Technical Procedure for the Identification of Marijuana

1.0 Purpose - This procedure specifies the required elements for the identification of Marijuana as defined in NC General Statute §90-87 (16) and Hashish as defined in §90-95(d)(4).

2.0 Scope - This procedure applies to all cannabis exhibits analyzed in the Drug Chemistry Sections of the State Crime Laboratory.

3.0 Definitions

- **Performance verification –** The initial confirmation of the reliability of a previously or externally validated method or instrument.
- **Quality control (QC) check –** Periodic confirmation of the reliability of equipment, instrumentation, and/or reagents.
- **Reference material** – Material sufficiently homogeneous and stable, with reference to specified properties, which has been established to be fit for its intended use in measurement or in examination of nominal properties.

4.0 Equipment, Materials and Reagents

4.1 Equipment

- Microscope(s) – basic and/or polarizing
- Balance

4.2 Materials and Reagents

- Marijuana (or Hashish/THC) reference material
- Weigh vessel
- Modified Duquenois-Levine reagent (Drug Chemistry Section Technical Procedure for Preliminary Color Tests)
- Suspected cannabis exhibit

5.0 Procedure

5.1 Standards and Controls - A primary or secondary reference material of marijuana and/or hashish shall be used for macro and microscopic comparison purposes.

5.2 Calibrations - N/A

5.3 Sampling - Plant material shall be sampled according to the Drug Chemistry Section Administrative Procedure for Sampling.

5.4 Application of Procedure on Evidence

5.4.1 Plant material shall be weighed according to the Drug Chemistry Section Technical Procedure for Balances and reported with applicable measurement assurance.

5.4.2 Plant material shall be viewed macroscopically and microscopically to verify the presence of visually recognizable morphological characteristics.

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5.4.2.1 If the net weight of the item is less than five grams, and consists of hand-rolled cigarettes or partial hand-rolled cigarettes, the paper will be included in the weight recorded/reported with applicable measurement assurance. The evidence can be cut open to expose the plant material for viewing and analysis.

Example: Marijuana – Schedule VI.
Weight of paper and plant material - 0.30 (+/- 0.0X) gram.

5.4.3 Macroscopic and microscopic characteristics present in the exhibit shall be documented on the FA worksheet by checking the box beside the characteristics.

5.4.4 Macroscopic characteristics:

- Upright stalk attains a height of 3-16 feet, average 4-6 feet.
- Stalk varies in diameter up to two inches, averages less than one half inch.
- Plant has compound palmate leaves with 5-11 leaflets (usually seven), and odd in number.
- Leaf is similar in shape to a hand.
- Leaflets are pointed at both ends and vary up to about six inches length and to about 1.5 inches in width.
- Distinction between male and female plants is difficult except at maturity.

  Male: flowers are very prominent; mature ones shed pollen profusely.
  Female: flowers are inconspicuous and are found hidden among the small leaves at the ends of the stalk and branches.

- The plant branches at the nodes – a branch appearing immediately above each leaf. The branches occur at opposite points on the stalk with alternate pairs situated at right angles.
- Plant has a characteristic odor.
- Seeds have a lacy, mottled appearance like a melon or turtle's back.
- Seeds are ovoid in shape, mottled in color and are greenish-yellow to brown.
- Seeds are enclosed in bulbs or pods (hulls).
- One main tap root up to eight inches long. Smaller branches from the main root.

5.4.5 Microscopic Characteristics

5.4.5.1 Leaves

- Green, brown-spotted, or brown in color.
- Characteristically serrated.
- Veins end at sharp point of each serration or notch, best seen from the underside.
- Cystolithic hairs on upper side.
- Longer, sharper pointed hairs on underside.
- Effervescence with dilute hydrochloric acid.

5.4.5.2 Stems

- Fluted.

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- Branches appear immediately above each leaf.

5.4.5.3 Seeds (Fruit)

- Greenish-yellow to brown in color.
- Lacy, mottled appearance like a melon or a turtle's back.
- Ovoid in shape.
- Ridge around the greatest circumference.
- Inside similar to coconut meat.

5.4.5.4 Hairs

5.4.5.4.1 Cystolithic hairs

- Characteristic "warty" appearance; look like bear claws.
- Sphere of calcium carbonate at the base of the hair which effervesces in dilute hydrochloric acid.
- No plant which fails to show them can be marijuana.

5.4.5.4.2 Glandular hairs

- Wooly appearance; look like clubs with flattened, spherical heads.

5.4.5.5 Hulls (pods) - found on outside of seeds

- Green, brown or brown-spotted in color.
- Characteristically shaped.
- Cystolithic and glandular hairs on outer surface.

5.4.6 A positive Modified Duquenois-Levine color test shall be required in order for plant material to be identified as Marijuana. (See the Drug Chemistry Section Technical Procedure for Preliminary Color Tests.)

5.4.7 For plant material that lacks sufficient observable macroscopic and microscopic botanical detail (for example extracts or residues), the following shall be required:

5.4.7.1 A positive Duquenois-Levine color test shall be obtained. (See the Drug Chemistry Section Technical Procedure for Preliminary Color Tests.)

5.4.7.2 GC-MS analysis

- Retention time match to THC Reference Material may be used as a second test if a Duquenois-Levine color test was not possible due to sample size.

5.5 **Calculations -** N/A

5.6 **Uncertainty of Measurement -** See the Drug Chemistry Technical Procedure for Balances and the Drug Chemistry Procedure for Measurement Assurance.

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6.0 Limitations - Not every marijuana exhibit contains every plant characteristic. The Forensic Scientist shall identify and document those that are present.

7.0 Safety - Mold that grows on marijuana is an inhalation hazard. Precautions (such as the use of an APR) shall be taken when handling molded plant material.

8.0 References

Marihuana Its Identification. Washington, D.C.: U.S. Treasury Department Bureau of Narcotics, United States Printing Office, 1948.

North Carolina General Statutes §90-87 (16) and §90-95(d)(4).

9.0 Records

- FA Worksheets

10.0 Attachments - N/A

Revision History		
Effective Date	Version Number	Reason
09/17/2012	1	Original Document created for conversion to ISO Standards. This document was written to clarify the use of the FA worksheet section on plant material as it relates to the SWGDRUG Analysis of Seized Drugs recommendations that reviewable data for cannabis exhibits shall be "detailed descriptions of morphological characteristics."
02/15/2013	2	**2.0** – Scope changed to reflect all three laboratories. **5.4.2.1** – Clarified wording in paragraph, added measurement assurance data to example.
05/10/2013	3	**5.3 -** Revised name of Sampling Plan from Technical to Administrative Procedure **5.4.1, 5.4.2.1 –** Added reference to reporting applicable measurement assurance **5.6** Added references for Uncertainty of Measurement
07/31/2013	4	**5.6** – Updated name of Procedure for Measurement Assurance

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