Topic: Thermal Imager Review – Part 1  
Reference #: DG 17-04  
Level of Instruction: In service personnel  
Time Required: 3 hours

Instructor Preparation:

This drill requires minimal preparation in order for it to be successfully conducted. An appropriate classroom with projection or large screen TV equipment to view PowerPoint. Review the Thermal Imager’s (TI) owner’s manual and training material provided by the manufacturer before starting classroom module. This is part one of a multi-part series.

Goals:

The goals of this drill are:

1. Keep response personnel familiar with the proper use of Thermal Imagers and care of the devices.
2. Review limits/value of Thermal Imagers
3. Review operator safety information

Materials:

1. Departmental Thermal Imager  
2. Equipment to project PowerPoint.
3. For drills you will need containers that can hold cold and warm liquids. A variety of sizes, shapes and degree of translucency will be better. Containers or bags that can hold ice, plastic sheeting and/or a shower curtain
4. A small hose such as a garden hose.
5. A small safe heat source such as candles, lamps, small propane torch.

References:

- Some material from LSU-FETI and the Connecticut Fire Academy
- See list in the PowerPoint
Instructor Set-up:
Preparation includes downloading the PowerPoint (not required but helpful - at http://www.lsu.edu/feti/municipal/drill_guides/DG15-01_PPT.pptx and having an appropriate location for a “classroom” session. Your department’s Thermal Imager device(s).

Student Motivation:

The proper use of thermal imagers can expedite search and rescue, reduce the probability of firefighter disorientation; locate hidden fire extension and many other effective applications. Improperly used it can make it easier for firefighters to become disorientated, miss victims, lose situational awareness, and/or be injured.

Classroom/Station:

1. Review and discuss PowerPoint, include local incidents and issues.
2. Trivia: NFPA does not refer to these devices as Thermal Imaging Cameras, they are referred to as “Thermal Imagers” in their standards.
3. Using owner’s manual, familiarize students with the features and use of the camera. Let all students handle the unit and answer questions about that model before starting classroom module.
4. Situational awareness is essential. Do not depend on the Thermal Imager exclusively, remain orientated and keep switching from TI to your own visual and touch.
5. Remember to “crawl, not walk” when using a TI. You can be focusing on the image instead of hidden hazards,
6. **The proper use of thermal imagers can:**
   a. expedite search and rescue,
   b. reduce the probability of firefighter disorientation,
   c. better locate hidden fire spread and
   d. have other effective applications, such as V.E.I.S.
6. **The improper use of thermal imagers can:**
   a. make it easier for firefighters to become disorientated,
   b. miss victims, and
   c. increase the chance of firefighter injury
7. (Utilize PowerPoint)
8. Review before Drill
   a. Thermal Contrast
      i. Definition - the difference in temperature of objects viewed, provides a visual image
      ii. Heat flows from objects with higher heat to objects with less heat.
      iii. Objects differ in the amount of heat they absorb.
   b. Viewing the image:
      i. Black indicates an absence or lack of heat.
      ii. Glass appears black to the thermal imaging device (hot glass will be lighter).
      iii. White indicates the presence of heat.
      iv. More heat an object has the whiter that object appears in the image.
Practical Drill:

After going over the owner’s manual and becoming familiar with the operation of the TI, here are a few drills you can try.

Remember as in all training, safety first. Before starting drills appoint a Safety Officer.

1. While in classroom look at different people, light fixtures, and any other heat or cooling sources.
2. Walk across the room and have the participants look at the footprints with the lights dimmed or off. Check the differences on tile, cement, wood and carpet floors if possible.
3. Check different appliances to see where heat sources are. Can be helpful when responding to “strange smell” incidents.
4. Using a controllable heat source, use different building materials to block the IR waves to see how different materials can change the sharpness of the image on the screen.
5. Use a clear glass container, add water to half full. IR waves will not transmit through water or glass but can change the temperature of the surface of the glass. Let stand until container and water achieve room temperature, then check again. Used different types of containers, different colors with hot and cold water. Note the difference in the images.
6. Use a plastic sheet or clear shower curtain to hide behind, have participants get a visuals from TI.
7. Play “hide and seek” in the station. Some in normal clothes, some in full bunker gear. See which one is harder to find. Have some cover with a sheet or a blanket to simulate a victim on a bed.
8. Use the TI to find levels of HAZMAT in different vessels, such as propane, fuel cans, etc.
9. Do not allow anyone to participate as a “victim” if actual smoke or fire is present.

Review:

Thermal Imaging Cameras are one of the best tools that have come out in a long time for the Fire Service. Also one of the most underused tools. Practice, practice, practice. Get in the habit of using it and developing your skills. With two people on the attack line, one should have the TI. It could save your life one day.

Clean up the equipment and return to service. Make sure TIs are charged and ready for use. Then come together in the meeting room and review procedures. By doing this you assist in ensuring that the firefighters learn from each other’s experience.

1/9/15 Casey, Savage
**ATTENDANCE ROSTER FOR FETI DRILL GUIDE 17-03**

**Topic:** Thermal Imager Review – Part 1  
**Version:** April 2017  
**Level of Instruction:** In service personnel  
**Time Required:** 3 hours

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