

## **Sandside Bay monitoring**

**The problem, the current system  
and potential new systems**

# The problem

- Particles of (mainly) used MTR fuel.
- Cs-137 is the major gamma component
- An alloy of enriched uranium and aluminium clad in aluminium
- Strong, slow to erode, chemically inert and close to sand in density
- 56 to 9/9/05, activities from 8 kBq to 300 kBq Cs-137

# Particle finds



# The approach from the main road



# Sandside Bay from the west



# Current system

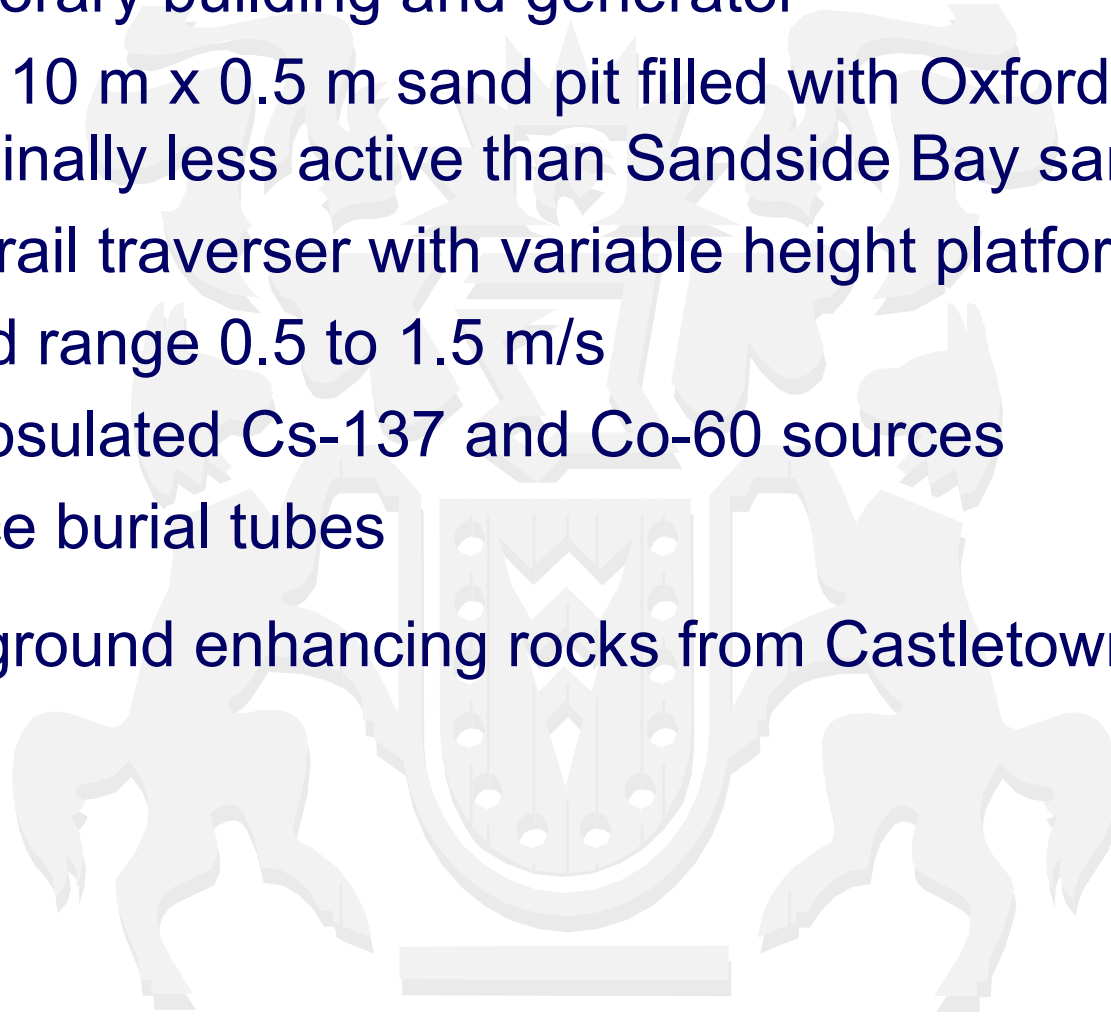


# The tests

- Depth of detection for on axis Cs-137 sources of 30, 100 and 300 kBq and 100 kBq Co-60
- Sideways view for Cs-137 buried to 100 mm
- Influence of background rocks - false positives and false negatives

# Test facilities

- Temporary building and generator
- 6 m x 10 m x 0.5 m sand pit filled with Oxfordshire sand (marginally less active than Sandside Bay sand)
- Monorail traverser with variable height platform
- Speed range 0.5 to 1.5 m/s
- Encapsulated Cs-137 and Co-60 sources
- Source burial tubes
- Background enhancing rocks from Castletown beach



# Original Groundhog detectors



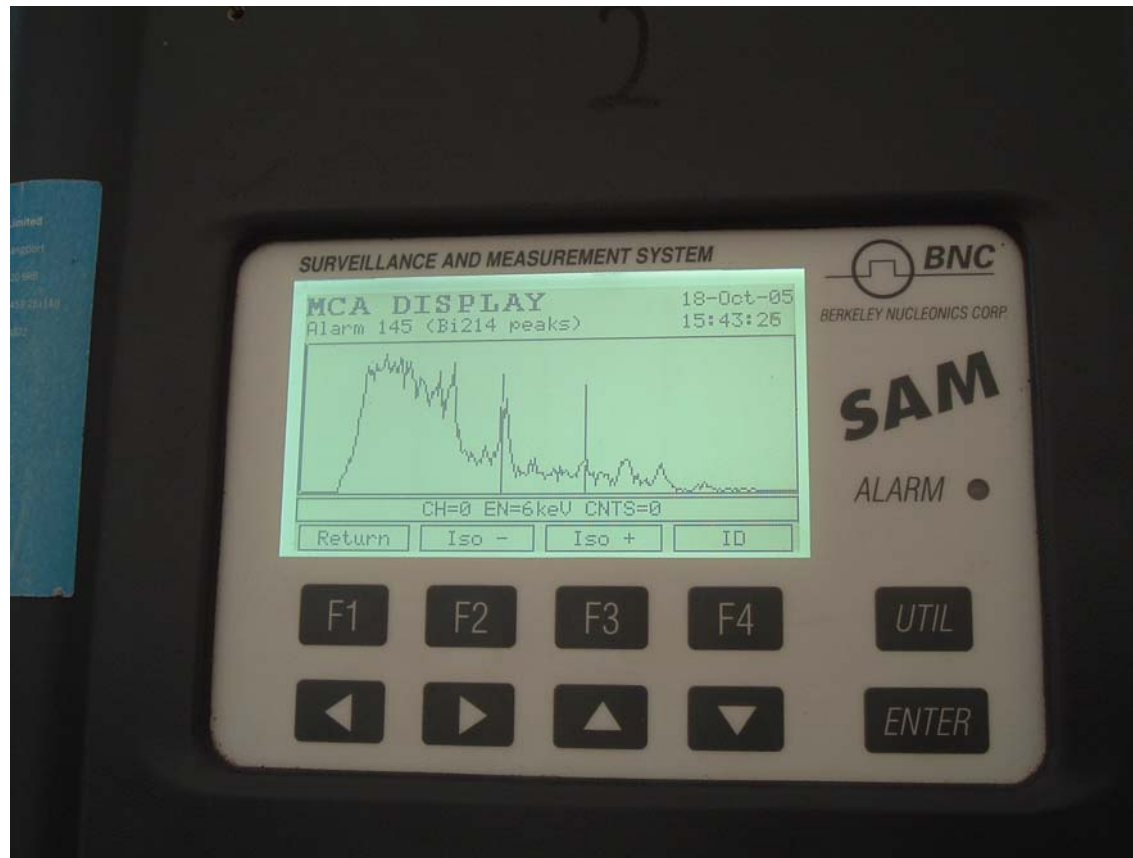
# System under test- 4 x 4 x 16 inch NaI scintillator



# Collimated hpGe detector



# Typical Display



# Web sites

- [http://www.sas.org.uk/pr/nuclear\\_fuel\\_apr\\_2005.asp](http://www.sas.org.uk/pr/nuclear_fuel_apr_2005.asp)
- <http://www.caithness.org/fpb/dounreay/particlefinds.htm>
- <http://www.sandsideestate.com/>
- <http://www.guardian.co.uk/nuclear/article/0,2763,1431834,00.html>
- <http://www.sepa.org.uk/radioactivity/dpag/>
- <http://www.ukaea.org.uk/dounreay/beach.htm>

