

## **BEACH MONITORING STEERING GROUP: 1<sup>ST</sup> MEETING**

<b>Date</b>	Thursday 9 <sup>th</sup> October 2003	
<b>Location</b>	Gleep Room Bld 521 UKAEA Harwell OX11 0RA	
<b>Present</b>	Mr Pete Burgess (PB)	UKAEA Harwell
	Dr Philip Day (PD)	University of Manchester
	Dr Joe Toole (JT)	UKAEA Dounreay
	Dr Andrew Tyler (AT)	University of Stirling
	Mr Mike Woods (MW)	Ionising Radiation Metrology Consultants Ltd
	Dr Mike Youngman (MY)	National Radiological Protection Board, Chilton
<b>Minutes</b>	Mr Gordon Gallacher (GG)	RWE Nukem (seconded to UKAEA Harwell)

Apologies were received from Mark Liddiard (UKAEA Dounreay).

### **MINUTES**

#### **1 Introductions**

JT described safety arrangements and welfare issues for the meeting.

The group introduced themselves and stated their interests.

Names and affiliations are listed above.

The following interests were noted:

- GG is a member of RWE Nukem, which carries out beach monitoring using the Groundhog system. GG had discussed this interest with PB before the meeting, and had agreed to leave the room should any commercial / confidential issues arise. PB would take minutes during GG's absence.
- MY would be involved in the assessment of Groundhog Evolution for SEPA.
- PD provides advice to Mr Geoffrey Minter (the owner of Sandside Beach).
- MW carried out a technical review of the current Groundhog system.

#### **2 Terms of Reference**

JT clarified that there were two versions of the ToRs up for discussion, where either (a) confidentiality applies to everything raised at the meeting or (b) confidentiality applies only to items or information identified as such.

PD expressed concerns over what items should be treated as confidential, and what items were considered to be in the public domain. He stressed his other activities outside of the group, such as providing objective advice to Mr Geoffrey Minter. He pointed out that some information should not be confidential (such as issues concerning a public beach). However, he appreciated that certain technical issues should be confidential.

He pointed out that the confidentiality issue needed to be addressed in advance. He suggested that the group clearly define its approach to this matter.

The group then discussed this issue at length.

It was noted that lack of confidentiality could slow down progress. In addition, the principles of Intellectual Property Rights (IPR) had to be respected.

Some contractors may be deterred from bidding for work due to concerns over confidentiality. This could be to the detriment of the project.

It was also appreciated that there could be problems if the group declared a particular system to be better than others on the market. There were concerns that this could lead to litigation.

Further, care had to be taken not to release any information considered by contractors to be confidential. Again, this could lead to litigation.

It was appreciated that any tests of equipment should be set up such that they do not prejudice results. For example, the group should not reveal aspects of any trials such that manufacturers could “tweak” their equipment to obtain the correct results.

The group also appreciated that a clear definition of “performance” was required.

The group felt that it was acceptable to contact manufacturers who may miss any invitations / advertisements in journals.

AT identified that the possibility of UKAEA leading the development of a monitoring system had been previously discussed. However, PB pointed out that UKAEA does not presently carry out this sort of research and development work.

The issue of cost was also discussed, and some problems highlighted.

For example, what are the implications if the third best system was selected due to cost restrictions? How would stakeholders react?

It was also noted that monitoring results could be used to discover how the equipment worked.

At the end of this part of the meeting, the group agreed on the following principles governing confidentiality:

- Discussion of general principles and approaches are not confidential unless identified in advance.
- Manufacturers’ proposals are strictly confidential.
- Anything concerning money is strictly confidential.
- Results of the detailed testing of the current and any future systems are confidential (eg type testing).
- Current monitoring results are in the public domain.
- The basis of comparison is the (Technical Implementation Document) TID, not the performance of the current system.
- Any other third party data / information received by this group and identified as supplied in-confidence is confidential.

### **3 Background to the particle monitoring programme**

JT gave a presentation on the particle monitoring programme at Sandside Beach. The presentation included some monitoring results and photographs of the beach.

This is included in appendix 1. It was emphasised that the second last slide, showing the detection confidence levels and SDE box, was confidential.

The following points were raised during the presentation.

PD pointed out that the TID does not require that sand above the spring high tide line is monitored. However, it is actually monitored anyway.

Often, there are restrictions on access to some parts of the beach. For example, pools of water or rocky outcrops cannot be monitored easily.

PD emphasised that it was important that rocks and pools were monitored carefully, as families would tend to gather there for recreational purposes. The aim should be to detect particles in the sandy areas between the rocks and pools.

The group looked at photos of the current monitoring vehicle.

PD pointed out some of the ergonomic issues behind driving the vehicle. He said that the driver sits in a cramped space and the vehicle pitches up and down during some of its progression.

The group looked at a diagram showing data from the November 2002 survey.

PD raised a question over the confidence levels used in assessing data.

Confidence levels need to be reviewed and it was noted that SEPA would be contracting MY (NRPB) to review the performance of Groundhog Evolution.

MY asked whether any particles other than these with Cs-137 had been found (eg Co-60).

PD pointed out that the detectors looked for Cs-137. There was no evidence of the presence or absence of other radionuclides. JT stated that the prevalence of Co-60 particles found offshore was very low, about 1% of total particles.

The group raised the question of whether the monitoring regime should look for other radionuclides.

It was appreciated that particles were generally physically similar to grains of sand, having much the same density and size.

It was appreciated that the layout of beach could change due to environmental conditions. On one occasion, a particle was detected using Groundhog, but the survey team was unable to remove the particle due to the incoming tide. The following survey-day, when the team returned, there was no sign of the particle at the point in question, although a particle was found several metres away.

AT stated that the vertical positioning accuracy could be improved. This may assist in determining whether a particle had recently arrived on the beach by enabling beach height to be compared with the previous survey.

**Action 1:** JT agreed to provide information on the technical specification of the current monitoring system. This information would include details on the ability to detect Co-60, which had been found as a dominant gamma emitter in a small number of offshore particles.

The group would then have to consider the need to detect any other radioactive particle types.

#### **4 Available and potential systems**

The group discussed desirable monitoring requirements.

A list of attributes / keywords / issues was produced for use in assessing the suitability of a monitoring system. This list is given in appendix 2.

During this session, the sources of background were also discussed

Fossils	Uranium series in equilibrium
Rocks	Some with high uranium, some with high thorium but low uranium.
Sea weed	Elevated K-40 signal
Sellafield deposition in fine particulate (minor contribution).	Cs-137

AT requested that information be made available on the levels of Cs-137 and the range in specific activity concentrations of the natural series radionuclides in beach sands near Dounreay. These are fundamental in determining the system's detection limit.

**Action 2:** JT agreed to provide data on beach sand (eg Cs-137 levels) and naturals if possible.

**Action 3:** During the discussions, members agreed to provide the group with any appropriate technical issues or information that they felt should be shared.

## **5 Concluding remarks**

JT briefly described how UKAEA would be using the Official Journal of the European Union (OJEU) to stimulate interest from manufacturers or suppliers of viable detection systems. There was insufficient time to discuss monitoring systems further. (NB During the meeting OJEU was referred to as OJEC.)

## **6 Next meeting**

The group needs another meeting to discuss (i) OJEU and (ii) available and potential monitoring systems in more detail.

**Action 4:** All members to let JT know of suitable dates around the last week in November.

**Action 5:** JT to arrange the next meeting based on a suitable date.

**Gordon Gallacher,  
Minutes Secretary  
Telephone 01235 43 4781**

**Date of issue 31<sup>st</sup> October 2003**

## Appendix 1

*Insert Joe's powerpoint presentation here in paper copy  
Suggest we have 6 slides per page.....*

## Appendix 2

A list of attributes / keywords / issues was produced for use in assessing the suitability of a particle monitoring system.

- Difficulty of the task. (This needs to be made clear.)
- Vehicle deployment
- System needs constant response
- Performance must be demonstrable / quality assurable
- Speed / detector height / completeness of system
- resistance to background variation
- Temperature independence
- Long term stability
- Robustness to rain, bangs, thuds, electrical spikes and gales
- Maintenance / spares pool
- Long term back up / expert assistance / depth of knowledge
- Cost
- Ergonomic issues behind handheld instruments and monitoring over difficult areas
- Driver acceptability
- Instant alarm modes / real time processing
- False alarms
- Computer derived results to be at least as good as current system
- Portability of data
- Validation / accreditation (including software)
- Understandable
- Spacing between detector and beach surface  
Height of beach (geographical feature)
- Operator acceptability
- Safety of operator, public and environment
- Deployment  
self propelled  
road worthy  
transport issues such as use of trailer
- Could the system float (use of hovercraft)
- Storage
- Possible use in more difficult environment
- Collimation  
reduction in field of view  
focussing

- Spectral stripping
- Frequency and time of monitoring
- Area to be monitored in daylight hours
- Removal of background signal
- Target nuclides (Cs-137, Co-60)
- Particle retrieval
- Depth recording
- Compliance with legislation  
Ionising Radiations Regulations  
Radioactive Substances Act  
Road Transport Legislation
- Monitoring of equipment when working or leaving the beach
- Lone working restrictions
- Towability / retrievability of equipment  
(eg if stuck in sand)
- Staff ability and training
- Public acceptability
- Landowner acceptability
- Detection should not disturb particle
- No tearing up or damaging the beach
- Security of equipment while working