

Item	Discussion and decisions	Action by
1.	<p><u>Introduction</u></p> <p>a) The chairman explained that the new secretary to the Board, Mr Dan King, was presently engaged in duties related to his prior post and was unable to minute this meeting. This would be undertaken by Dr Chris Morgan VPU Deputy Director Depleted Uranium.</p> <p>b) Apologies were also received from Professor Ian Gilmore, Dr Gideon Henderson and Dr Len Levy.</p> <p>c) Dr Derek Hall had also been appointed to the Board but was not in attendance.</p>	
2.	<p><u>Minutes of last meeting</u></p> <p>a) Minor changes were agreed.</p> <p>Action 16.1 Secretary to finalise and circulate minutes of the 15th DUOB meeting.</p>	Secretary
3.	<p><u>Matters arising from the last meeting</u></p> <p>Action 15.3 Dr Etherington to draft technical document on dose calculation.</p> <p>Action 15.4 Dr Etherington and Professor Spratt to draft a paper relating exposures to risks. The paper had been e-mailed to members and was also tabled. A final version was being cleared with NRPB.</p> <p>Action 15.5 Chairman to amend advisory sheets for positive and negative results</p> <p>These were discussed and the final versions were agreed.</p> <p>Action 15.7 Secretariat to draft advertisement/announcement for national press</p> <p>This was tabled.</p> <p>Action 15.11 Dr Lewis to investigate the quality control methods of the biological monitoring test</p> <p>All other Actions were complete.</p>	<p>Continuing</p> <p>Continuing</p> <p>Complete</p> <p>Complete</p> <p>Continuing</p>
4.	<p><u>Pilot Results</u></p> <p>a) The pilot results available at the time of the meeting were discussed.</p> <p>b) Professor Coggon noted that the spread of results from Harwell was greater than expected generally. He thought that the average result accorded with what would be expected had there been no exposure to Depleted Uranium.</p> <p>c) It was noted that some NIGL results were still outstanding and these should be awaited before sending out the relevant individual's results.</p> <p>d) Mr Brown would have preferred to have seen the analysis of blanks and standards also reported.</p> <p>e) Professor Spratt noted that the NIGL results were impressively precise and generally consistent with the Harwell results.</p> <p>f) Dr Busby considered the fact that the upper 95% CL for the U-238/U235 atomic ratio of some samples reported by the laboratories lay below 137.9 provided evidence for the presence of enriched uranium. Dr Etherington, however, felt that within the limits of experimental error the findings were compatible with the presence of only natural uranium. Professor Spratt agreed there was no evidence for enriched uranium or depleted uranium given the experimental error. Professor Coggon also agreed there was no evidence from these results for exposure to DU or enriched uranium.</p> <p>g) There was then discussion of individual sample numbers. It was felt by the Board that letters</p>	

	<p>should be written to those with negative results. The exceptions were those for which there was some uncertainty. On this basis the Project Manager was asked to prepare letters indicating negative results for 23 participants. For a further three participants the negative letter should state that ‘your Uranium excretion was very low and hence it would be helpful to receive another sample’. This further sample analysis could be done as part of the main testing programme. NIGL results had not been received for 5 samples and letters could not be sent out until they had been received. One sample was borderline positive and Professor Coggon would write a letter for this case.</p> <p>h) It was agreed on Professor Spratt’s recommendation that nothing should appear on the web site until all individuals had been informed of their urine test results.</p>	Action: 16.1: Professor Coggon
5.	<p><u>Content of Results sheet</u></p> <p>i) Professor Coggon asked that the results should be calculated for 24h excretion as follows: $\text{Mass} = \text{Volume in litres} * ((2 * \text{NIGL}) + \text{Harwell} + \text{Harwell}) / 4.$</p>	
6.	<p><u>Dr Etherington’s paper</u></p> <p>a) Dr Etherington presented his paper. He added that 1mSv represented a 1 in 21000 fatal cancer lifetime risk. Dr Etherington noted that he would be updating this paper.</p> <p>b) Dr Busby said it was unknown whether there was a third component to the solubility which should be incorporated in the ICRP model. Second, doses did not take into account anisotropic internal exposures. Third, linear extrapolation from Hiroshima results may not be valid. Fourth, individual cell doses from alpha radiation are important. Fifth, findings reported by the Bremen Group on the occurrence of chromosome aberrations had indicated that mg intakes of DU appeared to give rise to higher radiation doses, in the range of 120-500mSv.</p> <p>c) Dr Etherington replied that there was a great deal of accumulated information on the biokinetics of uranium intakes and solubility in the ICRP model on which he had based his paper.</p> <p>d) Dr Etherington also pointed out that the doses were experienced by sensitive tissues of the lung – layers of cells – so a gross average was not being taken as suggested by Dr Busby.</p> <p>e) Dr Busby felt that doses to lymph nodes were most important.</p> <p>f) Mr Brown noted that other explanations might account for the chromosome aberration results of the German study. Also, the background chromosome aberrations for the controls were half those that had been reported in people in the UK.</p> <p>g) Professor Coggon noted that the dose to risk relationship was most important and the built in 10 fold uncertainty in the model should alleviate Dr Busby’s concerns.</p> <p>h) Professor Hooper referred to enzyme damage; repairs to kidneys; structures of cells damaged; renal cancers and the Baverstock Report.</p> <p>i) Dr Etherington said that the idea of chemical/radiological synergistic interactions was a minority view. The article had not been peer reviewed. Professor Spratt said Baverstock used standard effects but also considered synergisms. These were unquantifiable risks which added to uncertainty.</p> <p>j) Professor Coggon then asked for a vote to be taken on whether the dose assessment in the Etherington paper was reasonable. 7 agreed but two did not (Dr Busby and Professor Hooper).</p>	
7.	<p><u>Further statistical analysis</u></p> <p>a) The chairman agreed to compare uranium to creatinine ratios for spot and 24h samples.</p> <p>b) The results could be inspected for correlation of urinary uranium excretion to location during operations.</p> <p>c) Board Members could have access to the data for their own further statistical analysis but they should report back to the Board and not to the media.</p>	Action 16.2: Chairman

8.	<p><u>Main Testing Programme</u></p> <p>a) It was agreed that the Main Testing Programme was still needed. Administrator</p> <p>b) Mr Williams briefed the Board that the Invitation to Tender (ITT) had gone out to 2 potential bidders for the post of Administrator. Clinics</p> <p>c) Clinics: 6 hospitals had been identified but the majority had not yet replied to the ITT. Quality Assurance</p> <p>d) It was agreed that 1 in 10 samples should be spiked. It was thought that the Royal Holloway could arrange this. Mr Williams was asked to look into this. Guidance for Administrator</p> <p>e) Guidance on how to calculate results from the laboratory inputs would be provided by Professor Coggon. Medical Consultant</p> <p>f) The Medical Consultant would provide advice on request from those who had been sent their urine analysis results. Professor Anthony Seaton had said that he would be willing to fill this position and it was hoped he would attend the next DUOB. Such requests would be flagged up by the Administrator who would refer them to the Medical Consultant. Maximum work load</p> <p>g) Professor Coggon advised that the maximum work load for each hospital should be what they could comfortably deal with but it would be useful if they could deal with about 50 per year. Geographical spread of hospitals</p> <p>h) The hospitals so far identified were located in London, Bristol, Salford, Sheffield, Glasgow and Belfast.</p>	<p>Action 16.3: Mr Williams</p> <p>Action 16.4: Professor Coggon</p>
9.	<p><u>Preliminary Civilian Normative Values Study</u></p> <p>a) Mr Williams explained that this was underway at Edinburgh. Results were expected in the autumn.</p>	
10.	<p><u>Dates of next meetings</u></p> <p>a) The date of the next full Board Meeting was set for September 6th. There would also be a meeting at St George's Court on July 23rd. The Secretary would canvass for a further meeting in the last two weeks of November.</p>	<p>Action 16.5: Secretary</p>
11.	<p><u>Any other business</u></p> <p>a) None.</p>	

Distribution:

All members

All observers

ACTIONS LIST	
Action 15.3 Draft technical document on dose calculations.	Dr Etherington
Action 15.4 Dr Etherington and Professor Spratt to draft a paper relating exposures to risks.	Dr Etherington
Action 15.11 Investigate the quality control methods of the biological monitoring test	Dr Lewis
Action: 16.1: Sample 205 was borderline positive and Professor Coggon would write a letter for this case.	Chairman
Action 16.2: Compare uranium to creatinine ratios for spot and 24h samples.	Project Manager
Action 16.3: Investigate spiking of samples with Royal Holloway.	Chairman
Action 16.4: Provide guidance on how to calculate results from the laboratory inputs.	Chairman
Action 16.5: Canvass for a further meeting in the last two weeks of November.	Secretary