IN THE FIRST TIER TRIBUNAL

WAR PENSIONS AND ARMED FORCES COMPENSATION CHAMBER

BEFORE:

THE HON MR JUSTICE BLAKE

MRS I MCCORD

DR J RAYNER

BETWEEN

LEONARD ABDALE AND ELEVEN OTHERS

Appellants

And

SECRETARY OF STATE FOR THE DEFENCE

Respondent

EXECUTIVE SUMMARY OF THE DETERMINATION

Introduction

1. The Tribunal has promulgated its determination in these twelve appeals, that were heard between 13 and 30 June 2016. The determination runs to 686 paragraphs and 200 pages. It dismisses the appeals relating to each veteran save for the claim for a war pension made by Mr Abdale in respect of cataracts in his eyes.

2. It is only the full determination that has legal effect. This executive summary is intended as a guide to the Tribunal's decision in non-technical language for the assistance of those interested.

Background

3. These appeals are brought by military veterans or members of their families in the case of those who have died. It concerns the service of each veteran in the British armed forces at various times between September 1956 and November 1960 when the United Kingdom conducted atmospheric tests of nuclear devices.

4. The test programme had started earlier off the coast of Western Australia in October 1952.

5. Mr Donald Battersby served at Maralinga, South Australia between July and November 1956 and was present when the Buffalo series of tests took place there in

September and October 1956. His duties did not require him to be present in the close vicinity of these tests, but he may have been involved in decontamination of aircraft that had contact with radioactive material.

6. All the other veterans served at Kiritimati or Christmas Island, now part of the Republic of Kiribati, from where the Grapple series of tests were organised. The first Grapple tests were detonated at Malden Island some 700 kilometres from Christmas Island. Grapple X Y and Z tests were detonated on or just offshore from Christmas Island between November 1957 and September 1958. Some of the veterans were stationed on Christmas Island during part of this time, although Mr Barry Smith only arrived on the island in October 1959.

7. None of the Christmas Island veterans were directly concerned with the detonations conducted there; they were not stationed at the detonation sites or in aircraft flying over or through the radioactive cloud. Most were located in the north of the island in various places some 35 kilometres from the detonation site. Mr Trevor Butler's duties did require him to enter a controlled site near to the detonation site after the Grapple Z1 test in August 1958. As a result of this he was the only one of the present group of Christmas Island veterans to have worn a film badge to measure radioactivity on three occasions.

8. The film badge data and other test records suggested that those who had no direct contact with the devices, the detonation site or the radioactive cloud, were only exposed to very small amounts of radiation. Thus Mr Butler's three film badges recorded no radiation exposure on two occasions and a negligible low level exposure on a third occasion (one third of a milli-Sievert; see paragraph 28 below).

Radiological concerns

9. There had been debate and concern since the mid 1980s that British service personnel had or might have been exposed to radiation from these tests that was harmful to health. Such concerns led to the formation of an association of veterans the British Nuclear Test Veterans Association (BNTVA) who campaigned for compensation.

10. During the same period Australia conducted a lengthy inquiry into the effects of the atomic testing in and around its territory that led to the publication of the Carter Report in 2006. A number of large scale epidemiological surveys of veterans connected with the tests were conducted in the United Kingdom, Australia, New Zealand and the United States.

11. More generally there were a number of concerns raised about the environmental impact of low level radiation on adjacent communities that led to a number of scientific inquiries in the United Kingdom and elsewhere. One of these inquiries was the Committee Examining Radiation Risks from Internal Emitters (CERRIE) that reported in 2004

12. Notice of a claim for negligence was served in 2004 on behalf of a representative group of veterans but in 2012 these claims were finally declared to have been lodged beyond the time permitted by the Limitation Acts and so were struck out.

13. A number of veterans applied for war pensions where the legal issues are different. Under the Naval Military and Air Forces (Disablement and Death) Service Pensions Order 2006 (the SPO), a disablement or death shall be certified as attributable to military service if qualifying conditions are met. The question for determination is whether there was a causal connection between the particular medical condition from which the veteran suffered that caused disability or death and their military service.

14. Article 41 of the SPO states that:

> 'where upon reliable evidence, a reasonable doubt exists whether the conditions are fulfilled, the benefit of that reasonable doubt shall be given to the claimant'.

15. Decision makers on behalf of the Secretary of State for Defence concluded that there was no reliable evidence giving rise to a reasonable doubt in the case of the conditions claimed by these veterans in these appeals. The veterans appealed to the First-tier Tribunal War Pensions and Armed Forces Chamber but their appeals were dismissed by a constitution of the Tribunal presided over by the late Judge Stubbs, then its President.

16. On 22 October 2014, Mr Justice Charles, President of the Upper Tribunal Administrative Appeals Chamber, allowed appeals relating to each of the present veterans on the basis that Article 41 of the SPO had not been properly applied. He set out guidance as to how Article 41 was to be applied directed a re-hearing and recommended that a High Court Judge should preside.

The appeals

17. At the hearing of these appeals in June 2016, the appellants were divided into two groups. The larger group was represented by the firm of Hogan Lovells and is referred to as the HL group. All the appellants were part of this group save for the appeals relating to Mr Battersby and Mr Smith, the BS appellants, who were represented by Dr Chris Busby.

18. Dr Busby is not a lawyer but he is a qualified scientist with an interest in nuclear radiation and its possible health effects. He is also a member of a group of scientists called the European Committee on Radiation Risks (ECRR) that is a campaigning group critical of the guidance offered by the lead international body on radiological protection, the International Commission on Radiological Protection (ICRP). He had participated in CERRIE but disagreed with the majority views of that inquiry. He had previously provided opinions on risk to the BNTVA.

19. At the previous hearing of these appeals in 2012 to 2013, all the appellants relied on expert evidence from Professor Regan (nuclear physics), Dr Harrison (radiation deposition mechanics), Professor Parker (radiological epidemiology) and Professor Mothersill (radiological biology). Their core contentions were that:

    (i) The system of radiological protection and monitoring deployed at Maralinga and more particularly Christmas Island was inadequate in the light of present knowledge.

(ii) The possibility of unexpected pathways of radiological deposition coming into contact with one or more of this group of veterans cannot be ruled out.

(iii) This was sufficient to give rise to a reasonable doubt as to the causal link between military service and the medical conditions suffered many years later.

(iv) This doubt was said to be supported by (a) a study of a small group of New Zealand sailors where a disproportionate number of chromosomal abnormalities were found in blood samples tested (the Rowlands and Wahab studies); (b) epidemiological reports of British, Australian and New Zealand servicemen showing that some adverse health effects may have resulted from exposures during military service; and (c) the evidence previously given by Professor Mothersill on recent developments in radio-biology creating uncertainty as to health risks from low doses of radiation.

20. The respondent Secretary of State responded to the cases previously advanced by the appellant and the legal ruling of Mr Justice Charles, by commissioning fresh evidence.

21. First there was new evidence from a health physicist, Mr Hallard, who was invited to assess all the available evidence about radiological protection and monitoring and the possible exposure pathways discussed at the previous hearing and asked to make conservative estimates of radioactive deposition and both external and internal effective dose (see paragraph 28) that might have arisen.

22. Second, there was evidence from a molecular biologist Professor Thomas, whether any of the health conditions for which the veterans had made a claim was considered to be capable of being caused by radiation exposure either at all or at the dose estimates made by Mr Hallard.

23. Third, in the case of any condition where there was a possibility of some harm to health caused by radiation exposure, the statistical possibility of causation was assessed by Dr Haylock head of Analytical Epidemiology at the Centre for Radiation, Chemical and Environmental Hazards, that is part of Public Health England.

24. The HL group of appellant did not take up the offer of joint instruction of the Secretary of State's experts, did not commission any further expert evidence of their own, and did not call any of the witnesses who had previously given evidence. Instead, they relied on the transcripts of that evidence, in support of their contention that reasonable doubt still existed.

25. The BS appellants took a more radical stance and questioned the reliability of the ICRP guidance on radiological risk at low levels, particularly where a significant component of the detonations was uranium. By direction of Mr Justice Charles, Dr Busby was precluded from giving evidence himself in these appeals directly or indirectly, but he called expert evidence from Professor Sawada of Japan, as to doubts about the reliability of the conclusions reached from long term studies of Japanese

survivors of the weapons detonated in 1945; Professor Schmitz-Feuerhake on the health effects of ionising radiation; Professors Hooper and Howard on the health effects of uranium. He also called Mr Bramhall who was on the secretariat of the CERRIE committee and Dr Ash who had military experience of radiological risk and was asked to comment on photographs relating to the Grapple tests.

The determination

26. The decision of the Tribunal is divided into eight parts. In Part One, we set out the background to the appeals and give brief details of the health conditions suffered by the twelve veterans with whom we were concerned.

27. In Part Two, we set out the uncontroversial evidence about the nature of atomic and nuclear explosions, the radiation consequences both immediate and longer term, and the distinction between internal and external exposure to ionising radiation. We also summarise the history of awareness of the health consequences of exposure to man-made radiation. Man-made radiation can be contrasted to natural radiation to which everyone is exposed, which may vary in intensity according to the geological and climatic features of the place of residence.

28. In this part of the determination we explain how the ICRP measure the health effects of radiation by means of concepts known as absorbed dose, equivalent dose and effective dose that today are measured in units called Sieverts of which milli-Sieverts (one thousandth of a Sievert), and micros-Sieverts (one millionth of a Sievert) are sub-units. Effective dose is a measurement in milli-Sieverts (mSv) that includes a weighting factor for different organs in the human body that may absorb radiation by one of more exposure pathways through either external or internal exposure.

29. The ICRP reviews all relevant information that is considered reliable including the life time study of the Japanese survivors of the bombs dropped in 1945, epidemiological studies and other relevant scientific data. It applies the linear no threshold model (LNT) that assumes, while no level of radiation is completely safe, risk of adverse health effects rises with exposure to dose. The higher the effective dose the greater the potential health risk. Practical guidance is given as to exposure levels for those who may work where man made radiation is present. ICRP guidance is accepted and applied by advisory and regulatory bodies in the European Union, the USA, the UK and elsewhere.

30. In Part Three, we summarise the available information that describes the history of the British test programme in Australia and Christmas Island between October 1952 and October 1958 when British tests ceased. Christmas Island was used for a period for further US tests until all atmospheric testing ceased following international agreement.

31. A number of reports from scientists attached to the Atomic Weapons Research Establishment at Aldermaston, enable us to reconstruct what the awareness of health risks or radiation was at the time, the lessons learned as the programme developed, the calculations made as to potential fall-out risk, the safety regime devised and implemented to prevent any or any significant exposure, what was recorded by way of

measurement of individuals and the environment shortly after the tests and subsequently.

32. We review the material available that describes the events and climatic measurements recorded at the time of the largest single detonation in the programme Grapple Y detonated just off the south east coast of Christmas Island on 28 April 1958.

33. Although doubt had been expressed as to the height at which this airborne explosion was detonated and the wind patterns on Christmas Island at the time, in this part of the determination we explain why we are sure that the height and the wind measurements recorded at the time are reliable and why we concluded that Dr Ash was unable to give us informed assistance on these matters.

34. Nevertheless, there were uncertainties as to whether there had been significant local rainfall at the time of or shortly after Grapple Y despite the rainfall recorded at the weather station and whether such evidence of radioactive deposition as had been captured by Geiger counter surveys could be said to represent the highest levels of deposition anywhere in the island. Any uncertainties as to exposure pathways and rates of deposition needed to be carried forward and set alongside other plausible evidence before reaching overall conclusions as to whether there was a reasonable doubt as to a causal connection.

35. In Part Four, we review the evidence provided by the BS experts, and Mr Bramhall. We explain why we did not find their evidence to be reliable or plausible or relevant to the issues we had to determine in these appeals. We accordingly rejected the challenge made in this part of these appeals to the ICRP model. We further dealt with a number of hypotheses advanced by these two appellants as to the health effects of uranium but again did not find any evidence to be plausible. We concluded that ICRP methodology was sufficient to measure radiation dose from low level internal exposure in general and from internal exposure to uranium in particular.

36. In Part Five, we examine the evidence of Mr Hallard and the challenges made to his evidence. Mr Hallard was taking a different approach to that of the witnesses called in 2012 to 2013 by the Secretary of State. Previously the respondent's case had been that the Tribunal could be sure that none of the veterans concerned in these appeals had been exposed to any or any significant radiation at all, and the theoretical possibilities raised by the appellants' experts as to the possible effect of wet and dry deposition could be dismissed as theoretical.

37. Mr Hallard took a different approach and performed calculations of effective dose assuming a high degree of generalised exposure from the various pathways previously identified. These calculations, revised from time to time as further possibilities were put to him for consideration, resulted in, for the most part, very low estimates of internal dose with which these appeals are principally concerned. We examine the criticisms made both of Mr Hallard's approach and his conclusions and explain why we do not consider those criticisms to be well-founded. We concluded that his conservative assumptions of absorbed dose were at or indeed beyond the limits of the possible given the nature of the tests and the precautions taken and what was measured and/or recorded at the time.

38. In Part Six, we examine the submissions of the HL group of appellants. We examine the Wahab and Rowlands studies of chromosome abnormalities in a selected group of a few New Zealand sailors whose vessels had participated in the Grapple tests off and around Christmas Island. Setting the test results in the broader context of what is known, we explain our conclusion that these results did not lead us to have any doubt as to Mr Hallard's worst case assumptions of effective dose to which the veterans stationed on Christmas Island may have been exposed.

39. We then consider and reject the submission that the epidemiological studies of veterans support the existence of reasonable doubt as to a causal link between the health effects suffered by each veteran, mostly some 40 to 50 years after the possibility of exposure at Maralinga Australia (Mr Battersby) or Christmas Island (all the remaining veterans).

40. We next conducted a critical review of the radio-biological evidence given by Professor Mothersill at the previous appeal, that had previously been the subject of significant criticism. We explain our conclusions that in the light of what medical science now knows, why the evidence of this expert was not plausible or reliable and why it did not meet the standards of objectivity required of any scientific expert giving evidence before a court or, in our view, a tribunal such as the present one.

41. In Part Seven, we identify the medical conditions suffered by each veteran, the date of diagnosis and the period of time since the claimed exposure. We review the medical evidence as to whether exposure to radiation is known to be a cause of any of these conditions, whether at the maximum doses assessed by Mr Hallard or at all. Apart from the case of the cataracts suffered by Mr Abdale we conclude that there is no evidence to suggest that any of the other conditions could have been caused by radiation at the external and internal doses assessed by Mr Hallard.

42. The other conditions diagnosed in the veterans including pancreatic cancer and chronic lymphocytic lymphoma (CLL) were either not considered radiogenic at all, or not capable of being caused by radiation at doses under 500 mSv. The highest internal equivalent dose that any veteran was assessed by Mr Hallard as having been exposed to on Christmas Island was 2 mSv. Only four of the veterans were assessed as having been exposed to over 50 mSv external dose on Christmas Island (Mr Abdale 120 mSv); Mr Butler (110 mSv); Mr Hatton (88 mSv) and Mr Sinfield (88 mSv).

43. The position with respect to Mr Battersby at Maralinga was different, as the possibility that he had been exposed to radioactive dust from aircraft decontamination could not be excluded. On the worst case scenario Mr Hallard assessed that he had been exposed to an external dose of 680 mSv and an internal dose of 43 mSv. His claim was for CLL that was diagnosed 49 years after his putative exposure. It would be his internal exposure to radiation that is relevant for the assessment of such an illness after so long a period of time. His assessed high external dose is not relevant for this purpose. There is debate whether CLL can ever be caused by radiation, although the industrial industry scheme used in the USA (called NIOSH-IREP) has recently accepted that radiological exposure might cause CLL if there was a 15 year exposure at 1 Sv for a man aged 20. If no disease had appeared after 15 years from

exposure an even higher dose was needed. Mr Battersby's internal dose was assessed to be 43 mSv over a four month period. We concluded that there was no possibility of his CLL being caused by radiation exposure during this period.

44. The position with cataracts in the eyes is different from the other medical conditions. The Carter Report in 2006 suggested that there was no evidence of opacities to the eyes at doses below 500 mSv. However, in 2007 the ICRP reported that new data as to the radio sensitivity of the eye are expected and new emphasis was needed on optimisation of outcomes where there was exposure to the eye. By 2013, new guidance suggested that there should be an equivalent dose limit for the lens of the eye of 20 mSv in a year averaged over five years, with no exposure in a single year exceeding 50 mSv. Mr Hallard had made a conservative estimate that due to his 10 month service on Christmas Island while a number of tests were conducted, Mr Abdale had been exposed to a total external dose of 120 mSv. This was substantially in excess of the 2013 recommendations.

45. In Part Eight, we bring together all the conclusions reached in the previous different parts and address the test identified by Mr Justice Charles in the Upper Tribunal. In the end our task is to assess:

    "whether the combined effect of the possibilities carried forward do not found a reasonable doubt, because for example the combination of those possibilities is too far fetched".

46. We identify the things that we are sure about (and therefore not a source of reasonable doubt) as: a) the way the tests were conducted, the safety regime in force at the time, the measurements to personnel, equipment and the general environment that were made and recorded both at the time and subsequently; b) the ICRP system of radiological measurement and protection; c) the health effects of low dose radiation as derived from large scale epidemiological studies and the experience of radiobiology; d) the conservative estimates of maximum dose calculated by Mr Hallard that in practice we are sure were very significant over estimates of dose to each particular veteran.

47. We comment on whether scientific speculation can amount to reliable evidence and the need for objective rigour when scientists give opinion evidence to a court or tribunal. We note the issues on which there is no certainty and consider whether any of them or cumulatively they could amount to reliable (plausible) evidence on which a real doubt as to the radiation exposure to which any of these veterans might have been exposed during their military service or whether the medical condition complained might have been caused by radiation exposure arising from such service.

48. We reach the overall conclusion that we are sure that there is no such doubt save in the case of Mr Abdale's cataracts where a low external dose might produce an adverse health effect and decided each of the individual appeals accordingly.