

Draft Guidelines for Field Applications of Imaging Technologies

(Version 2.2, June 7, 2001)

Introduction:

The purpose of this document is:

- To provide specific recommendations and guidelines for the use of imaging technologies in law enforcement field applications;
- To describe the advantages and disadvantages of silver-based film cameras, instant photography cameras, digital still cameras, video cameras, and hybrid imaging systems in law enforcement field applications;
- To provide general guidelines for preparing agency-specific imaging technologies standard operating procedures (SOPs) for law enforcement field applications; and
- To provide imaging equipment recommendations.

This document addresses the photographic documentation of events or subjects that are not contained in a controlled environment (e.g., forensic laboratory/studio).

The field applications addressed in this document include the following:

1. [General Crime Scene Photography](#)
2. First Responder (FR) Photography
 - a. [When Crime Scene Photography personnel will not be called.](#)
 - b. [Prior to arrival of Crime Scene Photography personnel.](#)
3. [Surveillance Photography](#)
4. [Tactical Surveys](#)
5. [Hazardous Materials \(HAZMAT\) Crime Scene Photography](#)
6. [Aerial Photography](#)
7. [Accident Scenes](#)
8. [Arson Photography](#)
9. [Autopsy Photography](#)
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14. [Field mug shots and tattoos \(FR\)](#)
15. [Victim Photography](#)

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Advantages and Disadvantages of Major Image Capture Technologies in Field Applications

The selection of an acquisition device (camera) is driven by the purpose and requirements of the end product. Therefore, the final use of the image should determine the choice of the camera.

The recommendations for primary and secondary image capture devices are dependent on current technologies and may change subject to changes in technology. These recommendations are made based on the practical experience of the SWGIT membership in the acquisition and analysis of the images discussed herein. Agencies should decide for themselves what technologies are best suited to meet the requirements of their mission-specific tasks. So long as an agency can demonstrate and document that its choice of technologies is adequate to meet its anticipated needs, the agency should not feel constrained to adhere to the SWGIT recommendations.

Silver-Based Film Cameras

It is strongly recommended that a camera capable of manual override, with interchangeable lenses, off-camera flash, and a tripod mount be used as the primary capture device along with conventional silver-based film in 35-mm format or larger as the primary capture media for evidentiary photography/imaging.

Advantages of Silver-Based Film Cameras in Field Applications:

- Film has the highest resolution of available image capture options.
- Film has the highest dynamic range of available image capture options.
- Film has the best color range of available image capture options.
- Film has the most flexibility of currently available image options.
- Film is the most durable storage medium.
- Film is more readily available in the field than video or digital storage media.
- Availability of manual override, interchangeable lenses, off-axis flash, and tripod mounts

Disadvantages of Silver-Based Film Cameras in Field Applications:

- The need for separate processing/printing facilities.
- Relatively long processing time.
- Environmental hazards generated by processing by-products.
- Pre-processing fragility (temperature/humidity/x-ray effects).
- No means of immediate image evaluation (with the exception of instant film).

DISCUSSION

RESOLUTION

The best measure of resolution is the evaluation of output imagery, which is the product of a series of steps. However, since this document is devoted to field applications, the following discussion is restricted to camera evaluation only. Users should verify resolution by visually examining images of test targets in their specific environments.

SWGIT uses the following definitions of RESOLUTION: (a) "Measure of capability to delineate picture detail;" (b) "The ability of a photographic system to record fine detail." These definitions are a subset of those found in ANSI/AIIM Technical Report TR26-1993 "Resolution as it Relates to Photographic and Electronic Imaging."

Traditionally, film manufacturers have measured resolution in terms of line pairs per millimeter (lp/mm) or lines per millimeter. A line pair consists of a black line and an adjacent white line. Lines per millimeter refers to each individual line (black or white), thus there are always twice as many lines as there are line pairs over a given distance. See Figure 1.

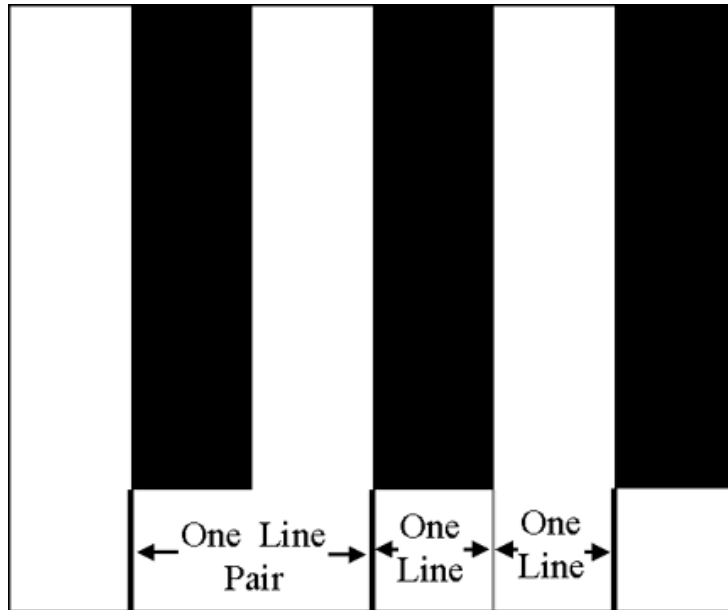


Figure 1.

Manufacturers of digital cameras frequently describe image size in terms of number of pixels. As stated in ANSI/AIIM TR26-1993, "There is a common practice of referring to digital resolution as simply the total number of pixels within a frame or field, or alternately as the number of pixels in the horizontal and vertical directions. Alone, this information is useful to indicate the amount of data that can be handled in a single field at a given moment, but tells nothing about the unit's ability to resolve spatial information." (Note that the words "frame" and "field" in the above quote refer to a photographic field of view. These should not be confused with the terms used in video technology.)

The ability to resolve spatial information can only be determined by testing a specific imaging system. In order to compare technologies, we discuss the total information that can be represented in the sensor. This constitutes an upper limit to the actual achievable resolution.

It is possible to directly compare the maximum amount of information that can be represented by any two sensors by comparing the total number of pixels per frame. To compare film to the sensors in digital cameras (CCD/CMOS) it is necessary to relate line pairs per frame to pixels per frame. Under ideal conditions, two pixel columns (or rows) represent one line pair. See Figure 2.

Theoretically Ideal Conditions
Each line pair corresponds to two pixel columns
(1 line pair = 2 pixels)

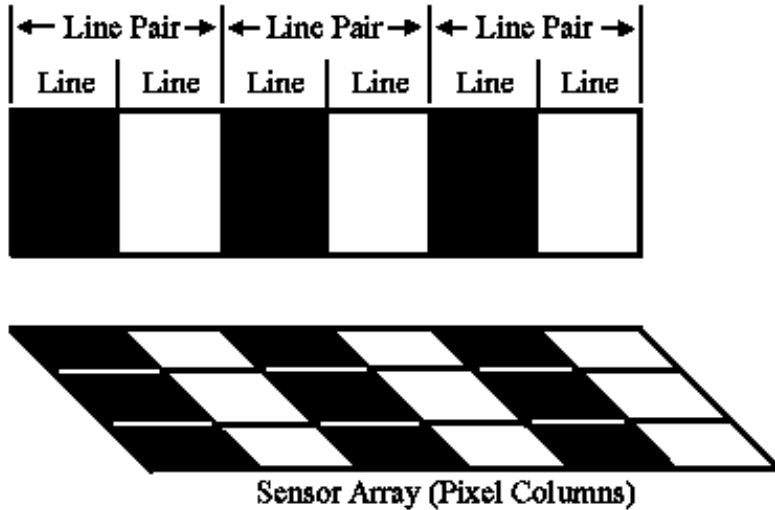


Figure 2.

Common film types encountered in law enforcement field applications have optimal resolutions in the range of 40 - 160 line pairs per millimeter. Black and white films typically used at crime scenes have resolutions at the upper end of this range. Color films used at crime scenes have resolutions at the lower end of this range.* (See "Guide to Kodak 35 mm Films")

A single frame of 35-mm ISO 200 color film is 36 mm wide by 24 mm high. With a resolution of 50 line pairs per millimeter such a frame can resolve:

36mm x 50 lp/mm = 1800 line pairs horizontally
and
24mm x 50 lp/mm = 1200 line pairs vertically.

The equivalent number of pixels in a single frame is then calculated:

1800 line pairs x 2 pixels/line pair = 3600 pixels horizontally,
and
1200 line pairs x 2 pixels/line pair = 2400 pixels vertically.

This represents a total of $3600 \times 2400 = 8,640,000$ pixels.

A digital camera with a detector that is 3040 x 2008 pixels in size contains over 6-million (6,104,320) pixels. This is referred to as a "6-Megapixel" camera.

There is a trade-off between the field of view and the resolution that can be represented by a sensor. If the field of view is held constant, then the resolution will vary with the number of pixels. If resolution is held constant, then the field of view will vary with the number of pixels.

If the field of view is held identical for both sensors above (35-mm ISO 200 color film and a 6-Megapixel CCD), the film, with 40% more pixels than the CCD (8.64 million vs. 6.1 million), will provide an improvement in resolution of approximately 20%.

Alternatively, if the resolution is held constant for both sensors, the film will cover a field of view that is 40% larger than the CCD. (Figure 3).

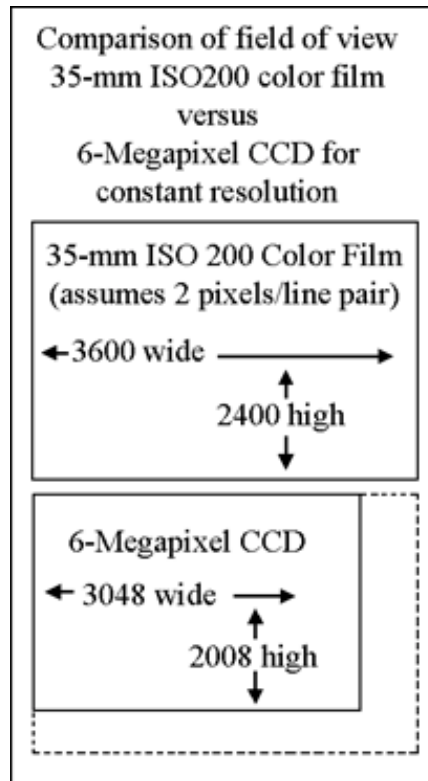


Figure 3.

The resolution that can be achieved in a digital camera will be lower than the upper limit (ideal conditions) discussed above. Some research has found that it actually takes approximately 4 pixels to capture and reproduce a line pair under test conditions, instead of the representation by 2 pixels. Using this standard, the pixel resolution of film is effectively doubled. The practical result of using 4 pixels per line pair leads to the comparisons in Table 1 and Figure 4. (Note: Discussing the resolution of video systems is beyond the scope of this document. SWGIT will address issues relating to video resolution in future documents.)

Table 1 - Comparison Pixel Resolution of Capture Media

MEDIA/SENSOR	Sensor Size and Resolution	Number Pixels Equivalent (assuming 4 pixels/line pair)
35mm ISO 100 B&W Film	36 mm x 24 mm at 100 lp/mm	14,400 x 9,600
35mm ISO200 Color Film	36 mm x 24 mm at 50 lp/mm	7,200 x 4,800
"Instant" Prints	92 mm x 73 mm at 10 lp/mm	3,680 x 2,920
6-Megapixel CCD	3,040 x 2,008	3,040 x 2,008
3-Megapixel CCD	2,008 x 1,504	2,008 x 1,504
0.3-Megapixel CCD	640 x 480	640 x 480

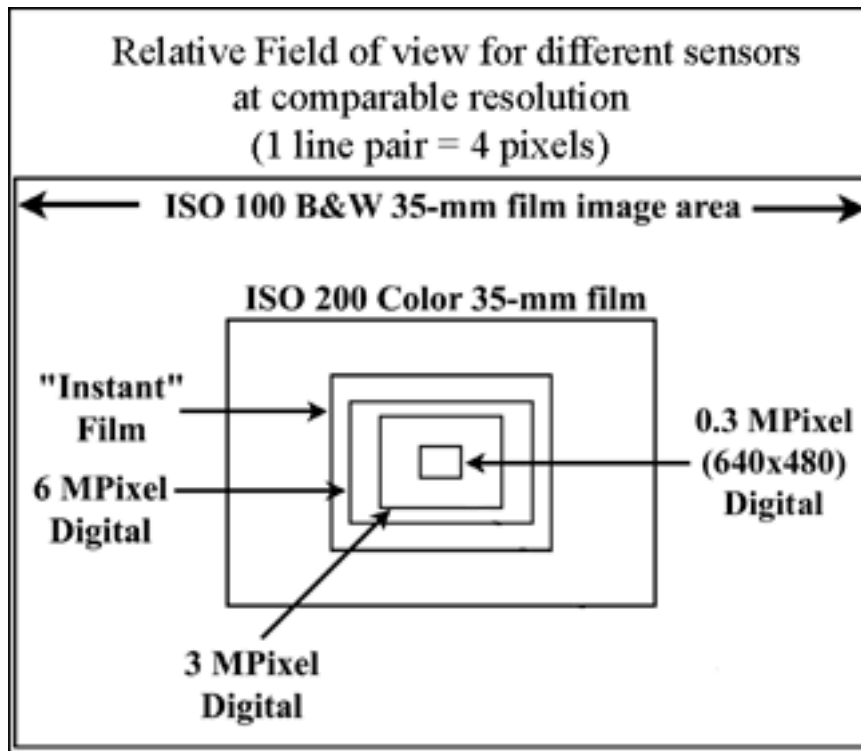


Figure 4.

To compare the size of images generated from each of these sensors, a common output resolution must be defined. A conservative divisor of 200 pixels per inch (ppi) is generally used to determine the output size. Table 2 lists the size of the images generated using the sensor resolutions in Table 1.

Table 2 - Comparison of Output Size for Capture Media

MEDIA/SENSOR	Number Pixels Equivalent (at 4 pixels/line pair)	Output Size in inches (at 200 pixels per inch)
35mm ISO 100 B&W Film	14,400 x 9,600	72" x 48"
35mm ISO200 Color Film	7,200 x 4,800	36" x 24"
"Instant" Prints	3,680 x 2,920	18.4" x 14.6"
6-Megapixel CCD	3,040 x 2,008	15.2" x 10"
3-Megapixel CCD	2,008 x 1,504	10" x 7.5"
0.3-Megapixel CCD	640 x 480	3.2" x 2.4"

In the above discussion, only film and digital sensors were considered. In reality, an image is captured and later displayed using an entire system in which several factors may affect the resolution of the particular image. The quality of the optics (lens or lenses) used to focus the image on the sensor plays an extremely important role and may greatly limit the overall resolution of the system. Also, differences in display methods may limit or enhance the perceived resolution.

CCD sensors often achieve color acquisition by using one sensor array with pixel cells of alternating color sensitivity. Thus the overall resolution of the image will be less than the specified number of pixels on the sensor. One way to ameliorate this situation is to utilize a camera which contains three CCDs instead of one - one CCD for each primary color, Red, Green, and Blue. Therefore, for the same specified number of pixels at the sensor, a three-CCD camera will provide higher resolution than a single-CCD camera.

Two other factors that can effect resolution include the contrast in the scene and noise. In this context, contrast refers to the apparent difference between the brightest and darkest parts of the scene. As contrast increases, resolution increases. Noise refers to random variations that limit the fidelity of detection and reproduction systems, such as the granularity of photographic images. As noise increases, resolution decreases. Identifying the specific effects of these factors on each of the sensors discussed above is beyond the scope of this document.

Dynamic Range: The difference between the brightest highlight and darkest value that a sensor (film or CCD) can detect and record in a single image. Negative film provides two to four f-stops more than most digital cameras. This increased dynamic range allows capture of both shadow detail and highlight detail in a single frame of film. These same details might require several different images (at different capture settings) when recorded with a digital camera.

Color Range: The range of colors that can be detected by a sensor compared to normal human vision. Negative film has a color range that is superior to CCDs.

Flexibility: Silver-based photography provides a wider selection of film speeds and types than digital cameras. Film can be selected for specific applications in the field, and the film speed or type can be changed on-site to meet specific needs.

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Instant Print Cameras

Advantages of Instant Print Cameras in Field Applications:

- Immediacy of the final image (instant viewing/verification of the image)
- Operational security (all processing is in-house)

Disadvantages of Instant Print Cameras in Field Applications:

- Limited resolution of image
- Production of copies requires multiple steps and can reduce image quality
- High cost per image
- Rarely offers manual override, interchangeable lenses, or off-axis flash.

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Digital Cameras

Advantages of Digital Cameras in Field Applications:

- Immediacy of image (instant viewing/verification of image).
- Ability to transmit and disseminate image with minimum of intermediate steps.
- On-site image management.
- Potential for on-site printing.
- Operational security (all processing is in-house).
- More environmentally friendly than film.

Disadvantages of Digital Cameras in Field Applications:

- Battery or power supplies:
 1. Environmental impact.
 2. Availability.
 3. Power conversion.
- Limited availability of storage media (available only from specialized stores).
- Storage media subject to damage from electromagnetic fields.
- Image acquisition subject to electromagnetic interference.
- Hardware and software **can be** proprietary and incompatible **among** manufacturers.
- Requires increased technical support compared to film-only systems.
- Legacy file problem (evolution of technology, including hardware and software, may impact ability to access archived images over time).

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Video Cameras:

(Note: Fixed camera video surveillance systems are not addressed in this document. They will be addressed in future SWGIT documents.)

Advantages of Video Cameras in Field Applications:

- Real-time motion record capability.
- Immediacy of image (instant viewing/verification of image).
- Ability to transmit and disseminate image with minimum of intermediate steps.
- More environmentally friendly than film.
- Ability to print in the field.
- Ability to synchronize and capture audio.

Disadvantages of Video Cameras in Field Applications:

- Battery/power supplies:
 - a. Environmental impact.
 - b. Availability.
 - c. Power conversion.
- **Some** high quality storage media available only from specialized stores.
- Storage media subject to damage from electromagnetic fields.
- Image acquisition highly subject to electromagnetic interference.
- Resolution of still images is less than that of digital or silver-based capture media.
- Limited color fidelity (**VHS and 8-mm formats, in particular**).
- Reduced media lifetime.
- Hand-held video frequently lacks image stability.
- Automatic compression in some formats.
- Weight and portability of equipment may be an issue.

Notes on Video Formats:

- VHS and 8-mm formats are the most commonly available formats but have the worst signal-to-noise ratio of any video format (greatest amount of noise).
- Super VHS and Hi-8 formats are the second most commonly available formats and have somewhat better signal-to-noise ratio than VHS.

- Beta SP and MII formats are professional broadcast quality and are the best analog format available.
- Digital Video quality varies, the high end is better than analog systems.

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Hybrid Imaging Systems

A hybrid system is defined as the combination of silver-based photography and digital imaging technology that typically involves the conversion of silver-based film or print images to digital images through the use of scanners. Hybrid imaging systems incorporates some of the benefits of both film and digital image technologies and are recommended for those agencies and organizations seeking to add digital imaging technologies to their photographic resources.

Advantages of Hybrid Imaging Systems in Field Applications:

- Shortened darkroom time for producing prints.
- Maintains high-quality original film images.
- Flexibility of digital image processing.
- Enables easy electronic transmission of images.
- Enables image analysis.
- Simplifies case file management.
- Ability to utilize variety of output devices.
- Permits the production of copies from prints generated through instant photography.

Disadvantages of Hybrid Imaging Systems in Field Applications:

- Separate processing/printing facilities.
- Relatively long processing time.
- Environmental hazards generated by processing by-products.
- Preprocessing fragility (e.g., temperature, humidity, x-ray effects).
- No means of immediate image evaluation (with the exception of instant film).
- Requires increased technical support compared to film-only systems.

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Guidelines For Standard Operating Procedures (SOPs)

General Guidelines for a Crime Scene Photography SOP

TITLE: Crime Scene Photography SOP

PURPOSE: To permanently document, by qualified personnel, evidence and other details at a Crime Scene for future reference.

NOTE: Crime Scene photography generally requires the ability:

- To record information that crime scene personnel may not know was important at the time the images were captured.
- To deal with varying lighting and physical conditions.
- To accurately represent the details and colors in a scene, and
- To get close-up and wide-angle images with accurate spatial relationships.

Crime scene photography is usually a time-limited activity in which there is only one opportunity to correctly complete the task. Depending on the nature of the crime or incident, conditions at a crime scene may dictate the selection and use of differing equipment and techniques.

EQUIPMENT: (Image Capture Devices)

- Silver-based film cameras are recommended for use as the primary image capture device. The minimum recommendation is a 35-mm (SLR) camera capable of manual override, interchangeable lenses, off-camera flash, and tripod mount.
- Digital still imaging can be used in a supplementary capacity (see [Digital Cameras](#)). Digital still imaging can be used as the primary image capture device when the performance of the equipment can be shown to meet anticipated needs.
- Video imaging can be used in a supplementary capacity. S-VHS, Hi-8, or better quality formats are recommended. It is suggested that cameras used have the ability to incorporate external/wireless audio, the ability to disable on-camera audio, and to incorporate/disable in-camera image stabilization. (See [Video Cameras](#).)
- Other standard photographic equipment as necessary.

PROCEDURES: Agency specific step-by-step instructions for documenting crime scene evidence.

CALIBRATION: If necessary, agencies should develop procedures specific to their needs.

CALCULATIONS: If necessary, agencies should develop procedures specific to their needs.

LIMITATIONS: See [Advantages and Disadvantages of Major Image Capture Technologies in Field Applications](#).

SAFETY: Agencies should develop procedures specific to their needs.

REFERENCES: Agency-specific documentation and manufacturers' manuals.

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General Guidelines for a First Responder (A & B) SOP

(A) The only images taken are those taken by the initially responding officer(s).

TITLE: First Responder Photography SOP.

PURPOSE: To document conditions found at an incident by the first law enforcement official(s) on the scene where a crime scene photography unit or specialist will not be requested.

NOTE: Examples may include: domestic violence incidents, traffic accidents, minor property crimes, and other incidents as defined by agency-specific policies. Photography generally is not the first responder's primary responsibility, and the first responder may have only a minimal amount of photography training.

EQUIPMENT: (Image Capture Devices)

- Silver-based media film camera. Minimum recommendation is a 35-mm camera with flash and close-up capability.
- Digital still imaging. The minimum recommendation is for a camera with more than 1600x1200 pixels (>2 MegaPixels), on-camera viewer, close-up capability, flash, and removable storage media.
- Video imaging can be used in a supplementary capacity. S-VHS, Hi-8, or better quality formats are recommended. It is suggested that cameras used have the ability to incorporate external/wireless audio, the ability to disable on-camera audio, and to incorporate/disable in-camera image stabilization. (See [Video Cameras](#).)
- Other standard photographic equipment as necessary.

PROCEDURES: Agency specific step-by-step instructions for documenting scene,

NOTE: Images from separate incidents should be clearly delineated through a change of storage media or through proper documentation.

CALIBRATION: If necessary, agencies should develop procedures specific to their needs.

CALCULATIONS: If necessary, agencies should develop procedures specific to their needs.

LIMITATIONS: Successful capture of close-up images will require adhering to manufacturers' specifications. Images captured digitally typically have a limited enlargement capability that is less than those captured using 35-mm film. (See [Advantages and Disadvantages of Major Image Capture Technologies in Field Applications](#)) Successful capture of images also requires utilization of fresh media (e.g., film that is not past expiration and has been stored properly) and well-maintained equipment.

SAFETY: Agencies should develop procedures specific to their needs.

REFERENCES: Agency-specific documentation, manufacturers' manuals.

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General Guidelines for a First Responder (A & B) SOP

(B) Images taken by the initially responding officer(s) prior to arrival of a Crime Scene Photographer.

TITLE: First Responder Photography SOP

PURPOSE: To document conditions found at an incident by the first law enforcement official(s) on the scene prior to the arrival of a crime scene photographer.

NOTE: This guideline is directed toward documenting transient conditions that might be lost prior to the arrival of crime scene photographers. Examples include situations in which evidence must or might be moved, lost, or altered. Photography generally is not the first responder's primary responsibility, and the first responder may have only a minimal amount of photography training.

EQUIPMENT: (Image Capture Devices)

- Silver-based media film camera. The minimum recommendation is 35-mm camera with flash, close-up capability.
- Digital still imaging. The minimum recommendation is for a camera with more than 1600x1200 pixels (>2 MegaPixels), on-camera viewer, close-up capability, flash, and removable storage media.
- Video imaging can be used in a supplementary capacity. S-VHS, Hi-8, or better quality formats are recommended. It is suggested that cameras used have the ability to incorporate external/wireless audio, the ability to disable on-camera audio, and to incorporate/disable in-camera image stabilization. (See [Video Cameras](#).)
- Other standard photographic equipment as necessary.

PROCEDURES: Agency specific step-by-step instructions for documenting scene.

Note: Images from separate incidents should be clearly delineated through a change of storage media or proper documentation.

CALIBRATION: If necessary, agencies should develop procedures specific to their needs.

CALCULATIONS: If necessary, agencies should develop procedures specific to their needs.

LIMITATIONS: The successful capture of close-up images will require adhering to manufacturers' specifications. Images captured digitally or with video typically have a limited enlargement capability that is less than those captured using 35-mm film. (See [Advantages and Disadvantages of Major Image Capture Technologies in Field Applications](#)). Successful capture of images also requires using fresh media (e.g., film that is not past expiration and has been stored properly and new, unused video tapes and well-maintained equipment).

SAFETY: Agencies should develop procedures specific to their needs.

REFERENCES: Agency-specific documentation, manufacturers' manuals.

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General Guidelines for a Surveillance Photography SOP

TITLE: Surveillance Photography SOP.

PURPOSE: To document acts and individuals engaged in those acts as they occur.

NOTE: Surveillance activities may involve highly specialized techniques and equipment that require technical training and knowledge and are best accomplished by trained specialists.

EQUIPMENT: (Image Capture Devices)

- Silver-based media film camera. The minimum recommendation is a 35-mm camera with capability to disable both the flash and infrared auto-focus transmitter.
- Digital still imaging. The minimum recommendation is for a camera with a minimum pixel resolution of 2000 x 1500 pixels (3 MegaPixels), capability to accommodate long telephoto lenses, and to disable the flash and infrared auto-focus transmitter. In covert surveillance situations, illumination of the photographer by the LCD screen may compromise safety.
- Video imaging can be used in a supplementary capacity. S-VHS, Hi-8, or better quality formats are recommended. It is suggested that cameras used have the ability to incorporate external/wireless audio, the ability to disable on-camera audio, and to incorporate/disable in-camera image stabilization. (See [Video Cameras](#).)
- Other standard photographic equipment as necessary.

Note: State laws may limit the legality of audio taping. Check local statutes for legality of all surveillance activities.

SPECIALIZED EQUIPMENT: Night vision or thermal imaging equipment.

PROCEDURES: Agency specific step-by-step instructions for surveillance activities. If audio is utilized, simultaneous recording of audio with video on the same media and testing of the system is strongly recommended.

CALIBRATION: If necessary, agencies should develop procedures specific to their needs.

CALCULATIONS: If necessary, agencies should develop procedures specific to their needs.

LIMITATIONS: The successful capture of images sufficient for identification of depicted individuals and/or objects (e.g., license plates) will require close attention to the selection and appropriate use of equipment. Images captured digitally or with video typically have a limited enlargement capability that is less than those captured using 35-mm film. (See [Advantages and Disadvantages of Major Image Capture Technologies in Field Applications](#)). The successful capture of images also requires utilization of fresh media (e.g., film that is not past expiration and has been stored properly or new, unused video tapes) and well-maintained equipment.

SAFETY: Agencies should develop procedures specific to their needs.

REFERENCES: Agency-specific documentation, manufacturers' manuals, local statutes.

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General Guidelines for a Tactical Survey SOP

TITLE: Tactical Survey SOP.

PURPOSE: To document conditions at a location so that plans can be made for future law enforcement activities.

NOTE: This type of photography is directed at obtaining general information regarding the physical layout and major contents of a location in preparation for law enforcement activities.

EQUIPMENT: (Image Capture Devices)

- Silver-based media film Camera. Minimum recommendation is 35-mm camera.
- Digital still imaging. Minimum recommendation is for a camera with more than 1600x1200 pixels (>2 MegaPixels).
- Video imaging can be used in a supplementary capacity. S-VHS, Hi-8, or better quality formats are recommended. It is suggested that cameras used have the ability to incorporate external/wireless audio, the ability to disable on-camera audio, and to incorporate/disable in-camera image stabilization. (See [Video Cameras](#).)
- Other standard photographic equipment as necessary.

PROCEDURES: Agency specific step-by-step instructions for documenting locations.

CALIBRATION: If necessary, agencies should develop procedures specific to their needs.

CALCULATIONS: If necessary, agencies should develop procedures specific to their needs.

LIMITATIONS: Location-specific limitations may apply.

SAFETY: Agencies should develop procedures specific to their needs.

REFERENCES: Agency-specific documentation- manufacturers' manuals.

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General Guidelines for a HAZMAT Scene Photography SOP

TITLE: HAZMAT Scene Photography SOP.

PURPOSE: To permanently document, by qualified personnel, evidence and other details at a crime scene that may contain biological, chemical, and/or radiological hazards.

NOTE: A careful assessment of each HAZMAT Scene is necessary prior to committing any personnel or equipment. The means for inserting, removing, and sanitizing equipment and personnel from a scene should be planned prior to initial entry. HAZMAT Scene photography generally requires:

- To record information that the crime scene personnel may not realize was important at the time the images were captured,
- To deal with varying lighting conditions,
- To accurately represent all of the details and colors in a scene, and
- To get close-up and wide-angle images with accurate spatial relationships.

HAZMAT crime scene photography is usually a time-limited activity, in which there is only one opportunity to correctly complete the task. This type of photography usually involves the use of protective clothing and gear that will make the operation of photographic equipment more difficult.

EQUIPMENT: (Image Capture Devices)

- Silver-based film cameras are recommended for use as the primary image capture device. Minimum recommendation is 35-mm (SLR) camera capable of manual override, interchangeable lenses, off-camera flash, and tripod mount. If protective housings are not available but needed, disposable, waterproof 35-mm cameras may be necessary for some HAZMAT Scene photography.
- Digital still imaging can be used as the primary means when the performance of the equipment can be shown to meet anticipated needs or when contamination issues may preclude the use of silver-based media. Otherwise, digital still imaging can be used in a supplementary capacity. (see [Digital Cameras](#)) Minimum recommendation is for a 3 MegaPixel camera.
- Video imaging can be used in a supplementary capacity. S-VHS, Hi-8, or better quality formats are recommended. It is suggested that cameras used have the ability to incorporate external/wireless audio, the ability to disable on-camera audio, and to incorporate/disable in-camera image stabilization. (See [Video Cameras](#).)
- Other standard photographic equipment as necessary.

SPECIALIZED EQUIPMENT: Equipment for protecting personnel and camera systems.

PROCEDURES: Agency specific step-by-step instructions for documenting crime scene evidence.

CALIBRATION: If necessary, agencies should develop procedures specific to their needs.

CALCULATIONS: If necessary, agencies should develop procedures specific to their needs.

LIMITATIONS: See [Advantages and Disadvantages of Major Image Capture Technologies in Field Applications](#). Protective equipment will hamper the use of some equipment and conditions may not permit the use of other equipment (e.g., flash, film).

SAFETY: Agencies should develop procedures specific to their needs.

REFERENCES: Agency-specific documentation, manufacturers' manuals.

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General Guidelines for an Aerial Photography SOP

TITLE: Aerial Photography SOP.

PURPOSE: To document locations, activities, and geographical relationships using aircraft as a platform.

NOTE: Aerial photography may involve highly specialized techniques and equipment which require technical training and knowledge and is best accomplished by trained specialists.

EQUIPMENT: (Image Capture Devices)

- Silver-based media film camera. The minimum recommendation is 35-mm camera capable of manual operation.
- Digital still imaging. The minimum recommendation is for a camera with a pixel resolution of 3000 x 2000 pixels (6 MegaPixels) or higher.
- Video imaging can be used in a supplementary capacity. S-VHS, Hi-8, or better quality formats are recommended. It is suggested that cameras used have the ability to incorporate and/or disable external/wireless audio and on-camera audio. It is strongly recommended that image stabilization be used. (See [Video Cameras](#).)
- Other standard photographic equipment as necessary.

SPECIALIZED EQUIPMENT: Night vision or thermal imaging equipment.

PROCEDURES: Agency specific step-by-step instructions for aerial photography activities.

CALIBRATION: If necessary, agencies should develop procedures specific to their needs.

CALCULATIONS: If necessary, agencies should develop procedures specific to their needs.

LIMITATIONS: Check local statutes for legality of all surveillance activities. Images captured digitally or with video typically have a limited enlargement capability that is less than those captured using 35-mm film. (See [Advantages and Disadvantages of Major Image Capture Technologies in Field Applications](#).) Successful capture of images also requires utilization of fresh media (e.g., film that is not past expiration and has been stored properly, and new, unused video tapes) and well-maintained equipment.

SAFETY: Agencies should develop procedures specific to their needs.

REFERENCES: Agency-specific documentation; manufacturers' manuals, local statutes.

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General Guidelines for an Accident Scene Photography SOP

(A) When agency policy does not require that Crime Scene Photography personnel respond.

[\(See General Guidelines for a First Responder \(A\) SOP.\)](#)

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General Guidelines for an Accident Scene Photography SOP

(B) When agency policy requires that Crime Scene Photography personnel respond.

[\(See General Guidelines for a Crime Scene Photography SOP.\)](#)

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General Guidelines for an Arson Scene Photography SOP

[\(See General Guidelines for a Crime Scene Photography SOP.\)](#)

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General Guidelines for Autopsy Photography SOP

[\(See General Guidelines for a Crime Scene Photography SOP.\)](#)

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General Guidelines for a Bombing Scene Photography SOP

[\(See General Guidelines for a Crime Scene photography SOP.\)](#)

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General Guidelines for a Mass Disaster Scene Photography SOP

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General Guidelines for a Search Warrant Photography SOP

[\(See General Guidelines for a Crime Scene Photography SOP.\)](#)

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General Guidelines for a Gang Related Graffiti Photography SOP

[\(See General Guidelines for a First Responder SOP.\)](#)

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General Guidelines for a Field Mug Shots and Tattoos Photography SOP

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