

non-associated scent trail

A pathway laid by a human subject whose scent is not associated to the scent on the article presented to the canine, or the absence of an associated scent pathway.

3.31

non-productive response

A change of behavior of the canine followed by a positive indication which cannot be confirmed by the canine handler. This may be the result of residual scent that the canine can detect but which cannot be confirmed by technology or direct observation. A non-productive response may also be an error—a false positive—but these outcomes cannot be distinguished in an operational environment.

3.32

operational assessment

A test conducted (single- or double-blind) in an operational environment in which the canine team will be deployed or utilized.

3.33**passive alert**

A trained final response given by the canine that requires an inactive behavior such as sitting, staring or lying down. These types of behaviors are typically trained so as not to disturb the environment and/or forensic evidence.

3.34**positive alert**

A trained detection alert in the presence of the target scent.

3.35**pre-scenting**

A scent article that is presented to the canine prior to deployment. The canine's objective is to associate the scent article to the target scent. This is commonly used in tracking/trailing/location checks and/or scent discrimination line ups.

3.36**residual scent**

Scent that originated from any subject that may or may not be physically recoverable or detectable by other means. The scent that originated from a target subject and lingers after the target subject has been removed or has totally decomposed (as in the case of human remains).

3.37**scent**

Volatile chemicals emitted from a live human that are perceived by the canine through olfaction. "Scent" has traditionally referred to canine detection of humans. "Odor" has traditionally referred to canine detection of a substance.

3.38**scent article**

An item that has been exposed to the target scent source that is used to put the canine on task.

3.39**scent discrimination**

The ability of the canine to use olfactory capabilities to differentiate one scent from another.

3.40**scent dispersion**

Environmental conditions/factors/influences affecting the movement of scent from a fixed scent source. Movement of the source creates a separate scent cone at the new location.

3.41**scent recognition**

Demonstration of the canine's olfactory ability to alert on a target scent(s).

3.42**scent recognition assessment**

A test of the canine's olfactory ability to alert to target scent(s) in a controlled environment.

3.43

scent trail

Scent pathway left by an individual moving.

3.44

single-blind assessment/testing

An evaluation of the canine team's ability to complete an exercise where the evaluator knows the outcome and the canine team does not.

3.45

split trail

Refers to a training exercise in which two subjects walk the same pathway and then split into two different directions. When the canine is presented with a scent article from one of the subjects, the canine commences to trail and associate the correct person to the scent article. Despite the contamination of scent from the other person on the trail the canine is still able to discriminate between scents and identify the correct subject.

3.46

target

The scent for which the canine is trained to respond.

3.47

target trail

A pathway that was laid by a target subject that associates the scent article presented to the canine. (See **3.6 associated scent trail.**)

3.48

track/trail

The scent pathway left by an individual moving. (See **3.42 scent trail.**)

3.49

trailing

The propensity or learned ability of a canine to methodically follow the target scent. The canine may follow a scent plume which could be either air borne or settled on the ground/vegetation. The canine will use whichever technique will get them to the target the most efficiently. Canines are typically pre-scented on an object that has target scent.

3.50

unconfirmed operational outcome

Lack of verification of search results following a deployment of a canine team(s).

4 Canine Team Requirements

4.1 Initial Training of the Canine Handler

4.1.1 Canine handler training shall be conducted by a competent trainer from an organization that utilizes a structured curriculum with specific training and learning objectives.

4.1.2 Canine handler training shall include, but not limited to the following:

- a) the ability to “read the canine” (interpreting the canine’s change of behavior to particular stimuli);
- b) the acquisition and processing of scent by the canine;
- c) education on the various environmental conditions affecting scent dispersion;
- d) canine handling techniques (e.g., voice inflection and lead handling);
- e) rewarding the canine;
- f) education on cognitive bias;
- g) first aid for canine and handler;
- h) fitness for canine and handler, and
- i) relevant legal aspects to include (refer to ASB TR 084, *Presentation of Canine Detection Evidence in Court, First Edition, 2020* for additional information [not yet published]):
 - effect of odor/scent dispersion;
 - relevant case law;
 - preparation of legal documentation; and
 - preparation for courtroom testimony.

4.1.3 The training shall be structured to meet the typical mission requirements of the canine team’s department, agency or organization, herein referred to as organization.

4.1.4 The canine team’s training shall continue to maintain a level of operational proficiency and obtain certification (see Sections 5, 6, and 7).

4.1.5 Canine handler training may include techniques for collecting, handling, storing and disposing of articles and human scent evidence as required by the canine handler’s organization.

4.1.6 In order to maximize search efficiency, canine handler training shall include search techniques.

4.2 Initial Training of the Canine

4.2.1 Canine training shall be conducted by a competent canine trainer from an organization that utilizes a structured curriculum with specific training and learning objectives. The training shall include, but not be restricted to the following.

4.2.1.1 Initial training shall include sufficient obedience training to ensure the canine will operate safely and effectively based on mission requirements. Obedience training should include on- and/or off-lead control and responsiveness to verbal commands.

4.2.1.2 The canine shall be trained to perform a pre-determined specific final response (active or passive alert) upon locating the trained scent (positive alert).

4.2.1.3 The canine shall be trained to perform a consistent negative response when no target scent is associated at the start of the trail.

4.2.1.4 Initial training of the canine shall include exposing the canine team to a variety of locations, expected situations, and searches.

4.2.1.5 Training shall progressively include scent articles, aged scent, increasing trail distances, locations and environmental conditions typically expected in an operational search.

4.2.1.6 The canine shall be exposed to varying concentration/amounts of available scent.

4.2.1.7 Training shall include exposing the canine to a variety of different noise, visual, and odor/scent distractors.

4.2.1.8 The canine shall be trained to perform a safe, effective, and controlled search.

4.2.1.9 The training shall be structured to meet the typical mission requirements of the canine team's organization.

4.2.1.10 The canine team's initial training shall be continued until the required level of operational proficiency is achieved and the canine team is certified. (See Sections 5, 6, and 7)

5 Canine Team Assessments

5.1 Assessments are part of certification, maintenance training, and proficiency testing.

5.2 Each assessment is the evaluation of a search.

5.3 The canine handler shall articulate the canine's final response prior to the start of the assessment. The canine may not be able to make a final response due to the components and parameters of the assessment. Reasonable consideration by the assessor shall be given in these instances (e.g., the target is inaccessible for the canine to make a final response).

5.4 Each trail should be used by only one canine team.

5.5 Each non-associated trail should be used by only one canine team.

5.6 The canine team shall be assessed in the following ways.

5.6.1 The assessments in this section are intended for *single-blind assessments*.

5.6.1.1 *Scent recognition assessments* shall test the following.

5.6.1.1.1 The ability of the canine to detect and use a specific person's scent on a scent article to follow the associated scent trail while discriminating from non-associated scent trails.

5.6.1.1.2 The ability of the canine to demonstrate the absence of an associated scent trail.

5.6.1.1.3 The canine handler's interpretation of the canine's behavior while searching.

5.6.1.1.4 The canine's final response.

5.6.1.1.5 The canine handler's interpretation of the canine's final response.

5.6.1.1.6 The scent recognition assessment shall consist of four individual assessments with the following components and parameters.

5.6.1.1.6.1 For each scent recognition assessment, one human target and two human distractors are utilized to lay human scent trails in an environment similar to where the canine usually works (e.g., urban, suburban, or rural environment). Both target and human distractors shall not be visible.

5.6.1.1.6.2 Each scent recognition assessment shall be between 90 m – 183 m (≈100 – 200 yds.) in length with a single split turn involving one human target and two human distractors (see Figure 1).

5.6.1.1.6.3 Target trails shall be laid on a minimum of two surfaces (dirt, grass, concrete, asphalt, etc.).

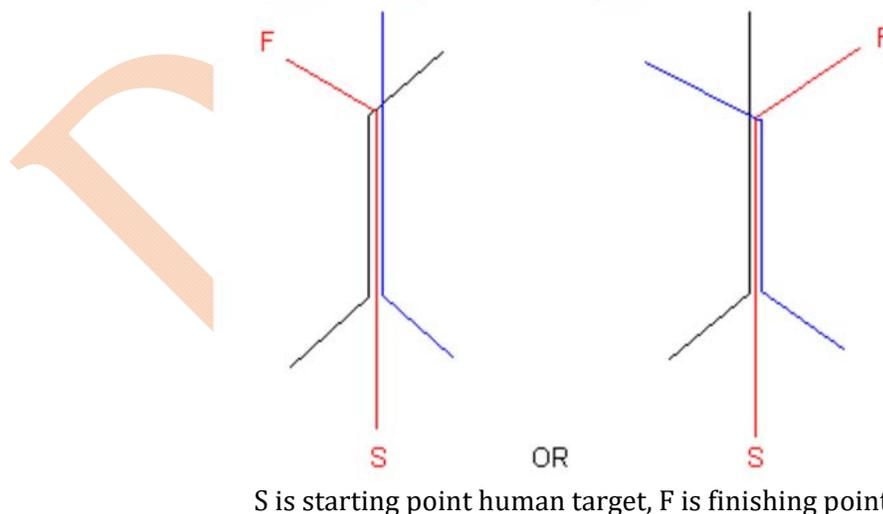


FIGURE NOTE The target trail is indicated by the red, the distractor trails are indicated by the blue and black.

Figure 1—Split Trail

5.6.1.1.6.4 The target trail and one human distractor trail shall be aged a minimum of 30 minutes, and one distractor trail shall be aged a maximum of 15 minutes.

5.6.1.1.6.5 At least half, but not all of the scent recognition assessments shall be conducted with non-associated scents to demonstrate the absence of an associated scent trail (see Figure 2). The order of the associated and non-associated scent recognition assessments shall be randomized.

5.6.1.1.6.6 Prior to the assessment, the start of the scent trail shall be marked by the assessing agency.

5.6.1.1.6.7 The canine handler shall be directed to the start marker, but not given the target's direction of travel.

5.6.1.1.6.8 The canine handler shall be provided a scent article from the target or a non-associated scent article as a negative control.

5.6.1.1.6.9 The assessor shall know the correct outcome of each assessment.

5.6.1.1.6.10 The canine handler shall not know the correct outcome of any assessment.

5.6.1.1.6.11 The assessor shall observe the canine team. At the conclusion of the assessment, the assessor shall compare the search results with the parameters of the search. This comparison may be done immediately after the handler determines the canine has made its final response, or at the conclusion of the entire assessment.



Scent or a scent trail present, but the human scent traces on the pre-scenting article does not associate the scent trail.

Figure 2—Non-associated Scent Trail

5.6.1.1.6.12 The assessing agency may take into consideration the environmental influences (e.g., wind, terrain, weather, vehicle, traffic, etc.) on the scent in determining whether or not the canine team has successfully completed the scent recognition assessment.

5.6.1.1.6.13 A successful completion of the scent recognition assessment shall be the ability to find the correct direction of travel and follow the scent trail and correctly demonstrate a final response at the target or demonstrate the absence of an associated scent trail.

5.6.1.1.6.14 The canine team shall properly scent discriminate in at least 75 % of the assessments.

5.6.1.1.6.15 The assessor can fail the canine handler team if it is determined that the canine is no longer actively searching.

5.6.1.2 *Operational assessments* shall test the following.

5.6.1.2.1 The ability of the canine team to follow a scent trail on different surfaces and identify the specific target at the conclusion of the scent trail as required by the organization.

5.6.1.2.2 Demonstration of the canine's ability to perform a systematic search.

5.6.1.2.3 Demonstration of the canine handler's control of the canine during the execution of a systematic search.

5.6.1.2.4 The canine's final response.

5.6.1.2.5 The canine handler's interpretation of the canine's behavior while searching and including the canine's final response.

5.6.1.2.6 Operational assessments shall consist of the following components and parameters.

5.6.1.2.6.1 A mission-oriented assessment environment shall be used.

5.6.1.2.6.2 In an operational assessment, the canine handler team is running only one trail. Each target trail shall be approximately 1.6 km (\approx 1 mile) in length in an environment similar to where the canine usually works.

5.6.1.2.6.3 Each target trail shall be aged in accordance with mission requirements for a minimum of 24 hours.

5.6.1.2.6.4 Each target trail shall contain a minimum of ten turns.

5.6.1.2.6.5 Multiple human distractors, either placed or regularly occurring in the assessment area shall be present along the distance of the target trail (see Figure 3).

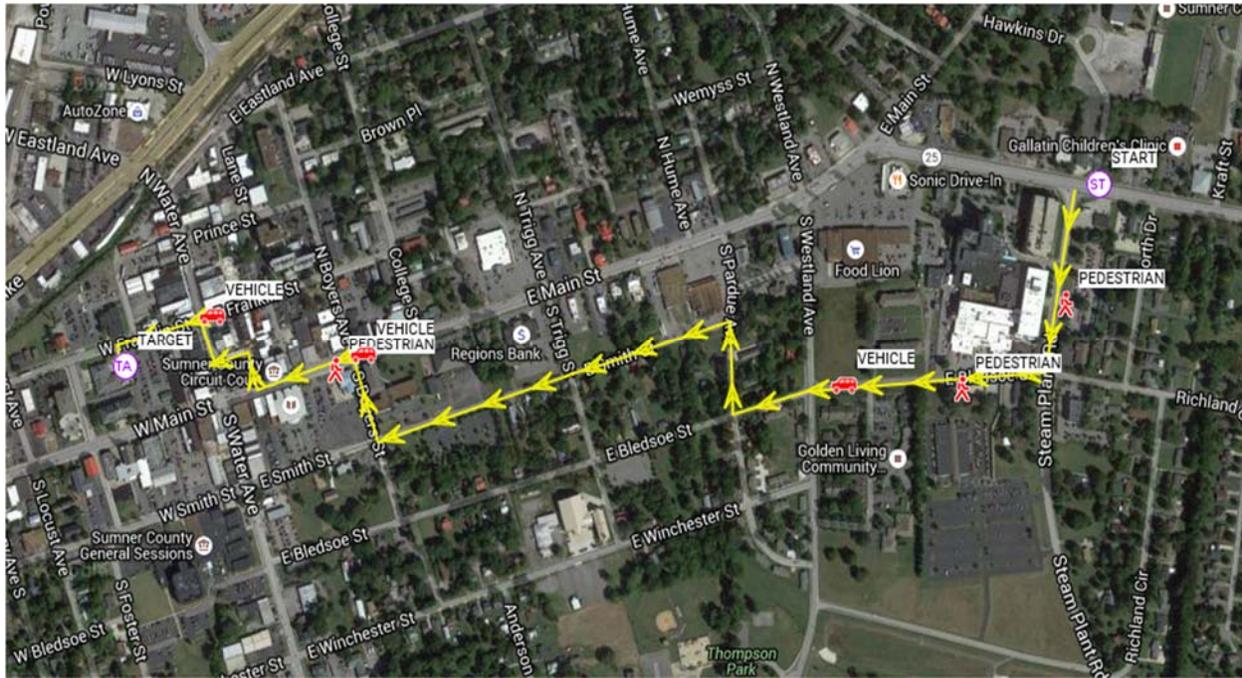
5.6.1.2.6.6 The assessment location shall be unfamiliar to the canine handler.

5.6.1.2.6.7 The targets and distractors shall not be ones normally utilized in the training of the canine team.

5.6.1.2.6.8 The canine handler shall be informed of the start location area.

5.6.1.2.6.9 The canine handler shall be provided a scent sample from the target.

5.6.1.2.6.10 The assessment should be completed in less than 60 minutes.



Associated scent article to scent trail with multiple human distractors present along the distance of the target/scent trail demonstrating presence of an associated scent trail.

Figure 3—Example Aged Scent Trail

5.6.1.2.6.11 The assessing agency shall know the correct target trail of each assessment.

5.6.1.2.6.12 The canine handler shall not know the correct target trail of the assessment.

5.6.1.2.6.13 The canine handler must be able to discern the canine's final response and communicate this to the assessing agency.

5.6.1.2.6.14 The conclusion of the assessment shall be defined by the assessing agency.

5.6.1.2.6.15 Any canine team that is determined by the assessing agency to correctly follow the target trail and correctly come to a final response at the correct target, within 60 minutes has passed the assessment.

5.6.1.2.6.16 Failure of the assessment includes the following.

5.6.1.2.6.16.1 Any canine team that is determined by the assessing agency to be more than 46 m (≈50yd) off the target's trail may be failed. However, the assessing agency may take into consideration environmental influences on the scent in determining whether or not a canine team is still on trail.

5.6.1.2.6.16.2 Identifying a human distractor shall be considered a failure.

5.6.1.2.6.16.3 A canine team taking longer than 60 minutes to complete the assessment shall be considered a failure.

5.6.1.2.6.16.4 Following a distracter odor/scent track/trail will be considered a failure.

5.6.1.2.6.16.5 The assessor can fail the canine handler team if it is determined that the canine is no longer actively searching.

5.6.1.2.6.16.6 If the canine fails to come to a final response, that constitutes a failure of the canine team in the assessment.

5.6.2 The assessments in this section are intended for *double-blind assessments*. When a double-blind assessment is conducted, it shall be conducted with considerations for safety.

5.6.2.1 Scent recognition assessments can be conducted double-blind following the components and parameters described in Section 5.6.1.

5.6.2.2 Unlike the assessments described in Section 5.6.1, neither the canine handler, nor the assessor, nor any individual present with the canine team shall know the correct outcome of any portion of the assessment, including whether there is a scent association.

5.6.2.3 The canine team shall be required to successfully complete the assessment as defined by the assessing agency.

5.6.2.4 The assessor shall observe the canine team. At the conclusion of the assessment, the assessor shall compare the search results with the parameters of the search. This comparison may be done immediately after the handler determines the canine has made its final response, or at the conclusion of the entire assessment.

5.6.2.5 The canine team shall be required to complete a double-blind assessment every six months unless there is a double-blind assessment as a component of the certification.

5.6.2.6 Any double-blind assessment may be used for proficiency testing.

6 Canine Team Certification

6.1 Certification for the named canine team shall be valid for up to one year (365 days or 366 days in a leap year).

6.2 The canine team shall perform regular maintenance training, periodic proficiency assessments, double-blind assessments, and follow other recommended local, state and/or federal guidelines. Certification does not remove the requirement for continued training.

6.3 The certifying official(s) shall not be routinely involved in the training (maintenance training, periodic proficiency assessments, double-blind assessment, etc.) of the canine team being evaluated.

6.4 The certifying authority may fail the canine team due to handler errors and breaches of safety, which may include, but are not limited to, the following.

a) Not maintaining positive control of the canine, which may lead to safety issues.

- b) Allowing canine outside of search area.
- c) Not following directions of the assessor.

6.5 Deliberate compromise of an evaluation will not be tolerated. Any communication concerning specifics of the evaluation will constitute a compromise and will lead to termination of the canine team's certification.

6.6 A mission-oriented test environment shall be used.

6.7 The certification shall be comprised of a scent recognition assessment together with an operational assessment (single- and/or double-blind assessment, or a combination of both). Certification parameters are outlined in Section 5, Canine Team Assessments.

6.8 Targets used in the certification process shall not have been used in the training activities (maintenance training, periodic proficiency assessments, double-blind assessment, etc.) of the canine team being certified.

6.9 The canine team shall properly scent discriminate in at least 75% of the scent recognition assessments (see section 5.6.1.1) and pass the operational assessment (see section 5.6.1.2) for successful certification.

6.10 A canine team that fails the certification process shall complete a documented corrective action plan developed by the canine team's trainer before making another attempt to certify.

6.11 Certifying official(s) shall identify the performance deficiency(ies) to the canine handler so that the trainer can determine a minimum amount of time for that deficiency(ies) to be remediated before another certification attempt.

6.11.1 During this time frame, documentation should be provided by the canine trainer/handler to demonstrate that efforts have been enacted to correct the deficiency.

6.12 Organization(s) may enhance the standards' requirements in order to make the organizational requirements more stringent.

7 Canine Team Maintenance Training

7.1 The canine team shall conduct regular objective-oriented training sufficient to maintain and enhance operational proficiency that includes:

- a) enhancing the proficiency level of the canine team;
- b) correcting identified deficiencies;
- c) a variety of search locations, environmental conditions, weather conditions, and search area sizes;
- d) a varied duration of search times at a variety of times of day or night;
- e) a variety of blank search areas;

- f) a variety of search areas that contain non-associated scent trails;
- g) a variety of odor/scent distractions and/or odor/scent distractors in the search area;
- h) a variety of set times;
- i) a variety of targets;
- j) a variety of articles used for pre-scenting the canine;
- k) a variety of degrees of concealment (behind a tree, behind a door, in a trunk of a car, above ground, in a tree, etc.); and
- l) a variety of noise distractors (traffic, sirens, children playing, verbiage over a PA system, etc.).

7.2 Routine training conducted solely by the canine handler to maintain the canine's proficiency is acceptable, but not a best practice, and shall be combined with supervised training on a regular basis.

Supervised training by a competent trainer is required in order to improve performance, identify and correct training deficiencies, and perform proficiency assessments.

7.3 A canine team shall conduct a minimum of 16 hours of training per month to maintain and improve the proficiency level of the canine team.

7.4 Training is meant to sustain, enhance, and promote the performance of the canine team.

7.5 The canine team shall perform periodic proficiency assessments throughout the certification period as outlined in Section 5 - Canine Team Assessments, including a variety of scent recognition assessments, operational assessments, and single- and double - blind assessments.

7.6 Canine teams shall be challenged during the regular maintenance training sessions within the operational environments for which the canine team may be deployed.

8 Scent Article(s) Storage and Handling

8.1 Handling and storage of scent article(s) shall be conducted in a manner that prevents odor/scent contamination.

8.2 Scent article(s) shall be stored in separate, individual, and labeled containers.

8.3 Scent article(s) shall be stored individually and separately from non-target and masking odor/scent.

8.4 Scent article(s) shall be appropriately disposed of and replenished as required and necessary due to odor/scent contamination and/or the perishable nature of the material.

8.5 Scent article(s) shall be maintained in a manner to avoid loss or destruction.

8.6 Scent article(s) should be signed in and out.

8.7 Scent article(s) should be inventoried monthly.

8.8 Documented training should take place on the acquisition, handling, storing and disposing of target scent.

9 Canine Team Records and Document Management

9.1 The canine handler/organization shall document training, certification, canine team assessments, and discipline-related deployment data as relevant.

9.2 Proficiency assessments and training records may be combined or separate documents.

9.3 Discipline-related deployment records shall be separated from training, proficiency assessment, and certification documentation.

9.4 Training and discipline-related records should be standardized within the organization.

9.5 Training records shall include, but are not limited to the following data.

- a) Name of canine handler and canine.
- b) Name(s) of individual(s) conducting or assisting with training.
- c) Time and date of training.
- d) Location, environment, and weather conditions of training (i.e., urban, rural, wilderness, etc.).
- e) Training design (non-blind, single-blind, or double-blind).
- f) Target descriptors (e.g., gender, age, ethnicity, stature, etc.).
- g) Location of target.
- h) Concealment of the target (if applicable).
- i) Set time.
- j) Type of scent article/source (if applicable).
- k) Length of scent trail.
- l) Length of training session.
- m) Canine team search results.
- n) Deficiencies and corrective measures implemented during training regimen.
- o) Other information required by organization.

9.6 Certification records shall be maintained by the certifying authority and the handler, and shall include, but are not limited to, the following data.

- a) Name of canine and canine handler.
- b) Name(s) of individual(s) conducting, assisting, or awarding certification.
- c) Date and time canine team certified.
- d) Location, environment, and weather conditions during certification (i.e., urban, rural, wilderness, etc.).
- e) Certification assessment design (non-blind, single-blind, or double-blind).
- f) Target descriptor(s) (e.g., gender, age, ethnicity, stature, etc.).
- g) Location of target(s).
- h) The concealment of the target(s) (if applicable).
- i) Set time.
- j) Length of scent trail.
- k) Type of scent article/source, i.e., leather, plastic, metal, textile (if applicable).
- l) Time taken to complete certification assessment.
- m) Canine team certification results.
- n) Deficiencies and corrective measures noted for future training.
- o) Other information required by canine team's organization.
- p) Assessing agency (i.e., agency, professional organization, and/or individual(s)).
- q) The standard or guideline to which the canine team is certified.

9.7 Canine team assessment records maintained by the canine handler/organization should include, but are not limited to, the following data.

- a) Name of canine and canine handler.
- b) Name(s) of individual(s) conducting, assisting, or awarding assessment.
- c) Date and time of canine team assessment.
- d) Location, environment, and weather conditions during assessment (i.e., urban, rural, wilderness, etc.).
- e) Assessment design (non-blind, single-blind, or double-blind).
- f) Target descriptor(s) (e.g., gender, age, ethnicity, stature, etc.).

- g) Location of target(s).
- h) The concealment of the target(s).
- i) Set time.
- j) Type of scent article/source, i.e., leather, plastic, metal, textile, etc. (if applicable).
- k) Time taken to complete assessment.
- l) Location address (GPS coordinates optional) included in assessment.
- m) Canine team assessment results.
- n) Deficiencies and corrective measures noted for future training.
- o) Other information required by canine team's organization.
- p) The standard or guideline to which the canine team is assessed.

9.8 Deployment/utilization records maintained by the canine handler/organization shall document the specifics of the deployment to include, but are not limited to, the following data.

- a) Name of canine and canine handler.
- b) Name(s) of organization(s) conducting search.
- c) Date and time of deployment.
- d) Requestor of deployment.
- e) Location address (GPS coordinates) of deployment.
- f) Environmental conditions at deployment.
- g) Search area type (i.e., urban, rural, wilderness, etc.).
- h) Point last seen (PLS) (date, time, environmental conditions).
- i) Name of target/suspect (if available).
- j) Description of target/suspect (e.g., gender, age, ethnicity, height, weight, dress, etc.) (if available).
- k) Medical conditions/medications.
- l) Type of search (i.e., missing person, criminal, run away, armed, etc.).
- m) Type of scent article/source (i.e., leather, plastic, metal, textile, etc.) (if applicable).
- n) Back-up names.

- o) Search results.
- p) Information regarding search and final response(s).
- q) Other information required by the canine team's organization.

9.9 Confirmed operational outcomes can be used as a factor in determining canine team's capability.

9.10 Unconfirmed operational outcomes shall not be used as a factor in determining a canine team's proficiency. Unconfirmed operational outcomes, including a non-productive response, may be relevant for investigative/testimony purposes because:

9.10.1 Target scent or residual scent may be present below the measurable level of detection for laboratory instrumentation.

9.10.2 There may be an environmental inability or external factors which prevent locating the scent source.

9.11 Supervisory review of all records is recommended.

9.12 Digitally formatted records (with appropriate back up), versus handwritten are recommended to facilitate compiling and analyzing data.

9.13 All documented training, assessments, certification, and deployments shall be documented to include final response, any false positives, and any false negatives.

9.14 Records may be discoverable in court proceedings and may become evidence of the canine team's reliability. Record retention policy shall be determined by the canine team's organization guidelines.

9.15 Training records are necessary to illustrate the type and amount of training that the canine team has experienced before and after certification.

9.16 Scent article records.

9.16.1 Scent article(s) shall be clearly labeled in a manner to support accountability.

9.16.2 Appropriate records shall be maintained by the canine handler/ organization in accordance with federal/state/local requirements.

9.17 Veterinary Records.

9.17.1 Veterinary records shall be maintained in a manner such as they are accessible to the handler/ organization.

9.17.2 Vaccinations required by state or local law should be documented in the veterinary record of the canine.

Annex A **(informative)**

Foundational Principles

Prior to the start of the search, the canine is “scented” on an object (scent article) containing the target’s scent. The canine works from an article to either a person or a location associated with that person. The goal is for the canine to detect and use a specific person’s scent on a scent article to either search for and follow an associated scent trail to this specific person or a location associated with this person while discriminating from all non-associated scent trails, or to correctly demonstrate the absence of an associated scent trail. Canines used in this discipline are typically deployed in search and rescue and forensic investigative functions, and typically not in immediate apprehension functions.

This standard provides the critical foundation needed for the development and quality assurance for deployment of the use of the canine’s functioning within this discipline.

Many canine organizations have established internal standards and standard operating procedures. The intent of this document is to provide a minimum standard which may be exceeded and provide consistency in training, assessments, documentation and terms and definitions.

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Annex B (informative)

Bibliography

This is not meant to be an all-inclusive list as the group recognizes other publications on this subject may exist. At the time this standard was drafted, these were the publications available for reference. Additionally, any mention of a particular software tool or vendor as part of this bibliography is purely incidental, and any inclusion does not imply endorsement.

- 1] ASB Technical Report 025, *Crime Scene/Death Investigation – Dogs and Sensors - Terms And Definitions*, First Edition, 2017².
- 2] ASB Technical Report 084, *Presentation of Canine Detection Evidence in Court*, First Edition, 2020² [*not yet published*]
- 3] Bernier, U.R., D.L. Kline, D. R. Barnard, C.E. Schreck,, and R. Yost. “Analysis of Human Skin Emantations by Chromotography/Mass Spectrometry.” *Analytical Chemistry*. 2000. 72, 747-756.
- 4] Bowling, T. “How reliable is your dog?” *Police K-9 Tracking*, 2006, Spring. 24-34.
- 5] Brisbin, I.L, S. Austad, S.K. Jacobson. “Canine Detectives: The Nose Knows-Or Does It?” *Science*, 2000. 290 (5494), 1093.
- 6] Brisbin, I.L. Jr., and S.N. Austad. “The use of trained dogs to discriminate human scent: a reply.” *Animal Behavior*, 1993. 46, 191-192.
- 7] Browne, C., K. Stafford, and R. Fordham. “The use of scent-detection dogs.” *Irish Veterinary Journal*, 2006. 59 (2), 97-104.
- 8] Curran, Allison M., Paola A. Prada, and Kenneth G. Furton. “Canine human scent identifications with post-blast debris collected from improvised explosive devices.” *Forensic science international*, 2010. 199.1: 103-108.
- 9] Curran, A., PhD., P. Prada, PhD., and K. Furton, PhD. “The Differentiation of the Volatile Organic Signatures of Individuals Through SPME-GC/MS of Characteristic Human Scent Compounds.” *Journal of Forensic Sciences*, 2010. 55(1), 50-57.
- 10] Curran, A., C. Ramirez, A. Schoon, and K. Furton. “The frequency of occurrence and discriminatory power of compounds found in human scent across a population determined by SPME-GC/MS.” *Journal of Chromotography*, 2006. B 846, 86-97.
- 11] Curran, A., S. Rabin, and K. Furton. “Analysis of the Uniqueness and Persistence of Human.” *Forensic Science Communications*, 2005. 7 (2), 1-15.

² <http://www.asbstandardsboard.org/published-documents/dogs-and-sensors-published-documents/>

- 12] Curran, A., S. Rabin, P. Prada, and K. Furton. "Comparison of the Volatile Organic Compounds Present in Human Odor Using SPME-GC/MS." *Journal of Chemical Ecology*, 2005. 31(7), 1607-1619.
- 13] Eckenrode, Brian A., et al. "Performance Evaluation of the Scent Transfer Unit™ (STU-100) for Organic Compound Collection and Release." *Journal of forensic sciences*, 2006. 51.4: 780-789.
- 14] Ensminger, John J. "Police and Military Dogs: Criminal Detection, Forensic Evidence and Judicial Admissibility", CRC Press, 2012.
- 15] Gallagher, M., C. Wysocki, J. Leyden, A. Spielman, X. Sun, and G. Preti, "Analyses of volatile organic compounds from human skin." *British Journal of Dermatology*, 2008. 159, 780-791.
- 16] Harper, R., A. Curran, J. Almirall, PhD., K. Furton, PhD. "Developing the Science Behind Canine Olfaction of Forensic Specimens." 2004. International Forensic Research Institute.
- 17] Harvey, Lisa M., et al. "The use of bloodhounds in determining the impact of genetics and the environment on the expression of human odor type." *Journal of forensic sciences*, 2006. 51.5: 1109-1114.
- 18] Harvey, L.M., Ph.D., and J.W. Harvey. "Reliability of Bloodhounds in Criminal Investigations." *Journal of Forensic Science*, 2003. 48 (4), 811-816.
- 19] Hepper, P. and D. Wells, "How Many Footsteps Do Dogs Need to Determine the Direction of an Odour Trail?" *Chemical Senses*, 2005. 30(4), 291-298.
- 20] Hudson-Holness, T. Davia, and K. Furton. "Comparison between human scent compounds collected on cotton and cotton blend materials for SPME-GC/MS analysis." *Journal of Forensic Research*, 2010.
- 21] Hudson, D. Phd., A. Curran, PhD., and K. Furton, PhD. "The Stability of Collected Human Scent Under Various Environmental Conditions." *Journal of Forensic Sciences*, 2009. 54(6), 1270-1277.
- 22] Hudson, T. "Variables Affecting the Collection and Preservation of Human Scent Components Through Instrumental and Biological Evaluations." Florida International University. Dissertation. 2009.
- 23] Hunt, R. "The Benefits of Scent Evidence." *FBI Law Enforcement Bulletin*, 1999. 68(11), 15-18.
- 24] Jeziarski T, Ensminger J, Papet L.E. "Canine olfaction science and law", CRC Press, 2016.
- 25] Kalmus, H. "The Discrimination by the Nose of the Dog of Individual Human Odours and in Particular of the Odours of Twins." *The British Journal of Animal Behaviour*. 1955. 25-31.
- 26] King, E., F. Becker, and J. Markee. "Studies on Olfactory Discrimination in Dogs: (3) Ability to Detect Human Odour Trace." *Animal Behavior*, 1964. 12(2-3), 311-315.
- 27] Krutova, V.I., and E.P. Zinkevich, "Dogs Recognize an Individual Odor in a Mixture of Odors from Many Individuals." *Doklady Biological Sciences*, 2002. 388, 56-58.

- 28] Kusano, M., M. Eladio, and K. Furton. "Comparison of the volatile organic compounds from different biological specimens for profiling potential." *Journal of forensic sciences*, 2013. 58.1:29-39.
- 29] Lorenzo, N., T. Wan, R. Harper, Y. Hsu, M. Chow, S. Rose, and K. Furton. "Laboratory and field experiments used to identify *Canis lupus var. familiaris* active odor signature chemicals from drugs, explosives, and humans." *Analytical and Bioanalytical Chemistry*, 2003. 376, 1212-1224.
- 30] Mesloh, C., and J. Mesloh, "Trained Dogs in the Crime Scene Search." *Journal of Forensic Identification*, 2006. 56(4), 534-535.
- 31] Mesloh, C., R. Wolf, and M. Henych. "Scent as Forensic Evidence and Its Relationship to the Law Enforcement Canine." *Journal of Forensic Identification*, 2002. 52(2), 169-182.
- 32] Miklosi, A., J. Polgardi, J. Topal, and V. Csanyi. "Use of experimenter given cues in dogs." *Animal Cognition*, 1998. 1, 113-121.
- 33] Penn, D., E. Oberzaucher, K. Grammer, G. Fischer, H. Soini, D. Wiesler, M. Novotny, S. Dixon, Y. Xu, and R. Brereton, "Individual and gender fingerprints in human body odour." *Journal of the Royal Society Interface*, 2007. 4, 331-340.
- 34] Pinc, Ludvík, et al. "Dogs discriminate identical twins." *PloS one* 6.6 2011. e20704. Available at, <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0020704>
- 35] Porter, Jess, et al. "Mechanisms of scent-tracking in humans." *Nature neuroscience*, 2007. 10.1 27-29.
- 36] Prada, P., A. Curran, and K. Furton. "Human scent evidence." CRC Press. 2014.
- 37] Rogowski, M. "An Attempt to Determine the Possibility of Penetration of Human Scent Through Rubber Gloves." *Problems of Forensic Sciences*, 2004. LVII, 44-50.
- 38] Segal, N.L., K.W. Brown, and T.D. Topolski. "A twin study of odor identification and olfactory sensitivity." *Acta Genet Med Gemellol*, 1992. 41, 113-121.
- 39] Sommerville, B.A., R.A. Settle, F.M.C. Darling, and D.M. Broom. "The use of trained dogs to discriminate human scent." *Animal Behavior*, 1993. 46, 189-190.
- 40] Steen, J.B., E. and Wilsson. "How do dogs determine the direction of tracks?" *Aeta Physiol Scand*, 1990. 139, 531-534.
- 41] Stockham, R. "Bloodhounds and Bombing Investigations." 2005.
- 42] Stockham, R., D. Slavin, and W. Kift. "Specialized Use of Human Scent in Criminal Investigations." *Forensic Science Communications*. 2004. 6 (3), 1-12.
- 43] Stockham, R., D. Slavin, and W. Kift. "Survivability of Human Scent." *Forensic Science Communications*, 2004. 6 (4), 1-11.
- 44] Thesen, A., J.B. Steen, and K.B. Doving. "Behaviour of Dogs During Olfactory Tracking." *J.exp Biol*, 1993. 180, 247-251.

- 45] Wallace, P. "Individual Discrimination of Humans by Odor." *Physiology and Behavior*, 1976. 19, 577-579.
- 46] Wells, D. and P.G. Hepper. "Directional Tracking in the Domestic Dog, *Canis Familiaris*." *Applied Animal Behaviour Science*, 2003. 84, 297-305.

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