

BEACH MONITORING STEERING GROUP (BMSG)

Meeting no. 8.

Date Thursday 1st December 2005

Location Apex International Hotel, Grassmarket, Edinburgh.

Present	Mr Peter Burgess (PB)	UKAEA Dounreay
	Dr Andrew Tyler (AT)	University of Stirling
	Dr Mike Youngman (MY)	Radiological Protection Division, HPA, Chilton
	Mr Mike Woods (MW)	Ionising Radiation Metrology Consultants Ltd
	Dr Philip Day (PD)	University of Manchester
	Mr Stephen Innes Secretary	UKAEA Dounreay

Apologies were received from Dr Joe Toole.

MINUTES

1. Draft minutes of previous meeting and actions

The members draw attention to several relatively minor details from the minutes of the 7th meeting. These will be incorporated into the final text before the minutes are posted on the UKAEA website.

Action 8.1 Make the necessary changes to the minutes from the 7th meeting and post them on the UKAEA website. (SI)

The members also thought it would be helpful if the radionuclide concentrations from the Sand from Sandside beach, analysed during February/March 2004, was tabulated next to the results for the test-bed sand for comparison.

Action 8.2 Insert the 'Sandside cores' results from 2004 alongside those from the test-bed builders sand for comparison. (SI)

Action 7.1 Compile a scoring sheet for UKAEA staff operating the test apparatus. It should contain details of the test protocol along with scoring sheets. (AT)
Action complete.

Action 7.2 Find out whether the platform speed can be reduced below 0.5ms^{-1} . (SI)
Action complete.

Action 7.3 Revise AT's draft protocol to take account of the discussions during the 6th meeting. (AT & MY, with subsequent input by all others by email).
Action complete

Action 7.4 Complete the calendar of test-bed dates for both companies and BMSG members. (SI)
Action complete.

2. Performance of test-bed facility

The test-bed proved to be well constructed and reliable, for which the designers, MPED¹ and Chesim Engineering, can be commended. Both organizations also provided support when required. The temporary building has now been removed and the test-bed beam, electric motors etc have now been decommissioned.

Over 5000 runs were completed over sixteen working days. Between thirty-five and seventy sets of runs were completed for each system. Generally, more runs were completed for those organizations that proposed running at their own selected speed, in addition to the common speed of 1ms⁻¹. During one of the trials, there were minor problems with fuses blowing, in accordance with the design intention, following the grounding of their detector case on the sand. However, sufficient runs were still completed to permit these results to be compared with the other systems.

3. Results of the tests and discussion

The members were presented with the results of the trials. It was agreed that this part of the meeting should remain confidential. UKAEA made available at the meeting the original scoring sheets from the test-bed trials in case any scores needed to be checked or any members wished to conduct QA checks.

4. Relative advantages/disadvantages of the detection systems offered, addressing points in Group's Terms of Reference

Some of the discussion in this section is confidential and has been omitted.

If we consider the primary objective in the Terms of Reference, i.e. are there beach monitoring systems that are currently better than those currently available to UKAEA, the answer is a qualified yes.

The weightings for the following objectives from the Terms of Reference have yet to be finalised. Nonetheless, it was generally agreed that ‘Sensitivity in detecting particles’ and ‘Ability to differentiate between particles and natural sources of radiation’ (in that order) are the most important. Arguably, the next most important factors are ‘Speed of operation...’ and ‘Cost of procurement...’ If the costs are significant for one or more of the recommended systems, then cost may be used to select between systems with similar performance.

◆ *Sensitivity in detecting particles*

Particles have been found on public beaches such as Sandside and Dunnet. The former is also where most monitoring effort has been concentrated. On these beaches there are large swathes of sand with relatively little variation in natural background. Hence, it can be argued that this objective should receive the highest weighting.

Action 8.9 Agree on the relative weightings for each objective. (all)

¹ UKAEA Major Projects and Engineering Division

To make a definitive statement as whether the systems exceeded the detection values in the TID and, if so, by what factor, quality-controlled measurements of the source strengths will be required.

Action 8.10 Obtain calibrated activities for the sources used in the test-bed trials. (PB)

◆ *Ability to differentiate between beach particles and natural sources of radiation*

The members agreed that the stripping technique was important in establishing the sensitivity of the detection system and should be ranked as the 2nd most important parameter. For example, over-stripping would reduce the sensitivity while under-stripping would make the software more prone to generating false positives alarms. At least one of these problems were observed in the trials. Thus, the detector's ability to differentiate between beach particles and natural sources of radiation was considered to be important enough to be included in the Terms of Reference. For those runs with elevated natural background, the success of the system can be judged by whether there is any difference in the results between the corresponding objective with a homogenous background.

In Objective 5, four systems were very resistant to increased background.

◆ *Cost of procurement and deployment*

At least one of the members thought that procurement costs should be left to management and the BMSG should concentrate on the metrological merits of the various systems, i.e. analyzing the detection capability and ranking the parameters. For example, The Terms of Reference state that the primary objective is to find out whether there are detection systems that are 'better than those currently available to UKAEA.' Therefore, those systems that are an improvement over GEv should be taken forward while those which are inadequate should be discarded. It is noted that the ToRs do include 'cost of procurement and deployment' as one of the parameters which could be advantageous. PB thought costs were important and that the BMSG should ask the participants their coverage costs/m².

The members asked if this process would culminate with the BMSG delivering a report to UKAEA outlining which (if any) detector systems they should consider for use in the future. As the contract is above the threshold value (about £150k) for tendering, an OJEU notice may be required resulting in a competitive process. Hence, costs will be required during the tendering process in addition to a request from the BMSG.

Action 8.11 Find out if the beach monitoring contract will be required to go through a OJEU, EoI and tendering process. If so, this will provide important cost information. (JT)

Action 8.12 Find out what actions are required for the members to select monitoring systems that are better than those currently available and thus fulfil the BMSG Terms of Reference. (JT)

Action 8.13 Using the results from the test-bed trials, compose (for possible publication in an OJEU notice) the selection criteria for a beach detection system. (JT & all)

- ◆ *Speed of operation, permitting more frequent deployment*
- ◆ *Ease of deployment, data collection and analyses*
- ◆ *Positional accuracy*

The members decided that these parameters can be assessed at the tender stage, if followed, when companies would be asked to submit detailed proposals for surveying the beaches. The tender document would be the basis for the contract and could take into account deliverables, coverage rates and sensitivity, while complying with the Technical Implementation Document (TID).

5. Review of confidential items

Item 3 and part of Item 4 are confidential.

6. Date and venue of next meeting

The next meeting of the BMSG will take place at a venue which has yet to be decided either in late January or early February.

Table 1. Actions from BMSG Meeting 8.		
Action 8.1	Make the necessary changes to the minutes from the 7 th meeting and post them on the UKAEA website.	(SI)
Action 8.2	Insert the 'Sandside cores' results from 2004 alongside those from the test-bed builders sand for comparison.	(SI)
Action 8.3	Contact those organisations which participated in the Harwell detector trials but have yet to submit a report with their conclusions.	(SI)
Action 8.4	Provide Participant 2 with further information on their test-bed trials.	(SI)
Action 8.5	Compile the scores from the present meeting into Tables in the meeting Minutes.	(SI)
Action 8.6	Provide the members with the results from Participant 2's plastic detectors during objective 1.	(SI)
Action 8.7	Provide the members with Participant 2's correspondence about their plastic scintillators. (SI)	(SI)
Action 8.8	Correct the errors that were identified in the test-bed spreadsheet results.	(SI & all)
Action 8.9	Agree on the relative weightings for each objective. (all)	(all)
Action 8.10	Obtain calibrated activities for the sources used in the test-bed trials. (PB)	(PB)
Action 8.11	Find out if the beach monitoring contract will be required to go through a OJEU, EoI and tendering process. If so, this will provide important cost information. (JT)	(JT)
Action 8.12	Find out what actions are required for the members to select monitoring systems that are better than those currently available and thus fulfil the BMSG Terms of Reference.	(JT)
Action 8.13	Using the results from the test-bed trials, compose (for possible publication in an OJEU notice) the selection criteria for a beach detection system.	(JT & all)