

# **The Manhattan Mercury (KS)**

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## **KSU professor's work will aid Marines in combat**

The Marines are looking for a few good men ... to assist them in the war on terrorism. A Kansas State University professor is one of those men.

Bill Dunn, a K-State associate professor of mechanical and nuclear engineering, has been recruited to develop a way to improve bomb detection without having to get close to containers that may conceal explosives. The Marine Corps needs what they call "stand-off bomb detection", Dunn said. We're trying to detect explosives remotely, where any people and anything that might be damaged if an explosive device is detonated are far enough away so that they are not injured or can survive the blast. The device will use pulses of both gamma and neutron radiation that go into the target. What comes back to a large extent is determined by what is inside. Different elements emit radiation of different characteristic energies, Dunn said. We're trying to detect what comes back from the target and see if it looks like what you would see in an explosive. A key problem is size. It's easier to hide explosives in large cars; it's easier to detect them in a briefcase or a knapsack. Even if you put other things in small containers, we think we're going to get a set of signals that indicate the presence of explosives if they are there, Dunn said. With larger containers it can become very complex, but we're still hopeful.

Dunn began working on the project in November 2004. The recent bombings in London, although different from the car bombs the project initially focused on, give the project even more of a priority. He's concerned about whether a device can be built small enough to be easy to use. The military would love to have a hand-held device, Dunn said. We're not optimistic that we can develop something that would be that light and maneuverable. What we're trying to develop now would probably be on rollers. If funding for the project is "dramatically increased", he believes he can have the device ready for field use in approximately a year. If funding continues at its current rate, he predicts three to four years. We think we understand the technology enough, he said. The real thing is analyzing the data in a careful way so that you eliminate false negatives; you don't say that vehicle looks OK and it really has a bomb. We want to be as certain as possible that we detect a bomb if one is present.

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