

Operating Guideline # 311

Thermal Imaging Camera: Use and Care

September 30, 2019



PURPOSE:

The purpose of this Operating Guideline (OG) is to establish policy and procedures for the maintenance, storage and operation of the thermal imaging cameras (TIC's).

GUIDELINE:

General

1. The thermal imaging camera (TIC) can be used to aid company officers and fire fighters in scenarios such as:
 - a. Search and Rescue
 - b. Initial Size up/Scene assessment
 - c. Locating seat of the fire
 - d. Locating fire extension
 - e. Identifying potential flashover situations
 - f. Overhaul
 - g. Locating victims at motor vehicle accidents, lost in bush or water rescue.
2. TIC's have limitations that need to be understood. These include:
 - a. The TIC is not to be used in a potentially explosive atmosphere as it has not been evaluated for intrinsic safety
 - b. The TIC will not provide images through glass, this surface acts like a mirror to the system
 - c. The TIC is not a night vision camera
 - d. The TIC is water resistant but cannot be used for underwater imaging
 - e. The TIC's successful operation is dependent on the maintenance and care of the unit's batteries

Unit of Operation

3. TIC's are a lightweight, highly durable infrared imaging device that can provide vision enhancement in firefighting and similar emergency response activities. The TIC "sees" temperature differences (infrared radiation) rather than visible light. The display screen shows shades of grey from black to white. Warmer objects appear on the display screen as lighter grey to white images while cooler objects appear darker grey to black. The housing is made of impact resistant reinforced thermoplastic that is water resistant. The internal electronics are isolated to withstand vibration and impact.
4. Just as with a radio, an infrared detector must adjust its gain level to filter out background noise. Current fire service TIC's have automatic gain adjustment systems, thus the firefighter does not have to concern himself with adjustments. The gain adjusts based on the amount of thermal energy in any scene. Infrared detectors commonly have two gain levels, "normal" or high gain and "EI mode" or low gain. When these TIs switch modes, the shutter will fire, and there will be a momentary freeze of the image. Extremely hot objects or areas at temps exceeding approx. 1000 degrees F/ 540 degrees C will appear RED in the display screen. The display screen will periodically update the image to assure that the image remains clear.

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Cleaning

5. The TIC is factory sealed to protect the optics and electronics from dirt and moisture. The camera should be cleaned after every use, using a soft cloth dampened with a solution of mild soap or detergent and water.

Maintenance

6. The TIC's should be stored in the truck charging unit when not in use. During equipment maintenance once a month the camera should be turned on, battery life checked and the camera run through basic operation to ensure its readiness. The camera should be inspected for signs of wear or damage. The straps/handles will be checked for tears or weakness. Firefighters will check the housing, display and lens for cracks, scratches or other damage that interferes with the performance of the camera. If any damage is found it must be reported to the Mechanical Officer who will arrange for repair with the authorized service centre. If the unit has to be taken out of service to be repaired all staff should be notified.

Batteries

7. Routine battery maintenance includes the following:

- a. Check that the rechargeable batteries are fully charged before use and the battery packs contain Nickel-Metal Hydride batteries.
- b. Batteries can explode, leak or catch fire if directly exposed to high temperature, water, or fire if opened, disassembled or tampered with. Failure to handle the battery properly may result in serious injury.
- c. To charge the battery, plug the battery charger into a suitable power source. Verify that the contacts on the bottom of the battery are clean and not damaged.
- d. The light on the charger will read RED while the battery is charging and will change to green when the battery is fully charged. After each use of the camera the battery should be recharged until the light turns green.
- e. After each use inspect the battery contacts for damage and cleanliness as well as any leakage.
- f. Batteries for the TIC will be replaced on a 5 year cycle.

RESPONSIBILITY:

It is the responsibility of all Emergency Operations Division staff to comply with the provisions of this Operating Guideline.

REFERENCES:

- Bullard Eclipse User Manual
- Scott Eagle 160 User Manual