GammaPix™

Extraordinary Capability From Ordinary Devices

First Responder radioactivity emergency training system with GammaSim™ smartphone app & GammaCommand™ software

GammaPix Training System allows for exercises to be run with realistically sized simulated sources placed anywhere in the user's city without the danger, unrealistically small sources, high cost, and inconvenience of training with live sources.

Training System Features:

- Smartphone app simulates the measurement of a radioactive source at a specified location.
- Source intensity at the measurement location appears on smartphone screen and is transmitted to a Command Center.
- Command Center tracks the location and performance of First Responder participants.
- Audible alarm sounds when radioactivity exceeds the cordon value of 2 mR/hr or value set by user.
- App can make and transmit periodic measurements automatically via WiFi or FirstNet.
- Measurement period can be changed during exercise by user or the Command Center.
- Command Center information can be transmitted to a local Incident Commander on a tablet or mobile computer.
- Radioactivity map can be transmitted to the user's smartphone
- Low cost compared to training with live sources at off site locations.

The GammaSim training system is based on the GammaPix App and GammaCommand software previously developed by Image Insight to make, transmit, and map actual radioactivity readings. This infrastructure is now used for measuring and mapping simulated source readings for First Responder training. When measuring simulated sources, the App transmits its location and the GammaCommand returns the reading consistent with the distance between the source and measurement location. In future versions of the app, shielding, such as from buildings, will be added to the calculation. GammaSim allows exercises to be conducted in the user's city in a realistic location, under realistic conditions, with a realistically sized simulated source.

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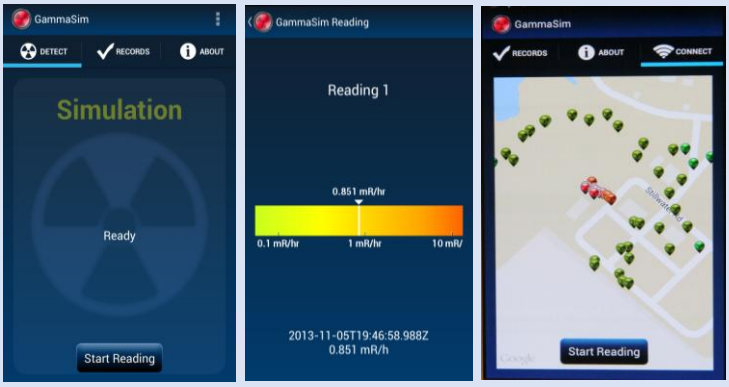
GammaSim™ Simulator

Why Use a Simulated Source?

Radioactivity emergency response training exercises are often conducted with live sources at special locations. The CTOS Center for Rad/Nuc Training at the Nevada National Security Site (NNSS) offers such training designed "*to prevent, mitigate, or respond to terrorists use of radiological or nuclear weapons of mass destruction.*" With the exception of awareness-level and online courses, all CTOS courses are "live agent," using radioactive material. For safety reasons, the sources are smaller than would typically be encountered in a real emergency, but large enough to demonstrate the use of measurement equipment. The GammaSim App installed on unmodified smartphones, together with GammaCommand server-side software, complements such training by providing real-time communication and a more realistically sized simulated source. GammaSim determines the simulated radioactivity level at the user's location and transmits those data with time and location to GammaCommand. GammaCommand receives, stores and plots the radioactivity data for use by the Incident Commander. Optionally, it can issue commands to change the operation of the app, such as increasing the measurement frequency. The system allows real-time monitoring of the First Responder's performance and training of the incident commander. Exercises can be conducted at low cost and with maximum convenience in the user's own city in locations which are of concern. The same smartphones can be used to monitor real sources with the GammaPix App.

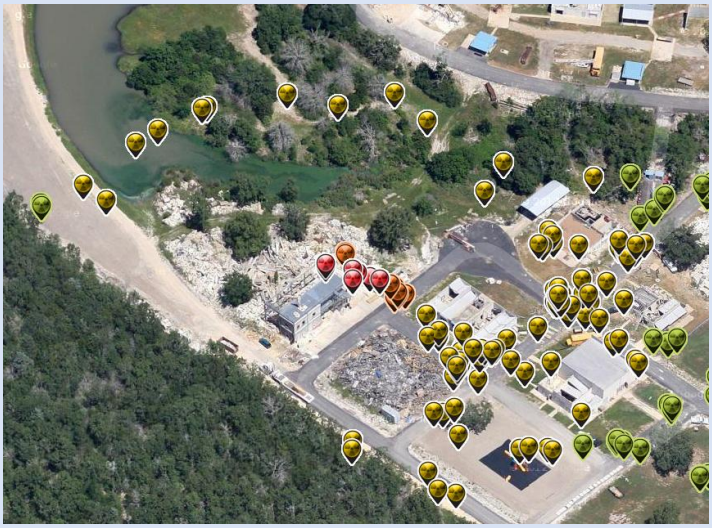
GammaSim App

The GammaSim App reads, displays and maps the intensity of the simulated source selected by the Incident Commander. Audible alarms start sounding at the 2 mR/hr cordon intensity. Manual or automatic measurements can be made, with the frequency selected by the user or Command Center.



Training with GammaSim™ and GammaCommand™

GammaCommand software receives time, location and radioactivity measurement data from GammaSim-equipped smartphones. The figure below shows simulated source data taken during a training exercise at Texas A&M's Disaster City facility at the Winter Institute in November 2013.



The figure shows yellow symbols at the safety cordon location at level of 2 mR/hr, red symbols at higher radioactivity closer to the source, and green symbols at lower radioactivity. The cordon location at about 75 meters from the source was easily established by the First Responders approaching the source and listening for the audible alarm. By contrast, the next day's exercise with a live source had a cordon distance of only a few feet, which severely limited the usefulness of establishing a cordon.

Two National Guard participants at Disaster City using their smartphones during the exercise.