

## **19. Thermal Imaging Camera (TIC)**

### **19.1 Thermal Image Camera Uses**

19.1.1 Thermal Image Cameras provide safer navigation in a space where there is diminished visibility due to smoke. Using a TIC can substantially reduce the time necessary for completing a primary search.

19.1.2 The use of the TIC enables suppression crews to execute a faster, more effective interior attack. The shortest route to the fire, holes in the floor and obstacles in the structure can be located rapidly and efficiently. Reduces fatigue of interior crews because efficiency in performing searches and suppression is increased.

19.1.3 Allows RIT/FAST units to quickly and efficiently locate downed firefighters.

19.1.4 May be used to determine fluid level within a container.

19.1.5 May be used as an exterior search tool to locate lost persons in an open area.

19.1.6 Thermal energy is not visible to the human eye, but the firefighter can feel the heat present. The TIC allows a thermal heat view of the firefighter's surroundings.

19.1.7 The TIC translates a thermal picture into an electrical picture and then a visual image for the human eye. When viewing a room using the TIC, hot things appear white, hotter objects appear brighter white, and colder objects appear black to gray.

### **19.2 Limitations**

19.2.1 The TIC allows a two dimensional view of a smoke filled environment. Depth perception is limited. Firefighters operating the camera should remain low to the ground, scanning the entire area before them. Walking with the TIC is discouraged as trip hazards may be overlooked.

19.2.2 Thermal energy does not travel directly through walls. The camera will only be able to "see" if the fire has increased the temperature of the wall itself.

19.2.3 A human being will not provide sufficient thermal energy to penetrate most standard construction materials or

solid items such as furniture. Therefore, it is reinforced that while conducting a search, rescuers must look under/around beds, sofas and other objects.

19.2.4 Water, plastic and glass are all effective barriers for the TIC. Thermal energy does not transfer through these aforementioned materials. Also, firefighters and occupants, who are wet from hose line operations, could be masked from the camera's view during a search because there is a momentary balance of thermal signatures.

### **19.3 General Operation of the TIC**

19.3.1 The TIC will only be used by trained personnel.

19.3.2 The TIC is either stored in a plastic, waterproof case or in an on board charging dock. The camera, including the carrying strap, and accessories must be completely dry before returning them to storage so moisture is not trapped inside.

19.3.3 In order to deploy the camera, remove it from the case/charger and firmly grasp the handle. The shoulder strap, when provided, should be utilized in order to lessen the chance of the unit being dropped.

19.3.4 To turn the Bullard TIC on, push the large green button on the left side of the unit. The camera takes approximately 15 - 30 seconds for the units to warm up, self check and become operational. To turn on the Bullard T-3 camera, push the gray button below the screen of the camera.

19.3.5 Once the camera is active, an image will be visible on the screen.

19.3.6 On the Bullard TIC, the left side of the display screen is an LED which shows the level of energy reserve in the battery. On the Bullard T-3 there is a LED light on top of the screen to show the level of energy reserve in the battery.

19.3.7 On the Bullard TIC, there is a black, notched wheel, located forward of the green power button and adjacent to the lens. This wheel is similar to the contrast control on a camera. By manipulating this wheel, the differentiation between hot and cold areas will become crisper. On the T-3,

there are two buttons on the top of the camera, by manipulating these buttons, the differentiation between hot and cold areas will change colors.

19.3.8 On the Bullard TIC, if the camera is not to be used for a period of time but needs to remain in a state of readiness, press the yellow "sleep" button located next to the green power button. While the camera is in the sleep mode, the screen will be blank. To activate the camera from the "sleep" mode, depress the yellow button. This feature is advantageous during FAST operations when the team must be ready for immediate action. The T-3 camera does not have this feature and must be turned off to store energy.

19.3.9 If the battery power LED's indicate that the battery has less than  $\frac{1}{4}$  of its energy capacity remaining, the battery should be replaced with a fully charged battery. The battery for the Bullard camera should then be placed in its respective charger.

#### **19.4 Incident Operation of the TIC**

19.4.1 TIC operators must be aware that they have a tendency to move faster than the rest of the team who are operating in zero visibility. In moderate to heavy smoke conditions the TIC allows a crew to quickly check a smoke filled area to determine whether or not there is fire present. The camera operator must remember not to move too quickly, so that the rest of the team is not lost in the reduced visibility environment.

19.4.2 The TIC has the potential to inspire overconfidence because it allows firefighters to "see" in an environment that in reality has zero visibility. Personnel must understand that the camera could fail and an escape route must be easily located.

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