

Union County Standard Operating Guidelines  
**Fireground Operations**

**Fireground Operations, SOG 3.44**

---

**THERMAL IMAGING CAMERA**

1. Intent and Purpose
  - a. To establish a guideline governing the most effective method for deploying a Thermal Imaging Camera(s).
2. Policy
  - a. It shall be the policy of UCFD's (if available) to utilize Thermal Imaging Camera(s) (TIC) in every structure fire and any other situation where it will enhance the safety of Fire Department personnel and aid in the location and rescue of victims.
3. Procedure
  - a. Personnel should become familiar with the location of the Thermal Imaging Camera and Trained on using it.
  - b. The TIC should be utilized within a structure whenever the initial report is a possible fire regardless of initial size-up reports. Once the Company Officer decides the TIC is no longer needed it should be removed from the structure for the use of the RIT if needed.
  - c. When operating in the "Rescue Mode" (Primary Search), company personnel shall use the TIC to aid in the search for victims.
  - d. If conditions warrant the use of the camera, the Company Officer or his designee, shall (in most instances) be the operator of the camera. Command should be notified that the TIC is in use and transmitting. The transmitter (if available) should be on unless it would pose a hazard on the fire ground (i.e. explosion detonators present or other explosive conditions). For ATFD/ MFD the default transmit channel is channel #1 and switch to channel #2 if there is interference. Camera operators must be aware that they have a tendency to move faster than the rest of the crew who are operating in zero visibility. Standard firefighting practices should be observed with the TIC acting as an "extension of the tool in the hand".
  - e. The TIC has the potential to inspire overconfidence because it allows firefighters to "see" in an environment that in reality has zero visibility. Firefighters should remember to stay low even if the camera allows them to see that the majority of the heat is at the ceiling. The possibility of a Flashover in the dynamic atmosphere of a structure fire is higher than ever before because of new materials, construction methods, and rapid responses. Personnel must understand that the TIC could fail and an escape route must easily be located, either by following a wall, hose line or rope tag line to safety. Keep in mind exit times in case of camera failure. The operator must inform his crew of escape routes and any other information he sees (i.e. doors, holes, windows, etc.). Therefore, UCFD personnel should not accept the TIC unless familiar with it's usage.
  - f. The fact that the thermal imaging camera can see through darkness and smoke is a great advantage on the fireground. BUT over dependence on

Union County Standard Operating Guidelines  
**Fireground Operations**

the TIC can have some undesired and dangerous consequences. Using the TIC as the sole search tool may leave hidden area(s) unchecked. A hands-on approach should still be used. Touching piles of debris and feeling hidden areas are still the best method of locating victims. Another drawback is tunnel vision and disorientation of crews who use the TIC constantly in a no visibility environment. Camera operators may have a tendency to stare straight ahead with the camera and may not get a full view of the room or area, or they may not maintain a mental picture of the structure and their escape route. If for some reason the camera fails the operator may be completely disoriented and unable to escape. One-way to avoid this is to use a peak or snapshot approach to using the camera. Conduct most of the travel inside a structure in the conventional method (without looking in the TIC) and just use the camera to do a quick visual check of the room to check for victims and heat. Start by viewing an area of the room (left or right) at the top (where the heat is and possible detection of flashover conditions) and using an “S” pattern to the floor. Continue to the next area (center) and repeat, continue in the same direction until the whole room is checked. After this, move to areas that may not have been viewed (i.e. closets) by normal search patterns. This will help the camera operator maintain safe search techniques.

- g. The TIC can also serve as a tool for detecting heat during the overhaul phase of an incident. It must be remembered however, that the TIC cannot penetrate most construction materials including drywall, plaster and lathe, concrete, glass, or plastic. A Thermal Detector (Hot Spotter) is another tool for locating areas or objects that have a higher temperature than their surroundings to be determined by sensing the infrared radiation.

**WARNING: DO NOT USE the Hot Spotter Thermal Detector in areas containing combustible gases or vapors, as it has not been tested for intrinsic safety.**

**WARNING: DO NOT CHANGE or take, Thermal Imaging Camera batteries into a hazard zone.**

4. Safety

- a. No operation in this Guideline shall preclude any person from using good judgment with due regard for the safety of all personnel. Remember, if you can't see your feet and the floor you should be crawling.
- b. Limitations of TIC:
  - i. Reflective surfaces may indicate fire and heat where there is not (i.e. mirrors, water, etc.).
  - ii. Water absorbs and retains thermal energy thereby concealing holes, depressions, etc.
  - iii. The TIC displays in two dimensional, distance and depth are deceptive (i.e. a hole may appear as a dark spot).
  - iv. As the TIC heats up its ability to detect heat decreases and may need to cool down prior to reentering the structure or area.
  - v. Thermal inversion may give a false perception of surface temperature.