

PROCEDURE MANUAL

07-29



MICHIGAN STATE POLICE

Capturing Mug Shots

Purpose: This manual provides guidance on best practices for capturing mug shot photographs, including proper suspect positioning, photograph sets, facial expressions, settings, and file types.

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Definitions:

Mug Shot: Photograph used for law enforcement purposes, taken of an individual at the time of arrest. These photographs are of the individual's face, profile, and may include notable scars, markings, or tattoos.

Section 1: Positioning

1.1 Pose 1

This photograph is taken of the individual's frontal profile.

- a. The full-face or frontal pose is the most commonly used pose in photo lineups / facial recognition and shall always be captured. This pose is in addition to profiles captured to acquire perspective and other information such as scars, marks, and tattoos. There should be no obvious tilt of the head from front to back and the eyes must be open. Head coverings are not permitted unless for religious reasons, but the full face must be displayed. The composition consists of an individual's head and a plain background. For a frontal-facing pose, the width of the individual's head shall occupy approximately 70% of the width of the captured image. This width shall be the horizontal distance between the mid-points of two imaginary vertical lines.

Each imaginary line shall be drawn between the upper and lower lobes of each ear and shall be positioned where the external ear connects to the head.



1.2 Poses 2,3,4,5

These photographs are taken at the individual from 90 degrees (2), 45 degrees (3), their right profile (4), and left profile (5).

- a. The individual's entire body should be turned 45 and 90 degrees from frontal pose. It is recommended to capture all profiles; however, if only one side is captured, it should be the left profile. This composition consists of the individual's left and right profile which is a total of a 45 and 90 degree turn from the frontal composition. The individual's entire body should be turned to the side when capturing the 90-degree profile images and partially turned to the side when capturing the 45-degree profile images. The hair should be pulled back to allow the ears to be exposed in the image.



1.3 Poses 6

These photographs are taken to document the individual's scars, marks, and tattoos (SMTs).

- a. Capture all of the individual's SMT's and include location and description information. Each SMT should be captured individually and should be centered in the image.



1.4 Poses 7

If the individual wears glasses, at least one image should be captured with glasses and one image without. The image with glasses must be identified as “Front with glasses.”



Section 2: Special Considerations

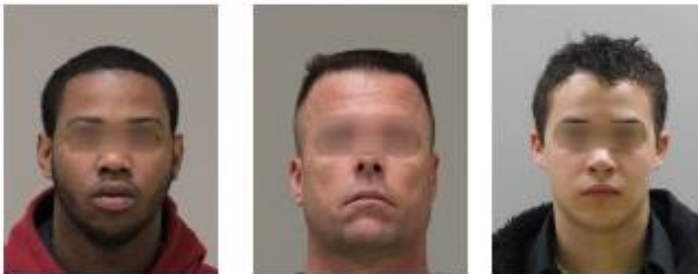
2.1 Eyepatches

The wearing of eye patches is allowed only for medical reasons. In these cases, the specification of the patch in the SXS field is required.

2.2 Facial Expression

Individuals shall maintain a neutral expression. The operator is responsible for ensuring there are no smiles, grimaces, or exaggerated expressions whenever possible. The mouth should remain closed, if applicable.

- a. Examples of pictures with facial expressions within guidelines:



- b. Examples of pictures with facial expressions not within guidelines:



2.3 Accessories

Masks, hats, and earrings, along with all other accessories, shall be removed.

- a. Examples of pictures with accessories not within guidelines:



2.4 Visibility of Ears

The ear(s) shall be visible in the frontal pose and the left and right profile views. The hair shall be pushed back or tied behind the ears when appropriate.

Section 3: Image Composition

3.1 Depth of Field

The individual's captured facial image shall always be in focus from the nose to the ears. Although this may result in the background behind the individual being out of focus, this is not a problem. It is recommended that auto-focus on the central part of face be used with digital camera photography.

3.2 Image Size and Aspect Ratio

- a. Best practice mug shots standard
 - i. For a level-50 image capture profile, the minimum number of pixels in the digital image shall be 3300 pixels in the horizontal direction by 4400 pixels in the vertical direction. Off-the-shelf 15 (or more) megapixel digital cameras satisfy this requirement.
- b. As an alternative, allocating 70% of the image width for the head requires approximately 2400 pixels for the "head only" facial capture.
 - i. For a level 51 image capture profile, the minimum number of pixels in the digital image shall be 2400 pixels in the horizontal direction by 3200 pixels in the vertical direction. Off-the-shelf 8-megapixel digital cameras satisfy this requirement.
- c. The resolution aspect of the captured facial images might be improved as the number of pixels in both directions are increased. As images are captured with an increased number of pixels, the 3:4 (Width: Height) aspect ratio shall be maintained.

3.3 Compression Algorithm

- a. Non-frontal images shall be compressed using JPEG 2000, as specified in ISO/IEC 15444. (JPEG is not allowed). There shall be one frontal facial image compressed using lossless JPEG 2000. If multiple images are in the transaction, then one image must be compressed via lossless compression and the others can be compressed either using lossless JPEG 2000 or lossy JPEG 2000 that meets the maximum compression limits specified below. The best practice is to apply the lossless compression to the frontal images with ears visible.

- b. The maximum compression ratio for both JPEG and JPEG 2000 of a rectangular region containing any exposed skin of the face, from crown to chin and ear to ear, shall be at most 15:1. The non-facial portion of the mugshot, as well as other Type-10 records, can be compressed up to a ratio of 120:1.
- c. For both JPEG and JPEG 2000, care must be taken to account for automatic compression by camera hardware. Multiple compression stages can damage the quality of photographic data. When possible, minimum compression (highest resolutions) should be applied at the camera level when external software performs the final (15:1 or less) compression stage.

3.4 File Format

The JPEG File Interchange Format (JFIF) shall contain the JPEG compressed image data. The JFIF file shall then be part of the transaction file for interchange which conforms to the requirements as contained in ANSI/NIST-ITL 1-2011.

3.5 Lighting

Lighting shall be three-point (shown below), equally distributed on the face and shall contribute to the uniformity of illumination of the background. A single bare "point" light source, such as a camera flash, is not acceptable for imaging. The background shall be free of shadows. Hot spots or reflections shall be minimized. The region of the face, from the crown to the base of the chin, and from ear-to-ear, shall be clearly visible and free of shadows. There should be no dark shadows in the eye sockets caused by the brow, and the iris and pupil must be clearly visible.

- a. Examples of pictures with lighting within guidelines:



- b. Examples of pictures with lighting not within guidelines:



3.6 Background

- a. Background should be uniform, plain, smooth, flat, and 18% gray. Ensure that the background completely fills the image frame behind the individual. Avoid the presence of visible shadows in the background, if possible.

- b. If no suitable wall surface is available, an 18%, neutral gray matte surface can be prepared. An example of a paint formula that will approximate an 18% gray (on matte surface) is: one-quart Olympic Premium Interior Latex Eggshell, Base 3 - 72403, 101- 1Y31.5-, 109-8.5-, or one-quart Benjamin Moore & Co. Premium Interior Latex Eggshell finish, Medium Base 549, Formula: Y3,0X, 29.75, S1,2X, 31.5, R3, 0X, 4.5, Area/Tint Code: B.
- c. Examples of pictures with the background not within guidelines:



Questions may be directed to the Biometrics and Identification Division, Digital Analysis and Identification Section, SNAP Unit at: MSPSNAP@michigan.gov.

Review Responsibility: Information and Technology Bureau; Biometrics and Identification Division
Accreditation Standards: N/A