

(from a child of D Battersby)

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Dear Sir/Madam

Request to set aside Decision in PAT Case ENT/00250/2015

I previously wrote to request the First Tier to Review the Decision under Section 9 of the 2007 Act and set aside the Decision. The reason for this request was that there was a serious procedural irregularity. Contrary to Section 31 (2) (c) of the Tribunal Procedure (First Tier Tribunal)(War Pensions and Armed Forces Compensation Chamber) Rules 2008, I was not sent any notification of any right of appeal against the decision and the time within which, and the manner in which, such right of appeal may be exercised.

I have still not received any such documents.

Here, as I previously promised, I write to request that the Tribunal give permission for me to appeal the Decision for reasons which I attach to this letter.

Yours Faithfully

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## **Appeal against the First Tier Decision in the cases of Don Battersby and Barry Smith.**

*First, if any opinion is compelled to silence, that opinion may, for aught we may certainly know, be true. To deny this is to assume our own infallibility. Second, though the silenced opinion may be in error, it may, and very commonly does, contain a portion of truth; and since the general or prevailing opinion on any object it is rarely or never the whole truth, it is only by the collision of adverse opinions that the remainder of the truth has any chance of being supplied. Thirdly, even if the received opinion be not only true, but the whole truth, unless it is suffered to be, and actually is, vigourously and earnestly contested, it will, by most of those who receive it, be held in the manner of a prejudice, with little comprehension or feeling of its rational grounds.*

John Stuart Mill. On Liberty. 1859

### **Appeal**

The following does not discriminate between the Battersby and Smith appellants. This is because the behaviour of the Tribunal and the general course of the appeal events throw light on the process for both appellants. Unfairness in interpreting facts, discriminating between experts, or making decisions which affect one of the appellants illustrate general unfairness of the Tribunal and its decision-making approach to either, and to the Hogan Lovell appellants also.

#### **1. Appealing on Points of Law, Findings of Fact**

1.1 Findings of fact by the Tribunal and presented in the final Decision as fact, even if demonstrably in error, might not in themselves be subject to appeal as points of law *per se*. We are told that in English Law a judge can apparently find that black is white and such a finding cannot be challenged or appealed as a Point of Law. However, the original 1943 Pensions Appeals Act, the 2007 Tribunals Act (the 2007 Act) and the 2008 Tribunals Procedures Rules (the 2008 Rules) all state clearly in different ways that the Overriding Objective in Pensions Appeals is to deal with cases fairly and justly. In the 2008 Rules Section 1 (2) this is presented as: *The overriding objective of these Rules is to enable the Tribunal to deal with cases fairly and justly.* This is thus the law. It must therefore be a point of law for any appeal if these errors of fact **draw attention to aspects of the proceedings which affected the fairness and justice of the process.**

1.2 Therefore, showing that the Tribunal's Decision is riddled with errors of fact, as we do below, is a valid part of our argument that they have, in law, misled themselves, misapplied directions and evinced bias. Thus these errors of fact point to an issue in law: that in order for the tribunal to so surprisingly find that black is white, or to find things which, on the evidence before them, are obviously wrong, the process must have been unfair and unjust in the sense of the Acts. In what follows, various ways in which the appellants were treated, which form the substance of this appeal, will be subsumed under the term "Unfairness". Other reasons for appeal will refer to the specific piece of legislation of relevance (e.g. procedural irregularity).

1.3 The three most notable sources of this unfairness are:

- (i) the Direction at the very beginning of the hearing, in which Dr Busby's reliability as a witness was invalidly extended to a judgement of his reliability as a scientist, thus enabling the SSD to impugn the reliability of all the appellants' expert witnesses by association.
- (ii) the lack of appropriate scientific knowledge, which meant that the Tribunal were unable to judge for themselves the validity of the arguments of the appellants' expert witnesses and instead fell into the error of 'preferring' some witnesses over others on the basis of invalid and unsubstantiated assumptions about their reliability. Hence many pertinent scientific issues raised by the appellants' witnesses were not taken into account, while irrelevant considerations brought forward by the respondent's witnesses and counsel were taken into account
- (iii) the failure to follow the 'stepping-stones' approach advocated by the UT, and to engage with all the possibilities and certainties outlined by the appellants.

1.3 Whilst not going so far as to accuse the Tribunal of bias in its behaviour up to and during the hearing, and its Decision, it is evident from the account we present below that a fair-minded and scientifically informed observer, knowing all the facts, including those pertaining to the evidence before the tribunal and the parties, may well have considered the Tribunal's decisions in certain specified cases to be unfair in the circumstances.

## **2. Unfair Procedures Before and During the Hearing**

### **2.1 Unfairness pre-hearing**

#### STEPPING STONES APPROACH

2.1.1 The Tribunal failed to follow the Directions laid down by the Upper Tier for the remitted appeal. The SSD consistently failed to follow the stepping stones approach of the UT made in the UT Direction of Dec 4<sup>th</sup> 2014, specifically:

*(vii) The Appellants shall file with the First Tier Tribunal and serve on the respondent a statement of case for the remitted hearing setting out the possibilities and/or certainties for which the appellants contend and identifying the evidence on which they wish to rely by no later than 4pm on 19<sup>th</sup> March 2015.*

*(viii) The respondent shall file with the First Tier Tribunal and serve on the appellants a statement of case in response to the appellants statements of case and identifying the evidence on which the respondent wishes to rely by no later than 4pm on 30<sup>th</sup> April 2015.*

The SSD at no time addressed the possibilities and/or certainties listed by the BS appellants or indeed the HL appellants, nor did they address them in the hearing. The Tribunal failed to order the respondent to do this, or follow the UT Direction that the respondent should reply to each of the possibilities and certainties raised by the appellants in their statements of case. Thus the Tribunal colluded with or in any event enabled the respondents to employ the unfair

stratagem of entirely ignoring the substantive evidence advanced by the appellants and upon which the case pivoted.

2.1.2 This matter was raised by the BS appellants and also by the HL appellants throughout the period leading to the hearing but nothing was done by the judge. The points were raised in the original statement of case of July 2015 and in the expert reports of October 2015. The respondent's stratagem (also identified by the HL team) was as follows: (1) entirely ignore the arguments and evidence advanced by the appellants; then (2) only provide expert witnesses whose expert reports were tailored to exclude any consideration of the appellants' evidence; and (3) when this evidence was put to the respondent's experts in the hearing they were to plead either lack of expertise in the area or failure to have examined the evidence or both, which they accordingly did; and finally (4) the respondent made certain to not cross-examine the appellants' experts on any issue that would admit a re-examination to bring out substantive points in the case which the respondent needed to exclude. At no point in the hearing did the respondent properly address any of the evidence and arguments or the supporting evidence – in the form of published scientific reports – of the appellants' expert witnesses, except to personally attack their scientific credibility. This stratagem, which was identified by Hogan Lovells in their Response to the SSDs statement of case (SB1/6; see Table 2) was enabled by the judge's failure to enforce his own Directions despite being asked to several times by both the HL and BS appellant teams.

2.1.3 The two- and fro- of evidential points was a feature of all the previous FtT procedures as directed by Stubbs J, and this had enabled the cases to go forward with some understanding of the issues which were critical and had to be addressed. In this case, there was no such process defined: indeed it had been banned, and scorned as "ping-pong", by the SSD and even the limited opportunity for this process contained in the Directions was not adhered to. It is arguable (and indeed was part of earlier FtT hearings before Mr Stubbs where Dr Busby was an expert) that failure to respond to points made in expert evidence should be taken by the Tribunal to show that the SSD had no reply and that the point was carried, whereby these previous cases were uniformly successful. The matter was again raised in the hearing. The UT Directions required both sides to provide a table of the key issues or stepping stones, but again the respondent failed to do so, although the appellants did. Neither this table, nor the similar table in the closing submission provided at the request of the judge in the hearing, was addressed in the Decision. This will be discussed below in the Decision section.

2.1.4 There was a complete failure to follow up or sanction the SSD's failure to respond to UT Directions of 4<sup>th</sup> Dec 2014 as argued in the HL response to the SSD Statement of Case 8<sup>th</sup> April 2016. The Respondent specifically wrote in his final Statement of Case (SB1/5) that there was no need to address each of the appellants individual points (stepping stones) because the issues had been given to the SSD's experts to consider and respond to in their reports. However in the hearing, both the SSD's Counsel and the individual SSD experts stated the exact opposite. They had been given clear instructions (they stated under oath) that did not include addressing the points made in the appellants Statement of Case and the Appellants. **Hence it is clear that the SSD did not follow the UT Directions, as he claimed to have done, and the Tribunal was not, therefore, following proper procedure in making its decision.**

## MATTERS OF EVIDENCE

2.1.5 Requests for photographs of the detonations made on 4<sup>th</sup> Jan 2016 were not dealt with by the SSD in a timely fashion and thus these photographs emerged too late for them to be sent to the appellants' expert Dr Ash for consideration in his report. Evidence from these photographs was critically important to the assessment of fallout at Christmas Island.

2.1.6 Failure to follow up requests for information disclosure from respondents. Exclusion of information said by the SSD to be secret. Refusal to order that the SSDs witnesses from AWE Aldermaston be available for cross examination.

2.1.7 The SSD removed almost half of the evidence in the bundle that was provided to the appellants, 147 documents. This was only discovered by accident and by the time the issue was raised and the documents provided by the SSD it was too late to incorporate this evidence in the Statement of Case and Skeleton argument or to provide it to the appellants' experts for supplementary reports. It was fortuitous that some of the documents were accessible in the database of the appellants' representatives since these went back several years. Important examples include the 1953 Karl Morgan memorandum where the MoD was warned of the serious effects of Uranium-234 exposures (a copy of which fortuitously remained in the possession of the BS appellants) and the Ken Johnston weather map for Grapple Y (which was not in the bundle but was "discovered" by the SSD during the hearing).

2.1.8 The Uranium-234 issue. The SSD consistently throughout the UT appeals and the new FtT process refused to release evidence showing the U-234 content of the weapons and the fallout. In fact the BS appellants were pursued with the Official Secrets Act over the Vixen Trials document showing the U-234 content of enriched Uranium which they submitted as evidence to the UT. This document was also held to be secret for the new FtT. This evidence was critical to the case since a major hazard on the test sites according to the US expert Karl Morgan was U-234. Efforts to obtain data on U-234 in the weapons was refused. A request for Direction to permit Prof Regan and Gp Capt Ades to examine documents held secret was made on 16<sup>th</sup> Feb 2016. It was refused and threats were made of a Costs Warning. The fact that evidence asked for and necessary for the appellants' case was consistently refused is unfair. It was unfair to threaten the appellants with a costs warning.

2.1.9 Following the issue of effects of Carbon-14 being raised with Mr Hallard, he suddenly appeared to discover evidence that 28kg of C-14 had been generated by the Christmas Island series. The source of this evidence was not clear. The BS appellants had made prior Disclosure requests for data from the SSD for levels of C-14 and Tritium and had been told by the SSD and by the AWE affidavit signatory Mr Bates that no evidence existed. How then did Mr Hallard obtain it unless he had access to evidence which was not released to the appellants? This is unfair. The question of Mr Hallard defining C-14 in terms of its mass rather than its activity is discussed elsewhere in this appeal.

2.1.10 Additionally, the Shackleton radiation readings were provided to Mr Hallard in a form that enabled him to read the numbers giving measurements of radiation. The same document which had been released previously to the BS appellants was unfocused and no numbers could be read. Thus the SSDs expert in both cases seems to have access to data which was not released to the appellants following the Disclosure orders. This is unfair

## 2.2 Unfairness on the First Day of the Tribunal

### EXCLUSION OF DR BUSBY'S SCIENTIFIC PAPERS

2.2.1 The decision to exclude scientific peer-reviewed papers with Dr Busby as author or co-author, made at the beginning of the hearing – a critical direction by the judge to exclude evidence already submitted – was not presented until the day the hearing began, a decision which removed a significant part of the appellants' case; this decision should have and could have been made before the appellants created their statements of case and decided on which evidence to present.

2.2.2 It was unfair for the Tribunal to interpret the direction from the UT – to exclude Dr Busby from acting as an expert witness – as meaning that all scientific peer-reviewed reports and articles with his name on as part author or author must be excluded from discussion. Judge Charles's direction was about Busby being an unreliable WITNESS not an unreliable SCIENTIST. In fact it's beyond a court's competency to rule Busby an unreliable scientist, especially since he has published more than 36 papers in the peer-reviewed literature on the issues at the heart of the appeal.

2.2.3 This ruling right at the beginning by the Tribunal, namely, that Busby was, in effect, an unreliable SCIENTIST, was used by the SSD to discredit all of the appellants' expert witnesses by association. So it had a profound effect on the way the tribunal approached the evidence. In effect, it biased the decision from the very outset. The hearing was therefore unfair in that it was not undertaken in a spirit of open-minded willingness to listen to the arguments of both sides. Various instances of this bias are noted below in our response to the Decision document and the conduct of the hearing itself. If the judge mis-directs himself at the beginning of a case, and that leads to a skewed decision-making process, this is a clear point of law issue.

2.3.4 Even if this exclusion was a fair and reasonable application of the UT ruling, it was manifestly unfair not to raise this issue earlier, in time for the appellants to change their Statement of Case and supporting documents provided for the hearing. The issue was not raised by the Tribunal till the day that the hearing opened. As a consequence significant important independent evidence was excluded from the hearings and from the Determination and was only discussed at all because the Respondent brought it in in order to attack it.

### EXCLUSION OF MR WILLIAMS' METEOROLOGICAL EVIDENCE

2.3.5 It was unfair that the appellants' witness Mr Williams' documentary evidence and notes about the wind directions and weather at Christmas island during Grapple Y and X should have been excluded on the day that the hearing began. This evidence was from an expert in the English law sense that he had a pilot's licence and had extensively studied the Met Office records and used the USA NOAA computer program to plot the winds at the time of the detonations. His evidence had been admitted in the earlier 2013 FtT and Mr Williams had not been excluded by any Direction by the UT. As a result there was major confusion about the weather which fed though to an incorrect description in the final decision which erroneously weighted the arguments. Evidence presented to the previous FtT by the SSD's expert Mr Johnston was accepted on these issues, yet Mr Johnston equally had no

qualification or expertise in meteorology: his expertise was, in fact, as a chemist. Mr Johnston's reports, which formed the basis for the Tribunal's Decisions, were quite incorrect, and should not have been allowed since he was not there to be cross-examined. The late Mr Johnston made many serious errors in his reports to the previous FtT and was clearly a biased witness in the sense that the UT had decided Dr Busby was. See below for comments on the use of his evidence in the decision.

2.3.6 Even if it is decided that Mr Williams should have been excluded, it should not have been done on the first day of the hearing as this was unfair.

### **2.3 Unfairness During the Hearing**

2.3.1 Refusal to permit Prof Sawada to employ a power point presentation to help him convey his evidence.

2.3.2 Stopping continued cross-examination of witnesses at hearing at important point in the argument. See examples in Transcript issues Appendix 2.

### **2.4 Unfairness After the Hearing was Concluded**

2.4.1 The appellants' representatives asked to comment on or obtain clarification about the reports produced by Mr Hallard after the hearings were concluded but were not permitted to, despite clear assurance at the end of the Tribunal that any further evidence asked for would be made available to all parties for comment. If Mr Hallard had produced this new evidence in his reports before the hearings the appellants' representatives would have had the opportunity to cross-examine Mr Hallard on the issue or comment on it, and they were prevented from so doing.

2.4.2 The issue is critically important to the outcome of the case of Mr Smith since there are aspects of Mr Hallard's new evidence which show that there was significant contamination on Christmas Island, from Grapple Y.

2.4.3 Mr Hallard's reply and his general approach rested on a scientific simplification, based on discussing the radiation as backdated to the time of detonation, which gave a misleading representation of the evidence, but the appellants had no opportunity of showing this through comment or cross-examination. The Tribunal were not sufficiently scientifically competent to understand how this process misrepresented the facts, with serious results for the accuracy of their decision-making, yet there was no opportunity for the appellants to point this out.

2.3.4 The BS appellants made two separate requests to comment on and follow up the issue of the Shackleton measurements raised in Mr Hallard's replies, but the Tribunal ignored them. The SSD also wrote to the Tribunal about this point but they were also ignored. The issue is a key one since the reply by Hallard stated that the Shackleton, which reported radiation readings to the west of Christmas Island, whilst the main cloud moved East of Christmas Island, was already contaminated by fallout when it began its survey and thus must

have been contaminated over Christmas Island. This is a very important piece of evidence which was excluded by the Tribunal.

### **3. Unfairness Evident in the Decision Document Itself**

#### **3.1 Failure to follow the stepping-stones approach outlined in the UT**

3.1.1 There was a failure to address the evidence provided by the BS experts, and the arguments of the BS and HL Statements of Case.

3.1.2 There was a failure to thoroughly grapple with the Stepping Stones/ Possibilities and Certainties outlined by the appellants, or consider that evidence that was ‘not fanciful’ should be addressed and taken into account.

3.1.3 There was unreasonable dismissal of appellants’ evidence without proper justification, except by way of ‘preferring’ the evidence of the respondents’ experts, in direct contravention of the UT Directions.

#### **3.2 Failure to apply the correct threshold of proof**

3.2.1 Failure in law in that balance of doubt should be given to appellants rather than respondent. Items will be listed in Tables.

3.2.2 Setting the reasonable doubt threshold too high by not following the stepping stones “not fanciful” approach as directed by the UT. Items will be listed in Tables.

#### **3.3 Bias in Approach to Experts, Leading to Errors of Fact**

3.3.1 There was no parity between assumptions of bias by the Tribunal; all the SSD’s experts were assumed to be unbiased, even though, in the case of Prof Thomas her bias was so extreme that even the SSD’s counsel conceded it in his final submission speech. Yet this expert, Thomas, was given pride of place in the Tribunal’s Decision. Her egregious errors under cross-examination were either not mentioned in the Decision, or were cited as “silly mistakes”: see below and Tables.

3.3.2 In considering the testimony of witnesses, expert or other, or the representatives of the SSD providing written submissions, documentation or giving verbal evidence recorded in transcripts of proceedings, we question what weight the Tribunal can put on evidence of witnesses or representatives who are or have been employed on behalf of the State in relation to nuclear weapons, or the nuclear industry, and who have signed the Official Secrets Act. It is our understanding that these witnesses may face a conflict of interest between their duty to the Tribunal or Court, and their sworn duty to the Crown or State not to disclose any evidence that is subject to official secrets classification of any level.



3.3.3 It is our observation from earlier proceedings that such witnesses will evade or not reply to questions that may compromise the SSD's case, such as the evidence of Dr Braidwood in the previous FTT. Certain phrases may be well known to the Tribunal to indicate forbidden territory in security terms, although the witness plainly will have professional or operational knowledge in the issue being questioned. This conflict may compromise the evidence given by such witnesses at least as regarding omissions or deliberate refusal to disclose material evidence. This issue has occurred regularly throughout these appeals, mostly in relation to disclosure, sometimes in compilation of earlier trial bundles. The conflict becomes more serious when the testimony does not simply stay silent on critical evidence, but include a direct denial of a facts knowing them to be true to conceal restricted data. It becomes most serious where deliberately misleading evidence that has been provided by a witness, or where a deliberately misleading line of inference is pursued by representatives knowing it not to be true.

3.3.4 A specific case in point concerns the SSD's proposition developed in the previous FTT and repeated in the latest appeal that there was minimal radioactive fallout on Christmas Island after UK nuclear tests because the nuclear clouds passed through the tropopause and into the stratosphere to disperse globally but not near the island. This proposition was repeated by Counsel for the SSD in examination and cross examination. Apart from one very small "chimney" above the Grapple Y cloud (representing at most 1% of the material in the cloud) there is no evidence that the radioactive clouds from any of the UK atomic or nuclear tests passed into the stratosphere. This was evident from meteorological records, photographs and eye witness testimony. It was investigated by two professionally trained expert meteorologists who affirmed the importance of the tropopause as a boundary layer. Nevertheless the Tribunal chose to accept Mr Johnston's testimony in the 2013 FTT transcript as the authority on this subject.

3.3.5 We do not question the Tribunal's right to hear and consider evidence from witnesses on behalf of the SSD who have been required to sign the Official Secrets Act and thereby who have an alternate duty to the Crown through their work, rather than via the Tribunal. However we do question the weight that the Tribunal puts on such evidence when compared to other witnesses who are not under such a conflicting obligation, who by definition cannot be independent on the issues before the Tribunal.

3.3.6 Further we question whether the principles of the Ikarian Reefer case, used to exclude Dr Busby from giving evidence in these appeals by Judge Charles on the grounds that Dr Busby had a campaigning agenda that might influence the veracity of his evidence, should not equally be applied to witnesses currently or previously employed or funded by or on behalf of the SSD. We do not seek to exclude witnesses from the MoD, AWE or other military or civil nuclear industry employment from giving evidence. We specifically requested the opportunity to call such witnesses to be available for cross-examination which the SSD declined to do in these proceedings. But we do expect that the Tribunal should consider the weight they can give to such evidence, mindful of conflicting duties.

3.3.7 We have already referred to our appeal point here which is to question the Tribunal's unqualified reliance on Mr Johnston's transcript evidence from the 2013 FTT, not a meteorologist, nor present at the UK Nuclear tests in Australia and Christmas Island, while criticising and dismissing the evidence of Flt Lt Joe Pasquini and Lt Cmdr John Ash, both with professional training and operational experience with nuclear weapons.

3.3.8 The Decision placed no weight at all on the BS Experts and their reports and did not cite evidence supporting the BS Statement of Case, the BS list of Issues to be Determined, the BS Possibilities and Certainties. Neither has the Decision even listed these, or referred to the evidence submitted supporting the BS claims, including evidence submitted by the BS appellants during the hearing. Apart from the Expert reports themselves there were hundreds of scientific papers referred to and submitted either as full articles or abstracts. The Tribunal ruled that abstracts could not be used: but it did this during the hearing, which is another point of unfairness. In some cases the BS appellants obtained full reports and submitted these: but they are also not discussed in the Decision. This is also unfair.

3.3.9 This relates to a wider issue of discrimination against appellants experts through incorrectly and **without evidence** categorizing them as “campaigners”. This is even more questionable given the scientific status, scientific publication history and expertise of the seven expert witnesses who appeared and the three expert witnesses whose previous reports were discussed in the Decision. We compare these in Table 3.

### **3.4 Lack of Scientific Knowledge in a Number of Areas, leading to Errors of Fact**

#### DOSE

3.4.1 The Tribunal failed to understand the point made in the Statement of Case and the BS experts’ reports and under cross examination that radiation “Dose” is misleading with respect to biological damage from **internal** radiation. This was most evident in the way the Tribunal dealt with the Rowland/Wahab material on chromosome damage. The Tribunal accepted the SSD’s argument that if the chromosome damage was that which would normally be **associated** with an external dose of 1000mSv this meant the veterans on the ships must have **received** an external dose of 1000mSv, and this not only appeared absurdly high but would have meant that the Geiger counters on the ships would have detected high levels of radiation. The point (made by Miss Busby in her Closing Statement and not referred to in the Decision) was that **small** amounts of Uranium particles or internal radiation (undetectable by the Geiger counters on the ships) may have had the same biological effect as 1000mSv of external radiation. The evidence from Wahab/Rowlands was of **the biological effect**: it was not evidence of 1000mSv of radiation, it was evidence of massive damage to chromosomes. The entire point of the BS appellants’ case is that massive damage to chromosomes can be caused by **small amounts** of internal radionuclides or internal uranium because as BS experts showed, the bomb residue Uranium is in the form of nanoparticles and Uranium binds to DNA, the target for radiation mutation effects. Hence it is not a logical answer to their argument that the ships ought to have detected the radiation: they did not argue that there *were* high levels of radiation, only that what levels there were caused massive damage.

3.4.2 **This issue of the greater effect of small amounts of internal radiation was the subject of all the BS experts’ evidence and was explained by them under cross-examination.** It is the key issue in Prof Sawada’s report which the Tribunal claim not to understand. Mr Te Haar understood it and attempted to explain it to the Tribunal; Miss Busby attempted to make it clear; yet the Tribunal make no attempt to discuss these arguments or refute them; they simply repeat the arguments of the SSD as if they had never been challenged. This relates to the next point about Sawada’s evidence.

## THE EVIDENCE FROM SAWADA

3.4.3 In the Decision, at p. 72, the Tribunal note:

229. (xiii) It was entirely unclear how the hypothesis that some of the survivors had received health damaging radiation doses at greater distances from the epicentre than might have been previously believed married up with the detailed statistics on health outcomes for survivors. **On one view, if there was greater exposure to radiation but the same recorded health outcomes, it would suggest that the dosimetry based on this data was too conservative.**

The Tribunal appears to be display a profound misunderstanding of epidemiology in these comments on Sawada's data, and further to have relied on a non-expert, Mr Adam Heppinstall, for their conclusion. The view that high levels of contamination of survivors at distance would in fact lead to an overestimate of health risks from radiation was one put by Mr Heppinstall in his Closing Statements. Under no circumstances could he claim to be an expert in this matter, and the argument outlined above was rebutted briefly in Miss Busby's Closing Statement (Day 12: p.154, l.25 – p.156 l.3). The Tribunal have ignored this rebuttal and have been substantially misled as a result (see Appendix I).

## RATIO

3.4.4 The Tribunal's lack of scientific or indeed mathematical understanding caused them to make mistakes in understanding anything involving Ratio. For example, it concedes that the epidemiology studies showed significant excess leukemia, yet it believes the doses were below 1mSv. These two facts are impossible unless the ICRP model is wrong, since to develop leukemia with 50% probability under ICRP you need about 500mSv or more. Thus the ICRP model (which the Tribunal agrees is accurate) must be in error according to the Tribunal's own evidence by a factor of 500 times. This again is a reason for the Tribunal to employ an independent scientific assessor to advise it which the legal instruments enabled it to do.

## PROBABILITY

3.4.5 Tribunal's lack of mathematical understanding cause them to accept the ridiculous response by SSD expert Haylock on the issue of the probability of 4 pancreatic cancers in 7 cancers. Haylock had been asked this question before the hearing and had not answered. Nor did he answer under cross examination. Nor was the cross examination permitted to proceed. Haylocks explanation and calculation based on an assumed total population had no mathematical, epidemiological, statistical or logical basis. The 7 appellants were not chosen by Busby nor any of the BS team. They were selected only on the basis that they had been those whose appeals were outstanding when the Pensions Appeals were decided. Thus this was the same as throwing 7 dies and obtaining 4 sixes except that the unit probability was not  $1/6^{\text{th}}$  but was equal to the probability of pancreatic cancer out of all cancers. This result, which is vanishingly improbable, can only be explained if the appellants had shared a common cause of pancreatic cancer. All the appellants shared was being at the test sites. This result on its own should raise reasonable doubt even if no other evidence was considered.

## METEOROLOGY

3.4.6 The Decision description of the wind directions is totally wrong or at minimum confused and misleading. Even though all the evidence from the meteorological experts was available to the Tribunal it chose to use questionable evidence from the SSD's expert Mr Johnston submitted to the FtT. Mr Johnston himself finally conceded that the fallout had mostly gone East, but the Tribunal chose the earlier incorrect evidence he gave. This highlights the important issue of Meteorology evidence. The meteorology at the Grapple Y test was accurately presented by experts Stretch and Nicholson who also agreed with our witness Williams.

## EXTENT OF CLOUD AND FALLOUT

3.4.7 Further bias in favour of the SSD extends to the Tribunal preferring Mr Johnston's estimate of the Grapple Y cloud diameter of 71km over Flt Lt Pasquini's of 111km on the basis that Mr Johnston was an expert and Pasquini had either forgotten or wanted to spin his evidence because he had a financial interest in the result. This was (along with other statements in the Decision) offensive and absurd. Pasquini's calculation of the cloud diameter was made by consulting his flight logs and the radiation measurements. They are in agreement with other analyses made by Busby (excluded) and Williams (presented) at the previous FtT, also supported by met experts Nicholson and Stretch. It is an important issue since the larger diameter would put the radioactive cloud over the main camp, whilst in Mr Johnston's estimate it would clear the main camp.

3.4.8 In the Tribunal's dismissal of the correct height of the Grapple Y test as suggested by report from John Large, they ignored (did not refer to) witness statement by Derek Fidderman that huge amounts of seawater were sucked into the cloud. Nor did they understand the point made by Meteorological expert Nicholson to the previous FtT that the change in atmospheric pressure would have caused the detonation to occur at 5000ft, much lower than the 8000ft planned because it was a pressure activated detonator.

3.4.9 Again the Tribunal based its Decision on the evidence presented by Mr Johnston under cross examination in the previous FtT to declare (incorrectly) that the Grapple X and Grapple Y contamination mostly crossed into the stratosphere and could not fall to earth. All the previous meteorological experts, Stretch, Nicholson, Williams and the Canberra navigator Pasquini were clear in their evidence that there was less than 1% of the cloud passed into the stratosphere. The issue was not discussed or canvassed in the hearings nor was Dr Ash asked his opinion. Johnston was not available for cross examination.

## MISCELLANEOUS ERRORS

3.4.10 The Decision contains numerous further silly mistakes, errors of fact and errors of interpretation. Items are listed in Table 2, but examples are:

3.4.11 Failure to comment of SSDs dosimetry expert Hallard not producing any assessment of uncertainties, which if he had would have increased his calculated doses by a factor of 10-100.

3.4.12 Failure to comment on the fact that SSD dosimetry expert Hallard produced 3 different reports with increasing doses following each comment by the BS appellants

3.4.13 Failure to understand that the assumption by Mr Hallard of what the Tribunal thought to be a very high value of fallout was a trick. The value was only high because it had been scientifically re-adjusted to the time of the detonation H+1. In the 10 hours following the detonation this value will have fallen by a factor of 10-20 times and so the argument that the fallout, if it had occurred, would have been detected by the Geiger counters used at the time is a specious and misleading one. By the following day after overnight (40-fold) decay any increase in radiation would have been barely detectable by the instruments of the time.

3.4.14 In the case of Battersby, failure to discuss or mention the evidence from the Dundee data and the supplementary report by Prof Howard, who is an expert, a medical doctor and has published epidemiology in the peer review literature showing the 10-fold excess congenital malformations in the data. Battersby's wife gave birth to twins who died at birth from Congenital anomalies.

3.4.15 In the case of Battersby, failure to rule that since more experts in the peer review literature and in the USA had decided that Chronic Lymphatic Leukemia CLL was radiogenic than experts who had not, this should raise sufficient doubt about its radiogenicity. In fact too much weight was given to the expert Catovsky who was not an epidemiologist but a clinician and who exhibited bias himself by failing to refer to the Zablotska paper in his evidence before the previous FtT. Reports by experts on leukemia Howard and Schmitz-Feuerhake about the issue of CLL radiogenicity were either ignored (Howard) or derided (SF) even though the latter's paper in the peer review literature was one of the reasons for the US experts and government ruling that CLL was radiogenic. How can this not raise "reasonable doubt"? To find not, on the basis of a statement by Prof Thomas who has no expertise in this area is a monstrous and absurd distortion of the concept of "reasonable doubt".

3.4.16 The Tribunal failed to ask Mr Hallard about his unusual description of the Carbon-14 quantity released by the Grapple tests as 28kilograms. No scientist or dosimetrist ever describes radioactivity as Mass (kilograms, grams). The only possible reason Hallard used this description is to make it seem as the amount was insignificant because the number is small. The Tribunal should have asked Hallard what this meant in activity terms. He would have had to answer  $4.5 \times 10^{15}$  Bq which is a very large quantity (4,500,000,000,000,000) Carbon-14 is, of course, very dangerous since life is made largely of carbon. This clear attempt to evade proper consideration of the effects of C-14, missing from his initial reports but raised by the BS appellants at the hearing was compounded by his ridiculous methodology employing the UNSCEAR C-14 dose table which did not properly discriminate between those close to the bomb and any individual on the planet.

#### **4. Procedural Unfairness**

4.1 There was a Procedural Law Failure to inform the appellants in writing of their appeal rights against the decision as required by the 2008 Rules. We have already written and submitted that the decision be set aside on this technical point. But we say here that it is symptomatic of the way in which the appellants have been treated throughout this appeal.

## **5. Unfairness by Way of Lack of Scientific Expertise of the Tribunal**

5.1 The entire process was unfair, as has been demonstrated by the errors of fact outlined above, because the choice of the judge and attendant members resulted in a Tribunal which was clearly not competent to judge the complex and sophisticated scientific arguments presented. Examples of this incompetence will be listed in Tables 2 and 3.

**Table 1 Course of the important events in the BS appeals process with Notes**

<b>Date</b>	<b>Bundle ref.</b>	<b>Event</b>	<b>Note</b>
10/3/15	SB1/12	Ruling. Appellants to serve Statement of Case per UT Direction of Dec 4 <sup>th</sup> 2014 setting out possibilities and/or certainties and identifying evidence on which they rely by 2 April 2015. Respondent to serve a response per para 1(viii) of UT Direction by 14 <sup>th</sup> May 2015.	SSD did not. At no time throughout the whole period, nor at the hearing, did the SSD respond to or provide discussion or rebuttal of the possibilities and/or certainties submitted in the BS Statements of Case and other documents. Nor were they ever ordered to despite complaints from Hogan Lovells and the BS Appellants Representatives.
2/4/15	SB1/2	Statement of case for BS 55pp, 111 references with request for disclosure of information on radioactive contamination. 55pp.	First BS SoC has nearly all the points argued in the appeal right at the outset almost a year before the hearing.
13/5/15	SB1/13	Direction that SSD file his Statement of Case by 28 <sup>th</sup> May. Parties to agree a list of issues to be determined by the Tribunal.	SSD did not agree a list of issues suggested by the BS appellants.
15/5/15	SB1/2A	Revised SoC containing list of 26 possibilities and certainties as per UT Direction. 92pp 63 references.	Ignored by SSD. Not addressed by Tribunal at any stage.
22/5/15	SB1/4	Response by SSD to BS Statement of Case 5pp	Complains that the 2/4/2015 SoC does not set out the argument as possibilities and certainties as suggested by the UT Direction. Ignores all the submitted points. Ignores the 15/5/15 SoC except refuses to address the SoC until the BS experts have produced their reports. Suggests joint dosimetry expert. Appellants refuse.
28/7/15	SB1/17	Case Management Directions. All previous evidence included subject to submissions as to relevance and expertise. BS expert reports by October 2. SSD Experts by 11 <sup>th</sup> Dec. Agree a list of issues by	BS expert reports in on time; SSD Experts not till January 2016. SSD did not supply or agree a draft list of issues.
17/12/15	SB1/20	Disclosure Order; Reasons for Decisions. At 7(iii) Since uranium damage may not be	Ordered the release of the BNTVA Rabbitt Roff questionnaire data from the University of Dundee.

		<p>identified in traditional monitoring methods or assessments it is necessary to assess the likelihood of risk by other means including (a) the quantity of Uranium used to make the device, the amount of residue measured after the explosion and (b) epidemiological data about clusters of genetic disorders suffered by service personnel who have been exposed to the product of an explosion. Also ordered release of the photographs.</p>	<p>The SSD refused to release the Uranium evidence and was not ordered to by the judge. AWE did not bring to the hearing the experts it relied on to say there were no data but depended on an affidavit from a Mr Bates. This adversely affected the case for the BS appellants. The Dundee epidemiological data were released and analysed by the BS expert Prof Howard who has expertise in epidemiology, and showed a 10-fold excess congenital malformation risk. This evidence (stepping stone) was not discussed in the Determination. Photographs did not appear until it was too late to use them.</p>
20/1/16	SB1/5	<p>SSD revised Statement of Case appears 6 months after the BS SoC. It is 5 pages and para 14 states : “As the experts were instructed to consider all the possibilities and certainties advanced. . . it is submitted that there is no need for the SSD to respond line by line to each and every one of those possibilities and certainties.”</p>	<p>Does not address the 26 individual possibilities or certainties listed in the BS Revised SoC for the reason given. But in fact the SSD experts stated under oath when cross examined (See transcript table 4) that <b>they had not been asked to address any of the BS appellants possibilities or certainties</b> and this was also stated clearly by the SSDs counsel. Someone was therefore lying.</p>
8/04/16	SB1/6	<p>HL revised Statement of Case. At para 10: SSDs non-compliance with procedural orders. Para 16: “The current stance of the SSD is to arrogantly disregard the orders of Charles J and Blake J. . . The inherent risk of the SSD’s approach (which is probably deliberate) is that if the FtTs focus is not on the individual stepping stones, it will fall into the error of the previous FtT. . .” Para 17: “9 weeks before these cases are heard, the appellants still do not know which of the possibilities or certainties they rely on are accepted by the SSD. . . this is astonishing. . .”</p>	<p>HL make the same point made in the BS letters complaining that the SSD has not addressed any of the possibilities and certainties (stepping stones) raised in their (BS) SoCs and tables. Nor were these possibilities and certainties ever addressed by the SSD or his experts. Indeed the experts stated under oath that they had not been asked to address the BS proposed “stepping stones” and when asked about some of these, pleaded (accurately) that they did not have the necessary expertise.</p>



**Table 2 Errors and Unfairness itemised in the Decision Document**

<b>Paragraph</b>	<b>Statement</b>	<b>Note</b>
15	In the appeals relating to Messrs Battersby and Smith, Dr Busby, on their behalf, advances a more radical submission that that the guidance issued by the International Commission on Radiological Protection (ICRP) that forms the basis of radiological health protection in the UK and the EU is flawed and underestimates risks to health from internal exposure to radiation and in particular radiation from uranium.	At no time was this submission scientifically rebutted by the SSD or his expert witnesses.
26	Tribunal outlines the “fanciful or worthless” test	Tribunal does not employ it properly or at all
32 (102)	Tribunals and courts will have to explain how they have done it	Tribunal did not
37	Characterises the expert reports.	Did not discuss them, particularly the Howard report on congenital malformations. Decision shows no evidence that the reports were even read.
<b>42</b>	We will not be addressing every point made to us orally and in writing although we have read this material; rather in Parts Four to Six we <u>address the principal submissions advanced to us by the appellants in the light of the current state of the evidence.</u>	The Tribunal did not do this.
<b>75</b>	It is considerably more difficult to assess the amount of internal radiation. An estimation of the intake of internal radiation can	Assumes the result of the finding before discussing the finding. The whole argument from the BS appellants is that you cannot

	<p>be made from measurement of the external dose, for example, the radioactive content of the air breathed or items ingested, the breathing rate (in the case of inhalation) and the time spent in the radioactive area. With this information, if sufficient is known about the materials inhaled or ingested, particle size, chemical form, retention in bodily organs, radioactive half-life, and the excretion rate of the radio nuclides, it is possible to calculate effective dose. Measurement of dose.</p>	<p>do this and evidence also from CERRIE is that dose is a meaningless concept for internal exposure. This is the key issue of the whole appeal and the Tribunal has decided it here are the outset.</p> <p>None of the arguments of the ECRR dosimetric approaches are presented at the outset, thereby skewing interpretation from the start.</p>
92	<p>The Carter Report explains:</p> <p>‘stochastic effects do not generally become apparent for many years after exposure, and there is no way of distinguishing a particular cancer or genetic effect that might have been caused by radiation from one arising from other origins. There are some forms of cancer that do not seem to be caused by radiation exposure....stochastic effects, in particular cancer, have only been clearly demonstrated in humans following moderate or high exposures of the order of 0.1 Sv and above, and there is no direct evidence that these effects can arise at the significantly lower doses characteristic of present day occupational exposures.’</p>	<p>Reliance on the obsolete Carter report at the outset when there is a huge amount of evidence in the peer review literature that shows cancer occurs at doses lower than 0.1Sv including evidence submitted by the appellants and in the Bundle.</p>

177, 178	Wind Direction explanation	The explanation is 180 degrees out of phase and is both inaccurate, confusing and incomplete. Evidence submitted, evidence to the previous FtT by all the meteorological experts differ from that recorded by the Tribunal here.
180, 181	Grapple Y winds	Choice of SSDs previous FtT witness is highly questionable since Johnston had no expertise in Meteorology. All the meteorologists disagreed with Johnston's interpretation given here, and which Johnston subsequently changed. Extraordinary bias here. All the evidence showed at Grapple Y the lower winds were SSE but the upper winds were W. This meant the stem moved north-north-west along the coast whilst the cloud moved east across the island. None of the material in the cloud penetrated the tropopause at 50,000 feet.  Sending the Shackleton west meant that it was flying in the wrong direction.
181 (xiv) 182	It then pushed into the tropopause and thence into the stratosphere at 55,000 feet.	Not according to any of the evidence from meteorologists Nicholson and Stretch, nor from the photographs. This was a failed attempt by SSDs expert Johnston to confuse the issue. Johnston himself later conceded this and stated that the main fallout fell in the sea to the East of the island. Johnston's report on this was presented by Busby as evidence in the hearing.
184	From the available material, Mr Johnson has made his own rough calculation of the diameter of the cloud at its height. He suggests that it measures approximately 4.5 x 16 kilometres	Astonishing preference of Chemist Johnston's evidence to the previous FtT over Navigator Pasquini's. Johnston only was employed from 1962 whilst Pasquini, flew through the cloud

	<p>giving a cloud diameter of 72 kilometres, He was aware that his estimate is somewhat smaller than that made by Flt Lt Pasquini, who had flown a Canberra aircraft after the detonation to ‘sniff’ the cloud and take measurements. Pasquini had recorded certain matters in his flight log at the time. A number of matters not mentioned in the flight log were addressed in a witness statement made for the purpose of this litigation where he gave an estimate of a cloud diameter 111 kilometres (60 nautical miles)<sup>1</sup>. The relevance of cloud size is that the smaller the cloud’s diameter the less there is to overhang the inhabited parts of the island and be a potential source of deposition there.</p>	<p>and measured its diameter with his radiation detectors. His evidence was based on his flight log and not his memory. He had no financial incentive as he was already in receipt of a pension.</p>
187, 188	Height of detonation	<p>Tribunal arbitrarily dismisses evidence from John Large, eyewitnesses, and Meteorologist Nicholson that height of detonation of Grapple Y was much lower than asserted by SSD. Dismisses Nicholson’s point about atmospheric pressure without understanding that since the detonation initiator was pressure regulated this would have explained the low detonation at 5000ft rather than 8000ft. Does not include witness statement by Derek Fidderman who saw the ocean being sucked into the stem and who was at the hearing.</p> <p>Holds with Mr Johnston’s “emphatic evidence” on this topic. Johnston was not even there.</p>

<sup>1</sup> September 2011 paragraph 41 to 42 (SB 8/130) and further statement 2013 SB 8/131. A transcription of the flight log is exhibited to his first statement

190-193	Description of Stretch's statement about wind direction	Totally confused and unusual re-description of the conclusions of the SSDs expert Stretch which entirely misleads the reader. [192] would logically mean that the wind was blowing over Christmas Island yet the Tribunal concludes that all the winds were blowing away from the island, a logical impossibility.
211	Sticky paper results	This is a core issue. The Tribunal have not allowed for the rapid decay of these samples from H+1, the trick employed by Hallard (see text).
229	Mr Bramhall	Omits all mention of the evidence given that the CERRIE committee failed to carry out its remit.
229	Prof Hooper	Ignored all of Hooper's evidence on Uranium effects; wrongly attacked him on the Uranyl acetate issue, an issue where Hooper is an expert. Devoted 28 lines to dismissing his evidence. Ignored the several peer reviewed papers on Uranium and congenital effects including chromosome damage at low doses. See Section 6
229	Prof Howard	Dismissed his evidence on Uranium and DNA binding. Ignored his main evidence on photoelectron effects from Uranium particles. Dismissed his reliance on published papers on heritable effects in test veteran children. Ignored or did not refer to his Supplementary paper showing a 10-fold excess of serious genetic effects in the data from Dundee which the same Tribunal made a Disclosure Order on. Devoted 23 lines to dismissing his evidence. See Section 6

229	Prof Sawada	<p>Decided to ignore Sawada’s evidence on the basis (without any evidence that this was the case) that “there was no evidence of rigour or robustness in the way his published work was peer reviewed and published”. The journal <i>Medicine Conflict Survival</i> is a prestigious peer review journal which is cited in PubMed and papers undergo review by three reviewers. The Tribunal made no attempt to ascertain the status of the journals where Sawada’s paper were published.</p> <p>The Tribunal went on to write that it could not understand the evidence Sawada was giving, even though Mr Te Haar explained it to them at the hearing. In 229 (xii) the Decision states that Sawada’s work was unpublished; this is just not true, the work was published in the Proceedings of the 2009 ECRR Conference in 2012 and is available on Amazon.</p> <p>The Tribunal reveal their lack of scientific understanding, a feature of the whole process and of the Decision at 229 (xiii). This is another example of their failure to understand the concept of “ratio”. The point is that it was those far away that defined the effects in those close to the explosion. Thus if those far away had a higher effect, that would reduce the apparent effect in those close to ground zero (see explanation in Appendix 1).</p> <p>At 229 (xvi) is introduced the idea of a ECRR “campaign” which is an invention of the Tribunal. There is no evidence that the ECRR is a campaign. It is an independent expert NGO with the same status as the ICRP. Furthermore, the Tribunal decided that Sawada is not an expert in the area of criticism of the ICRP. Sawada, as he explained in the hearing, to the</p>
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		<p>consternation of the SSD’s counsel who was intent on disparaging his involvement, was a member of the Japanese American committee setting up the new Hiroshima LSS dosimetry in which the ICRP model is based. See Section 6.</p>
229	Schmitz-Feuerhake	<p>The Tribunal briefly but accurately outlines the evidence presented by Prof Schmitz-Feuerhake but dismisses it all. Two aspects of the bias of the Tribunal, which will be also examined in Section 6 are as follows.</p> <p>At (xix) Tribunal writes she has no expertise in epidemiology when it knew that she was a co-author on the most relevant leukemia paper for CLL which they say is a “medical issue”. It is not a medical issue, it is an epidemiological issue. Prof Schmitz-Feuerhake has published several papers in the peer-review literature on childhood leukemia and radiation. They dismiss her important paper on CLL by saying it was published in a journal of environmental health, without realizing that this is a prestigious epidemiology journal. See section 6 for discussion of the weighting placed by the Tribunal on the BS experts compared with the SSD experts.</p>
232	Summary	<p>Dismisses BS experts as “contentious” and “lacking in scientific robustness” despite the enormously greater weight these individuals have over the experts fielded by the SSD as demonstrated in Section 6. Scientific papers have scientific robustness by virtue of the peer review system. The Tribunal then goes on to describe the SSD experts as “reputable” when Hallard does not have a PhD and works for the nuclear industry, Haylock is biased by his occupation and connection</p>

		with ICRP and Thomas is a public relations expert employed to allay public fears about radiation effects and who makes mistakes and invents material when she is cornered. See Section 6.
233	Objection	Effectively rules out having to deal with any of the BS evidence or its experts. See the quotation from John Stuart Mill at the head of this appeal.
237	CERRIE	Tribunal is wrong. CERRIE was borne out of evidence brought by Dr Busby and Dr Scott Cato (now an MEP) to the attention of the Minister, the late Michael Meacher. Its founding was strenuously opposed by COMARE.
244 (i)	ICRP model	COMARE accurately reported as saying that the ICRP model should not be used for the purpose that Mr Hallard has used it for
244(ii)	ICRP model	Uncertainty for internal emitters accepted by COMARE to be factor of 10. Works both ways. But for purposes of assessing reasonable doubt it can only work one way, in the appellants' favour. Yet this factor of 10 was not applied by Mr Hallard because if it had been it would have raised reasonable doubt in the case of Mr Battersby whose dose according to Hallard was already high. Use of this CERRIE factor would have given Battersby a dose of about 430mSv. How could this not raise reasonable doubt?
244 (iii)	ICRP model	COMARE reported by Tribunal to state that the biological variability of individuals could be the same as the uncertainty factor of 10. These would multiply to the overall uncertainty is 100. In the case of Battersby this means his potential uncertainty dose according to COMARE is 43mSv para 518 of



		the Decision) x 100 which is 4300mSv and easily capable of causing any cancer under any scheme of causation analysis. Even use of the COMARE factor of 10 would give sufficient dose for a significant CLL probability under the USA NIOSH_IREP compensation scheme. Therefore the Tribunal have clearly failed to use the correct test.
247	The ECRR itself is a campaigning group	This statement is an invention, made without any evidence and is false.
250	Scientific objectivity	The ECRR 2010 document criticizes ICRP for all of the objectivity arguments advanced by the Tribunal. ECRR and ICRP have the same status in law and scientific objectivity is guaranteed by scientific peer review.
251	Wakeford	Why does the Tribunal put weight on Wakeford's non-peer reviewed editorial in a journal in which he himself is the Editor?
252	Attacks on Busby	Why does the Tribunal attack Busby, who is the representative here, not the expert?
253	Polanyi	Polanyi, who was a philosopher and twice Nobel prize winner and critic of certain scientists, was employed in the ECRR report to illustrate the absurdity of the ICRP denial of causation in childhood leukemia clusters near the most radioactive polluting site in Europe when radiation is the main known cause of leukemia.
254 (iii)	No scientific references in the ECRR report per se.	There are 657 references in the ECRR report. If the Tribunal had indeed read the ERCC report, Table 3.2 in the ECRR report points out that there are 267 references in the latest ICRP report of which only 103 are peer reviewed and of those 20 are written by members of the ICRP committee.

255a, b	Sample size, confidence intervals	<p>Tribunal fails to take account of the fact that if there are many studies showing that a certain exposure causes a certain effect, small sample size is not an issue since it is assisted by the number of studies <b>all showing the same effect</b>. This is the famous “Principle of Accumulation” in causation enunciated by John Stuart Mill (A System of Logic 1879) discussed in, and one of, the 657 references in the ECCR 2010 report. The list of studies showing heritable effects after Chernobyl in the Schmitze-Feuerhake et al 2016 paper which was discussed and which the Tribunal excluded because Busby was a co-author also contained some studies with <b>very large</b> numbers. These large number studies were not addressed by the Tribunal, which cherry-picked one small sample study to make its point. Furthermore, small numbers of cases from large populations is not the same as small size of study, something which the Tribunal clearly does not understand. Such studies are valid and the confidence intervals and significance can be assessed using Poisson statistics. This was the case with the famous Seascale child leukemia cluster which is universally accepted to show a real effect even though the number of cases of leukemia was 10.</p>
255c	Statistical bias	<p>Statistical bias is not a meaningful concept. The Tribunal is clearly ignorant here. If the Tribunal means selection bias in epidemiology, this can be dealt with on the basis of the size of the effect and the issue was discussed in the various papers before the Tribunal. The veterans’ wives suffered a 3-fold excess of miscarriages. This cannot have been a selection bias by the men who joined the BNTVA any more than the 8-fold</p>

		excess heritable disease in the grandchildren, who were not even born when they joined the BNTVA.
255e	Statistical significance	If there is an effect sufficiently powerful to result in a peer reviewed paper, but not significant at the 1 in 20 level, this should yet accrue as evidence of reasonable doubt. The failure of the Tribunal to include this point here shows clearly that it is employing the WRONG STANDARD of DOUBT as laid down by the UT.
258	Araneta	But as above, whatever caution the authors provided, the study showed an effect of Uranium, or what could have reasonable been an effect of Uranium. Again we see the Tribunal applying the wrong test about reasonable doubt. Thus it is not “fanciful” to propose that the Uranium in the Araneta (and the other examples) caused the congenital effects which the BS appellants argue also occurred in the Test veterans who were similarly exposed to Uranium particles.
259	Haylock	Haylock is not in his area of expertise. But it was not a review. Nor was Dr Busby picking out anything. It was a paper with 3 authors which showed that all the evidence after Chernobyl showed that the low doses of internal radiation caused genetic effects. The authors of the studies, including specific papers which the BS appellants provided but which were not discussed by the Tribunal in the Decision, found that the radiation was having these serious effects at low dose.
272-274	Uranium	This CURE study series is continuing. Tribunal writes that significant effect found at low doses in animals, but do not believe that this raises reasonable doubt about effects in humans. How can it know this? Tribunal has not included

		examination of any of the many studies cited by Hooper and Howard.
276	BEIR VII and genetic effects of Uranium	Tribunal found BEIR VII . . helpful. . . BEIR VII has nothing to say about Uranium
277-289	Uranium heading: Discussion of heritable and other effects	None of what the Tribunal writes here has anything to do with Uranium effects.
291	Thomas on criticisms of ICRP. Dose is absolutely critical  (iii)  (iv)  (vii)  (viii)	<ol style="list-style-type: none"> <li>1. In what way and how is Prof Thomas an expert in this area? Her degrees are in pharmacology and thyroid pathology</li> <li>2. “dose is absolutely critical” Prof Thomas was unable even to define the concept of “Dose”. She thought radiation dose was like a dose of aspirin.</li> <li>3. She told Dr Busby that natural Uranium was not radioactive. Tribunal let her off with the idea it was a silly mistake. But examination of the transcript shows that she defended this point vigorously. How much weight, then, should the Tribunal put on her other vigorously made points?</li> <li>4. If Uranium oxide is not soluble, how is it excreted in the urine/ Another clear scientific mistake.</li> <li>5. Thyroid cancer after Chernobyl. This is presumably Thomas’s area but even here she failed to see that both the Chernobyl Thyroid cancers and those in Fukushima falsified the ICRP model by factors of 100 upward.</li> <li>6. Regarding Fukushima there was an excess number of 180 thyroid cancers when 3 would have been expected. She failed to refer to the Tsuda paper which was before the Tribunal which showed that screening in Nagasaki,</li> </ol>

	<p>(x)</p> <p>(xi)</p> <p>(xiii)</p>	<p>where there was no radiation, showed no thyroid cancers. Furthermore Tsuda reported that screening occurring just after the accident showed no thyroid cancers. If it was a screening effect the rate of discovery of thyroid cancers would not increase but would be uniform, just reporting an unchanging background level of occult cancers.</p> <p>7. The difference with bombs is that the route for exposure is nanoparticles, which effects were explained by experts Howard and Hooper. Uranium exposures cause high levels of chromosome damage in Uranium miners, Uranium workers, Gulf veterans and others, according to peer reviewed papers before the Tribunal, all of which were ignored in favour of Prof Thomas's evidence which was outside her expertise.</p> <p>8. (xi) The paper with cancer risks in nuclear workers discussed here by the Tribunal actually showed significant excess risk. We cannot understand where the Tribunal obtained this belief from but it is wrong. And in any event, even if it was a non-significant increase, that does not mean, as they write, it was irrelevant. It could have still raised reasonable doubt. Why would the eminent authors of the paper (who all worked for the French nuclear radiation and health agency) have written and published a paper on Uranium if the result was irrelevant?</p> <p>9. Wahab Rowlands chromosome study. Thomas has no expertise to criticize this study. She is not an</p>
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	(xiv) no evidence Uranium causes cancer in man	epidemiologist nor has published any epidemiological studies. The point about “many other sources of exposure” could have made a contribution is frankly insane. The whole point about epidemiology is that all the test veterans would have had to have been exposed to this putative Thomas source of exposure and all the controls not so exposed. This is exceedingly unlikely. 10. There is a great deal of peer reviewed evidence that Uranium causes cancer in man, so this is another black is white statement by the Tribunal Several of these papers were submitted, they were discussed in the reports of and cited by all the BS appellant experts.
295	High Z elements long range photoelectrons	Simple physics shows the HPA statement to be incorrect. This issue is currently with the DECC NGO consultation. As Einstein showed, photoelectron energy and thus range is nothing to do with the atomic number of the element but is a function of the incident photon energy. The HPA statement was not peer reviewed. This is another black is white finding.
297	Thomas well within her area of expertise: no evidence of enhanced cancer risk from uranium	She was not. There were many peer reviewed papers on this before the Tribunal but they were ignored in favour of Thomas’s non-expert submissions.
299, 300	Rigour, nothing has emerged	The Tribunal means nothing will be allowed in or discussed.
300	Unscientific assertions of a body of campaigners. . . nothing has emerged that would qualify as reasonable doubt.	The Tribunal completely ignores the evidence in the Scientific peer review literature placed before it
310	Differing expert views	Neither Mr Hallard, nor Prof Thomas, and Mr Haylock were being asked to give an opinion on whether ICRP models. . . But in fact, the SSD stated clearly in his SoC that that is exactly what they had been asked to do.

314	Medical opinion of Prof Thomas	Thomas has no expertise to provide medical opinion
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**Table 3**  
**Comparing the expertise and qualifications of the experts**

<b>Side</b>	<b>Expert</b>	<b>Expertise; Number of peer review papers</b>	<b>Notes</b>
BS	Prof. Howard	<p>Medical doctor, foetal toxopathologist; epidemiologist. (136 peer review papers, 9 peer review books, 24 peer review book chapters)</p> <p>1985-1992 General Editor, Journal of Microscopy</p> <p>1991-1995 President International Society for Stereology</p> <p>1996-1998 President Royal Microscopical Society</p> <p>2003-2009 Member DEFRA Advisory Committee on Pesticides</p> <p>2004-2006 Founding Editor of the journal 'Nanotoxicology'</p> <p>2007-2009 President International Society of Doctors for the Environment</p>	<p>Eminent and world-famous authority on environmental toxicity, particularly congenital effects from exposures to environmental agents about which he is the author of several books. Authority on health effects of nanoparticles. Spent 7 years researching damage from Uranium nanoparticles and photoelectron conversion of ionising radiation by high atomic number nanoparticles like those of Uranium produced by the weapons; published results.</p> <p>Submitted initial report to the case which was dismissed by the Tribunal in the Decision document in 3 short paragraphs. His account of the Uranium particle issue was totally ignored. His Supplementary report finding a 10-fold excess of heritable disease in the Test Veterans Dundee data was not even mentioned. His expert evidence on Chronic Lymphatic Leukemia (the Battersby appeal) was not even mentioned. The issue was decided on the basis of the expert evidence from Prof Thomas whose expertise is in pharmacology and thyroid pathology (and see below).</p> <p>His submissions included citations of 17 references none of which were discussed or addressed in the Decision</p>
BS	Prof. Hooper	<p>PhD Medicinal Chemist, knowledge of biological fate of internal contaminants and pharmacological agents, expert on Uranium effects through membership of MoD Depleted Uranium Oversight</p>	<p>Prof Hooper did not provide a CV. His report cited 40 references most of which were submitted to the appeal. Less the three of them were mentioned, and the one which was, by Guseva Canu, showing leukaemia and lymphoma in French Uranium workers was dismissed by the Tribunal as not being statistically significant and therefore worthless. The Tribunal</p>



		Board.	was wrong as it was statistically significant; another error of fact.
BS	Prof. Schmitz-Feuerhake	<p>Prof Schmitz-Feuerhake is 80 and one of the most eminent international authorities on the health effects of radiation having researched the subject and published in the area all her life. She was the first woman Professor of Physics in Germany and has published (26) papers on the health effects of ionising radiation in the peer-review literature. These include papers on her areas of expertise, radiation chromosome damage and Chronic Lymphocytic Leukemia.</p> <p>Her report to the case and supplementary responses cited 64 peer reviewed papers supporting her arguments about the failure of the ICRP risk model.</p>	<p>The Decision document treated Prof Schmitz-Feuerhake with contempt, categorizing her as a “campaigner” and therefore worthless. It did the same to another eminent international expert on radiation, Prof Carmel Mothershill, whom it also decided was a campaigner and whom it ridiculed (in the Decision) on the basis of a ridiculous outburst by a worthless SSD expert from the original FtT, Dr Lindahl. This is unacceptable behaviour in both cases, representing ad-hominem attacks rather than looking at the data and evidence.</p> <p>Prof Schmitz Feuerhake was a co-author on the key Richardson et al Chronic Lymphocytic Leukemia paper which influenced the US expert agencies to decide that CLL was radiogenic.</p> <p>The Decision absurdly dismissed her expertise and this paper on the basis that it was published in a “Environmental Health” journal, which through the Tribunal’s ignorance and bias it does not realise is one of the most prestigious journals in the area of health effects of environmental harm like radiation. Her 64 citations including those papers which were submitted were largely ignored.</p>
BS	Prof. Sawada	<p>Prof Sawada (86) is an internationally celebrated physicist and was a member of the team that recalculated the doses at Hiroshima in 2000. Two of his students received the Nobel Prize in Physics. He has published 76 papers in the peer review literature including 3 specifically about the issue of the Japanese Life Span Studies which he decided to look at after he retired.</p>	<p>Prof Sawada’s important evidence was excluded on the basis that the Tribunal did not understand it. Additionally it was dismissed on the basis that Sawada had bias because he had been blown up at Hiroshima. Sawada had asked to present his evidence at the hearing though a power point presentation, and the BS appellants requested this, but it was denied. The one point that the Tribunal did make about it showed that they certainly did not understand the issue of radiation risk. See Table 2 and Appendix 1.</p>
BS	Dr. Ash	<p>Lt.Cmdr. Dr Ash is an expert on the methodology associated with protection from nuclear explosions as this was his job. Thus he has expertise in meteorology</p>	<p>Dr Ash’s important insights were dismissed by the Tribunal in favour of submissions from Mr Johnston dredged from the previous FtT. Ash made several important points, the main one being that radioactive particles falling in the sea would be brought ashore by the current. This was ignored</p>

		and the dispersion of radioactivity from nuclear weapons.	by the Tribunal which decided, on the basis of no evidence, that any radioactivity falling in the sea would disappear “because the Pacific was so large”.
SSD	Dr Haylock	Biostatistics. (10 papers)	Member of the UK National Radiological Protection Board and ICRP but a mathematician. Made comments from the witness box which were wildly beyond his narrow expertise. Haylock was the only expert from the SSD who had published anything in the peer review literature, mainly because his name was put with all the others on the various NRPB nuclear industry radiation papers. He had no expertise outside this narrow area and didn't claim any, though he certainly made statements outside his area of expertise. The 1973 report of the Atomic Bomb Casualty Commission Life Stan Study was put to him under cross examination. He had no response to this evidence that the epidemiological study underpinning the model he was using was made unsafe by the removal of the unexposed control group (see final word).
SSD	Mr Hallard	Health Physics Technician. (no publications)	Ex-British Nuclear Fuels Health Physicist. No PhD. No publications. Revised his numbers three times (each time the BS appellants pointed out an error or asked a question). Left out Uncertainties and ignored suggestions to include them thus the result did not give the balance of doubt to the appellants. For example the CERRIE committee suggested a 10-fold error for internal exposures and it is widely conceded that the calculation system of the ICRP cannot be employed in the way Mr Hallard employed it. Hallard made comments under oath which were widely outside his area of expertise.
SSD	Prof. Thomas	Expertise in pharmacology and thyroid cancer pathology (99 papers much of these on thyroid cancer after Chernobyl and most where she is listed with other workers)	Regular appearance on BBC allaying public fears of the effects of radiation: she is therefore arguably ‘campaigner’ against the effects of radiation. Recently made errors on TV over Fukushima radiation. Attacked by ex-World Health Organisation Expert Prof Keith Baverstock for being dangerously ignorant. She demonstrated this ignorance also under cross examination at the hearing where she talked about non-radioactive Uranium and made other ridiculous errors. She was unable even to explain what radiation “dose” was and how it was calculated. Her

			<p>errors were categorised by the Decision document as “silly mistakes”. She was accepted by the SSD’s Counsel (see transcript) as someone who was biased yet her evidence formed a basis for the Decision and was held to be correct against the weight of evidence from the SSD experts. She made many statements under oath which were completely outside her areas of expertise. Her position on the binding of Uranyl acetate to DNA was so absurd that the BS appellants and their chemist expert Prof Hooper were almost unable to speak since it demonstrated an ignorance of basic chemistry which was breathtaking. Even so it was accepted by the Tribunal whose knowledge in this area of solution chemistry is clearly even less. In a reasonable doubt scenario, or in any event, the differential reliance or weight placed by the Tribunal on her evidence in the Decision is unfair.</p>
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## Final word

This appeal is the continuation of a process which began in 2004 with Dr Busby's first involvement as an expert witness in a successful appeal before the late Mr Stubbs. From then on, there were a series of successful appeals before Stubbs, an honest and brave individual who at one point threatened the SSD with a contempt order and thereby obtained for Dr Busby the only real evidence of the quantities of Uranium and Plutonium in the fallout, the Bevis Parker Gist. These successes resulted mainly from evidence about the unsafe nature of the current radiation risk model, that of the ICRP and the new scientific evidence about internal exposures to particles. Similar successes occurred in the Australian Mahoney case where the Australian Tribunal specifically found that Dr Busby's evidence was correct and that the ICRP model presented by ARPANSA was wrong. In the UK, these successes were due to the fact that the SSD did not, and could not, field experts of his own to rebut the evidence.

In 2013, after 16 cases were collapsed into one before Mr Stubbs, this evidence submitted by Dr Busby was *excluded* at the last minute for reasons which no one has been able to fathom. An appeal to the Upper Tier resulted in Busby himself and thus the evidence *being again excluded*. An appeal of the exclusion of Busby by way of a Judicial Review of the law was not even permitted and Busby was fined £2750 costs to pay for a cut and paste job by the SSDs lawyers. Mr Stubbs died and was not there to explain a curious exchange between the lawyers from both sides (in the FtT transcript) about Busby's exclusion. In the remitted appeal, this one, the evidence and indeed stronger evidence which was accruing all the time in Science, because science does not stand still, was submitted. Again, we see it was *excluded*, this time by categorizing all the eminent scientists who were called by the BS appellants as "campaigners". Again, the SSD did not, and could not, field experts of his own to rebut the evidence, but this time dealt with the issue by blanking it, a stratagem in which he was aided by the Tribunal. The SSD stated in his Statement of Case that the main issues raised by the BS case had been put to his own witnesses and so he did not have to deal with them individually. This was not true. In the hearing all the SSD witnesses stated on oath that they had not been asked to rebut the BS evidence points and so these were not dealt with there either. This is not just a point for a subsequent complaint to the Bar Council. The stratagem was shameful and unjust. And as this appeal evidence and argument above shows all too clearly, was a continuation of the desperate necessity by the Ministry and Defence and the British government to ensure business as usual and to deny culpability, which culpability extends clearly from all the evidence to the children and grandchildren of the veterans.

The power of the English legal system may prevail, because decisions can be made by judges with little regard for the truth. Black can be White in English law. But the truth about the radiation model is now in the open, and increasingly so. In December 2016, the evidence presented in the appeal which showed that the basic study underpinning the ICRP risk model was wrong, and had been dishonestly manipulated, was published by Dr Busby in the prestigious peer-review journal *Genetics* together with a statement that it had been submitted as evidence to the appeal by the BS appellants. A main part of this evidence, the pages of the 1973 Japanese Life Span Study Report by Moriyama and Kato, reporting that the organisation had abandoned its control group, was put to the SSD witness Haylock, who was

unaware of this piece of dishonesty. Did the Tribunal even understand what this meant? This falsification of the ICRP model is only one example of evidence which was ignored and excluded from the Tribunal's Decision.

Science in this area is changing. The Risk model is under legal attack in Europe. The Test Veteran appeals will be part of news stories which will be circulated globally, since there are a very large number of people involved in this issue, and not only in the UK. Books will be written. The Decision of the Tribunal with Blake J, if it is not corrected, will be universally recognised as a shameful failure of the English justice system and will bring it into disrepute all over the world.

We ask that the Upper Tribunal deal with this matter in the simplest way, by setting aside the decision and finding for all the appellants.

Dr Christopher Busby  
Dr Cecilia Busby  
Gp.Capt. Andrew Ades

On behalf of Appellants Battersby and Smith

31<sup>st</sup> January 2017

## APPENDIX 1

(Dr Cecilia Busby)

The reason the tribunal is wrong on the LSS cancer rates (see point 3.3.3 above) is that the RERF cancer rates are not compared to some outside ‘control’ or yardstick of ‘normal’ rates (and we would ask the tribunal to consider why not) but are compared entirely internally, between those who had ‘higher’ doses (nearer the epicentre) and those who had ‘lower’ doses (further from the epicentre). If, however, both groups received a substantial ‘extra’ and unmeasured dose (e.g., from the black rain), the **overall cancer rates would be higher** but this would not be perceptible in the comparison of one group to the other.

Thus:

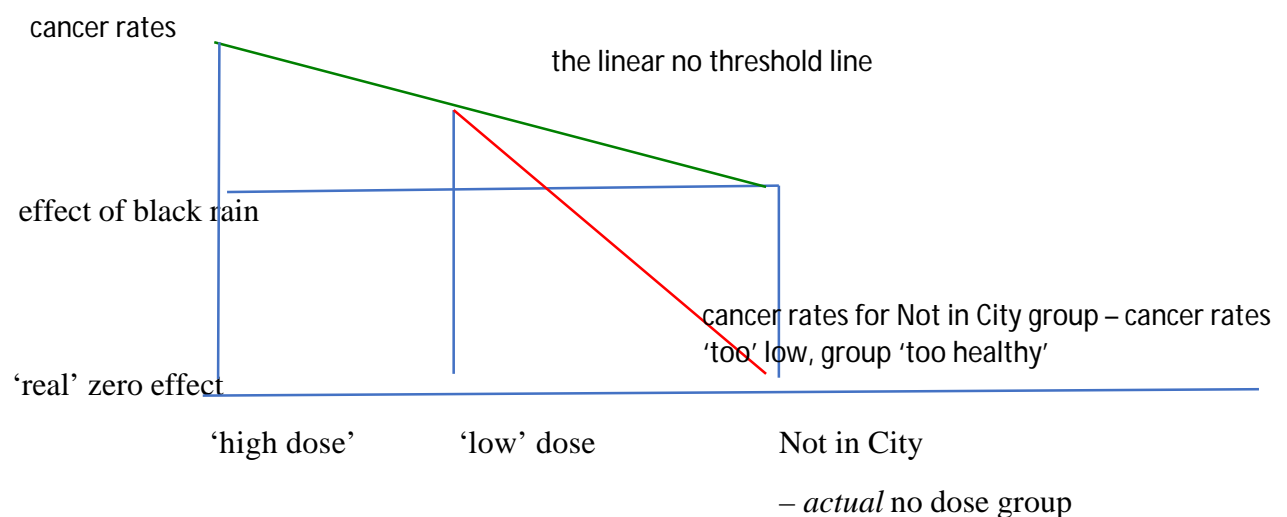
cancer rate ‘high dose’ group =  $n_1$  (cancers from external radiation) +  $N$  (cancers from black rain)

cancer rate ‘low dose’ group =  $n_2$  (cancers from lower dose external radiation) +  $N$  (cancers from black rain)

$$\begin{aligned} \text{Difference in cancer between ‘high dose’ and ‘low dose’} &= (n_1 + N) - (n_2 + N) \\ &= n_1 - n_2 \end{aligned}$$

Hence the ‘hidden’ extra cancers are not seen and the effect of that ‘extra’ radiation is not counted. The study gives a clear linear dose response for external radiation but fails to account for the damaging effects of the accompanying internal radiation.

If it helps to have it in graph form:



The point relates to a further one made by our witnesses, particularly Professor Schmitz-Feuerhake, which is that the RERF took out their ‘control’ Not in City group half way through the study, because they were ‘too healthy’ and were skewing the statistics. This makes sense, because the control group were ‘not in city’ at the time, and so not exposed to



the black rain. In effect, characterising your control (no dose) group as ‘too healthy’ with respect to the low dose group is another way of saying that your ‘low dose’ group is ‘too sick’ for the dose you assume them to have got. Hence another way of interpreting this anomaly is to consider that your ‘low dose’ group in fact got a higher dose than you have assumed, through some mechanism you have not accounted for.

This is Sawada’s point – the extra dose comes from the black rain. And the evidence for that extra dose is there, in the data, in the levels of epilation and diarrhoea (very sensitive markers of radiation) that were measured at the time. There are records to show these levels, which he has painstakingly gone through, collated, and modelled.

We would also like to point out to the tribunal that this exact point, about the removal of the ‘Not in City’ control group and its consequences for the whole epidemiological unsoundness of the LSS, has recently been accepted as a comment by Dr Busby in the well-respected journal *Genetics* –and is currently part of a legal request for Re Justification of the EURATOM Basic Safety Standards Directive separately being taken in UK, Republic of Ireland, Denmark, Norway, Sweden, France, Switzerland, and Latvia. Other EU States follow.

We would be grateful if the tribunal would consider not only correcting their comment about the measurement of relative risks of radiation if there were significant doses from the black rain, but also, in the light of this point, consider whether they have in fact been well served by the SSD’s expert witnesses, who utterly failed to engage with Mr Sawada’s and Professor Schmitz-Feuerhake’s points on this matter, despite the argument being a very simple one.

**The lack of a suitable control group NOT exposed to the internal fallout renders the LSS study unsafe and hence the ICRP model, which is based on it, also unsafe.** The corroborating evidence the scientific community has for the linear dose response is almost all from studies of EXTERNAL radiation exposure (for which the linear model holds) but does not touch our point the extra dangers associated with internal exposure.

## **APPENDIX 2: Transcripts: Evidence of Bias**

### **Day 1: page 37–62: Dr Busby’s evidence.**

The debate here on Dr Busby’s evidence shows clearly the determination of Mr Justice Blake from the very outset to disregard all scientific literature relying on Dr Busby’s expertise, on the basis – for which he has no evidence except his own opinion – that his scientific papers could be treated as if they were all written **with a view to litigation** and so came under the direction given by Justice Charles in the UT. As Mr Hugo Charlton pointed out, this not only went significantly beyond what Charles appeared to ask for, and ignored the purpose and process of scientific peer review, but was effectively only made clear on the first day of the Tribunal despite there having been ample time to make this direction in previous directions hearings.

### **Day 1, p.68 The validity of expert papers**

Mr Justice BLAKE

... we recognise that there may  
5 need to be some pragmatic opportunity for other experts  
6 to explain why they reach the views which they do and we  
7 do not exclude the possibility that particular articles  
8 written perhaps at some distance from the litigation  
9 with which various witnesses have been concerned might  
10 be demonstrated **to have been peer reviewed at such**  
**11 a high and independent level** that there is a relaxation  
12 of that direction as we find it to be.  
13 Again, our reasons for that construction of the  
14 direction will be given in due course but we thought it  
15 appropriate to raise it now, so if there is foreseen in  
16 the course of the next fortnight some particular  
17 importance given to an article the relevant researches  
18 **as to the status of it in terms of who published it, the**  
**19 editorial board** and the peer reviewers can be made  
20 available if need be.

This excessively cautious approach to the validity of scientific papers was not in evidence with respect to the SSD’s expert witnesses, who referred to: editorials in journals written by the editor of the journal; articles published by the organisation who employed the researchers who had written them; papers published in journals whose editors were friends and colleagues of the author; papers published by the Nuclear Industry.[CB1]

### **Day 1, p. 88: Evidence in Chief; Cross and re-examination**

5 MR JUSTICE BLAKE: Well, I have indicated that you can  
6 amplify by amendment, clarification, I tried to get that  
7 out. There will then be cross-examination.  
8 **Re-examination is indeed focusing upon what has been**  
9 **raised in cross-examination**, otherwise the witness  
10 statement will stand.

This direction effectively made the evidence-in-chief the expert/witness statements as written, and restricted re-examination to matters raised by cross-examination. Since the SSD’s counsel avoided cross-examining on any of the substantive scientific arguments, and the SSD’s experts claimed non-expertise in these matters when cross-examined by Dr Busby,

this direction meant that the hearing essentially failed to consider the majority of the scientific arguments for the appellants. While these arguments were in the witness statements, the Tribunal's Decision appears to not to consider these in depth but to rely instead mostly on evidence given in the Tribunal hearing itself. They have therefore ignored most of the appellants' case.

### **Day 3, p. 120: Schmitz-Feuerhake's 'so what?' comment**

MR HEPPINSTALL: So it's right, isn't it, professor, that  
17 ECRR and its risk analysis has been reviewed by both  
18 ICRP, CERRIE and the NRPB and it's been found to have no  
19 sound scientific basis?  
20 A. Yes. So what?

This exchange is used in the Decision to imply that Professor Schmitz-Feuerhake is a biased and unreliable witness. It is unfair to focus on the actual words she used when English is her second language. Her 'so what?' can be explained quite innocently, not as a truculent refusal to accept the other side's arguments, but more in the sense of the German 'also?' meaning: 'therefore?'/ 'your point being?', or (as she makes quite clear in the rest of her evidence) 'this evidence is well known to me but I plainly disagree with it: that is the whole point of my expert statement'. It shows strong bias against her evidence that the Tribunal chose to focus on this small comment, rather than the many scientific points she made: for example, that many of the papers the SSD's counsel put to her, which showed the accuracy of the ICRP model, were **irrelevant, since they dealt with external radiation exposure**, with which the ECRR model has no quibble. See below, issue of external and internal with regard to Professor Howard.

### **Day 3, p.123: SSD allowed to cross-examine on evidence Dr Busby was not able to bring in evidence**

22 You know, don't you, that Dr Busby produced  
23 epidemiological experts about the incidence of leukaemia  
24 near to nuclear power stations and that was heavily  
25 criticised for its methods and approach.  
Page 124  
1 DR BUSBY: My Lord, can I object here? This is evidence  
2 that has been excluded from this Tribunal from my side  
3 and it's hardly fair for the Secretary of State to now  
4 bring in an attack on my evidence when my evidence is  
5 not there and I'm not allowed to answer or deal with the  
6 issue.  
7 MR JUSTICE BLAKE: Thank you, I have the objection, I'll  
8 reflect upon it but we'll carry on for the time being.  
9 This witness is being asked to deal with examples  
10 and criticisms of ECRR methodology.  
11 DR BUSBY: With respect, my Lord --  
12 MR JUSTICE BLAKE: No, Mr Busby. Thank you.

p.125  
MR HEPPINSTALL  
4 Now, my Lord, in terms of Dr Busby's objection, I am  
5 not admitting into evidence -- I am not relying on this  
6 report in any way. But Professor Schmitz Feuerhake has  
7 relied on it, has published in relation to it, and it  
8 has to be put to her as to her credibility and so forth.  
9 MR JUSTICE BLAKE: Yes, I haven't precluded questions of  
10 your experts about material upon which they have relied

11 and that's what's going on here.

12 DR BUSBY: No, my Lord, that wasn't my point.

The Tribunal allowed questions on methodology with regard to Dr Busby's papers, allowing the SSD to attack these issues, but did not allow the substance of the papers, or rejoinders on the questions of methodology, to be presented to the Tribunal. It should be noted also, as pointed out below, that the attacks on methodology were not substantiated by any expert witness of the SSD who in fact had any expertise in epidemiological methodology. Professor Thomas is not, and admitted she was not, an expert in epidemiology.

### **Day 3, p. 126 onwards: epidemiological methodology**

This cross-examination of Professor Schmitz-Feuerhake focuses on methodology of the Busby/de Messieres paper and she makes clear that she sees the methodology as reasonable, if not ideal, but nevertheless acceptable given large and serious effects.

p.127

12 A. It's quite usual to take questionnaires and to ask  
13 people for their certain conditions at the time of  
14 exposure.

p.128

9 MR JUSTICE BLAKE: Yes. So as far as you are concerned, to  
10 ask an informant in a questionnaire to give  
11 a self-description of medical history of self and  
12 family, as this apparently did, is a perfectly  
13 legitimate way of getting the information?

**14 A. It is not ideal, of course, but you --**

15 MR JUSTICE BLAKE: Not ideal.

**16 A. But if you look, perhaps, to severe malformations,** so if  
17 you look to an effect which is clearly to be diagnosed  
18 by a (inaudible), you will see if you have a spina  
19 bifida child, you know it, **so you can make a survey. It**

**20 is quite --**

21 MR HEPPINSTALL: Professor --

22 A. -- **legal to do that.**

p.129

11 Q. So it cannot be possible, can it, that it can be a sound  
12 basis for a piece of epidemiology that you ask people to  
13 report about themselves, their partners, their children  
14 and their grandchildren? That cannot be a proper basis  
15 of a scientific study.

16 A. **It is a basis. It depends on two things.**

17 **The kind of effect which is clearly to diagnose,**

18 and -- let me -- I forgot what I wanted to say.

19 **And if the effect is large enough** so that you have

20 a significant -- you have an increase which is

21 impressive, you know? These things were big effects,

22 relatively big effects. **So you can't make a very great**

**23 error if you take the results of the questionnaire.**

p.131

I mean, Professor, isn't this really beyond the

16 pale, giving that sort of guidance to people for the

17 selection of controls?

18 A. **No, you must use the best information you can get.**

19 Q. Isn't the point of the criticism that is being levelled

20 against this sort of epidemiology, Professor --

21 A. May I remind you --

22 MR JUSTICE BLAKE: Let him finish his question.

23 MR HEPPINSTALL: -- that if you can't do it properly it's

24 better not to do it at all because of the risk and the

25 danger inherent of a bad result?

Page 132

1 **A. Then you must exclude the RERF studies. They have no**  
2 **real controls.**

3 Q. We are not looking at RERF, Professor. We're looking at  
4 this study.

5 A. You would not ...

6 THE INTERPRETER: Avoid.

7 A. Anybody German?

8 THE INTERPRETER: You wouldn't do without.

9 A. You wouldn't do without the information from the RERF,

10 but the RERF collective is a catastrophic population,

11 a very certain population. Now we hope that we will

12 have no control group for such an epidemiological

13 situation.

p.134

1 MR JUSTICE BLAKE: I'll record that answer but can I just

2 get your answer for my benefit. Is this a sufficiently

3 sound basis of epidemiological investigation to make the

4 conclusions which you just have been asked about?

5 A. Yes, it is legitimate.

6 MR JUSTICE BLAKE: It is legitimate?

7 **A. It is legitimate to do such research because you show**

8 **that the effects are evident, and that is very, very**

9 **important information for the scientific community. And**

10 **if they say the methodology is too bad, so they have to**

11 **make a better study. But they have to consider it.**

12 **Many, many knowledge in science, in medical science were**

13 **gained simply by observation. You need not always**

14 **a very big epidemiological study in order to have**

15 **an effect described.**

16

Professor Schmitz-Feuerhake could not be clearer that the methodology of the congenital malformations study is not ideal but acceptable given the size of the effect: and that if, as Mr Heppinstall suggested, all studies without controls were to be discarded, the Japanese RERF study that the ICRP is based on would also have to be discarded.

The Tribunal has failed to accept or balance this expert's assessment with that of Professor Thomas arguing that Busby/ de Messiere's methodology was flawed, yet Professor Schmitz-Feuerhake's expertise in epidemiology is greater than that of Professor Thomas (see Table 3).

#### **Day 4, p.7: Schmitze-Feuerhake on the Rowlands study and the issue of scientific illiteracy**

Professor Schmitze-Feuerhake was cross-examined quite fully on the Rowlands study. In fact, as an expert in chromosomal abnormalities from exposure to radiation, she was undoubtedly the most relevant expert for the Tribunal to take note of with respect to this study. Yet many of her points fell on deaf ears as the Tribunal were unable to interpret what she was saying:

But if we look at the mFISH chromosomal analysis

4 we see that that's translated into a range of doses,

5 don't we? If we look down that column --

6 MR JUSTICE BLAKE: You are looking at dose --

7 MR HEPPINSTALL: It's the fourth column from the left.

8 MR JUSTICE BLAKE: Yes, yes. Called "Dose in grays".

9 MR HEPPINSTALL: Yes. So if we look down that column we see

10 we have a lot of zeros, but then we have a great range

11 between 0.1 grays and all the way up to 1.15 --

12 A. Yes.

13 Q. -- gray. **Now, don't you find that analysis very**

14 surprising, Professor, when these sailors all had the  
15 same shared experience on two boats?

16 A. **That's not surprising, I think.** Because they breathe  
17 otherwise, they behave otherwise, these -- these studies  
18 were made years after that.

19 Q. So you think that some of the chromosomal aberrations  
20 were not biomarkers for exposures at Christmas Island  
21 but biomarkers for other exposures?

22 A. No, no, that's not my point but that you **have that is**  
**23 a problem of internal dosimetry, that you have**  
**24 individual differences, great differences in the**  
**25 metabolism of the fallout you breathe.**

Page 8

1 Q. But can it really be credible, Professor, that  
2 a veteran --

3 A. I must not --

4 MR JUSTICE BLAKE: Hang on for the question. Wait, don't  
5 get in there too quickly.

6 MR HEPPINSTALL: Can it really be credible that the spread  
7 of dose is quite so wide as what we are looking at here?

8 A. **Yes, unfortunately.**

9 Q. But you understand that 1.4 gray, or 1.4, I think,  
10 NZTVO26 --

11 MR JUSTICE BLAKE: Yes.

12 MR HEPPINSTALL: -- that's 1,400 millisieverts, Professor.

13 A. Yes.

14 Q. How can it be that a New Zealand sailor several hundred  
15 miles from the detonation could have been exposed to  
16 a dose of 1,400 millisieverts?

17 A. **That is because of the system. Internal dosimetry with**  
**18 chromosome aberrations quantitatively is only possible**  
**19 if you know where the locations are, which tissues were**  
**20 irradiated and only in the case of homogenous**  
**21 irradiation, you can make a quantitative -- you can go**  
**22 through this curve. That is unfortunately the problem.**

p.12

Isn't the true position, Professor, that

4 this is only a very tentative attempt at reverse  
5 dosimetry?

6 A. **This attempt is very, very relevant to show that there**  
**7 was an exposure and that there was a rather high**  
**8 exposure.** But I repeat, it's not possible in

9 an in-homogenous distribution of the isotopes in the  
10 body to make a quantitative approach. But it is

11 important to know if they have been irradiated. If you

12 find no significant elevation you do not know if they

13 have been irradiated to some degree.

The point was that estimating internal dosimetry from chromosomal aberrations is very difficult, and it is internal doses that are at issue here. The point was not understood by the Tribunal. Regardless, the witness's clear indication that the results were not in the slightest bit surprising and **did not invalidate the study** was ignored by the Tribunal in favour of spurious and unsophisticated arguments made by the SSD's counsel (not an expert) that the results indicated an anomalous exposure.

#### Day 4, p. 21, Professor Schmitz-Feuerhake's evidence on CLL

Professor Schmitz-Feuerhake is probably the most relevant expert witness on CLL presented to the Tribunal (see Table 3). She made it quite clear that the most recent research showed this was radiogenic.

p.21

18 move on to CLL.

19 MR HEPPINSTALL: SB2, tab 2.21, the report of Dr Haylock in  
20 these proceedings which presumably you considered.

21 I want to look at his conclusion, please, on chronic  
22 lymphatic leukaemia.  
23 If you turn three pages you get to his section on  
24 chronic lymphatic leukaemia. And his conclusion is, he  
25 runs through LSS, INWORKS, Zabolstaska, the Chernobyl  
Page 22

1 clean-up workers, and then his conclusion is:  
2 "Thus the overwhelming weight of epidemiological  
3 data from the LSS and other large scale epidemiological  
4 studies of low dose exposures provide no evidence that  
5 CLL is likely to be inducible by radiation exposure."

6 Do you agree?  
7 A. What -- likely?

**8 Q. "... no evidence that CLL is likely to be inducible by  
9 radiation exposure."**

**10 A. This is not right.** From when is it, this? 16? Oh, **he  
11 is not updated. He is not on the stage of knowledge.**  
12 Because this was a point which I talked about. The  
13 common paper with Richardson and people, they fought in  
14 the United States for years to show that CLL is  
15 radiogenic, and they -- in this paper is explained why  
16 the A bomb survivor study didn't find it. Because **CLL  
17 is a very rare disease in Japanese people.** It's not

18 quite as rare as in Europeans --  
19 MR JUSTICE BLAKE: I think you told us that yesterday.

20 A. Yes.  
21 MR JUSTICE BLAKE: So are you telling us that -- just pause.  
22 A. Yes.

23 MR JUSTICE BLAKE: Are you telling us that since this  
24 statement was written in January 2016 there has been  
25 some important new information upon this topic?

p.23

5 A. I make a point that **this is accepted, perhaps for  
6 example in Germany as a radiogenic cancer because of the  
7 US studies**, and it is accepted by what is the -- the  
8 NIOSH compensation board. They accepted as a radiogenic  
9 cancer and they made a paper upon that --

10 MR HEPPINSTALL: Professor I --  
**11 A. -- and Mr Haylock evidently doesn't know that.**

12 Q. Professor, I've deliberately not gone to the US  
13 information because I think that's a question of legal

15 A. It is in the international literature.

## Day 4, p. 41 onwards: Scientific illiteracy and the issue of Uranyl Acetate

The Tribunal's inability to understand basic chemistry led them into significant error in being unable to understand the absurdity of Mr Heppinstall's continued insistence that the binding of uranyl acetate to DNA had no connection to the argument that uranium ions or indeed uranium nanoparticles would bind to DNA. Professor Howard's assertions on this matter are clear. The Tribunal clearly erred, through bias or scientific naivety, in choosing Mr Heppinstall's unsophisticated argument that they were not the same over an expert assertion that they were.

p.41

12 do you have expertise about the properties of uranium  
13 outside its transformation into a uranyl acetate and  
14 biology?

15 A. I don't have any direct research experience in that  
16 field, no. But I mean **we know that uranium ions or  
17 uranium oxide will bind to phosphates** and there are  
18 plenty of phosphates around in the body, including --  
19 I mean **DNA is a highly phosphorised molecule.** So it's  
20 not surprising that it does.

21 MR HEPPINSTALL: Let me put this to you directly, Professor.

22 The Secretary of State's position is that whilst uranyl  
23 acetate may bind to DNA, uranium does not. There's no  
24 evidence that it does.

25 A. **Well, I mean there will be some ionisation**, whether it's  
Page 42

1 from uranium particles or whether it's as an acetate.  
2 **And there's also a chemi-absorption of proteins on to**  
3 **the surface of particles. There's another process**  
4 **that's possible.**

5 Q. Hang on, Professor, your words are: "There is  
6 unequivocal evidence also that uranium has a strong  
7 chemical affinity for DNA."

8 Then we get reference 4. Reference 4 is the Huxley  
9 paper, which is in the bundle, "Preferential staining of  
10 nucleic acid containing structures for electron  
11 microscopy", which I think you agree is only about  
12 uranyl acetate staining?

13 A. **That's a salt of uranium.** The thing that's producing --

14 Q. Just pause, Professor. How can you say "There is  
15 unequivocal evidence that uranium has a strong chemical  
16 affinity for DNA" by citing a paper about something  
17 else?

18 A. **Well, it's not about something else. It's about the**  
19 **fact that we can see things down the electron microscope**  
20 **because uranium, the atom uranium has bound to**  
21 **structures and is causing a negative image because of**  
22 **absorption of electrons. If that didn't happen we would**  
23 **not see it and we do, so we know that it's there.**

24 That's the whole basis of being able to image biological  
25 structures down the electron microscope.

p.43

1 **MR JUSTICE BLAKE: So in your view there's no significant**  
2 **difference on the topic of the binding properties**  
3 **between uranium and uranyl acetate?**

4 A. Yes.

It is clear evidence of bias that the Tribunal failed to accept this **unequivocal** answer by an expert in the field of electron microscopy (which depends, as he made clear, on the properties of uranium binding) – an expertise, we might note, that has no dependence on any relationship with Dr Busby and therefore cannot be considered to be biased – and rather preferred the argument of the SSD's counsel, backed only by the assertions of Professor Thomas, who is not an expert on uranium, DNA or electron microscopy. (Indeed, she is has so little expertise on the subject of uranium as to assert with vehemence that there is a non-radioactive form).

**See also on this point Day 4, p. 76 onwards, the evidence of Professor Hooper** who is, in fact, an emeritus Professor of Chemistry, so could not be more expert on this.

25 Q. Doesn't it have to be in its acetate form in order to  
p.77

see that effect?

A. **No, it doesn't. It can be any salt. The simple**  
3 **chemistry is acid plus base equals salt plus water and**  
4 **if you get uranium with acetic acid you get uranyl**  
5 **acetate, which is the ion. If you do it with nitric**  
6 **acid you get uranyl nitrate and it is the ion that**  
7 **associates with the DNA.**

8 The choice of the pairing -- an ion is in fact  
9 a matter of choice for the nature of the experiment and  
10 acetate is a very good choice because it's not going to  
11 interfere with the medium very much.

12 Q. Let's forget about the pairing and the salts and the  
13 acetates and the nitrates and so forth. Let's just deal  
14 with -- well, let's just deal with uranium coming out of  
15 fallout.

16 A. Yes.

17 Q. Without that metal going through a process to turn it  
18 into a salt, let's call it, for that metal there is no  
19 evidence that that alone binds the DNA, is there?



20 A. Yes, but that metal alone does not come out from the  
21 fallout. The fallout is generated at a very high  
22 temperature in the fireball at something in the region  
23 of 5,000 degrees centigrade, I believe, and that  
24 generates uranium oxides, mixed oxides. U308 is the  
25 atomic composition that is generally agreed, and that is  
Page 78

1 a composition of two atoms or three atoms, actually, of  
2 uranium. Two are in the high valence and hexavalent state  
3 and one is in the tetravalent state. So you have  
4 uranium oxides that come down in the fallout, not  
5 uranium, and they will interact with acids and form  
6 uranyl acetate and water.

**7 It's really very, very basic chemistry.**

8 Q. These additional stages to get from the fallout to DNA  
9 are not described in your report, are they, Professor?

10 A. Well, they're not because it is a simple matter of the  
11 environment. If you have an acid there present, and you  
12 have plenty of acids present in blood and in saliva and  
13 juices and in the gastrointestinal tract, the generation  
14 will take place very straightforwardly. It's just  
15 a very simple basic process.

Professor Hooper makes it crystal clear that the SSD is misleading the Tribunal on this issue. Yet his expertise in this matter apparently fails to convince the Tribunal. It is clearly unfair for the Tribunal, even if they were convinced that Professor Hooper not an expert in epidemiology or the effects of radiation, to fail to accept his expertise in basic chemistry over that of the SSD's counsel.

#### **Day 4, p. 61 on: Internal v External studies**

In the cross-examination of Professor Howard here we can see the strategy of the SSD's counsel, which was to discredit the appellants' expert witnesses by suggesting they had not brought attention to opposing evidence (this was also the case for Schmitz-Feuerhake, see above, the 'so what' comment). However, as both experts make clear, the apparently opposing evidence is not in fact opposing, since it relates to **external** radiation not **internal**, and is therefore not about the same thing. It is as if the tribunal were told: this expert asserts that apples poison people, but here is a very important paper saying pears are quite healthy. Why didn't they cite that paper?

15 MR JUSTICE BLAKE: Were you aware of this paper when you  
16 prepared your report?

**17 A. I'm aware of much of the literature on external  
18 radiation, my Lord.**

19 MR JUSTICE BLAKE: I think this is a literature review  
20 paper, isn't it?

21 MR HEPPINSTALL: Yes.

22 A. Yes.

23 Q. If you look at the back there's a huge number -- well,  
24 there's three tables of papers that were reviewed by  
25 these authors to come to their conclusions.

Page 62

1 A. I mean, there are a lot of question marks over papers  
2 where the choice of the control group is not ideal. For  
3 instance in Hiroshima they were chosen within the area  
4 where exposure to internal --

5 Q. We are talking about your duty to mention any of this,  
6 Professor. Have you mentioned anywhere in your reports  
7 evidence that goes the other way which is contrary to  
8 your conclusions?

**9 A. I did not address the literature which is based on  
10 external radiation because I think that what is before  
11 the Tribunal is a case which involves internal  
12 radiation.**

The Tribunal displays either bias or scientific misunderstanding in accepting that exchanges such as these do indeed discredit the appellants' witnesses. As a result of not paying attention to what these experts are actually saying, or giving their testimony due weight, they have themselves failed to take into account the **important differences between external and internal exposure** than are the very foundation of the appellants' case. They have thus failed to adequately engage with the appellants' case as they were directed to do by the UT.

#### **Day 4, p.67-68, the issue of controls**

Much was made of the problem of the control group in the Busby / de Messiere paper, but nowhere did the Tribunal take into account the point made by Professor Howard in response to re-examination, that there were in fact two controls, not just the self-selected ones but the general EUROCAT control population, which gave an adequate control group. In Dr Busby's re-examination:

There was a case control study and also

Page 68

1 a comparison with EUROCAT.

2 A. Yes.

9 Q. So would you say that EUROCAT is an authoritative source  
10 of control data for such a study?

11 A. Absolutely, yes.

12 Q. So therefore, by comparing with the EUROCAT national

13 data in a sense it's a backup for the comparison with

14 the selected controls process that Mr Heppinstall was so

15 upset about?

16 A. That's right. It's a way of checking its validity.

17 Q. In fact, the paper shows that the results for the  
18 controls process and the EUROCAT process were

19 substantially the same?

20 A. Correct, yes.

21 Q. Thank you.

This is clear evidence that SSD witness's arguments (about the lack of controls) were taken as valid, while the appellants' expert witness statements showing clearly that there were valid alternative controls, were ignored.

#### **Day 4, p.103 onwards: The stepping stones approach and the expertise of Prof Thomas**

It is clear from Mr ter Haar's cross-examination of Miss Thomas that a) she was not asked to consider all the arguments of the appellants, as directed by the UT and as stated by the SSD and b) **she was not an expert in epidemiological methodology**. This later did not stop her from making trenchant points on epidemiological methodology, most of which have found their way into the Decision and clearly affected the way the Tribunal treated evidence from the appellants. Yet this was to rely on the evidence of someone who herself admitted she was not an expert, and who has, as a result, led the Tribunal into considerable error.

p.103

13 Q. So don't take what I'm about to ask you critically but

14 I just want to explore a little what your understanding

15 was and how you went about it.

16 A. Well, I was asked to do a very specific job, which was

17 to consider whether there was reasonable doubt raised on

18 reliable evidence that exposure to ionising radiation at  
19 certain British nuclear tests was the cause of the  
20 appellants' claimed condition **and I was asked very**  
**21 specifically to only do that and based on the dose,**  
**22 which was assessed by Rick Hallard,** who is our expert on  
23 that.

p.107

4 Q. **But what I think you haven't done is to set out what**  
**5 alternative views there might be, and if you like say**  
**6 whether they are credible, incredible, should be taken**  
**7 into account, should not be taken into account from**  
**8 a scientific point of view.** Do you understand the point  
9 I'm asking you about?

10 A. I think I understand the point you're making. I'm not  
11 entirely sure I agree with what you're saying but  
12 I think I understand the point you're making. I've  
13 considered only the point I was asked to address.  
14 I could have waxed lyrical about loads of other things  
15 but I stuck exactly to what I was asked to do.

16 Q. But your understanding of what you were asked to do  
17 appears not to have included setting out whether there's  
18 an alternative school of thought which might lead to  
19 a different conclusion. Am I right about that?

20 A. **If you mean have I considered some of the papers that**  
**21 have been discussed earlier in these proceedings, that**  
**22 set out different opinions about how dose should be**  
**23 estimated, I don't think that was within the scope that**  
**24 I was asked to do.**

p.123

18 As you are here and if you were able to --

19 A. Yes.

20 Q. I don't --

21 A. **Epidemiological methodology is not my expert area** so  
22 I think it would be more appropriate for you to address  
23 those comments to Dr Haylock.

24 Q. That's tremendous, but just to check that I am, so to  
25 speak, going to address my questions to the right...

p.127

22 Q. Good. Thank you.

23 The other point, though, on which you haven't given  
24 opinions -- again it's a question of what you were asked  
25 to do, so again no criticism, but next week we will be

Page 128

1 hearing evidence from Mr Hallard.

2 A. Yes.

**3 Q. You were asked to take his figures and say: assuming**  
**4 those figures are right, what's the consequence?**

**5 A. Yes.**

6 Q. We will be suggesting to him next week that actually  
7 there are various matters he hasn't taken sufficiently...

That Professor Tomas was not a trained epidemiology was repeated in response to questioning by Dr Busby.

Day 5, p.7

3 and I think you are better directing your questions to  
4 somebody who is a trained epidemiologist.

5 Q. I will do that.

6 A. **My interest is in the molecular pathology of thyroid**  
**7 cancer and I'm not a trained epidemiologist.**

8 Q. So --

Yet almost the entirety of Professor Thomas's evidence in response to Dr Busby was a series of definitive statements (similarly trenchant to the statements she made on natural uranium and the number of children exposed at Chernobyl) about the validity of epidemiological studies put to her.

Professor Thomas was undoubtedly a witness who came across as emphatically authoritative. The Tribunal appear to have consequently found her reliable. Yet many of her statements are in error, and these statements on methodology were **by her own admission** outside her expertise. It is not good law that that the Tribunal appear to have put so much weight on them in their Decision.

### **Day 5, p.91 on: Professor Thomas's clear bias against the appellants' evidence**

In responding to evidence of birth defects among the cohort of New Zealand veterans studied by Rabbit Roff, Professor Thomas demonstrated just how far her bias against any evidence of radiation-caused effect was, but maintaining that it was simply not possible to judge whether a miscarriage/still birth rate of 40%, a large number of which were deformed, was or was not high compared with the general population of New Zealand. She was clearly intent on dismissing the reality (and thus the significance) the enormous level of congenital effects in the New Zealand Veterans, which would support the chromosome damage findings of Wahab and Rowlands.

p.91

3 A. Yes.

4 Q. -- of this submission, this Rabbitt Roff paper, which  
5 was published in the peer review literature. I want to  
6 look at conceptions here.

7 A. Mm-hm.

8 Q. So there were 443 conceptions reported for the 235 men,  
9 and of these 22 per cent were miscarriages, 16 per cent  
10 were still born and 2 foetuses were aborted. Do you  
11 think that would be normal in a population of that size?

12 A. I don't know. Reproductive numbers are not in the  
13 forefront of my brain, I am afraid I am too old for  
14 that.

15 Q. It seems rather high, don't you think?

**16 A. Unless we have a control data from New Zealand, I think  
17 it would be difficult to know whether those were low or  
18 high.**

...

24 Q. Let's canter on. The second sentence:

25 "Of these 117 prenatal and still born deaths a large  
Page 92

1 number were reported as severely deformed."

2 What would you comment on that?

3 A. I can't comment on it because I don't have the data to  
4 be able to compare it with to tell you whether that is  
5 unusual.

...

13 DR BUSBY: I think what I am asking you to say is whether  
14 you think that the background data from New Zealand, if  
15 you like the control group, would have such high levels  
16 of--

**17 A. The answer is I don't know, I don't have those  
18 statistics and I am not going to hypothesise without the  
19 proper evidence.** That would be wrong of me.

20 Q. Just as an ordinary person.

21 A. I'm not prepared to speculate. I'm not here to  
22 speculate.

### **Day 5: Hallard's evidence and stepping stones**

The initial cross-examination of Mr Hallard by Mr ter Haar makes it quite clear that Mr Hallard was not asked to engage with any of the appellants' arguments or evidence as per the

stepping-stones approach, despite the SSD having previously in his Statement of Case assured the Tribunal that all their witnesses had been asked to do this.

p.159

12 Q. Can I just ask, if we go back to the beginning of your  
13 report, one of the reasons I had to ask you about that,  
14 there is an oddity. If you go to page 9 which is the  
15 start of your text and paragraph 1 starts:  
16 **"I am instructed by the Secretary of State for  
17 Defence to consider the evidence listed in appendix 2 to  
18 this report."**  
19 We've hunted for appendix 2 and haven't found it  
20 yet. It may just be it didn't get photocopied. Is  
21 there an appendix 2?  
22 A. **The appendix 2 -- we realised this last night -- the  
23 appendix 2 is the list of references.**  
24 Q. Right.  
25 A. So it's all of the list of references and I should make  
Page 160  
1 clear, if I could, to the Tribunal as well that **some of  
2 these references are references that have been provided,  
3 some of these references are references that I have  
4 found.** So it is a combination of what I referred to  
5 originally as appendix 2 and 3.  
6 MR JUSTICE BLAKE: Can we just see where the references are?  
7 A. I beg your pardon, this is on page 280 onwards.  
8 MR JUSTICE BLAKE: 280 onwards.  
9 A. And there are some references which I did take account  
10 of which are not listed here as an omission. **I have  
11 taken account of all of the expert witness references  
12 produced by Mr Johnston and Professor Regan from the  
13 original First Tier Tribunal,** so I've not specifically  
14 mentioned Professor Regan's expert witnesses but --

**Day 5, P. 152 on: Hallard's acceptance that a) COMARE suggest an uncertainty of factor of 10 on ICRP dosimetry and b) he does not have expertise in dosimetry.**

These points are both crucial to the appellants' arguments about the safety of Mr Hallard's calculations, yet they are not considered by the Tribunal.

15 MR JUSTICE BLAKE: You are applying dosimetry levels; you  
16 are being brought into this case to help us with this  
17 rather difficult task of retrospective dosimetric  
18 analysis. When you have a figure or a range of figures  
19 others are then saying that's not going to raise any  
20 issues about causation, or people say well, it might do  
21 in certain hypotheses, which we then have to go off and  
22 explore. **But if the whole dosimetry might itself be the  
23 thing that's called into question by these clusters or  
24 other hypothesis, then is this a line of legitimate --**  
25 A. Okay. I think the only way I can answer that -- I don't  
Page 152  
1 think I have the necessary dosimetry expertise to be  
2 able to make a technical answer to that.  
3 MR JUSTICE BLAKE: Mm-hm.  
4 A. So I think the answer I would make is based on reports  
5 that I've read, written by people who do have that  
6 appropriate level of expertise, and of those the report  
7 I think that I would go back to was the COMARE response  
8 to the CERRIE committee. The CERRIE was the committee  
9 that Dr Busby obviously was involved in.  
10 MR JUSTICE BLAKE: We've come across that one as well.  
11 A. Right. So **COMARE commented that they accepted that  
12 there could be uncertainties up to a factor of 10** with  
13 internal dosimetry. Although they also comment  
14 elsewhere in that report that they would say that the  
15 true value is likely to be close to the central  
16 estimate, and I can expand on that term if need be.

17 They are talking particularly about the internal dose  
18 risks there, the so-called internal dose co-efficients.

**p. 176 on: Hallard's admission that he had not incorporated uncertainty factors into his calculations**

This failure directly goes against the burden of proof direction, in that rather than applying the highest uncertainty (the very real possibility that the dose coefficients had been at the highest of the range of possible levels), Hallard stuck to the middle range, the average: that is to say, he calculated on the **balance of probabilities** rather than the **'reasonable doubt'** criteria. Thus his calculations are wrong in law.

p.176

9 Q. So the CERRIE Committee -- well, you say John Harrison

10 said a factor of 2 or 3 -- **have you incorporated**

**11 a factor of 2 or 3 into your dose co-efficients that you**

**12 employed in calculating your doses?**

**13 A. No.**

14 Q. No.

15 A. Perhaps I could expand on that.

16 Q. Of course.

17 A. I had some considerable difficulty in this area because

18 one of the questions that you asked in February was to

19 quote the -- was to give the uncertainties associated

20 with the parameters that I'd used. I sought to quantify

21 as many of those uncertainties as I felt able to do,

22 which was principally the uncertainties associated with

23 my assumptions.

24 When it came to the internal dosimetry and

25 estimating the uncertainties in the ICRP risk factors,

Page 177

1 I think I said in my replies that I didn't have the

2 appropriate expertise to do that, and really the best

3 I could do was to copy and include a table from the

4 report by John Harrison. There was another report,

5 I think, by a Mr Puncher, I think, or something like

6 that.

7 Q. I think somewhere in your report -- and we'll go there

8 --

9 MR JUSTICE BLAKE: Did you finish your answer?

10 A. I think so, my Lord, that I don't really think that --

11 in terms of -- so why didn't I include it?

12 DR BUSBY: No, I just ask if you did include it, that's all.

**13 A. I didn't include it.** Part of the reason that I didn't

14 include it was (1) for the reasons, as I say, in terms

15 of expertise, what is a reasonable number to choose.

16 I would simply have had to take a number from the

17 John Harrison paper or from CERRIE and apply it without

18 fully understanding it, which I didn't feel comfortable

19 doing.

20 But also the CERRIE report -- and I think, if I'm

**21 not mistaken, the COMARE response -- also comment that**

**22 the central value was likely to be close to the real**

**23 value.** So that's a second point.

**Day 9 Transcript Page 36-40 Dr Haylock's admission on being led to the 1973 Moriyama Kato LSS Annual Report SB7/113 that the basis for the ICRP risk model was flawed because the original control group had been abandoned. This utterly destroys the credibility of the ICRP model but was not even mentioned in the Decision.**

9 DR BUSBY: Okay, well, in that case let's just go to

10 SB7/113. This is the last question.

11 MR JUSTICE BLAKE: Yes. This is the mortality experience of  
12 A bomb survivors?

13 DR BUSBY: That's correct, my Lord. This is the 1973 annual  
14 report from the Atomic Bomb Casualty Commission.

15 **A. I have it.**

16 Q. Can I take you to page 6 of that report?

17 MR JUSTICE BLAKE: Right.

18 DR BUSBY: Now this report is interesting because it was one  
19 of the first reports that said what it's saying --

20 MR JUSTICE BLAKE: Which paragraph do you want to take us  
21 to?

22 DR BUSBY: We're looking at "comparison group".

23 MR JUSTICE BLAKE: Do you see that, about in the middle of  
24 the page?

25 **A. I have it.**

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10 (Pages 37 to 40)

Page 37

1 **DR BUSBY: It says:**

2 **"In order to ascertain the effects of radiation**  
3 **exposure, it is necessary to compare the mortality**  
4 **experience of a population exposed to ionising radiation**  
5 **with a comparison or control population."**

6 **Would you agree with that as a sort of general**  
7 **epidemiological statement?**

8 **A. It's one way. I don't believe it's the only way or even**  
9 **the best way.**

10 Q. Right:

11 "For this purpose a group of people who were not  
12 present in the cities was included in the sample."

13 Would that have seemed a reasonable thing to do?

14 **A. It depends what question you want to answer.**

15 Q. I think the question -- you know the question they want  
16 to answer. Perhaps you could tell us the question they  
17 want to answer?

18 **A. Well, if you are saying if you want to compare that**  
19 **group with the group who were exposed to the bombs and**  
20 **compare their health, then --**

21 Q. I asked you what the question was that they wanted to  
22 answer.

23 MR JUSTICE BLAKE: Well --

24 DR BUSBY: Could you answer that question?

25 MR JUSTICE BLAKE: Well, do you know what question was being  
Page 38

1 posed by the authors of this study? And therefore  
2 I think you are then being asked as to whether what they  
3 said they were doing by way of a comparison group was an  
4 appropriate --

5 **A. I think they are trying to compare and see if the health**  
6 **of the people who were exposed to the bombs is**  
7 **significantly worse than that of the group that wasn't**  
8 **in the city at the time of the bomb.**

9 **DR BUSBY: Well, could you agree --**

10 MR JUSTICE BLAKE: If that's the purpose, then is what they  
11 have done -- I think you are being asked to comment upon  
12 the methodology.

13 **A. I believe there was an issue with this in that when it**  
14 **was looked at the not in city group --**

15 **DR BUSBY: We haven't got a lot of time.**

16 MR JUSTICE BLAKE: Sorry, what's the question? Ask the  
17 question.

18 DR BUSBY: I have asked him the question, my Lord.

19 MR JUSTICE BLAKE: Do it again because I don't think --

20 DR BUSBY: What was the purpose of this study?

21 MR JUSTICE BLAKE: Well, he has told you the answer.

22 DR BUSBY: In that case we can move on.

23 MR JUSTICE BLAKE: Right.

24 DR BUSBY: We are going to go to the bottom of this page  
25 now.

Page 39

1 MR JUSTICE BLAKE: Low mortality?

2 DR BUSBY: It says:

3 "The low mortality for the not in city group would

4 have the effect of exaggerating the difference in  
5 mortality between the heavily exposed population and the  
6 control group."

7 **A. Right.**

8 Q. This is what they are saying. I ask you to accept that  
9 that's what they are saying, really, because we are  
10 going to go on to the killer point over the page.

11 **A. I agree that's the point they wanted to make.**

12 Q. Yes, right. Can we go to the next page, 7, top of the  
13 page now?

14 **A. Mm-hm.**

15 Q. "The use of the low dose survivors as a comparison group  
16 is endorsed by the Subcommittee on Somatic Effects of  
17 the Advisory Committee on the Biological Effects of  
18 Ionising Radiations. It was felt that 'some relatively  
19 small contaminations on the side of dosimetry is  
20 potentially less disturbing than the known large  
21 differences that mark the NIC group with respect to  
22 occupation, social class, and perhaps other factors'."  
23 Does that seem reasonable to you?

24 **A. It does.**

25 Q. So can we go back to page 6 now, right at the bottom,  
Page 40

1 and see what they are talking about. So going back to  
2 that last paragraph, where they say:

3 "Although the tables include comparisons between  
4 early and late entrants and between the not in city and  
5 exposed populations, the discussions will be confined  
6 mostly to the comparison between the mortality of a low  
7 dose group and the more heavily exposed population  
8 groups."

9 What does that mean?

10 **A. As I understand it, it means that they are not using the  
11 not in city group as an appropriate comparison group but  
12 doing essentially a within comparison, where you're  
13 looking at people who were, they think, lowly exposed at  
14 the time of the bomb versus people who are more highly  
15 exposed to see if there's a difference in that exposure.**

16 Q. Thank you. So they threw out their control group, is  
17 that correct?

18 **A. Yes.**

19 **DR BUSBY: Yes. That's all. No further questions.**