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Case No: HC12 C 01722

IN THE HIGH COURT OF JUSTICE
CHANCERY DIVISION

Royal Courts of Justice, Rolls Building
Fetter Lane, London, EC4A 1NL

Date: 02/07/2014

Before :

MR JUSTICE BIRSS

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Between :

(1) CRAIG BAILLIE **(2) STEPHEN LAMBERT** **(3) JAMESON TECHNOLOGIES (a firm)** **(4) DUALGLO LIMITED** **(5) LACOMP PLC** **(6) LACOMP NOMINEES LIMITED** **(7) DUALGLO TECHNOLOGY PLC**	**Claimants**
- and -	
(1) BROMHEAD & CO (a firm) **(2) BROMHEAD JOHNSON (a firm)** **(3) MICHAEL SPENCER**	**Defendants**

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Roger Stewart QC and **Richard Davis** (instructed by **Field Fisher Waterhouse**) for the **Claimants**
John Wardell QC and **Jeremy Reed** (instructed by **Hewitsons**) for the **Defendants**

Hearing dates: 27th, 28th, 31st March, 1st - 4th, 7th, 8th, 10th and 11th April 2014

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Approved Judgment

I direct that pursuant to CPR PD 39A para 6.1 no official shorthand note shall be taken of this Judgment and that copies of this version as handed down may be treated as authentic.

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MR. JUSTICE BIRSS

Mr Justice Birss:

Introduction

1. This is an action for professional negligence concerning a patent attorney. In 1999, the first and second claimants, Craig Baillie and Stephen Lambert, started developing plastics materials which glowed in the dark. Mr Baillie had recently graduated with a degree in economics and had a number of ideas for new products. Mr Lambert had 20 years experience in the plastics industry and had technical experience in plastics compounding and extrusion. They obtained a few days free use of a laboratory at Warwick University and worked together making up batches of materials. The problem they set out to solve was that normal glow in the dark materials have an unattractive daytime colour (usually dull green). They addressed this problem and were able to make materials with a long night time glow and but also with a bright attractive daytime colour. Initially the colour was yellow but others followed. To achieve this result two components were mixed into the plastics: a phosphorescent component based on rare earth doped strontium aluminate and a fluorescent colourant. The phosphorescent component glows in the dark and fluorescent colourant shines brightly during the day. Their first patent applications were filed in June 2000.

2. The fourth and seventh claimants, DualGlo Ltd and DualGlo Technology Plc, are companies set up to exploit their ideas. The third claimant is a partnership between Mr Baillie and Mr Lambert. I will refer to these five claimants as the DualGlo claimants.

3. The third defendant, Michael Spencer, is a patent attorney engaged by the DualGlo claimants to work on their behalf. The first defendant (Bromhead & Co.) is the firm of which Dr Spencer was a partner at the earlier phase of the relationship. In mid 2004 Dr Spencer and his then partner Mr Crouch came together with partners from another firm JY and GW Johnson to form a new firm, Bromhead Johnson. It is the second defendant.

4. The relationship between Messrs Baillie and Lambert and Dr Spencer started in late summer 2000 until it came to an end in late 2009. The claim form was issued in May 2010. Throughout the period of the relationship Dr Spencer prosecuted patent applications for the DualGlo claimants based on a PCT application (PCT/GB01/02532) made by Dr Spencer on their behalf in June 2001. Patents were granted in the USA, Eurasia, New Zealand, Australia and India, amongst others. At the point the relationship ended DualGlo decided to stop spending any further money on the applications. By that stage the European application which had been pending in the EPO was abandoned and so too were a number of other applications including a continuation application in the USA aimed at broader claims than had been granted hitherto. A key ground for complaint in this case is that Dr Spencer is alleged to have advised that broad patent protection would be obtained around the world based on the PCT application but that this advice was negligent and wrong.

5. Another key aspect of this case relates to a US patent called Hirotec (US 6 177 029). That patent was cited by in the International Search Report for the PCT application. The claimants contend that Dr Spencer advised them to buy the Hirotec patent and advised them that it was valid, infringed by DualGlo and its competitors and of major importance. DualGlo bought the Hirotec patent from its owners for $550,000. They

contend that the Hirotec patent is in fact worthless and that Dr Spencer's advice about it was negligent and wrong.

6. The DualGlo companies are now effectively dormant. The remaining granted patents (including Hirotec) have been assigned to a new company, Visible 24/7 Ltd, in return for shares. The relevance of Visible 24 and its activities is disputed.

7. The claimants contend that Dr Spencer was negligent in a number of further respects but the main issues are those I have mentioned. There is no dispute that Dr Spencer owed a duty of care to the DualGlo claimants either in contract or in tort. No distinction in argument before me has been drawn between the positions of the various DualGlo claimants as claimants nor between the positions of all three defendants as defendants. There may be a difference between the DualGlo claimants as regards the quantification of any damages but no other distinction is relevant.

8. The losses claimed are put in various ways. First there is a claim for repayment of all the sums paid to the patent attorney over the years. This includes fees for work done by the defendants and disbursements paid on to other professionals. It comes to £222,700. Second there is a claim for all the losses incurred by DualGlo Ltd since October 2001 on the basis that acquiring and prosecuting the patent portfolio as well as developing and marketing the DualGlo products was all predicated on the advice that broad patent protection would be obtained. These losses are put in two ways. They are either the wasted operating costs and expenses of DualGlo Ltd (including the cost of buying the Hirotec patent) in the sum of £1,960,344 or else they are the total value of the shares in DualGlo Ltd held by DualGlo Technology Plc plus outstanding intercompany loans, coming to £2,231,554 on the basis that the shares are now worthless and the loans will never be repaid.

9. The defendants deny negligence and deny that any negligence which is proved caused the losses claimed or any losses. The defendants also counterclaim for £57,328.58 worth of unpaid fees which were outstanding at the end of the relationship.

10. All the figures are stated without the interest which is also claimed.

11. The fifth and sixth claimants are in a different position. They were investors either in DualGlo Plc or, for one early investment, in DualGlo Ltd. They contend that Dr Spencer also owed them a duty of care and is liable to them for negligence too. They claim the loss of the money which they invested which has now been lost. The claim is for £1,912,562. The same issues arise on the defendants' side in relation to this claim with the further point that the defendants deny that any duty of care was owed to the investor claimants. They can be referred to as Lacomp.

The negligence relied on

12. The Particulars of Claim sets out six particulars of negligence. They are:

    i) failure properly to investigate the existing position when first instructed leading to failure to make any priority claim from the 7 June 2000 filing;

    ii) negligent advice on the Hirotec purchase;

iii) negligent advice as to the effect of an item of prior art (US 5 989 135, "Welch") on the scope which could secured for the DualGlo PCT;

iv) negligent advice as to the effect of another item of prior art (WO 00/27908, "Hannacolor PCT") on the scope which could secured for the DualGlo PCT;

v) negligent advice as the scope which could be secured on the DualGlo PCT generally;

vi) negligent advice as to the validity of Hirotec in 2008 (specifically in view of Welch).

13. However by the trial points (iii) and (vi) had been dropped. Point (i) was maintained but no loss was said to flow from it. Point (iv) and (v) go together. Thus there are in substance only two claims: one relating to Hirotec and the other relating to the DualGlo PCT. However in addition to these two points, the claimants made a number of other allegations about Dr Spencer's conduct throughout the period of the relationship. Accordingly it has been necessary to consider the events over the whole period from 2000 up to and including these proceedings.

The law

14. The elements of a claim for negligence are the existence of a duty of care, a breach of that duty and damage suffered that has been caused by the breach. There is no dispute that the defendants owed the DualGlo claimants a duty of care but there is a dispute about whether the defendant owed a duty of care to the investors, Lacomp.

15. Any duty owed to the fifth and sixth claimants can only be a duty in tort. There was no contract between the defendants and those claimants. The modern approach to determining whether a defendant owes a duty of care to a claimant in a case like this was settled in ***Caparo v Dickman*** [1990] 2 AC 605. The defendants also referred me to the judgment of Neill LJ in ***McNaughton v Hicks Anderson*** [1991] 2 QB 113 at 125F-127B (with whom Nourse and Balcombe LJJ agreed) which provides a useful template for assessing whether a duty of care exists and identified six factors as being relevant in the consideration of the issue. The six factors are:

i) The purpose for which the statement was made;

ii) The purpose for which the statement was communicated;

iii) The relationship between the adviser, the advisee and any relevant third party;

iv) The size of the class to which the advisee belongs;

v) The state of knowledge of the advisor;

vi) Reliance by the advisee.

16. I accept that submission.

17. There is also a dispute about the scope of any duty which is owed to all the claimants and its relationship to the causation of damage and identification of recoverable

losses. The question arises whether at least some elements of this case are to be classified as an "advice" case or an "information" case as those expressions have come to be used following the decision of the House of Lords in ***Banque Bruxelles Lambert v Eagle Star*** [1997] AC 191 (referred to as the ***SAAMCo*** case).

18. Mr Wardell described ***Kuwait Airways v Iraqi Airways*** [2002] QB AC 883 (at paragraphs 69-71 per Lord Nicholls) as the starting point for this analysis and referred me to the judgment of Arden LJ in ***Johnson v Gore Wood*** [2003] EWCA Civ 1728 (at paragraph 91) for the proposition that the courts no longer approach the question of the measure of damages in negligence as questions of causation and remoteness but to engage in an intensely fact sensitive analysis as to whether the duty owed by the tortfeasor was a duty in respect of the kind of loss of which the victim complains. Thus to decide the issue of the scope of duty requires scrutiny of all the circumstances.

19. Mr Stewart referred to ***Aneco Reinsurance v Johnson & Higgins*** [2001] All ER (Comm) 929. There the House of Lords distinguished ***SAAMCo*** and held that the negligent adviser was liable for all the loss arising from the relevant transaction. The principle I take from ***Aneco*** is that the outcome turns on a careful analysis of the scope of the duty owed by the negligent party.

20. Mr Wardell also referred to the judgment of Rix LJ in ***Haugesund Kommune v Depfa*** [2011] EWCA Civ 33 which considered Lord Hoffmann's speech in ***SAAMCo*** and classified the two kinds of case (information or advice) as "category 1" and "category 2" respectively. Rix LJ held that satisfaction of a "but for" test and the reasonable foreseeability of the damage were both necessary but not sufficient conditions for the award of damage on an "advice" basis. He analysed the question by focussing on the scope of the advisor's duty, including considering whether the adviser had a general retainer or was asked to advise on a specific question (paragraphs 74 - 75). Another relevant consideration identified in this judgment (based on the ***Nykredit*** case) was whether the adviser bore the risk of the transaction as a whole (paragraph 51).

21. Finally Mr Stewart referred me to ***Gabriel v Little*** [2013] EWCA Civ 1513 and the judgment of Gloster LJ with whom Fulford and Maurice Kay LJ agreed. Gloster LJ dealt with the correct approach to take and the law from ***SAAMCo*** onwards in paragraphs 70 and 71. In summary the approach to take is as follows. The factual enquiry is highly sensitive to the circumstances. The first step is to assess if the advisee suffered loss as a result of the negligent advice. The next step is to determine whether the negligent adviser is liable for the whole of the overall loss or only some (and if so what) part of it. This requires identifying the kind of loss for which the advisee is entitled to be compensated which in turn depends on the scope of the duty of care. In analysing the scope of the duty a judge needs to differentiate between a duty to provide information for the purpose of enabling a client to decide on a course of action and a duty to advise someone what to do. Finally one must address the question of causation, answering the question "what are the consequences of the duty of care being breached?"; i.e. the consequences of the advisee acting based on the negligent advice. That is not the same as asking what the consequences would have been if the duty had been fulfilled.

22. Both counsel identified and recognised the difference between an "advice" case and an "information" case but neither was able to characterise what quality it was which

placed a case in one category or the other. I find the summary of the approach set out by Gloster LJ to be a compelling one. I gather that the Supreme Court has given permission to appeal in ***Gabriel v Little*** but I propose to take account of the approach since it provides a useful framework for the issues I need to consider.

23. Three further points of law should be mentioned. First the required standard of care is that of the ordinary skilled patent attorney. It is objective and he or she must act with reasonable skill and care. That was not in dispute.

24. Second I should address the position of patent attorneys in particular. Patent attorneys are, of course, professional persons carrying on professional business. By statute and delegated legislation they are granted rights to conduct certain litigation on behalf of clients. Their functions include applying for and obtaining patents and advising on intellectual property rights including legislation and infringement. In terms of other professions, their functions are similar to those of barristers and solicitors and I agree with the analogy drawn to those other professions in Jackson & Powell on Professional Liability (7th Ed) paragraph 21-001.

25. Mr Stewart also submitted that:

    i) a patent attorney must have adequate knowledge of the law and practice relating to the activities that he undertakes (***Lee v Walker*** (1872) L.R. 7 C.P. 121);

    ii) they are obliged to take full and proper instructions from their clients (per Graham J in ***Andrew Master Homes v Cruikshank and Fairweather*** [1980] RPC 16);

    iii) they must inform their client of any matter in respect of which they need to take instructions in order to give proper advice (per Jacob J in ***Halifax Building Society v Urquart -Dykes and Lord*** [1997] R.P.C. 55 at p67);

    iv) they must tailor their advice according to their client (***Phelps v Stewart*** [2007] PNLR 32 at paragraph 39); and

    v) they must give advice as to the legal pitfalls which may arise (***Halifax Building Society*** at p67).

26. I accept the points (i) to (iii) and (v) without further elaboration. I also accept the fourth point but it bears some comment and elaboration. ***Phelps v Stewart*** is a case about a solicitor but I accept Mr Stewart's point that the analogy is a good one. In that case the point was complex and the clients were unsophisticated. The judge held that merely giving oral advice without confirming it in writing would not discharge that duty.

27. In this case there is no doubt that Mr Baillie and Mr Lambert had no real experience of the patent system and Dr Spencer knew that. A patent attorney cannot discharge his duties to advise an unsophisticated client without taking reasonable steps to explain the advice in terms the client can understand.

28. A separate question arises concerning commercial advice. Mr Stewart reminded me that in ***Halifax*** (p67) Jacob J held in the context of trade mark attorneys, that an attorney is obliged to warn his client to consider commercial problems which may arise as a result of legal problems which he ought to be aware. I accept that (and that it applies also to patent attorneys) but the statement must be seen in the context in which it was made, i.e. that it was an exception to the general statement "a [*trade mark*] attorney is not under a duty to give commercial advice as such".

29. Mr Stewart also referred to Clerk & Lindsell at 10-135 for the proposition that "*where a solicitor is aware that his client is inexperienced and relies on him for more than strictly legal advice, he may owe a duty to give that advice*". As before I accept that submission too but note that it is put as an exception to the wider rule that a solicitor is not generally obliged to advise his client on non-legal matters.

30. Finally there was a point about reflective losses. The investors are shareholders in DualGlo Technology Plc. Any consideration of loss suffered by shareholders of DualGlo Technology Plc needs to reflect losses claimed by DualGlo Technology Plc which in turn, as it is a shareholder in DualGlo Limited, need to reflect losses claimed by that company. Mr Stewart did not dispute the legal principle and I do not need to address it further.

The witnesses

31. The claimants called four witnesses of fact. The first two were Mr Baillie and Mr Lambert. They explained the history of the DualGlo invention, their development work and their work over the years to build up a successful business based on the DualGlo products. They explained their relationship with Dr Spencer over the years and what advice he had given. I think both men had set out to tell the truth as they saw it but I was not impressed by either Mr Baillie nor by Mr Lambert.

32. Mr Baillie's memory purported to improve in an unconvincing way between his first witness statement and his second served only seven weeks later. As Mr Wardell submitted in closing, Mr Baillie wanted to have a recollection that assisted the case being advanced (an example was his evidence about how a licence agreement had been drafted). I am not satisfied Mr Baillie had any genuine detailed recollection of events independent of the documents nor am I satisfied that he was attempting to give his evidence fairly. Simply as an example, Mr Baillie's witness statement (paragraph 81) criticised Dr Spencer in relation to a point about a prior art search relating to Hirotec in a way which clearly implied that at the time he was not aware that such a thing could be done. However in fact the documents showed that he was aware it could be done because one had been conducted by the previous firm of patent attorneys. Despite this Mr Baillie would not withdraw the criticism of Dr Spencer.

33. Mr Lambert was a worse witness that Mr Baillie. He unfairly blamed Dr Spencer for an error in wavelength data which had been made by him (or Mr Baillie). He referred to "further issues" which arose which meant that the Hirotec patent was narrower than previously thought such that the DualGlo materials did not fall within it but when asked about this in cross-examination his explanation simply did not make sense. It was a critical part of the case. As Mr Wardell submitted, he was hyper critical of Dr Spencer to the point of absurdity. One example relied on by Mr Wardell concerned a letter of 17th October 2001 from Dr Spencer. Rather than admit a mistake he had

clearly made in his witness statement criticising the clarity of the letter, Mr Lambert refused to face up to what would otherwise have been a minor point. I am not satisfied I can rely on Mr Lambert's evidence at all.

34. The claimants' next witness was Christopher Hall. He is a director of DualGlo Ltd and DualGlo Technology Plc. His involvement began in 2007 when he was asked by Lacomp to look into DualGlo. He became a director of DualGlo Ltd in March 2007. Mr Hall was in a position to explain what happened after he became involved and much of his evidence focussed on the period from 2007 until the relationship with Dr Spencer ended. He also explained what had happened after then from 2010 onwards including dealing with a company called Visible 24/7 Limited. That company now holds the Hirotec patent and all patents and utility models granted pursuant to the DualGlo PCT. In addition to matters directly within his knowledge Mr Hall sought to give evidence in two further areas. One area related to scientific issues, the properties of certain chemical additives and their emission and excitation spectra. This evidence was given by Mr Hall despite the fact that he has no scientific training at all. His background is in banking. I am not prepared to place weight on that evidence. The other area of evidence outside Mr Hall's direct knowledge was concerned with events at DualGlo before his involvement. It was based on a review of company documents.

35. Mr Hall was a better witness that Mr Baillie or Mr Lambert. In my judgment his oral evidence was generally accurate and frank but it exposed serious inaccuracies in his written statements. For example his statement stated that Dr Spencer's advice was fairly reflected and recorded in DualGlo business plans. When shown an example which demonstrated that this was not correct, Mr Hall accepted the point. This means that while I can rely on his oral evidence, I am not prepared to place weight on his written evidence, particularly when it cannot be tested by reference to documents.

36. The claimants' final factual witness was Peter Buxtorf. He is the founder and Managing Director of Lacomp Plc the fifth claimant and gave evidence on behalf of both Lacomp claimants. His evidence was concerned with the investments made into DualGlo by Lacomp. The defendants criticised his evidence on the basis that the statement had not been drafted with care. It is true that the cross-examination exposed an example of a wide statement about Mr Buxtorf's involvement in drafting business plans when in fact the correct position was more complicated but that does not cause me to question the reliability of his evidence. I found Mr Buxtorf to be a good witness trying to help the court with his recollection of events.

37. The defendants' only factual witness was Dr Spencer. He narrated his version of events from the outset until the relationship broke down.

38. Dr Spencer was not a good witness. Making all allowances for the nature of this case and its focus on his behaviour, nevertheless his evidence was highly defensive and argumentative. Mr Hall stated in his first witness statement that when he first met Dr Spencer, his impression was that Dr Spencer was arrogant and treated Mr Baillie and Mr Lambert disrespectfully, talking down to them. I can well see why Mr Hall is likely to have got that impression of Dr Spencer.

39. Each side called a senior patent attorney as an expert witness.

40. The claimants called Geoffrey Bayliss. He is a Chartered Patent Attorney and European Patent Attorney. He obtained a degree in mechanical engineering from Manchester University in 1965, joined the firm Boult Wade Tennant and stayed there for about forty years. Mr Bayliss was senior partner from 1999 until 2007. He retired in 2010. Mr Bayliss gave evidence about the practice of a patent attorney and expressed opinions about whether various acts of Dr Spencer did or did not fall short of the standard of a reasonably competent patent attorney. Mr Bayliss also sought to assist the court on various technical issues arising from the facts in this case.

41. The instructions given to Mr Bayliss led to a problem in one respect. He had been asked to focus on the negative aspects of Dr Spencer's conduct. In some cases this might be appropriate and sensible, for example if the claimants' case had focussed only on particular, narrowly defined issues. However part of the claimants' approach was to seek to criticise Dr Spencer's conduct in relation to a wide range of activities aside from the core issues in the case. By instructing Mr Bayliss to look across a wide range of other issues but only to focus on the negative aspects, the result was an unbalanced picture of Dr Spencer's overall behaviour. That was not Mr Bayliss' fault. It was a consequence of his instructions. However it means that I am wary of placing much weight on Mr Bayliss' expert's reports in relation to the wider allegations. On the other hand it does not detract from his views on the core issues.

42. The defendants called Michael Butler. He is also a Chartered Patent Attorney and European Patent Attorney. He obtained a degree in Natural Sciences from Cambridge University in 1973, specialising in materials science. He joined the firm Frank B Dehn & Co (now called Dehns) in 1973 and has remained there ever since. Mr Butler is the senior partner in the firm. Like Mr Bayliss, Mr Butler gave evidence about the practice of a patent attorney and expressed opinions about whether various acts of Dr Spencer did or did not fall short of the standard of a reasonably competent patent attorney. Mr Butler also sought to assist the court on various technical issues arising from the facts in this case.

43. As witnesses, both Mr Bayliss and Mr Butler were seeking to assist the court and mindful of their duties as experts in that regard. I am grateful to them both for their assistance in this case.

Patents and technology

44. In this section I will address three matters:

    i) The technical background

    ii) The patents and the prior art

    iii) Patent practice

Technical background

45. This case is concerned with visual effects caused by adding compounds into a matrix. The matrix may not be a plastic material but that is one example. A matrix may be given a colour by adding a colourant. A colourant may be a dye or a pigment and strictly there is a distinction between them, as follows. With a dye the molecules of

the colourant are thoroughly dispersed in the matrix. With a pigment the colourant consists of particles of coloured material and it is the particles which are dispersed. Despite these strict definitions the term pigment is sometimes used just to mean any colourant without being concerned whether it is a dye or a (strict) pigment.

46. Normal (i.e. non-fluorescent) colouring materials work as follows. If white light is shone on a red material, the material reflects the wavelengths corresponding to red light and absorbs light of all other wavelengths. The wavelengths which are absorbed are lost as heat.

47. Phosphorescence and fluorescence are similar phenomena. In both cases electrons in the material are excited by incident light in a given wavelength spectrum. The excited electrons then relax. They drop down from the higher excited energy levels, ultimately to their original energy level, releasing a photon. The material therefore emits light. The emission spectrum comprises longer wavelengths (lower energy) than the excitation spectrum. So for example ultraviolet (UV) light, with shorter wavelengths than visible light, can lead to visible fluorescence. The difference between phosphorescence and fluorescence is the relaxation time. In fluorescence the emission occurs more or less instantaneously after excitation. For example cycling jackets fluoresce when light is shone directly upon them. In phosphorescence the emission takes place much more slowly and can occur many hours after excitation. That is why a phosphorescent material can be excited by light during the day and will then glow in the dark.

48. In general the excitation spectra of either phosphorescent or fluorescent materials may include UV and visible light. The emission spectra may also include UV and visible light. A given material will have its own particular excitation spectrum and emission spectrum and its emission spectrum will have longer wavelengths than its excitation spectrum.

49. There was a debate about the meaning of the term “daylight fluorescent”. Daylight fluorescent colourants provide very bright day time colours because they are excited by the high energy part of the daylight spectrum. The debate was whether it was meaningful to talk of a daylight fluorescent material which was excited only by UV and not by visible light. It is true that some texts which were in evidence do express themselves in that way but I find that generally daylight fluorescent materials are regarded as materials which are excited by daylight. They may also obtain excitation from UV as well but I do not think those working in this field generally regarded a material which was only excited by UV as a daylight fluorescent. At most it would have been an exceptional case. However it is important to note materials of all kinds did exist irrespective of what they were called. A particular class of fluorescent materials which are excited by UV only are the optical brighteners. They are used to make whites whiter. They are excited by UV and emit bluish white light.

50. In the past a standard phosphorescent material was zinc sulphide but a new class of phosphorescent material was developed in the mid 1990s. These use strontium salts doped with a rare earth metal. A commonly used example and the one used for most of the formulations in this case is strontium aluminate doped with europium and dysprosium. At all relevant times this was a patented material sold at a relatively high price but there was also a “grey” market. In fact one of the problems suffered by DualGlo was competition from grey market material.

51. A debate in this case is concerned with what happens when a matrix includes both a phosphorescent and a fluorescent material. Mr Baillie and Mr Lambert's invention (in the sense of what they thought they had invented regardless of the prior art) was a matrix comprising both. One can conceive of a number of effects at least in theory, as follows. Once excited by daylight, phosphorescent material generally glows in the dark with a pallid pale greenish colour. One thing the technologist may want to do is change the colour of the night time glow to make it more attractive. One idea is to use a fluorescent material which is excited by the light given off by the phosphorescent material and then emits its own bright colour. In theory if all the pale green light emitted by the phosphorescent material at night is absorbed by (say) a red fluorescent material and acts to excite that material leading to emission of red light, then the night time colour will be red rather than pale green. This idea of an overlap between the emission spectrum of the phosphorescent material and the excitation spectrum of the fluorescent material is described in the Hirotec patent and has been called the Hirotec effect. Note that the night time colour of the phosphorescent material has been changed by the addition of a fluorescent material.

52. The term "photostorage" is sometimes used. This refers to the ability of the materials to effectively act by storing light and emitting it later.

53. At least in theory a night time colour change could occur regardless of fluorescence and could just be due to the normal action of coloured materials. For example a normal red dye absorbs all wavelengths except red light. So a green phosphorescent glow through a red dye might take on a different shade. Mr Butler agreed that the addition of a non-fluorescent colourant to a phosphorescent glow in the dark material could cause a change to the glow colour but he was doubtful it would be noticeable if the colourant was not fluorescent. I have no reason to doubt his view about this.

54. Mr Baillie and Mr Lambert had a different idea from that described in Hirotec. They wanted a material which has both high visibility (i.e. good daytime colour) and high luminosity (i.e. good night time glow which lasted for a long time). To achieve this they used a fluorescent material for the day time colour and a phosphorescent material for the night time glow. The effect they sought to create is achieved by trying to reduce "quenching" (also called "interference"). From the point of view of Mr Baillie and Mr Lambert, the Hirotec effect is a form of quenching because the fluorescent material will absorb light emitted by the phosphorescent material. The fact some of the absorbed light excites the fluorescent material and is re-emitted does not help because these processes are never 100% efficient. In concept this is the opposite of the Hirotec effect. Rather than trying to change the night time colour to make it more attractive, they were trying to have a good daytime colour and for night time effects they were placing emphasis on brightness and length of glow. In this case this effect was sometimes called the DualGlo effect.

The patents and the prior art

55. The earliest published item of prior art in this case is Röhm. It is a German utility model DE 92 02 955 U and was published in 1992. It discloses a resin material containing a white pigment and a fluorescent dye.

56. The Rayovac patent (US 5,752,761) was granted (and therefore published) on 19th May 1998. It describes to a torch coated with a luminescent material.

57. I have mentioned the Hirotec patent already. It discloses the idea of using a combination of a phosphorescent material and a fluorescent material together such that light emitted by the phosphorescent material excites the fluorescent material. Hirotec was applied for in the USA on 5th October 1998 and granted on 23rd January 2001. Its main claim is to a photostorage material comprising a combination of a "luminescent" (i.e. phosphorescent) material and a fluorescent material with an overlap.

58. The Welch patent was applied for on 28th April 1998 and granted as a US patent on 23rd November 1999. It discloses a golf ball coated in what is in effect and in fact the Hirotec material. Although Welch was filed in the USA before Hirotec, the evidence before me shows that Welch acquired the material used to coat the golf balls from the proprietors of the Hirotec patent. In terms of US patent practice the fact that Welch was filed before Hirotec does not matter to the validity of Hirotec if the invention in Hirotec was made before the invention in Welch because the US is based on a first to invent system as opposed to a first to file system. The timing was of some importance to DualGlo and the matter was investigated. On the basis of the evidence before me there is clearly a good case that as a matter of US law Welch is not prejudicial to the validity of Hirotec. It is not clear to me whether it is necessary to go as far as making a positive finding on the point (not least because there was no proper evidence of US law) but if so then I would find that Welch does not prejudice the validity of Hirotec.

59. On 10th November 1998 a US company called Hannacolor filed a US patent application (09/189,464). Based on this application a US patent was granted on 23rd April 2002. That document is called Hannacolor US. The Hannacolor company also filed a PCT application claiming priority from the original US filing and it was published on 18th May 2000 as WO 00/27908. That document is called Hannacolor PCT. No distinction has been drawn between the disclosures of Hannacolor US and Hannacolor PCT. They relate to phosphorescent articles with an attractive fluorescent daytime colour.

60. A separate Hannacolor patent from the USA, US patent 5,976,411, was published on 2nd November 1999. It relates to phosphorescent materials having laser marked indicia on them and is referred to in this case as "Hannacolor Laser Marking".

61. On 21st March 2001 Dr Spencer filed a UK patent application GB 0107069.7 on behalf of the inventors. It was based on the material provided by Mr Baillie. The application contains some key passages which resonate throughout this case. They are as follows:

> Thermoplastic materials having luminous, or "glow-in-the-dark" characteristics are well-known. However, the materials themselves are typically of a dull, pale, green or grey colour under normal daylight condition, which can render articles made from these materials difficult to see in daylight, and also lacking in aesthetic appeal. Attempts to increase the visibility of such articles by adding colourings to the thermoplastic materials has the disadvantageous effect of decreasing the luminosity, because the colouring acts to quench the light given off by the luminescent material in the thermoplastic, thus reducing the afterglow of the material. This renders the

> luminosity of the article both dimmer and more short-lived compared to that of a non-coloured article.
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> …
>
> Accordingly, a first aspect of the present invention is directed to a luminous material comprising a rubber, glass or plastics material matrix, a luminescent material dispersed throughout the matrix, and a colorant dispersed throughout the matrix, the colourant giving the matrix a colour when it is observed under substantially white light, and the colourant allowing substantial transmission of light emitted by the luminous material. Thus the material has both the properties of high visibility, owing to the colourant, and high luminosity, thanks to the colourant not acting to quench the glow of the luminous material. A small amount of colorant, just sufficient to provide adequate colouration of the luminous material, gives the least possible quenching whilst still performing the function of colouring.
>
> [*These become the second and fifth paragraphs in the PCT*.]

62. These paragraphs seek to explain the problem the inventors set out to solve and why their materials achieve a solution. The first sentence of the second paragraph is a statement of invention, in other words it is text which will be used as a patent claim in future.

63. In the context it is clear that the term "luminescent material" is referring to phosphorescent material. The problem described is that adding colouring to compositions which use phosphorescent materials to glow in the dark quenches the glow, leading to dimmer and shorter glow. The material invented by the inventors has both high visibility, i.e. good daytime colour and high luminosity, i.e. good night time glow. In other words the material provides the DualGlo effect. A point in dispute is whether the idea is to reduce quenching as much as possible consistent with still achieving the beneficial properties, or whether to go further and eliminate quenching altogether.

64. The statement of invention uses the term "the colourant allowing substantial transmission of light emitted by the luminous material". This is clearly intended to relate to the point that the interference with the glow of the light from the phosphorescent material is reduced. In other words the light from the phosphorescent material is substantially transmitted rather than (say) being absorbed by the colourant or reflected by the colourant.

65. The preferred components described in the document are a phosphorescent material based on strontium salts doped with a rare earth metal for night time glow and a fluorescent colourant for daytime colour but the broadest statement of invention, while it is limited to a luminescent (i.e. phosphorescent) material and a colourant, does not require the colourant to be fluorescent. The quenching problem is not stated in a manner which limits it to only being a problem with fluorescent colourants but is a problem with colourants generally.

66. A later paragraph (which becomes the tenth in the DualGlo PCT) is as follows:

> Advantageously, the colourant comprises a fluorescent material. This gives improved visibility of the luminous material in low light conditions, as it will fluoresce any ambient radiation as well as re-emitting any radiation stored from higher light levels. Additionally, the colour spectrum of a fluorescent material compared with that of a luminous material is such that quenching of the luminescence by the colourant is greatly reduced. The luminous material is excited by light having wavelengths in the range of 520 to 525 nm, whereas the fluorescent material fluoresces in the range 340 to 360 nm; therefore these characteristics do not interfere with each other.
>
> [The numbering of these paragraphs is mine. It corresponds to their position in the later PCT.]

67. The last two sentences above contain some errors but are getting at the idea that to reduce quenching one wants to use a fluorescent colourant whose excitation spectrum is different from the emission spectrum of the phosphorescent compound. Otherwise light from the night time glow will not be transmitted out of the material, rather it will be taken up with excitation of the fluorescent material.

Patent practice worldwide and its relevance

68. This case concerns applications for patents all over the world. Immediately this raises a problem with the similarities and differences between national patent laws. Stated at one level of generality, patent law throughout most of the world is essentially the same. The Paris Convention from 1883 requires all signatory states to give foreigners the same IP rights as their own nationals and institutes a worldwide priority right for patents. The Patent Cooperation Treaty (1970) provides a worldwide scheme for using a locally filed patent application as the basis for applications worldwide. In Europe the European Patent Convention (1973) set up a single European patent office (the EPO) and provides for substantive harmonisation of European patent law. The TRIPS agreement made at the Uruguay GATT round in 1994 provides for more detailed harmonisation of IP law, including substantive patent law.

69. In all states a patent should contain a disclosure sufficient to allow the invention to be practiced by a person skilled in the art. All countries require a patent to contain a descriptive disclosure of the invention and at least one patent claim. The claim defines the invention. The scope of protection conferred by the patent is defined by the claim albeit there may be doctrines which broaden or narrow that scope of protection. To be valid the invention in the patent must be novel and involve an inventive step (i.e. not be obvious) as compared to what is disclosed in the prior art.

70. This difference between scope of a claim and disclosure is universal. A patent claim may have wider scope than the thing described in the specification. So it is possible to have two patents, one earlier than the other, in which the later one is novel (and inventive) over the earlier one but for which the product described in the later one infringes the earlier one.

71. The idea that patents should work in essentially the same way throughout the world is an old one. It is a necessary element in the overall worldwide scheme whereby inventors can file a patent application in their local country and obtain protection throughout the world. That system would not work if patents in one country were radically different things from patents in others.

72. However beyond this broad identity, the details between different states and regions differ markedly. A critical difference is in the rules governing prior art. One important difference is between the USA and (most of) the rest of the world. The USA operated a first-to-invent system whereas the rest operate a first-to-file system. In a first-to-invent system an inventor (A) who files his patent application later than his rival (B) will be able to show that B's invention is not relevant prior art if A actually invented his invention earlier than B. By contrast in a first-to-file system the earlier filed application is prior art to the later application regardless of when the inventions were actually made. A first-to-invent system might be said to favour fairness, at the expense of requiring disputes to be resolved based on evidence and disclosure of documents, whereas a first-to-file system might be said to favour simplicity and certainty (since the dates are trivial to prove). In fact the USA has recently moved to a "first-inventor-to-file" system but the details of this do not matter.

73. Another difference relating to prior art is in the treatment of parallel patent applications which were filed earlier than the subject application but published later. In Europe the general rule is that prior art has to have been published before the priority date ("made available to the public") and this applies to publication anywhere in the world. However as an exception a later published European application which was filed before the inventor's priority date will be prior art for novelty purposes only (Art 54(3) EPC, s2(3) Patents Act 1977). Note this European rule only applies to earlier European applications (not to applications elsewhere) and the effect is limited to novelty. The US has a similar system in that local applications which are earlier filed and later published are relevant (whereas an equivalent European application would not be) but in the US the earlier application would be relevant to both novelty and obviousness.

74. These differences between the citability of prior art in different countries play a part in this case. First, since it is a US patent, the validity of Hirotec depends not on the fact that Welch was filed before Hirotec but on who was first-to-invent as between Hirotec and Welch. Second, in considering the validity of any US DualGlo patent, both the Hirotec and the Hannacolor US patents are relevant prior art for both novelty and inventive step despite the fact that they were published after the earliest DualGlo priority date (June 2000) because they were applied for in the US beforehand. Third, in considering the validity of any DualGlo patent outside the USA (such as in Europe, Singapore or New Zealand), the Hannacolor PCT will always be relevant since it was published before the earliest DualGlo priority date.

75. The differences between different countries' patent laws are not limited to what constitutes prior art. Although in general the concept of novelty, inventive step, sufficiency and infringement are much the same throughout the world, there are important differences in detail. For example before the EPC applied in the UK patent law derived from the Statute of Monopolies of 1623. This included validity objections such as lack of fair basis, inutility, false suggestion and failure to disclose the best method known to the inventor. Some common law countries such as

Australia and New Zealand have (or had) a patent law which was based on the pre-EPC law of the UK. Another example relates to the law of infringement. The US has a well developed doctrine of equivalents and at the same time a well developed doctrine of file wrapper estoppel. Elsewhere in the world these doctrines either do not exist or work in a different way.

76. Even when the black letter law is the same, the practice in different states can differ. In Europe, governed by the EPC, there are in fact differences between different states. Today there is no court with pan-European jurisdiction covering patent law. Thus the approach to infringement is not identical across Europe, particularly with regards to equivalents. The EPO operates as a centralised European body which handles validity and as it should, the settled jurisprudence of the EPO on validity matters commands respect in national courts but even then the EPO's approach on some issues is not universally accepted. Two examples are its rigid adherence to the problem solution approach in inventive step and what could be thought of as an unduly rigid and formalistic approach to added matter (Art 123(2) EPC).

77. The partially harmonised nature of worldwide patent practice and law has an impact on the role of professional advisers. As in this case an inventor in one country may well wish to seek patent protection both in their own country and abroad. The inventor will look to their local patent attorney for advice in the first instance. The local patent attorney liaises with the foreign counterparts and plays a role both in instructing the foreign professional and in interpreting the advice received from the foreign professionals for the benefit of the local client.

78. For this and other reasons patent professionals often come to have some understanding of the practices in other countries. In particular most patent professionals in Europe have some understanding of the major points on which US patent law and practice differs from that in Europe. This knowledge is put to use in assisting the local client but the risk is obvious. A UK client may want advice about the US but may also wish to rely on the advice of the UK patent attorney on the point and avoid the expense and trouble of seeking advice from a US adviser. The broad similarity of the worldwide system means that one cannot lay down general rules about what advice a UK adviser can properly give about foreign law and practice. On some questions in some circumstances the proper advice from a UK adviser would be simply that foreign advice is necessary. In other situations the UK adviser will be able to express a clear view albeit also making it clear that for a definitive view foreign advice would be needed. There will also be situations in between these extremes.

Chronology of events

The beginning: 2000 to 2002

79. After their work in the lab at Warwick University in the late 1990s, Mr Baillie and Mr Lambert started working on a confidential basis with Douglas Baker Plastics and then with a colourant manufacturer then called Reidel-de Haën (now part of Honeywell). They were able to make a "masterbatch" of material. This is a concentrate in pellet form which can be added to other things by a manufacturer. Their initial idea was to use the material to make a torch called the GloTorch. Initially they operated as a partnership, the third claimant.

80. The inventors had no experience or knowledge about intellectual property. They consulted the patent attorneys Urquhart-Dykes & Lord in late 1999. Some searches were undertaken. Two of the patents identified at this stage were Welch and Rayovac. UDL advised that the luminescent material in Rayovac may comprise a phosphorescent component and/or a fluorescent component. This advice is wrong in that Rayovac discloses using a phosphorescent or a fluorescent component but does not disclose the combination. UDL advised that the inventors could not patent the material they had created but that applications for patents based on specific applications of that material were worthwhile.

81. Pursuant to UDL advice in June 2000 a patent application focussed on a torch coated in their material (entitled Flashlight Body) was filed. In fact two such applications were filed. One on 7th June 2000 (GB 0013724.0) and another on 8th June 2000 (GB 0013972.5) claiming priority from the 7th June application. The reason for the second application being filed the following day was that Mr Baillie was not happy with the one filed on 7th June which was unnecessarily limited to an aluminate compound. The application on the 8th June was broader.

82. In August 2000 the inventors placed their first order for products using their invention. It was an order for 360 GloTorches from a Chinese manufacturer (the inventors having travelled to China in March 2000 with the masterbatch to find a manufacturer). Later larger quantities were obtained. It is not necessary to address the subsequent commercial dealings in any detail. Necessarily the focus of the events described below is on patents and patent applications albeit at least until early 2009 the inventors and others at DualGlo were busy working on the commercial side of the business.

83. The details of the initial contact between Mr Baillie/Mr Lambert and Dr Spencer are unclear. The inventors were unhappy with the fees charged by UDL and in July or August 2000 they contacted Dr Spencer. Dr Spencer impressed Mr Baillie with his knowledge and expertise. Their initial instructions to Dr Spencer were focussed on three further applications of their ideas: a light switch, a light bulb/shade and a tubular leash. Mr Baillie clearly sent some text to Dr Spencer at this stage concerning all three applications. He also sent Dr Spencer the text of the existing 8th June 2000 flashlight application. This text includes a reference to Rayovac but no reference to Welch. Dr Spencer was not told about Welch at that time. Another key point (with hindsight) is that Mr Baillie did not tell Dr Spencer about the 7th June application.

84. No attempt was made at that stage (or at any other time) to specify in writing what the nature of Dr Spencer's duties was going to be. The first letter from Dr Spencer at Bromhead to Mr Baillie at Jameson Technologies is dated 21st August 2000. It relates to charges for preparing and filing a patent application and also advises that the subject matter of the applications should be kept secret until the application is filed. Dr Spencer's evidence was that he had given wider advice than this and had advised not to disclose torch itself until the PCT was filed. There is no record of that advice from Dr Spencer and I do not accept that it was given. Dr Spencer's evidence on this point seemed to me to be an example of the so called "happy hindsight" referred to by Dankwerts J in ***Goody v Baring*** [1956] WLR 448.

85. The next important event was advice by Dr Spencer that an application should be made for a patent on the DualGlo material itself, i.e. not one limited to particular

applications. A fax letter from the firm to Bromhead of 22nd December 2000 shows that the basic advice had been given by that stage. A letter from Bromhead on 11th January 2001 confirms that a broad application will be filed and asks the inventors for details of the composition of actual worked examples of the material with different combinations and proportions and some diagrams and spectra if possible.

86. In February 2001 Mr Baillie sent the information to Dr Spencer for incorporation into an application. The text includes a technical explanation why the material achieves a good night time glow and good daytime colour, includes examples with details of materials and proportions and reports the results of tests showing the improved properties.

87. On 21st March 2001 Dr Spencer filed application GB 0107069.7 which was based on the material provided by Mr Baillie. The application contains key passages of text on which turns the issue about whether broad protection was ever possible based on the DualGlo applications.

88. On 8th June 2001 Dr Spencer filed the DualGlo PCT application designating all states. It claimed priority from the 8th June 2000 torch application and the 21st March 2001 materials application. It did not claim priority from the 7th June 2000 application (nor was it filed a day earlier in order to achieve this) because Dr Spencer did not know about the 7th June 2000 application. The first key factual issue I have to decide relates to whether Dr Spencer ought to have acquired files from UDL. The significance of this question is that if he had he would have found out about the 7th June application.

89. On 18th September 2001 Dr Spencer forwarded the International Search Report for the PCT application to the inventors. The report identifies two items of prior art: Hirotec and Röhm. The examiner placed both prior art documents in category X which means he considered them to be particularly pertinent. It is clear that there was a discussion between Dr Spencer and at least Mr Baillie about this which led to two steps. First Dr Spencer initiated a patent name search relating to Hirotec. The significance of this is disputed. It is relevant only as part of the context to the larger disputes. Second Mr Baillie sent a fax message to Dr Spencer dated 8th October 2001 which contained six pages of notes by Mr Baillie explaining how DualGlo's material differed from the other patents (including Hirotec). Mr Baillie's conclusion is that "*with luck there should be a great enough distinction, I am convinced we are dealing with different animals*".

90. On 9th October 2001 Dr Spencer wrote to Mr Baillie explaining that the Hirotec name search had shown no other patents in existence relating to Hirotec. The letter states "*Therefore I believe the only problem you will have with this problem will be in the United States*". The parties do not agree about what this letter meant. The claimants contend this was advice that Hirotec was only relevant prior art to what would be DualGlo's US patent application based on the PCT. The defendants contend this was advice that the risk of DualGlo infringing the Hirotec patent itself was confined to the USA. I prefer the defendants' submission. Although the letter does end with a reference to amending claims, which clearly does not relate to a concern about infringing Hirotec, in context overall I think that this letter and the purpose of the name search itself was to look at the risk of infringement of Hirotec.

91. On 17th October 2001 Dr Spencer wrote to Mr Baillie concerning amending the claims of the PCT application. That is a step which can be taken using the PCT procedure. The parties do not agree on the significance of this letter. I find that it shows Dr Spencer was operating on the basis that the disclosure of Hirotec should be treated as having significance worldwide, which was sensible. It also shows that Dr Spencer was telling DualGlo that claims may have to be narrowed in future (not just in the US) to differentiate over the prior art. The possible amendments mentioned in this letter (% colourants and emitted wavelengths) did not provoke a reaction from DualGlo that they were not commercially desirable. The final point arising from this letter is that it engages with the difference between the DualGlo effect and the Hirotec effect (although those terms are not used). It shows that Dr Spencer had a clear understanding of the DualGlo invention.

92. On 22nd October 2001 Mr Lambert sent Dr Spencer an English translation of Röhm. There was some suggestion that Dr Spencer could be criticised for this because a free translation of Röhm was available in the form of a Canadian equivalent. The matter was minor and not developed in depth. I am not satisfied there is substance in the criticism.

93. On 22nd November 2001 Dr Spencer wrote a five page letter to Mr Baillie setting out his opinion on infringement of Hirotec. This is an important letter. The clear advice is that there is a risk of infringement of Hirotec in the USA if DualGlo use materials which contain fluorescent components.

94. On 1st February 2002 Dr Spencer made an offer on his clients' behalf, to the patent attorneys on the record for the Hirotec patent, to buy the patent for $10,000. This was turned down and on 5th April 2001 Dr Spencer replied to the US attorneys offering that his clients would be prepared to take a licence under Hirotec on a 5% royalty. The significance of this is disputed. The claimants say a 5% royalty is a commercial rate and indicates a significant shift from the nominal purchase price offered before of $10,000. The claimants also contend this shows that Dr Spencer was closely involved in the DualGlo claimants' business. I agree that this shows that Dr Spencer's advice was wider than simply narrow questions of patenting but I do not accept that Dr Spencer in fact had any detailed involvement in the business. He did not have a detailed involvement in the business but the letter shows that Dr Spencer was prepared to give advice which could only reasonably be given by someone who did have a detailed involvement. It shows what I can only describe as a cavalier approach to giving advice on Dr Spencer's part.

95. At this time the inventors were seeking patent insurance and on 5th April Dr Spencer advised the insurers that although there was overlap between the scope of the PCT application and Hirotec, he believed a patent of reasonable scope would be granted to DualGlo but that DualGlo's material could well fall within the scope of the Hirotec patent.

96. Negotiations to buy the Hirotec patent continued in 2002. Dr Spencer was not directly involved but was aware of events in general terms. DualGlo engaged a US attorney, Bruce Tasan to deal with the matter.

97. Late 2002 was the period in which the PCT application entered national and regional phases. It is convenient at this stage to address the point that DualGlo actively sought

patents on a more or less worldwide basis from this period onwards. A designation of all states when a PCT application is filed allows an applicant to postpone the decision about which states to go for but at this stage the decision has to be made because fees are due. The number of countries in which DualGlo actually sought patents looks surprising in retrospect but I find it is simply a reflection of the fact that at that time and subsequently the inventors and the investors thought the DualGlo materials and products incorporating them were going to be enormously successful. For example a 2005 business plan for DualGlo described a "vast potential market" which was "estimated to be in excess of £1bn".

98. The work undertaken by Dr Spencer for DualGlo was not limited to patents. For example in 2002 a UK registered design was granted for a torch/flashlight and there were also trade mark applications made.

2003

99. The first investment in DualGlo by Lacomp was made by a subscription agreement dated 20th February 2003 (D3/610). It was an investment of £300,000 into DualGlo Ltd. At this stage the investor in DualGlo had been Catalyst Investment Group. Mr Renwick Haddow of Catalyst was very enthusiastic about DualGlo. Lacomp and Catalyst set up a joint venture type arrangement to make Enterprise Investment Scheme investments. Compared to Catalyst, Lacomp were inexperienced in small company corporate finance. An investment advisory panel (IAP) was set up. One of the individuals on the IAP was Nigel Milton, an experienced stock picker who was at that time an adviser to Catalyst.

100. From this time on until 2009 Lacomp invested in DualGlo. Through that period Dr Spencer never met Lacomp and had no direct contact with them.

101. In February 2003 a licence agreement was entered into between Mr Baillie and Mr Lambert as licensors and DualGlo Ltd as licensee. In this arrangement the individuals hold the patent applications and other intellectual property such as some trade marks and the company is a licensee. It is obvious that the occasion of this licence was the investment into DualGlo. There was a suggestion that Dr Spencer drafted this licence and therefore knew about the investments. In fact it was drafted by solicitors in Birmingham but I accept that Dr Spencer must have been aware in broad terms that the licence was being put in place because outside investment was being made in DualGlo. Nevertheless that does not mean that Dr Spencer knew anything more than that.

102. Sales of product were made in 2003. A profit and loss account for November 2003 shows sales in the year to date of £97,000 albeit in November the actual sales (£6216) are about half the budgeted target (£12,000).

2004

103. An important letter is one from Dr Spencer to Mr Lambert on 19th January 2004. It appears to be linked to a note dated 27th November 2003 which states "*Fluorence*(sic) *in plastic that does not emit*". The letter records recent discussions in which the inventors had told Dr Spencer that they had reformulated the DualGlo product such that the fluorescent compound has no fluorescent effect. The context is clearly a

consideration of whether DualGlo can or has produced products which avoid infringing the Hirotec patent. Dr Spencer asks two questions. There was a suggestion that these questions, or at least the second one, could be understood as being determinative of the issue of infringement. I reject that. It is clear that Dr Spencer is here asking questions about the material in order to consider the answers before advising. In fact no answers were given.

104. The first question is: what is the purpose of a fluorescent material if it has no fluorescent effect? In my judgment this question is a natural one and reflects simple scepticism on Dr Spencer's part: what is the point of using a compound with a property if that property is not used? The claimants argued that this interpretation of the question was inconsistent with another aspect of the defendants' case, namely that in the discourse between Dr Spencer and the inventors "fluorescent" had been defined more narrowly in the 22nd November 2001 letter to refer only to materials which were excited by emissions from the phosphorescent material. That may be so but in my judgment the letter does not bear this kind of minute analysis. I am sure that the first question bears the simple meaning I have attributed to it. This means its usage is inconsistent with the idea that the term "fluorescent", as between Dr Spencer on one side and Mr Baillie and Mr Lambert on the other, always has a narrow meaning limited to the overlapping case.

105. The second question is whether the fluorescent compound affects the glow colour of the plastic in the dark. The point behind this question is that if it does then one might surmise the fluorescent compound is emitting light as a result of excitation by light emitted by the phosphorescent compound. Although such a colour change may not be determinative of infringement of Hirotec, it is at least indicative of a risk.

106. There is no evidence Mr Baillie or Mr Lambert ever answered these questions or provided any material or results of experiments indicating how the modified material worked or what it comprised. I find they did not do this and I reject any suggestion that the putative new material was ever used or sold.

107. In May 2004 it appears the efforts to licence the Hirotec patent had failed and DualGlo had decided to buy it. The original sale price was $2million but by July 2004 the parties had agreed a price of $550,000 for DualGlo to buy the Hirotec patent.

First office action for the US DualGlo application and the meeting in November 2004

108. The local US attorneys prosecuting DualGlo's US patent application were a Chicago firm called Cook Alex. On 30th August 2004 Cook Alex passed on the first office action to Dr Spencer from the examiner at the USPTO. The United States has a well deserved reputation for the thorough examination of patents and the examiner's first report reflects that. Fourteen items of prior art are cited and the report runs to sixteen pages of analysis. The US examiner's view is negative. There are objections on grounds of lack of novelty and obviousness.

109. The claimants criticised Dr Spencer's practice of only forwarding the US examiner's report to his clients and not including the Cook Alex covering letter. There is nothing in this criticism. The Cook Alex covering letter summarises the rejections and asks for the necessary arguments or amendments to respond. Mr Butler said this was a

formulaic letter and did not accept there was any reason to criticise Dr Spencer for not sending it to his client. I accept that evidence.

110. Two of the items of prior art cited in this first office action are Hannacolor Laser Marking and Hannacolor US. Others include Rayovac and Hirotec. This is the first occasion that Hannacolor US came to the attention of DualGlo or Dr Spencer. As an earlier filed but later published US patent it is only relevant to DualGlo's US application and not to any DualGlo application elsewhere. However a natural question given the earlier filing date would be whether the Hannacolor company used the PCT system and filed elsewhere. If that happened then given the dates, a prior publication of such a PCT application would be a possibility. In fact we know Hannacolor PCT exists and was published before the DualGlo priority dates. One of the issues I have to decide is the point in time at which Dr Spencer was aware of Hannacolor PCT and when were his clients made aware of its significance outside the USA.

111. It is clear that a meeting took place sometime prior to 26th November 2004 between Dr Spencer, Mr Baillie and Mr Lambert to discuss the US examiner's objections. In existence is a copy of the Examiner's report with Mr Lambert's handwriting on it. Also in existence are copies of the specifications of Hannacolor Laser Marking and Hannacolor US which have some of Mr Baillie's handwritten notes on them. I find that the documents at Bundle D4/915A-915SS derive from that meeting. There is a major factual dispute about that meeting. I will return to it below. What is clear is that at this meeting some prior art was considered and potential amendments to the US claim were formulated either at the meeting or soon after. Their purpose was at least in order to try and produce a claim the US examiner would accept over the prior art cited in the US (including Hannacolor US). Claim 1 in the form of the DualGlo PCT was to be amended to limit it to the new rare earth metal type phosphorescent materials and was to be limited to introduce a reference to "high opacity".

112. On 2nd December 2004 Dr Spencer wrote to the patent attorneys in Singapore who were handling DualGlo's Singapore application (Drew & Napier). At that time Singapore operated a self-assessing system and the Patent Office did not examine patent applications. Thus Drew & Napier had advised in 2002 that if amendments had been required in other patent offices, DualGlo should file amended claims in Singapore. Pursuant to this advice Dr Spencer's 2nd December letter provided Drew & Napier with amended claims to file in Singapore. The amendments are to include high opacity and rare earth metals into claim 1. These are the limitations which were discussed at the November 2004 meeting.

Funding the purchase of the Hirotec patent

113. Also at this time discussions took place between DualGlo and Lacomp to fund the purchase of the Hirotec patent. This included sales projections predicting nearly £2million sales three years hence sent by Mr Baillie to Lacomp.

114. An important letter in these proceedings was sent by Dr Spencer to Mr Lambert on 18th November 2004. The letter was revised and re-dated 13th December and I will refer to it as the Nov/Dec 2004 letter. It expresses an opinion about infringement of the Hirotec patent. The advice is that the Hirotec patent catches the DualGlo product. The letter ends with a statement that purchasing Hirotec would provide a useful tool

in DualGlo's armoury (this version of the letter uses the word argument instead of armoury). The parties do not agree what Dr Spencer was told about this letter. The claimants say he was told that the opinion would be given to investors. Dr Spencer denies this. This is a key dispute of fact, addressed below.

115. What is undisputed is that Dr Spencer was asked to amend the letter in various ways. One of the amendments was to remove a sentence which said it was unlikely that DualGlo's own patent would be granted with such broad claims.

116. The final form of the Hirotec infringement letter was sent on 13th December 2004. The addressees are now Mr Baillie and Mr Lambert at DualGlo Ltd rather than Mr Lambert at Jameson Technologies as originally.

117. On 15th December 2004 Mr Baillie sent a copy of Dr Spencer's letter to Lacomp. The funding was provided, inter alia to buy the Hirotec patent.

118. The Hirotec sale agreement was executed on 21st May 2005. The purchase price was $550,000.

Amending the US DualGlo application: high opacity and rare earths

119. On 17th February 2005 Dr Spencer replied to Cook Alex with instructions about how the US attorneys should reply to the US Examiner. The letter reflects the then strategy of limiting claim 1 to "high opacity" and to luminous (i.e. phosphorescent) materials based on rare earth metals. The letter also explains that the problem addressed by the DualGlo invention is to provide a material with both improved appearance in normal daylight conditions and improved luminous (i.e. night time) properties. It argues that the prior art teaches the use of additional colourants which compromise the luminous properties of the materials and refers to the fact that DualGlo material glows in the dark for 6 to 8 hours whereas the prior art glows for about two hours.

120. The US examiner did not accept the proposed amendments and maintained the objections. A second negative office action from the examiner was issued in April 2005.

Advice to an investment broker, limiting the US application to white

121. On 15th September 2005 Dr Spencer wrote to Glynn Reese of Nathan Alexander Ltd. Nathan Alexander is an investment broker. The claimants submit the letter shows that Dr Spencer knew that DualGlo was seeking outside investment. That is plainly correct. The claimants also submit this supports their case that Dr Spencer owed a duty of care to Lacomp. I will consider whether Dr Spencer owed a duty to Lacomp below.

122. The letter discusses the prospects for the DualGlo application around the world. Outside the US Dr Spencer's view is that a patent should be granted based on claim 1 of the PCT with amendments to high opacity and rare earth luminescent materials. For the US, Dr Spencer emphasises that the rules for prior art are different, advises that he believes the same claim (claim 1 with high opacity and rare earths) would be

obtained but also refers to a strategy which he and the inventors had decided upon to limit the existing US application to white material in order to obtain a swifter grant.

123. The letter also discusses the strength of the Hirotec patent which is now owned by DualGlo. The clear inference is that an expert advising the investment broker had queried the validity of the broad claims of the Hirotec patent and in response Dr Spencer justifies the breadth of claim on the basis that Hirotec was the first patent to disclose the combination of the new rare earth luminescent materials in plastics with a colourant. He wrote that this makes the Hirotec patent "*very powerful*".

124. On 28th September 2005 Dr Spencer wrote to the US attorneys proposing further amendments to the US application. DualGlo's strategy for the US was now to seek to obtain a patent on white material as soon as possible and to file a continuation application in order to seek a separate patent with broader claims. The parties could not agree about the utility or commercial importance of white material. In my judgment it is clear what DualGlo's strategy was at this stage. White material was regarded as very important. It was described as the "holy grail" for many applications in a contemporaneous DualGlo business plan and there are other similar references to the importance of white material. DualGlo was seeking patents based on the PCT application for both white material and material with other colours. In the USA they had the Hirotec patent to cover coloured materials and so a patent limited to white alone would complement that. Elsewhere they hoped to obtain patents which were not limited to white products.

125. In this letter Dr Spencer wrote that his clients believed that Hirotec was the closest prior art. I do not think anything turns on that because the letter also discusses Hannacolor US, Hannacolor Laser Marking and Rayovac.

126. In November 2005 Cook Alex report that the US examiner has rejected the US application. Dr Spencer reports this to the clients in December 2005 and states that "*as you can see we are making progress in the United States Patent Office*". He was criticised for this and there is force in the criticism since the objections to the "high opacity" amendment on formal grounds were never overcome. The positive point was that there was some movement by the examiner on the prior art objections but this letter is an example of a tendency on Dr Spencer's part to emphasise the positive at the expense of always giving a carefully balanced view.

2006 - The European application

127. On 22nd May 2006 the first report of the patent examiner in the EPO was sent. The only art cited by the examiner was Röhm. Dr Spencer reported it to Mr Lambert on 8th June on a positive basis, stating that it made a "*refreshing change*" from the USA and that "*on this basis I believe we should obtain a reasonably broad level of protection for your invention in Europe*". The claimants submitted this was too optimistic a characterisation of the EPO examiner's view. On this occasion I do not accept that criticism. A claim combining claims 1 and 2 of the DualGlo PCT, which was clearly desirable to DualGlo, was clearly patentable over Röhm.

128. It is true that Dr Spencer had advised that other prior art including Hannacolor (US or PCT) and Hirotec (if its subject matter was treated as relevant prior art) would require limitations to the combination of claim 1 and 2 of the DualGlo PCT but the EPO

examiner had not cited that art and there was no obligation on a patentee to disclose prior art to the EPO of which he was aware. Sometime patentees will take such a course but Dr Spencer cannot be criticised for not suggesting it here. The view expressed on the 8th June was concerned with what claims the EPO examiner was likely to grant and was a reasonable one.

129. In July 2006 Dr Spencer reported on another official letter from the US examiner. He said "as you can see we are starting to make some progress".

130. On 26th November 2006 Dr Spencer wrote to the EPO examiner amending claim 1 (which was in the form of claim 1 of the PCT) to include claim 2 (rare earth metal) and presenting arguments over the only cited art (Röhm). The letter expresses the belief that the European patent will now be granted. That was not an unreasonable view given the EPO examiner's previous letter and the response on 4th July 2007 was favourable save for a detailed point about a dependent claim.

Developments in 2006 and into 2007

131. By the end of 2006 Lacomp had invested a further £486,000 on top of the £300,000 invested in February 2003 making the total just under £800,000. Mr Buxtorf explained that at this stage Nigel Milton had expressed the view that DualGlo needed a professional sales and marketing team because Mr Baillie and Mr Lambert did not have this experience and could not do it on their own. The evidence shows that DualGlo obtained good sales leads (such as a deal with Victorinox, the makers of the Swiss Army Knife) but that they were not being developed properly. As a result of this Chris Hall became a director of DualGlo in March 2007.

132. In March 2007 DualGlo received from Dr Spencer the US examiner's "final" rejection of the US application. Although it is marked final in fact the US procedure allowed the applicant to make further submissions. Dr Spencer's letter to Mr Lambert of 2nd March 2007 asks "*I would appreciate your detailed comments much in line with those put forward with regard to the New Zealand application.*" To explain this it is necessary to consider DualGlo's application for a New Zealand patent, which took on some significance at trial albeit it had not been addressed in detail in the witness statements or reports.

The New Zealand application

133. The New Zealand examiner had cited the Hannacolor PCT as novelty destroying in January 2006 and in April 2006 the New Zealand agents had submitted written arguments, based closely on written arguments provided by Dr Spencer, distinguishing the claims from the Hannacolor PCT as the closest prior art. The distinctions relied on were high opacity and that the Hannacolor PCT did not disclose a colourant that allows substantial transmission of light emitted by the luminous (i.e. phosphorescent) material. The latter is described in the written arguments as very significant. On 25th September 2006 the New Zealand examiner had dropped the novelty objection based on Hannacolor PCT.

134. In January 2007 the New Zealand examiner had taken a different point, that the claim was not fairly based because it left the person skilled in the art to perform significant experimentation to find colourants which did not quench the light from the

luminescent material. On 8th February 2007 Mr Lambert had emailed Dr Spencer addressing the point raised and going into detail about the spectrum of light emitted by the luminescent material and the idea of using a colourant which absorbs little within the relevant emitted range. This led to an amendment to claim 1 in New Zealand to insert the words "*the said colourant selected so its quenching effect on the glow radiated by the luminescent material is as low as possible, so that both day time visibility and visibility in the dark of the luminescent material is enhanced*". The amendment was reported to Mr Lambert on 26th February 2007.

135. The New Zealand examiner maintained the lack of fair basis objection and referred to a passage in Hannacolor PCT to show that it was appreciated that transmission abilities of colourants could interfere with the length of the glow. However the objection was not maintained in relation to claim 10 as it was then in New Zealand, which was limited to fluorescent colourants. Although it is not explained, I expect this was because the passage cited in Hannacolor PCT referred to a problem cause by the particle size of the colour pigments and did not mention fluorescent pigments. DualGlo limited the main claim to fluorescent colourants (letter of 8th June 2007) and the New Zealand application was successful. Ultimately two patents were granted in New Zealand and the later in time contains a potentially confusing amendment to address double patenting but nothing turns on that.

136. This digression into the position in New Zealand explains what Dr Spencer is referring to in his letter of 2nd March 2007 to Mr Lambert concerning the US.

Further developments in 2007

137. Lacomp invested £600,000 in DualGlo in 2007. It is clear and I find that in this period DualGlo was still regarded as a company whose focus was and was to be on selling product. That was the position both of its managers (including Mr Baillie, Mr Lambert and now Mr Hall) and its investors, i.e. Lacomp. A draft business plan in January 2007 refers to a vast potential market for the product. Minutes of a management meeting in June 2007 are focussed on selling products and sales leads. One item discussed is suspected breaches of patent and patent insurance but I do not accept that this reflected any change away from the idea that DualGlo's business was based on selling products. A funding requirements document dated October 2007 mentions IP licensing as one of four complementary strategies, the other three relating to products.

138. An email from Mr Baillie to Dr Spencer dated 16th July 2007 attaches some detailed thoughts on the prior art and the differences between that and the DualGlo application in the USA and China. The note mentioned Rayovac, Hannacolor (probably US), Hannacolor Laser Marking, Hirotec.

139. The US examination was still not advancing smoothly. The claimants submitted that a 25th July 2007 letter from Cook Alex showed that Dr Spencer had not conducted a proper exercise in analysing the US case and providing proper arguments to the US associates beforehand. I reject that interpretation of the letter. All it reflects is that new person was handling the file at Cook Alex (Daniel Riess instead of Renee Barthe).

140. On 10th September 2007 Dr Spencer wrote to Mr Baillie about the US application. Dr Spencer expresses the opinion that the inventors will have to go to the USA to meet the new US attorney. He wrote that "*As this is possibly the most key market I believe spending a reasonable amount of money to secure yourself a patent on the basis of your PCT in the United States is vital.*"

141. On 2nd October 2007 Dr Spencer reported the US associate's analysis of the US case. The view of the US associate was that the position was hopeless and examiner's objections could not be overcome. Dr Spencer's view was that he did not believe nothing could be done.

142. On 10th October Mr Hall sent sale projections to Nigel Milton. These were based on the scale of investment in DualGlo. With a £2 million investment sales income was predicted to be £3.7 million in 2008 rising to £33 million in 2011. All of this income was from product sales rather than licensing. With a £1million investment the predictions were reduced (£7.4 million sales in 2011).

Tritec's observations in the EPO

143. On 2nd December 2007 Dr Spencer reported to DualGlo that a company called RC Tritec AG filed third party observations with the European Patent Office about the European application. Tritec were a competitor of DualGlo. The observations raised Welch as prior art. It was the first time Welch had been raised as far as Dr Spencer was concerned. Although UDL had identified it in 2000, Dr Spencer did not know that. The letter asks for the inventor's detailed comments. Dr Spencer was criticised for not conducting a detailed analysis of the third party observations at this stage. His evidence was that that was because he wanted to wait and see what the examiner said. That could have been a reasonable approach at the time since he was not immediately being asked for an opinion. However a meeting then took place with the inventors at which amendments were formulated which were deployed both in the USA and the EPO. I do not see how that could reasonably have been done without considering the third party observations in detail.

144. Although the Tritec observations were reported in December, in fact the observations were filed in August 2007 and Bromhead Johnson received them on 20th September. Why reporting took so long is not clear and does not reflect well on Dr Spencer's business practice.

145. The meeting between Dr Spencer, Mr Lambert and Mr Baillie took place on 10th December 2007. Handwritten notes from this meeting exist which were made by Dr Spencer's assistant (Mr Edward Clarke) and by Mr Baillie. It is clear that the impact of both Hannacolor (US or PCT) and Hannacolor Laser Marking were discussed at the meeting and it is clear that the meeting led to the proposal to amend the US claim to limit it to claim to a composition comprising small (<1 micron) particles of titanium dioxide. It clearly also led to the idea to include a new dependent claim in Europe with a corresponding limitation to titanium dioxide particles of less than 1 micron. There is no evidence the third party observations were analysed in any further depth.

146. On 13th December 2007 Dr Spencer wrote to Cook Alex proposing the < 1 micron amendment in the USA. The letter confuses Hannacolor US and Hannacolor Laser Marking but nothing turns on that.

2008

147. On 10th January 2008 Dr Spencer filed amended claims in the EPO including the new dependent claim to titanium dioxide. This was clearly intended as a fall back should the examiner accept the Tritec observations.

148. In February an agreement with an American company called GlowZone was signed. DualGlo were to supply pigments, masterbatch and paints to GlowZone for them to resell or use in the USA.

149. On 3rd March 2008 Mr Hall emailed Nigel Milton. The email records that nothing had "*materially changed negatively on the patent front*". This is a fair characterisation of the state of Dr Spencer's advice at that time.

150. An email dated 5th March 2008 between Mr Buxtorf and Nigel Milton illustrates that at that time Lacomp were not investing large sums into DualGlo but were investing smaller sums to keep the company going prior to the next major funding round.

151. On 8th April 2008 a review meeting took place between Dr Spencer, Mr Lambert, Mr Baillie and Mr Hall. This can be taken as the beginning of a shift in DualGlo's strategy in relation to patents. Hitherto the focus had been on securing patent protection. From now on DualGlo were becoming interested in deploying any rights they had against third parties.

152. Dr Spencer's advice given at the meeting was summarised in a letter dated 9th April. It was that

    i) In all countries in which the patent had been granted, "the broad claim" had been granted except for New Zealand.

    ii) In the USA DualGlo was currently encountering difficulty but had filed two reduced claims: one to small titanium dioxide particles and another limited to certain plastics. Dr Spencer's advice was that these claims had merit and should be "grantable" with work.

    iii) In Europe the Tritec observations meant that considerable effort will be necessary to get the patent granted and Tritec are likely to file an opposition. This will all lead to substantial delay, up to 9 years including opposition and appeal. Welch is referred to. Narrower dependent claims like those filed in the USA had been filed in Europe. The possibility of using the utility model systems in Germany and Austria in order to obtain a quicker grant is mentioned.

153. Mr Hall asked for clarification and Dr Spencer's letter of 13th May 2008 explains the 9 year delay in more detail and the utility model system. Utility models are granted quickly and are not open to post grant oppositions but a third party would be able to

challenge novelty and inventiveness as a defence, albeit generally they require a lower level of inventiveness.

154. Mr Hall's evidence was that Dr Spencer's advice about the 9 year delay never mentioned that the reason the European application was likely to be delayed was because the prior art raised meant that "*broad claims (which is what we wanted and needed) would simply not be valid*".

155. In July 2008 experiments were carried out to support DualGlo's case for the US that small titanium dioxide particles gave improved results. Later these results were filed at the US patent office.

156. In August 2008 Mr Hall sent Mr Milton a document summarising DualGlo's status given the "credit crunch". The note discusses commercial problems and also refers to a problem caused by grey market strontium aluminate materials. DualGlo's IP is being widely copied. They have patents in the US (Hirotec) and in Australia, New Zealand, Singapore, India and some lesser markets but the infringers are too small and so both DualGlo's patents and the patent held by the originator of strontium aluminate are impotent.

157. A copy of DualGlo's IP insurance policy was sent to Mr Lambert on 19th August 2008. The schedule includes the DualGlo PCT with an aggregate limit of £500,000 but does not include Hirotec.

158. An email between Mr Buxtorf and Mr Milton dated 5th Sept 2008 records that DualGlo has run out of money. Costs cutting and potential investors are discussed.

159. In September 2008 Mr Lambert and Mr Hall travelled to the USA and purchased Fossil watches and a range of products from Toys R Us with a view to an infringement claim based on the Hirotec patent. It was clear that US advice would be needed for this and a note of DualGlo management meeting on 10th October 2008 records that a Lacomp investment at that time (of £20,000) is in part to assist in taking US legal advice re the Hirotec patent and to ratify its validity.

160. US attorneys Clark & Brody had been asked to advise in relation to the Hirotec patent and did so in a letter dated 12th November 2008. The US attorneys had analysed the prosecution file for Hirotec (the so called US file wrapper) and expressed the view that based on the file wrapper the claim would be limited such that the luminescent materials had to be excited by both UV and visible light. This was a new point but did not prove to be a problem since rare earth doped strontium aluminate, which was the material of interest, has that property.

161. The Clark & Brody letter also makes clear that Hirotec is limited to materials in which the fluorescent compound is excited by light emitted by the luminescent compound and suggests consideration of the emission and excitation spectra of materials thought to infringe. This is the familiar overlap point. Given the way this case has been argued by the claimants it is notable that Clark & Brody's point clearly did not excite comment from anyone at DualGlo. It seems to me that it shows that DualGlo – including Mr Hall as well as Mr Baillie and Mr Lambert knew all about the requirement for overlapping spectra in Hirotec.

The "To whom it may concern" letter

162. Dr Spencer was not provided with the Clark & Brody letter. No plausible explanation why not has been provided. Dr Spencer was asked to prepare a letter of advice about Hirotec and did so on 20th November 2008 in a letter marked "To whom it may concern". In providing this letter Dr Spencer knew that it was to be given to potential investors but at that stage (although Dr Spencer did not know this) those potential investors were not Lacomp. The intent was to seek to raise funds from other investors. At that stage Lacomp were putting minimal funds into DualGlo to keep the company alive.

163. The "To whom it may concern" letter contains an admittedly negligent piece of advice from Dr Spencer. It states that in prosecution of the DualGlo applications they have come across no documents which invalidate the main claim of Hirotec. That is wrong because the Tritec observations included Welch and on its face Welch predates Hirotec and is prejudicial to the main claim. Not only is the statement wrong, in my judgment it is bizarre. If all Dr Spencer had said was that he was not aware of prior art which prejudiced Hirotec then that might be explicable on the basis that he had not focussed on prior art cited in a slightly different context, i.e. DualGlo. However the letter goes out of its way to link the prior art emerging against DualGlo with its relevance to Hirotec and to imply that Dr Spencer had been carefully checking that art to consider its impact against Hirotec. But that is exactly how Welch arose and there is no rational excuse for this statement. It was a cavalier and careless comment by Dr Spencer and does not reflect well on him at all. As Dr Spencer noted in his witness statement, in fact the first to invent system in the USA means that Welch does not actually prejudice Hirotec but Dr Spencer did not know that at the time and it is no excuse.

164. The "To whom it may concern" letter also summarises and advises on the scope of Hirotec, stating that the patent is very broad. It would be avoided by not using a fluorescent pigment but states "our" view (i.e. the view of Mr Lambert and Dr Spencer) that avoiding using a fluorescent pigment would be extremely difficult and the result would be less than pleasing. That is an accurate statement of what the inventors and Dr Spencer thought at the time. There is no mention of spectral overlap.

165. In fact a few days before the "To whom it may concern" letter, on 13th November 2008 Cook Alex, the US attorneys dealing with DualGlo's US application, reported that the US examiner had allowed it. This followed from a successful interview with the examiner in the USA attended by Mr Lambert and Mr Baillie. In an email on 14th November 2008 Mr Hall described the grant of the US DualGlo patent for white formulations as very important to DualGlo. In my judgment that reflected his genuine view at the time. As Mr Wardell also submitted, the significance of the US patent can also be gauged by the fact that the inventors went to the trouble of travelling to the USA to the interview. I reject the suggestion that the inventors only travelled to the US because Dr Spencer told them to. They went there because the US patent was important to DualGlo. The result represented a vindication of Dr Spencer's opinion in 2007 that the US associate's analysis in the 2nd October 2007 letter was unduly pessimistic. If the advice of the US associate had been accepted then no US patent would have been obtained by DualGlo.

2009

166. There is a meeting note dated January 2009 which records that the immediate focus of DualGlo would now be on trading in ingredients and licensing IP. Consumer products would be "put on ice". Both the Clark & Brody letter and Dr Spencer's 20th November 2008 "To whom it may concern" letter eventually formed annexes to a DualGlo business plan dated March 2009 which was seeking to obtain funding from outside investors other than Lacomp for a strategy based on seeking to enforce DualGlo's patents, in particular Hirotec. Fossil watches were a key target as were watches made by others such as Blancpain and Oris. Toys such as a "Phlat Ball" were also targeted.

167. On 6th February 2009 a UK consultancy called RAPRA provided a detailed 50 page report on the characterisation of luminescent and fluorescent materials used in the Phlat Ball and in orange and white hands of Fossil watches. The results were encouraging and supported the view that rare earth doped strontium aluminate was being used as the phosphorescent material.

168. A March 2009 business plan was produced which reflects the plan to pursue infringers but external investors were not interested.

169. In a letter of 16th June 2009 Dr Spencer gave advice about the Australian patent and the German utility model (which had been obtained by then). He advised that before taking court action a full infringement and validity opinion from local lawyers should be obtained but expressed a view subject to that qualification. That was a reasonable thing to do.

170. As regards Australia Dr Spencer advised that the Fossil watches were likely to infringe the main claim. That claim was in the form of claim 1 of the DualGlo PCT with an added limitation to rare earth metal luminescent material. However Dr Spencer advised that since an infringer was likely to defend themselves by attacking validity "*we could then end up in the same argument which has been raging in the US and Europe and be forced to retreat to the small particle TiO_2 claim*". It was less clear whether the Fossil watches infringed that claim and evidence should be obtained.

171. As regards Germany there was less of a problem because all that was required for the validity of a utility model was novelty. There was no need to show inventive step and "*none of the prior art we have seen so far anticipates the broader claim in this way*". The broader claim referred to is the combination of claims 1 and 2 of the DualGlo PCT.

172. Dr Spencer summarised his advice about Australia and Germany as follows: "*it is therefore impossible at this stage to give an accurate assessment of the likelihood of court success but I believe our chances are good*".

173. This advice came as a surprise to Mr Hall. Dr Spencer was asked for clarification and he wrote again on 17th June 2009. That letter states that "raging" refers to a discussion they had had at a meeting in February about the US. It describes the TiO_2 claim as very much a worst case scenario which is by no means the only possible amendment which could be made if the broader claim cannot be sustained.

174. Full opinions were sought from local lawyers in Germany and Australia by letters of instruction dated 1st July 2009. Hirotec, Welch and Hannacolor PCT are provided to the lawyers. They were clearly the most pertinent prior art.

175. Also on 1st July 2009 there was a meeting between Dr Spencer and Messrs Hall, Baillie and Lambert. There is no suggestion he said anything at that meeting which was different from his advice in the 16th June letter qualified by the further comments in the 17th June letter.

176. Oddly the minute records Dr Spencer as having advised that DualGlo was in a very strong position in Germany. It is true that Dr Spencer's advice in the letters had been that the position in Germany was stronger as a result of the utility model system but I have difficulty reconciling this with the surprise felt by Mr Hall about the cautious nature of the 16th and 17th June letters.

177. A company overview of DualGlo was prepared in July 2009. It was prepared to get funders into DualGlo to fund the litigation. The document states that the only patent known to materially conflict with patents based on the DualGlo PCT is Hirotec and describes DualGlo as being in a "uniquely strong position to dominate the worldwide market". The first statement is plainly wrong and the second one cannot be reconciled with the advice Dr Spencer had given in the June letters. The inconsistency was put to Mr Hall. His position was that once they had received the 16th June letter referring to arguments raging they went back and qualified it with Dr Spencer, their understanding was that the position was potentially salvageable and so they took the view they were still in a strong position. I infer that "potentially salvageable" refers to the point made in the 17th June letter about other amendments. It is true that Dr Spencer's advice was optimistic but again I cannot reconcile the unqualified optimism expressed in this overview with the more qualified optimism he expressed. I do not believe Dr Spencer said that DualGlo was in a "uniquely strong position".

178. The advice about Germany was provided in an expert opinion dated 31st July 2009 from Dr Held of Meissner, Bolte & Partner and sent to DualGlo on 12th August 2009. Dr Held's opinion is negative. The main claims are not novel over the prior art. Some of the dependent claims are novel (such as the small particle titanium dioxide claim) but there is no evidence they are infringed by the Fossil watch hands. In his covering letter to Mr Lambert, Dr Spencer states that the German test for novelty of a utility model is apparently quite a lot broader than under British or European patent law and there therefore appears to be more scope to undermine the validity of the utility model than previously thought.

179. Dr Spencer's letter also states that Dr Held has raised the possibility of formulating a claim to a matrix of thermoset material. That is not stated in the written opinion and Dr Spencer's evidence was that the suggestion was made in a phone call. Since I do not think Dr Spencer made it up, I accept that this must have happened.

180. The Australian opinion was from Mr Kelson of Cullinans in a letter dated 14th August 2009. Mr Kelson identifies Hannacolour PCT as the most relevant prior art and states that the significance of Hannacolor depends on whether it is limited to pigments or discloses pigments and dyes. He does not regard Welch as pertinent and states that Hirotec will not be prior art in Australia as long as the DualGlo patent can maintain its

earliest priority date of 8th June 2000. That is because Hirotec was published on 23rd January 2001, between the first and second claimed priority dates. The opinion is that although there is a reasonable prospect of demonstrating infringement, the breadth of claim 1 is a concern. Even if it is novel it is possibly not inventive in the light of the prior art.

181. A note prepared by Mr Hall in August summarises the position as he saw it as that DualGlo does not have a winnable case against anyone for non-white coloured materials but may be able to secure a winnable position relating to white materials. The reason Mr Hall is negative about non-white coloured materials is because not only was the advice from Australia and Germany negative but at this stage it has been realised that Welch may prejudice the validity of Hirotec.

182. Mr Hall had clearly never been impressed with Dr Spencer and by this time the relationship between DualGlo and Dr Spencer was in serious trouble. Surprisingly in cross-examination Dr Spencer did not accept that he had an unhappy client at this stage. He clearly did.

183. On 4th September, as a result of the point made in Australia about priority, Dr Spencer looked into the matter and found out about the 7th June 2000 patent application filed by UDL the day before the 8th June 2000 application. This prejudiced the claim to priority from the 8th June application.

184. Mr Hall prepared a note of current status for Mr Buxtorf dated 9th September. It is clear that Mr Hall's view was that there may have been negligence on Dr Spencer's part. He also thought that many of the patent issues now surfacing could and should have been identified as far back as September 2004. Mr Hall also did not have a high opinion of the founders (i.e. Mr Baillie and Mr Lambert). His view was that they had failed to comprehend the patent situation as it was unfolding due to lack of focus and effort, did not commit sufficient time or focus on patent activities, were extremely lacking in attention to detail and overly relied on the activities of Dr Spencer. While there may be "duty of care issues" with Dr Spencer relating to the DualGlo PCT it appeared clear to Mr Hall that there had been contributory negligence on the part of the founders.

185. On 27th August Mr Hall had emailed Dr Spencer asking what his current view was about the possibility of DualGlo getting "*a set of claims worth having through the EPO, i.e. a broad set of claims*". Dr Spencer replied on 14th September. He said until the examiner had commented on the Tritec observations it was "a little hard" but he believed that there were a number of avenues to obtain reasonable protection. Four sets of claims were possible:

i) A claim like the USA to less than 1 micron titanium dioxide (or calcium carbonate)

ii) A claim to white pigment (i.e. not limited by particle size). But the problems here are the two patents of Hannacolor.

iii) A claim based on the selection of plastics substrate. This would require samples.

iv) A claim including thermoset. This would require evidence that prior art examples with thermosets do not produce DualGlo's results.

186. There is a note of a DualGlo management meeting from sometime in August/September 2009 (D11/p3857). It records as positives that reasonably broad patents over white materials appear achievable outside the USA, that a narrow white patent such as is granted in the USA has particular value in vertical applications. As negatives Hirotec is probably worthless, very broad coverage expected via the DualGlo applications will not stand up to attack and significant work and costs are involved in moving things forward.

187. Work was done to investigate whether the invention of Hirotec could be shown to have predated Welch so as to support the validity of Hirotec under US law and by October 2009 a DualGlo Ltd directors meeting records the strong belief that the Hirotec invention must have occurred before Welch.

188. On 30th October 2009 DualGlo Ltd made a formal written complaint to Dr Spencer's senior partner at Bromhead Johnson. Four complaints are made: first about Hirotec on the basis of Welch; second about the validity of the German utility model; third about priority dates and the 7th June application and fourth that the very limited scope of validity set out in the 14th September 2009 email should have been anticipated in 2004 given the prior art was cited then. The point on Hirotec referred to the "To whom it may concern" letter in 2008. In fact Dr Spencer was away from this office at this stage but nothing turns on that.

189. By November 2009 it was clear to Mr Hall, Mr Baillie and Mr Lambert that Welch was not a problem for Hirotec. From then on the focus inside DualGlo was in "leveraging" the Hirotec patent. A note of a meeting in January 2010 between DualGlo and Lacomp records that Hirotec covers the US market and although it would not cover white watch hands it would probably catch items produced by Fossil, Swatch and others.

2010

190. DualGlo entered into discussions with a US company called GlowZone and on 21st April 2010 an email from Mr Hall to Joe (Bloomfield) at GlowZone refers to the Hirotec patent as "the strongest patent we hold […] which we have very recently reviewed from an enforcement standpoint and we are advised that is both strong and enforceable".

191. There is also a document from April or May 2010 entitled "Protecting and Enhancing the value of the Hirotec patent". It was disclosed in this action in July 2013. Like the email to GlowZone, this document characterises Hirotec as strong and enforceable. It states that products of Fossil have been independently analysed and appear to breach it. The document discusses litigation against Bromhead Johnson as a way of raising funds to "*enable the Hirotec patent's potential to be exploited*".

192. The claim form had been issued on 20th April 2010 and a letter before action was sent to Bromhead Johnson dated 26th May 2010 enclosing draft Particulars of Claim. The draft particulars did not mention the two principal arguments now pressed. It neither pleaded the effect of the Hannacolor PCT nor the argument that Hirotec is not

infringed. Inexplicably given the materials from April and May 2010 I have just referred to, a claim was advanced that the Hirotec patent was worthless, on the basis of Welch as prior art to Hirotec. There has never been a satisfactory explanation on the claimants' behalf for this approach.

193. A new company called Visible 24/7 Ltd was incorporated in June 2010. Mr Hall is a director. The information about Visible 24 is sketchy because as a director of Visible 24 Mr Hall cannot disclose its confidential business information or trade secrets. Visible 24 has not given disclosure although it is also fair to say that the defendants never pressed for an order for third party disclosure.

194. In August 2010 DualGlo Ltd transferred Hirotec and the US DualGlo patent to Visible 24 in return for 450,000 £1 shares. Other investors invested £450,000 into Visible 24 at about that time. The relationship with GlowZone was also transferred to Visible 24.

195. Sometime later the relationship between Visible 24 and GlowZone failed. Mr Hall says that GlowZone found a way to avoid the Hirotec patent but he is unspecific and I am not prepared to place weight on that evidence.

2011 – 2014: the proceedings

196. The Particulars of Claim were served on 14th February 2011. At that stage Welch was relied on heavily both as the basis for the allegation that Hirotec was worthless and as the basis for the allegation that there was no real prospect of securing claims of broad scope based on the DualGlo PCT. One of the points made in the Defence, served on 8th April 2011 was that it had been apparent since 2004 that Hannacolor (US and PCT) would have an adverse impact on the scope of the claims that DualGlo would be able to secure.

197. Major amendments to the Particulars of Claim took place in July 2013. They were amended into their present form. The Hirotec patent was still alleged to be worthless but not now because of Welch but because it was not infringed. I infer that the idea that DualGlo's own products did not fall within the claims of Hirotec must have occurred to Mr Hall sometime in the first half of 2013.

198. As regards the DualGlo PCT the allegation over Welch was dropped and the claim based on Hannacolor advanced. It was suggested before me that the Defence had admitted the claimants' case over Hannacolor. I do not agree. The issue depends on precisely what claim one is talking about. The claimants' case is unspecific. The defendants' position is that Hannacolor does have an adverse impact on the scope of the claims in the DualGlo PCT but that does not mean they accept that there is no prospect of obtaining useful claims over Hannacolor.

199. On 13th February 2014 a pre-trial review took place before Arnold J. He required the claimants to serve a statement of case dealing with their case on causation and loss. The final version was served on 28th February 2014. This explained that the claimants' primary case was an "advice" case and that the scope of the defendants' retainer was sufficiently wide to encompass recovery of all losses flowing from the continued trading of the 3rd, 4th and 7th claimants after the relevant dates on which allegedly negligent advice was given. Negative advice about Hannacolor should have

been given either just after the first US office action in August 2004 or around August 2007 after the Tritec observations. Had it been given DualGlo would have stopped trading.

200. Alternatively the claimants rely on (a) a claim for the Hirotec purchase price on the basis that the advice about Hirotec was negligent because it is not infringed and is worthless; (b) a claim by the investors on the basis that all advice was given to all claimants including the investors; (c) a claim by the investors based on the "to whom it may concern" letter in 2008; (d) a claim for the wasted prosecution costs of the DualGlo PCT on the basis that if the advice about Hannacolor had been given correctly, the claimants would not have continued to prosecute those applications.

Findings on negligence and other key matters

(1) The earlier 7th June 2000 application filed by UDL

201. The DualGlo PCT application claimed priority from the DualGlo claimants' 8th June 2000 patent application filed by their previous patent attorneys, UDL but not from the earlier 7th June 2000 patent application also filed by UDL. The reason this happened is because Dr Spencer was unaware of the 7th June 2000 application. He was not told about it. The claimants' pleaded case is that on being instructed any competent patent attorney would have made enquiries of the Patent Office or of attorneys previously instructed and that such enquiries would have revealed the 7th June filing. I agree that had enquiries been made the 7th June filing would have emerged and the problem avoided. The issue is whether any competent patent attorney would have made enquiries. That depends on the circumstances. The defendants submitted that in the actual circumstances there was no reason why Dr Spencer should have contacted UDL or asked for the file.

202. In a sense this is a problem of unhappy hindsight. Looking back with hindsight we can see how the problem arose. Mr Baillie and Mr Lambert did not realise there was any reason to inform Dr Spencer about the 7th June application. As far as they were concerned the 8th June application was the one they wanted and they had given it to Dr Spencer. On the other hand there was nothing in the materials actually provided to Dr Spencer which suggested that the 7th June application existed nor is there anything in what he was given or told which would have put Dr Spencer (or any reasonably competent professional) on enquiry. Dr Spencer was simply instructed to claim priority from the 8th June application. That therefore included incorporating the subject matter of the 8th June application into a later application. On the face of it the documents provided gave Dr Spencer everything he needed in order to do what he was instructed to do. It is true that in fact the 8th June application claimed priority from the 7th June application and the documents at the Patent Office and at UDL would have shown that to be the case but there was no reason to suspect this unusual state of affairs existed.

203. In my judgment the responsibility for this problem arising lies with Mr Baillie and Mr Lambert and not with Dr Spencer. In the first half of 2001 they were dealing directly with both Dr Spencer and UDL at the same time. For example there are letters to Mr Baillie from UDL in February and May 2001 about applications filed by UDL the previous year while in the very same period Mr Baillie is writing to Dr Spencer and discussing matters with him. I find that when he was retained by Mr Baillie and Mr

Lambert, Dr Spencer was not instructed to and did not take over responsibility for the applications made by UDL the previous year. Moreover neither claimant thought he had or could reasonably have thought that he had. The application(s) Dr Spencer was to file were to claim priority from the 8th June 2000 application but that was the limit of his involvement at the relevant time. There was no reason for Dr Spencer to seek the file from the other firm nor to investigate anything at the Patent Office.

204. The claimants submitted that from January 2001 it was clear that Dr Spencer was to take forward the subject matter of the 8th June application – whether via a PCT or otherwise – and at that stage a reasonably competent patent attorney would have requested a copy of the file from the patent attorney's previously instructed. I agree with the first point but not the second. Once instructed to incorporate the subject matter I am sure many patent attorneys might ask for the file from the other firm. It might save them some work but I reject the submission that a reasonably competent patent attorney would have requested a copy. There was no reason to do so.

(2) The Hirotec patent

205. The claimants argue essentially that Hirotec was purchased by DualGlo because Mr Baillie and Mr Lambert were advised by Dr Spencer that their products infringed it and so would the products of their competitors. The claimants' case on Hirotec is that it is and was "worthless" and that Dr Spencer's advice was wrong. The facts relating to this part of the case involve two issues: what advice was actually given about Hirotec and is Hirotec worthless? I will address these issues in turn.

(a) What advice was given about Hirotec

206. Stated generally there is no doubt Dr Spencer advised the DualGlo claimants that they were at risk of infringing Hirotec in the USA at least for some of their products. It is also clear that by November 2004 Dr Spencer knew that DualGlo were going to buy it and that his advice played a part in that decision. However the negligence claim depends on a closer analysis of the facts than that.

207. The claimants refer to the Nov/Dec 2004 letter. Both drafts advise the DualGlo claimants that Hirotec "*catches your product because of the use of fluorescent dyes*". The claimants' case is that this is wrong because it ignores the need for a spectral overlap. Clearly, read literally, the quoted sentence omits a reference to the overlap feature but the defendants take two points. First the letter has to be seen in its wider context especially the earlier full advice on infringement given in the letter of 22nd November 2001. Second as far as Dr Spencer was aware the letter was nothing more than confirmation of advice previously given. The language was therefore compressed but the recipients understood it and understood the overlap point. A key question is whether Dr Spencer knew, as Mr Baillie and Mr Lambert allege but Dr Spencer denies, that the letter was to be given to investors. If he did then his case on the letter cannot stand because there could be no justification in using compressed language in a letter which was to be shown to third parties who were not necessarily privy to the earlier discussions.

208. The letter of 22nd November 2001 starts by noting that Dr Spencer has based his views on UK practice which he says is substantially similar to US practice but that obviously for a concrete view his clients should approach a US patent attorney. There

was criticism of this on the footing that Dr Spencer should have placed more emphasis on obtaining US advice. I reject that criticism. The letter explains the basis of the advice (including also the fact that validity has not been addressed) and properly reminds them about advice from the US.

209. The 22nd November 2001 letter correctly identifies the overlap point as a feature of claim 1 of Hirotec. It records Dr Spencer's understanding that the colourant used by his clients can have fluorescent properties "*that is to say it can be excited by the light stored within the luminescent material and emit radiation*". This was criticised on the basis that it equates any fluorescence with spectral overlap. I do not accept that criticism. In my judgment the point Dr Spencer was making, and what his clients understood, was that there was, as a matter of fact, some spectral overlap with the materials being used by DualGlo. The fact that the point of the DualGlo invention was to minimise quenching and minimise overlap does not mean that no overlap existed.

210. The conclusions of the 22nd November 2001 letter are that provided DualGlo use a colourant or optical brightener which is not fluorescent, they will not fall foul of Hirotec whereas if a material which even partially fluoresces is used then there is a problem. The first aspect is clearly right (no fluorescent means no risk of infringement). The correctness of the second aspect depends on spectral overlap. Since the letter makes clear it is working on the basis that in practice the fluorescent colourant in the DualGlo material can be excited by light from the phosphorescent material the conclusion follows and in my judgment cannot fairly be criticised.

211. There is an ambiguity in the 22nd November 2001 letter about optical brighteners. On page 2 the advice is that "*to avoid this claim you should use optical brighteners or colourants that do not fluoresce*". In isolation this could be read disjunctively such that the qualification about not fluorescing applies only to colourants. This could make sense since optical brighteners which fluoresce may not infringe if they are only excited by UV and therefore will have no overlap unless the luminescent material emits UV as well. However as I read the letter as a whole, the qualification applied to both optical brighteners or colourants. After all the letter contemplates that the luminescent material does emit UV (for example the next paragraph on p2).

212. In my judgment in the period from 2001 and on into 2004 and beyond, Dr Spencer and his clients understood that although in theory a fluorescent material might not necessarily have a spectral overlap with the emission from the phosphorescent material, in practice they believed that the materials DualGlo was using had some overlap. This follows from the 22nd November 2001 letter and is supported by the second question in the 19th January 2004 letter.

213. Turning to the particular context of the Nov/Dec 2004 letter, Dr Spencer maintained in evidence that he did not know Mr Baillie and Mr Lambert were going to show it to investors. Mr Baillie and Mr Lambert maintained that he did know. A reasonable point in the claimants' favour is the editing of the letter. This supports the idea that Dr Spencer would have realised it must be something to be shown to someone else. However his evidence was that he understood the letter was for their "peace of mind". Counsel for the claimants submitted that the recollection of the claimants was to be preferred to that of their professional adviser because whereas for the professional this was just another case, for them it was their only involvement with patents. I accept

that this point can play a role in many circumstances but I reject its application in relation to the Nov/Dec 2004 letter. Dr Spencer said the letter was unusual from his point of view and that is why his recollection was clear. I accept that this would have been an unusual thing for a patent attorney to be asked to do. Thus this is not a factor which weighs in the balance between the rival recollections.

214. What Dr Spencer did know by this stage in November 2004 was that DualGlo had been negotiating about the Hirotec patent since early 2002. The defendants suggested that Dr Spencer did not know that negotiations had been reopened in late 2003 or early 2004. I will make no finding about his state of mind in that period because I do not understand its relevance. However I do find that by November 2004 Dr Spencer knew that the negotiations had restarted and that by now the price was to be $550,000. However none of this means that Dr Spencer knew that the Nov/Dec 2004 letter was being sought to show investors funding the purchase.

215. All I have to go on in concrete terms is the testimony of three witnesses, none of whom were wholly satisfactory. In the end I preferred Dr Spencer's evidence on this point to that of Mr Baillie and Mr Lambert. It was more credible. I find that Dr Spencer was not told that the Nov/Dec 2004 letter was to be shown to existing or potential investors. I reject the claimants' submission that at the time of production of the letter Dr Spencer knew that the letter itself was being sought to raise investment to fund the purchase of Hirotec. Dr Spencer did know (or ought to have known) that his advice generally, including what was recorded in the letter, was critical to DualGlo's decision to purchase Hirotec but that is a different matter.

216. Returning to the interpretation of the Nov/Dec 2004 letter, since as far as Dr Spencer was aware it was addressed only to the DualGlo claimants, it cannot fairly be read in isolation. Given the context of the 22nd November 2001 letter and given that Dr Spencer did not and had no reason to know that the letter was to be shown to anyone outside DualGlo, the fact the letter did not mention spectral overlap was reasonable. I reject the submission that Dr Spencer advised prior to the purchase that Hirotec would be infringed irrespective of spectral overlap. He did advise that Hirotec could be avoided by not using a fluorescent material at all, but that advice is correct.

217. Putting the matter the other way round, I find that the relationship between the three individuals (Baillie, Lambert and Spencer) was such that Mr Baillie and Mr Lambert could only understand the Nov/Dec 2004 letter on the basis that it was implicit that the only fluorescence that counted was fluorescence in response to emissions from the phosphorescent material.

218. The Nov/Dec 2004 letter also advises in relation to the impact of Hirotec on DualGlo's competitors. The basis for this advice was clear and is stated in the letter, namely that "*if it is necessary for you to infringe the patent in order to produce a decently coloured plastics* (sic) *it will presumably be necessary for anybody who is intending to infringe your products to do so as well*". The letter therefore advises DualGlo that Hirotec "*is almost certain to catch your competitors as well as you*". That was a reasonable view to express at the time.

219. In the 15th September 2005 letter to the investment broker Nathan Alexander, Dr Spencer described the Hirotec patent as very powerful. The letter is not a detailed infringement opinion. Dr Spencer's characterisation of Hirotec reflects the advice he

had given before and the views of the inventors. This was that the products involving fluorescent colourants which DualGlo wished to sell in the US infringed Hirotec and so would the products of competitors.

220. I have considered whether the terms of Dr Spencer's 20th November 2008 "To whom it may concern" letter and also the fact Dr Spencer knew it was for investors, either individually or together to shed any light on the advice given in 2004. The 2008 letter includes a very compressed summary of the infringement advice which concludes that it was not possible to avoid the Hirotec patent and again makes no reference to spectral overlap. It does not alter the conclusions I have reached as to the position in 2004.

(b) Is Hirotec worthless?

221. The claimants contend that in fact the DualGlo materials did not infringe Hirotec at all because the excitation and emission spectra of the compounds actually used do not overlap in the relevant sense. Moreover since non-overlapping compounds exist, it is simple to design around Hirotec and so it is worthless for that reason. The defendants do not agree that Hirotec is worthless. They do not accept the DualGlo materials fall outside Hirotec nor do they accept there is any proper evidence that the patent can be avoided.

222. This element of the case is in effect a US patent infringement claim being considered without evidence of US law and without evidence from technical experts. Both Mr Butler and Mr Bayliss have significant technical expertise but they are patent attorneys not technologists. Mr Hall gave technical evidence for the claimants on this issue but I am not prepared to place any weight on his opinions on this topic.

223. Hirotec has 20 claims. I will consider only claim 1 and start with its scope. Hirotec claim 1 is:

> A photostorage and emission material composed of a luminescent material which absorbs light energy from a light source and re-emits the light energy in a first wavelength spectrum when the light source is removed; and a material selected from the group consisting of fluorescent colorant and optical brighteners which are excited by absorbing light at said first wavelength spectrum and re-radiating the absorbed light at a second wavelength spectrum.

224. This claim is to any material comprising a combination of a luminescent (i.e. phosphorescent) material and a fluorescent material with the spectral overlap described before. Clark & Brody's letter of 12th November 2008 advised that the US doctrine of file wrapper estoppel means that the claim will only be infringed if the phosphorescent material is excited by UV and visible light.

225. The only detailed evidence about the nature of DualGlo's material at any material time was given by Mr Hall in his third witness statement. Since he was not present until 2006/7 this is surprising. Mr Hall describes nine formulations he contends were used in 2004/5 by DualGlo. They all included a phosphorescent material. Of the nine formulations, three (5601, 5650 and 5739) contained no fluorescent colourant or

optical brightener at all. As Mr Hall explained these are not relevant. They cannot have infringed Hirotec on any view and the claimants cannot have thought they did. I note that according to Mr Hall's table of information for these three formulations the night colour was the same as the phosphor emission colour.

226. The remaining six formulations include two white and four non-white coloured formulations. I will consider the four non-white coloured formulations first. Mr Hall was not able to find the spectra for the fluorescent colourants used in these four formulations.

227. Although Mr Hall's evidence is the only detailed evidence relating to the materials used by DualGlo, the correspondence from 2001 to 2004 also sheds light on the point. In his letter on 8th October 2001 in which Mr Baillie said of Hirotec and DualGlo that he was convinced they were "*dealing with different animals*" Mr Baillie looked in some detail at the overlapping spectra issue for DualGlo's materials. The thrust of the letter is that the overlap between the spectra for DualGlo material was minimal and that DualGlo's approach was to reduce quenching and therefore reduce overlap. I accept the latter point but not the former. Clearly the point of the DualGlo effect is to reduce quenching and therefore reduce overlap but the evidence does not rule out an overlap nor show it is so minimal as to be disregarded. Mr Lambert explained in cross-examination that there was a slight change in night time colour. I find that it is likely to be an indication that the fluorescent material is fluorescing. This supports a conclusion that the coloured DualGlo materials fall within the scope of the Hirotec patent.

228. Moreover it is clear that Mr Baillie believed that the fluorescent material in DualGlo products was excited by emissions from the phosphorescent material, albeit that they aimed to reduce this effect. He had this belief at all material times until Mr Hall, in the course of these proceedings perhaps as recently as late 2013, suggested otherwise to him.

229. The issue of whether the fluorescent materials were excited by the phosphorescent material in DualGlo materials was debated between Mr Bayliss and Mr Butler in their reports exchanged before Mr Hall's third witness statement was served on 6th March 2014. I did not find their views on this point expressed before March 2014 to be of assistance.

230. Although Mr Hall was not able to find the spectra for the fluorescent colourants in the non-white coloured formulations, the defendants were able to find relevant datasheets and other materials on the issue. I am satisfied on the evidence produced by the defendants which was put to Mr Hall in cross-examination that the excitation spectra of these fluorescent colourants do overlap with the emission spectra of the phosphorescent materials.

231. I should also mention the point raised by Clark & Brody in November 2008 letter that file wrapper estoppel means that to infringe Hirotec the phosphorescent material must be excited by UV and visible light. In my judgment that requirement is satisfied by the DualGlo materials.

232. Accordingly I conclude that the four non-white coloured DualGlo formulations fall within claim 1 of Hirotec. Since they are the only formulations for which any

concrete information was provided, it is a reasonable inference that all non-white coloured formulations produced by DualGlo at any relevant time would have fallen within claim 1 of Hirotec.

233. I will turn to DualGlo's competitors. There is clear evidence that there are phosphorescent materials and fluorescent materials for which the relevant spectra do not overlap but there is no reliable evidence that any realistic non-white coloured formulations to rival DualGlo material are or were feasible using those materials.

234. Part of the claimants' argument was based on the submission that the DualGlo materials avoided Hirotec but they do not. There was a suggestion that someone had recently found a particular way of producing material which did not infringe Hirotec. There was no proper evidence about this but even if it is correct, there is no evidence it was feasible until recently and it would not undermine advice in 2004 that Hirotec was almost certain to catch DualGlo's competitors.

235. I also bear in mind the work done at DualGlo to look into suing Fossil. At the same time this claim began, DualGlo believed that Hirotec was strong and enforceable and infringed by Fossil but no proceedings have been commenced. The clear evidence from Mr Hall is that the problem has been funding. The reason no infringement claim based on Hirotec has been brought in the USA is not anything to do with the merits. DualGlo could not raise the funds to bring a claim and that is the only reason no such claim has been brought.

236. I reject the submission that at any material time DualGlo's competitors could avoid the Hirotec patent if they wanted to produce a realistic rival to one of these DualGlo materials. The advice of Dr Spencer that Hirotec was a powerful patent was reasonable advice.

237. I need to address the final two formulations in Mr Hall's list of nine. They are white (5593 and 5660). They contain titanium dioxide (TiO_2) and an optical brightener. The optical brightener is fluorescent but I find that the claimants are correct that it is not excited by emissions from the phosphorescent material. The defendants did not really challenge the point. It makes sense because optical brighteners are generally excited by UV, which has shorter wavelengths than visible light.

238. Accordingly these products would not infringe Hirotec because there is no relevant overlap.

239. This finding also means that the "To whom it may concern" letter is wrong and negligently so. That is because it repeats the point that using a fluorescent pigment would infringe Hirotec and since Dr Spencer knew this letter was addressed to investors, the absence of a reference to spectral overlap cannot be excused in the way it can be excused in relation to the Nov/Dec 2004 letter. However I am not satisfied any consequences flow from this negligence. First Lacomp did not in fact rely on this letter. The investors it was addressed to were not Lacomp and in fact no investors invested in DualGlo on the strength of it.

240. Moreover the fact that these white materials do not infringe Hirotec does not translate into a finding that Hirotec is worthless or is even worth less than Mr Baillie and Mr Lambert might have thought. It is clear that Hirotec was regarded by DualGlo as

giving protection for non-white coloured formulations. The whole basis of DualGlo's patent strategy in the USA after September 2005 was to focus the DualGlo application on white material. The idea was the Hirotec gave protection for coloured (i.e. non-white) materials while the DualGlo US patent would protect white material.

241. DualGlo's US patent 7,507,352 was granted on 24th March 2009. Its main claim 1 refers to a rubber, glass or plastics matrix, a rare earth metal phosphorescent material, titanium dioxide (which is white) as a colourant. The titanium dioxide particle size must be less than one micron. Claim 25 is dependent on claim 1 and includes optical brighteners.

242. In my judgment it is more likely than not that the two white DualGlo formulations fall within the US patent. There was no direct evidence about particle size but DualGlo thought the small particle size gave improved results and I note the IP review meeting in September 2009 regarded this patent as of particular value.

243. There is a point on the interpretation of claim 25. It could be read as requiring the optical brightener itself to both enhance the daylight visibility and enhance visibility in the dark or it could mean that the effect of adding the optical brightener means that the formulation as a whole has enhanced visibility in daylight (due to the optical brightening) and enhanced visibility at night (due to the luminescence – i.e. the phosphorescence). In the latter case the claim would cover the DualGlo material while in the former case it would not because the optical brightener is not excited by the emission of the phosphorescent material. I prefer the latter construction in any event since it is consistent with the idea of reducing quenching and is consistent with the "substantial transmission of light" feature.

244. Before leaving the DualGlo US patent I should mention the following. Mr Hall's third witness statement was only served three weeks before trial. It did not address the point at all. The debate about whether these white formulations fall within the DualGlo US patent only arose during the trial, prompted by me. Nevertheless it is clear that the value of the Hirotec patent to the DualGlo claimants cannot be assessed entirely in isolation, as this point shows. I have addressed the issue as best I can on the material.

245. Finally before concluding on Hirotec or the DualGlo US patent I should record that neither side addressed US law or practice to me. These findings are not findings of infringement of US patents under US law. They are binding only as findings of fact arising in this negligence case between the parties before this court.

246. I find that Hirotec and the DualGlo US patent taken together protect all the six DualGlo formulations which include fluorescent materials. That is another reason for rejecting the submission that Hirotec was worthless at any material time. In its context in DualGlo's portfolio, it was not.

247. Thus I conclude that advice that the Hirotec patent was infringed by DualGlo's products and by its competitors at the relevant time was advice which a reasonable patent attorney could give.

(3) The DualGlo application

248. The claimants argue essentially that Dr Spencer always advised that the DualGlo application would lead to broad useful patents worldwide but that this advice was negligent and wrong because the Hannacolor PCT prior art means that useful broad scope is not available from the DualGlo application. The facts relating to this part of the case involve three topics:

i) The November 2004 meeting,

ii) Later advice about the DualGlo PCT,

iii) The relevance of Hannacolor PCT to the DualGlo PCT.

249. I will address these issues in turn.

(a) The November 2004 meeting

250. The issue is about what advice was given at this meeting or just following it, particularly as regards the position outside the US. To address that it is necessary first to resolve the dispute about whether Hannacolor PCT had been identified by this stage since Hannacolor US was not relevant prior art outside the US.

251. Dr Spencer's position was that he identified Hannacolor PCT in 2004 after Hannacolor US was cited by the US examiner. Dr Spencer's testimony is supported by the following points. First, looking for foreign equivalents of cited prior art in a situation like this would be a natural thing for a patent attorney to do in general. Second, the alternative date advanced by the claimants for when Hannacolor PCT emerged is in 2007 when it was cited in third party observations by Tritec in the EPO however there is documentary evidence that Hannacolor PCT was known to Dr Spencer well before that. It was cited in New Zealand in 2006. There is no evidence it excited particular comment in 2006. Third, the Singapore amendments filed on 2nd December 2004 record that the amendments had been discussed between Dr Spencer and Mr Baillie at the recent meeting. The amendments are the same as the ones formulated for the USA to avoid Hannacolor US. The natural explanation for what happened in Singapore is that Hannacolor was being treated as having worldwide relevance. That is consistent with the identification of Hannacolor PCT beforehand. It is true that there is no copy of Hannacolor PCT in the documents from the 2004 meeting but its text is the same as Hannacolor US.

252. The best evidence to the contrary is the letter of 15th September 2005 to Nathan Alexander. This draws a distinction between the prior art available in the US and elsewhere in the world but does not explain what prior art is referred to. It could be Hirotec, or Hannacolor or something else. If it is Hirotec then it is inconsistent with Dr Spencer's evidence that he treated Hirotec as if it was prior art worldwide as a prudent measure since US inventors will generally start selling their products well before the patent has granted. If Hannacolor US is the prior art available in the US but not elsewhere then this is clear evidence that Dr Spencer either had not yet found the Hannacolor PCT or had forgotten about it. If it is something else, it is not clear what other prior art cited in the US it could be.

253. Further evidence to the contrary could be the letter of 11th January 2008 in which Dr Spencer is reporting the Tritec observations in the EPO to Cook Alex in the US. The

clear reason for this is so that DualGlo complies with its American information disclosure obligations. This letter encloses the Hannacolor PCT. This would have been consistent with the idea that Hannacolor PCT first emerged in the Tritec observations but we know that is not correct because it was cited in New Zealand at least a year beforehand. I infer that this letter does not indicate the Hannacolor PCT was new. It is simply including the document because Tritec's arguments refer to it.

254. On balance I accept Dr Spencer testimony on the Hannacolor PCT point. It makes sense. I find that the Hannacolor PCT was identified in late 2004 and so the disclosure of Hannacolor (US or PCT) was treated as prior art by Dr Spencer outside the US.

255. There is no point in trying to fully explain the terms of the 15th September 2005 letter. It is odd because even though there is a reference to different prior art in the US, the opinion expressed there does state that a claim in the form of claim 1 plus high opacity and rare earths would be granted in the US as well, albeit DualGlo is going to seek swift grant of a white claim. That would be consistent with the important prior art being the same worldwide. I would not be surprised if Dr Spencer had forgotten about the Hannacolor PCT when writing this letter. The claimants did criticise Dr Spencer's record keeping. While it was not a pleaded ground of negligence, I must say there did seem to me to be force in this criticism. That may explain the terms of this letter.

256. The claimants submitted I should make four findings of fact which relate at least in part to what happened at the November 2004 meeting. They submit I should find that:

i) Dr Spencer never performed the analysis which the experts are agreed is necessary before giving advice as to the patentability of the DualGlo PCT in view of the cited art.

ii) Dr Spencer was giving robust positive advice as to the patentability of the broad inventive concept (over the prior art, including over Hannacolor) throughout.

iii) Following the 2004 meeting advice was given as to patentability of the DualGlo PCT and that advice was that, with limitation to rare earth metals and "high opacity" the claims could be distinguished from the prior art.

iv) The advice that that, with limitation to rare earth metals and "high opacity" the claims could be distinguished from the prior art was advice no reasonable patent attorney could have given. I will address this fourth point in the later section concerning the position of the claims over Hannacolor.

257. I reject the first submission. The experts did agree that an analysis would be necessary before giving advice as to the patentability of the DualGlo PCT in view of the cited art. I accept that. However the analysis does not have to take any particular form. The fact that no detailed notes survive and the fact that Dr Spencer's invoices suggest (but do not prove) that he cannot have spent very long preparing for the meeting, does not establish that he did not conduct a proper analysis. Dr Spencer approached the matter by aiming to consider the prior art in detail with his clients at

the meeting. That was a legitimate approach. Although it might be prudent to have kept detailed notes, the lack of such notes does not prove that Dr Spencer did not analyse the relevant material. I find that at the meeting Dr Spencer did what he set out to do. He went through the cited prior art in detail with Mr Baillie and Mr Lambert. That included Hannacolor and Hannacolor Laser Marking.

258. I accept the second submission up to a point. I think Dr Spencer was giving positive and optimistic advice as to the prospects of obtaining patents throughout. This optimistic advice ostensibly took into account all the prior art, including Hannacolor. That is clearly what Mr Baillie and Mr Lambert thought and in my judgment they thought that because of what Dr Spencer was telling them. But this is a long way from saying that he was advising that claim 1 of the DualGlo PCT (or claims 1 and 2 together) would be accepted in any given state as being patentable over the prior art. It is plain that Dr Spencer's advice was the amendments would be needed to the US claims to secure patentability.

259. The introduction of "high opacity" produces a claim which is narrower than claim 1 plus claim 2. All three of Mr Baillie, Mr Lambert and Dr Spencer must have had the view that it was not giving up important scope. I reject the suggestion (if made) that the limitations to high opacity or rare earth metals were simply proposals imposed on DualGlo by Dr Spencer. In my judgment they emerged from a discussion of the way forward by all three individuals and agreed upon. All three thought that the invention could be distinguished from the prior art by introducing these limitations. It was not simply a matter for the patent attorney. In general terms the inventors can be assumed to know about their invention. In the specific circumstances of this relationship Mr Baillie and Mr Lambert were entirely capable of suggesting differences between what they had invented and the prior art. For example Mr Baillie had done this on 8th October 2001. That does not absolve Dr Spencer of a responsibility for giving competent advice but it is an important part of the process.

260. The meeting and/or the advice which was given at or just after it was not limited to the US. It encompassed the rest of the world and was to the same effect. Dr Spencer advised that the prior art (including Hannacolor) would impact on the scope of protection elsewhere in the world (the actions in Singapore demonstrate that).

261. I do not accept the claimants' characterisation of his advice as being that the "broad inventive concept" was patentable. The claimants use the word "broad" to refer to a claim with the scope of claim 1 plus claim 2. It was plain that amendments, such as to high opacity, might be needed. With all the hindsight of these proceedings, I would characterise the advice Dr Spencer gave at the time as that the core inventive concept was patentable. That is not the same as saying that claim 1 plus claim 2 is patentable nor is it the same as saying that the only way forward was to obtain the same claim with a limitation to high opacity. My characterisation is intended to convey what I believe Dr Spencer thought at the time and what his clients understood him believe: that the essence of what they had invented and was described in the DualGlo PCT was patentable. That was what was commercially important to them. This view is not tied to a particular form of patent claim. It is concerned with products which achieve the DualGlo effect. A claim limited to high opacity was not seen as giving up important scope as compared to the core inventive concept but the two are not the same.

262. No doubt it would have been better had Dr Spencer's advice been written down but Dr Spencer was not at this stage being asked for a formal opinion. The term "core inventive concept" has been coined by me to explain what I find took place. It involves a degree of ambiguity but no more than was present at the time.

263. The claimants submitted that Dr Spencer's advice here was "robust". The defendants submitted that Dr Spencer's view was merely that there was a real prospect of obtaining a patent and patents over Hannacolor in the various jurisdictions of the world. I think both sides are exaggerating although the defendants are closer to the mark. Dr Spencer's advice was positive and was firm but that is all. He did not offer an unqualified prediction of success and the DualGlo claimants did not in fact nor could they reasonably have thought that he had done so.

264. I do not accept the third submission as it is expressed. At or following the 2004 meeting Dr Spencer gave advice as to patentability of applications derived from the DualGlo PCT and the way forward. The strategy was to seek to limit the claims to rare earth metals and "high opacity" in order to distinguish them from the prior art. I have characterised the advice already. As I have said it was positive, optimistic and firm but it was not an unqualified prediction of success.

265. In summary I am satisfied that Dr Spencer's advice at or shortly after the November 2004 meeting was positive but I reject the submission that he advised that a claim with the scope of claim 1 plus claim 2 was patentable over Hannacolor. He did not. Hannacolor prior art was treated as adverse to the validity of a claim consisting of claim 1 plus claim 2. I have characterised Dr Spencer's advice at that stage as being that the core inventive concept was patentable amongst other things over Hannacolor.

(b) Later advice about the DualGlo application

266. I will start with the period from 2004 until December 2007. Up to that point there was no material change to Dr Spencer's advice about the DualGlo PCT. His view was that the core inventive concept was patentable. In 2005 Dr Spencer advised Nathan Alexander that a claim consisting of claim 1 plus claim 2 with high opacity should be granted. That is an illustration of the view that both DualGlo and Dr Spencer held, that a claim in that form did not give up important scope as compared to the core inventive concept.

267. In December 2007 there was a meeting just after the Tritec observations in the EPO had been reported to DualGlo. The defendants submitted (i) that the impact of Hannacolor was revisited at the December 2007 meeting since it had been cited in the Tritec third party observations, (ii) that Mr Baillie and Mr Lambert were well aware after the meeting that any patent likely to be granted in the US was going to be very narrow albeit there was some prospect of obtaining a wider claim via a US continuation, (iii) Mr Baillie and Mr Lambert were keen to pursue the narrow US application as they believed it would be commercially valuable if granted, and (iv) when it was granted they were pleased.

268. I accept the first and second submissions. They are supported by the evidence of Mr Baillie and Mr Lambert. I also accept the third submission. The narrow US application at this stage was one limited to white with titanium dioxide particles of less than 1 micron. The inventors believed and had evidence that the small particles

gave improved performance. It is clear that white was regarded as an important material. I also accept the fourth submission. The inventors clearly were pleased when the US patent was granted. I reject the suggestion which was made at one stage that Mr Baillie and Mr Lambert only went to the USA to meet the US examiner because Dr Spencer advised them to. Dr Spencer did advise them to but I find they went there because they regarded the narrow US patent as important.

269. The claimants submitted that as at 2007 Dr Spencer's advice remained to the effect that with the limitation to rare earth metals and "high opacity" the claims of the DualGlo application could be distinguished from the prior art. I find that by the end of 2007 Dr Spencer's advice concerning the prospects worldwide for the core inventive concept disclosed in the DualGlo application remained positive but the advice was not restricted simply to the introduction of limitations to high opacity and rare earth metals. After all in New Zealand in early 2007 amendments had been required which produced a claim narrower in scope than the broadest PCT claims (claim 1 and claim 2 with or without high opacity). Limitations had been introduced to fluorescent colourants and to minimising quenching but these are still directed to the core inventive concept.

270. I reject the submission that in 2007 Dr Spencer's advice was as definitive as saying simply that with the limitation to rare earth metals and "high opacity" the claims of the DualGlo application could be distinguished from the prior art. His advice was that limitations would have to be made over the combination of claims 1 and 2.

271. In April 2008 DualGlo's commercial strategy began to change. Dr Spencer gave advice in the 9th April 2008 letter. The advice summarised in the 9th April 2008 letter was clearly a surprise to Mr Hall but I think the real problem was that DualGlo's own imperatives were changing. The change in focus from trading in products and obtaining patents which reflected and protected that business to actually trying to make money from third parties by wielding the patents, meant that the precise terms of the claims in any granted patents became much more significant to DualGlo than it had ever been before. Dr Spencer's view remained that the core inventive concept was patentable but that claim amendments might be necessary. A significant part of Mr Hall's surprise was caused by the fact that he thought a European patent would be granted soon (he had been right to think that) but was now being told it would not happen. The thrust of Dr Spencer's advice about Europe was positive, i.e. that a patent for the core inventive concept would emerge from the 9 year opposition proceedings but I do not accept it was reasonable for Mr Hall to take it that this was advice that claim 1 plus claim 2 would be found valid.

272. In June 2009 Dr Spencer gave advice about the Australian patent and the German utility model. In my judgment Dr Spencer did not believe he was expressing a view any different from the one he had had for many years, in other words that the core inventive concept was patentable but that amendments would be needed for a claim with the scope of claim 1 plus claim 2 to be valid (i.e. novel and inventive). He thought claim 1 plus claim 2 would be novel, hence the advice about the German utility model.

273. I find that until the relationship between the parties broke down, Dr Spencer's advice remained as it was in 2004, that the core inventive concept was patentable over all the prior art, including Hannacolour.

(c) *The relevance of Hannacolor to the DualGlo PCT*

274. The claimants pleaded case is that Dr Spencer failed to advise properly or at all as to the effect of Hannacolor PCT which was or should have been identified by Dr Spencer as a result of Hannacolor US being reported in the US office action of 17th August 2004 and/or which was reported to the defendants in the Tritec observations in August 2007 and that a reasonably competent patent attorney upon becoming aware of such prior art would have advised that Hannacolor PCT meant "*there was no real prospect of securing any, alternatively a broad scope, of claims on the DualGlo application*". Similarly the claimants contend that advice that, with limitation to rare earth metals and "high opacity", the claims could be distinguished from the prior art was advice no reasonable patent attorney could have given.

275. This involves two distinct allegations. The first is concerned with the point in time at which Hannacolor PCT was actually identified. I have decided that it was identified by Dr Spencer in advance of the November 2004 meeting. The second is the relevance of Hannacolor PCT to the scope of claims available pursuant to the DualGlo PCT.

276. The real issue is the second point. To decide the second point one needs to know in what jurisdiction the question arises and what claim or claims are being considered. I will approach the question as a matter of UK law. The pleaded case refers to any or a broad scope of claims. In argument at trial Mr Stewart explained that by "broad scope" his clients meant either claim 1 of the PCT alone or claims 1 and 2 together. Those claims are:

> 1. A luminous material comprising a rubber, glass or plastics material matrix, a luminescent material dispersed throughout the matrix, and a colorant (*sic*) dispersed throughout the matrix, the colourant giving the material a colour when it is observed under substantially white light, and the colourant allowing substantial transmission of light emitted by the luminous material.
>
> 2. A luminous material according to claim 1, in which the luminescent material comprises a rare earth metal, such as europium or dysprosium.

277. Another putative claim discussed in argument is the combination of claim 1 plus claim 2 with a limitation to high opacity.

278. The point of the allegation is not simply an academic exercise about the possibility of obtaining claims in a particular form. A key aspect of the allegation is that without claims of a "broad scope" being available the whole exercise was a waste of time and money. It is said that Dr Spencer should have advised that a claim of "broad scope" as defined was unavailable once he knew about Hannacolor PCT and if he had given that advice the whole exercise would have stopped. The claimants' pleading reflects this point and in paragraph 39 relates "broad scope" to being what was required in order to successfully exploit the invention on a commercial basis.

279. I do not accept that claims 1 and 2 are the only claims of sufficient scope to be "what was required in order to successfully exploit the invention on a commercial basis". There was no convincing evidence to that effect and clear evidence to the contrary. The positions in New Zealand and Singapore are telling. There are two patents in New Zealand (553124 and 524226). The '124 patent corresponds to the DualGlo US patent and has what I believe is the same main claim 1. Claim 1 of the other New Zealand patent ('226) is based on claim 1 of the DualGlo PCT with four further relevant limitations: (i) matrix must have high opacity, (ii) a rare earth metal luminescent material, (iii) the colourant must comprise a fluorescent material and (iii) the colourant must be selected to minimise quenching (the exact wording is set out in the section on New Zealand above). This second New Zealand patent '226 also has an exclusion of the scope of '124 presumably to avoid double patenting.

280. The 9th April 2008 letter distinguishes between "the broad claim" and the claim obtained in New Zealand. The broad claim referred to was claim 1 plus claim 2 of the DualGlo PCT. Although it is plainly right that the New Zealand claim is narrower than "the broad claim" there is no evidence that at the time DualGlo was unhappy with the scope of the claims obtained in New Zealand. I infer it was commercially useful. I infer that with protection for white material in one patent ('124) the claims of the other ('226) could safely be limited to fluorescent colourants without giving up important scope. Also the feature referring to minimising quenching does not unduly restrict the scope of protection. It is at the heart of the core inventive concept.

281. Similarly Singapore is another example of scope which was less than claims 1 and 2 of the DualGlo PCT and which did not excite comment. As a result of the amendments made in December 2004, claim 1 in Singapore also has a limitation to high opacity although the language differs from that used in New Zealand. At this stage I will note again that there is no evidence that at the relevant time any of the DualGlo claimants (or Mr Hall) were unhappy with the scope of the claim granted in Singapore and I infer it was regarded as commercially useful.

282. In comparing the claims to Hannacolor I will address high opacity first and then consider claim 1 plus claim 2.

high opacity

283. In the course of these proceedings the claimants suggested the high opacity feature was nonsense or created a claim which was an oxymoron. Mr Hall gives evidence to that effect. The claimants also refer to the US examiner's objections and to the various unsuccessful attempts to include language of that kind in the USA. Requiring a material which is supposed to emit light to have high opacity certainly sounds odd and the US examiner thought so. Nothing can be inferred from Singapore since patents are not examined before grant. However the New Zealand examiner, who was clearly engaged with the detail in relation to this application, does not appear to have been concerned about it.

284. I am not convinced the limitation to high opacity is as nonsensical as the claimants' contend. Dr Spencer maintained that using high opacity plastic for the matrix did not stop the invention from working and can increase light transmission depending on the precise combination of ingredients. There is some support for Dr Spencer's view in the text of the DualGlo PCT at least to the extent that at p18 ln6-12 there is a

reference to increased opacity aiding the effectiveness of the fluorescent colourant, thereby reducing the required amount of fluorescent dye and so reducing quenching.

285. However even though I am not satisfied it is nonsensical, I am not prepared to find that a claim limited to "high opacity" would be available in the UK. The US examiner thought it was added matter. In my judgment an amendment to that effect here would obviously be refused on that ground too. It is plainly added matter under UK law. Nevertheless this conclusion does not apply worldwide. High opacity was accepted by the New Zealand examiner in a substantive examination procedure.

Claim 1 plus claim 2 in the light of Hannacolor

286. So, despite the fact that I do not accept that claims 1 and 2 of the PCT are the only claims of acceptable commercial scope for DualGlo I will consider whether they were novel over Hannacolor PCT since that is how the claimants put their case. I will consider this under UK law. The US examiner (applying US law) thought the claims were not novel. The New Zealand examiner also thought the claims were not novel but that examiner then accepted novelty based on the claim limitations discussed already. Both high opacity and substantial transmission of light from the luminous material were argued over Hannacolor PCT (24 April 2006) and one does not know whether the examiner accepted one or the other or both limitations.

287. The first paragraph of Hannacolor PCT is as follows:

> The invention relates to phosphorescent plastic compositions and articles that have an attractive bright fluorescent daylight color and a strong glow-in-the-dark phosphorescence of a color similar to that of the daylight color. In particular, the invention relates to the direct use of polymer-soluble fluorescent dyes, in combination with phosphorescent pigments, to provide an expanded and customizable palette of daylight and glow-in-the-dark colours.

288. This illustrates two key aspects of Hannacolor. First it is concerned with materials combining a phosphorescent material and a fluorescent material for good day time colour and good night time glow. Therefore it is plainly relevant to DualGlo. Second however is that Hannacolor is focussed upon changing the night time glow from the natural colour of the phosphorescent material so that the glow-in-the-dark colour is similar to the daylight color. In other words Hannacolor is specifically teaching the idea that the fluorescent colourant material should have an influence on the night time colour.

289. Hannacolor is based on the idea of using the new phosphorescent materials such as strontium aluminate doped with rare earths. These have a much brighter and longer lasting night time glow than the previous phosphorescent materials. However the daytime colour is unattractive and so it would be desirable to have a material with a pleasing daytime colour as well as long as it does not diminish the brightness or duration of the afterglow.

290. Hannacolor does not speculate whether that colour change effect is due to excitation of the fluorescent material by the light from the phosphorescent material (the Hirotec

effect) or is due to the non-fluorescent colouring effects of the fluorescent colourant. Hannacolor does contain passages which refer to the problem that adding colour pigments can interfere with the absorption and emission of light by the phosphorescent material (PCT p2 ln1-5 and p9 ln9-20) and to that extent the problem of interference is clearly described but these passages relate to a problem specific to colourants in pigment form rather than in dye form. They are not concerned with overlapping spectra and they have to be understood in the overall context in which Hannacolor is positively seeking to change the glow-in-the-dark colour.

291. Twenty four worked examples are given. At p14 ln17-21 the PCT states of them:

> The resulting daylight color, glow-in-the-dark color are set forth in the Tables. As illustrated, the glow-in-the-dark color is similar to the daylight fluorescent color in every case except in examples 19-24, where red-violet or violet fluorescent dyes were employed. In these cases the glow-in-the-dark color was whitish rather than a violet shade.

292. The light emitted by the glow-in-the-dark phosphorescent material itself (Luminova G-300M) is described as "green light" (p7 ln32) so although we know that the glow-in-the-dark colour for examples 19-24 was not the same as the day time colour it is not clear that there was no influence of the fluorescent material at night. There is also something odd about example 19 since contrary to the text quoted above it used a green fluorescent dye rather than a red-violet or violet one.

293. As the claimants submitted, it is clear that the percentage ranges of ingredients such as the phosphorescent material and the fluorescent material disclosed in Hannacolor PCT overlap with the same ranges disclosed in the DualGlo application.

294. There is no doubt Hannacolor PCT discloses a material with all the features of claims 1 and 2 of the DualGlo PCT save for the last part of claim 1. The defendants argued Hannacolor PCT does not disclose a material in which the colourant allows substantial transmission of light emitted by the luminous material. This depends on a narrow interpretation of those words in claim 1. The argument is that this feature relates to the minimisation of quenching by the fluorescent material of light emitted by the phosphorescent material. So a change in the night time colour is the antithesis of this aspect of the claim because if the night time colour is influenced by the fluorescent material the light from the phosphorescent material (i.e. the luminous material) cannot be being substantially transmitted. It must be being absorbed by fluorescent material, causing excitation and leading to emission of different photons by the fluorescent material.

295. Mr Butler clearly did not regard it as a strong point and neither do I. I am not surprised that the only examiners who had to consider the point at all found that claim 1 of the DualGlo PCT was not novel over Hannacolor US or PCT (as appropriate). I do not believe this is a point on which there is reasonable room for two professionals to differ. I find that no reasonable patent attorney could advise that claim 1 is novel. The elaborate argument about quenching cannot be read into claim 1 and the argument also depends on a word of degree (substantial) which cannot be read in such a way as to avoid Hannacolor.

296. However if I take into account the quenching limitation advanced in New Zealand, I do not consider that the position is clear cut. This language requires the colourant to be selected to minimise its quenching effect on the glow radiated by the phosphorescent material and refers to enhancing the visibility in the dark of the phosphorescent material. There is much more scope to argue that this draws a distinction over Hannacolor. Hannacolor is clearly focussed on changing the night time colour of the phosphorescent material and for that to happen one has to accept that the fluorescent material is quenching the glow radiated by the phosphorescent material at least to some extent. With a feature of this kind in claim 1 it is also the case that it is not enough to show that the ranges disclosed in Hannacolor overlap with the ranges disclosed in DualGlo. In a given case the relative proportions of a particular mix of components selected with Hannacolor's purpose in mind may well be different from the proportions produced with DualGlo's different objective as the guiding principle. An actual composition made according to Hannacolour may well not fall within a claim comprising the quenching limitation. None of this was explored in evidence but I can go this far. First in my judgment a claim along these lines would protect the core inventive concept disclosed in the DualGlo PCT. Second it would have been of real commercial utility to DualGlo. Third, I am not satisfied that the claimants, on whom the onus rests, have established that a claim of commercially useful scope lacks novelty over Hannacolor PCT.

297. Moreover there are other claims in evidence which, while they are narrower than the core inventive concept, had or may have had commercially useful scope. The US DualGlo patent to white material with small particles was regarded as useful at the time. I find it has tangible commercial value. A claim in Europe limited in the same way would do as well. Also there were other possible amendments proposed by Dr Spencer after Dr Held's opinion was provided. I am not satisfied that they would have had no commercial value to DualGlo.

298. In summary:

i) advice that claim 1 plus claim 2 would be valid (over Hannacolor) anywhere in the world was advice no reasonable patent attorney could give;

ii) advice that claim 1 plus claim 2 plus high opacity, would be valid in the UK (over Hannacolor and given the law of added matter) was advice no reasonable patent attorney could give.

iii) point (ii) applies to Europe and the USA but it does not apply in New Zealand and the claimants have not established where else it does apply.

iv) advice that the core inventive concept was patentable over Hannacolor was advice a reasonable patent attorney could give.

v) claims with a narrower scope than the core inventive concept had commercially useful scope and a tangible value to DualGlo.

299. Dr Spencer's advice to Nathan Alexander in 2005 was that claim 1 plus claim 2 plus high opacity would be granted. I find that was negligent. However the key advice given by Dr Spencer to DualGlo over the period from 2004 onwards was that the core inventive concept was patentable. That advice was not negligent advice.

(4) What would DualGlo have done differently?

300. DualGlo bought Hirotec in part in reliance on Dr Spencer's advice. If they had been advised that DualGlo's coloured (non-white) materials did not infringe the Hirotec patent then they would not have bought it.

301. The position in relation to the DualGlo application is that Dr Spencer gave positive advice and on the strength of it DualGlo prosecuted the applications in the various countries. I do not accept that after 2004 DualGlo relied at any stage on specific advice from Dr Spencer that claim 1 plus claim 2 was patentable or that claim 1 plus claim 2 plus high opacity was patentable. They did not. They did rely on his advice that the core inventive concept was patentable. If his advice had been less positive then no doubt DualGlo might have reconsidered their patent prosecution approach but even then I do not accept that DualGlo would have stopped prosecuting patents altogether either at all or at least prior to January 2009. I reject the suggestion that if Dr Spencer's advice had been less positive after 2004, DualGlo would have given up on its product business any earlier than they did.

302. In a revised draft of their proposed findings of fact dated 11th April 2014 the claimants made two further submissions, namely (i) that the advice given in 2004, 2007 and throughout was that, taken overall, broad defensible patents were achievable and that had that advice not been given, the claimants would not have believed they had a portfolio of broad defensible patents and, in particular, would not have continued to prosecute those patents; and (ii) without a portfolio of broad defensible patents, the claimants would not have continued the DualGlo business inter alia because they would not have been able to secure funding for it.

303. The defendants objected to these submissions on a number of grounds, the main one being that the concept of "broad defensible patents" was unpleaded and was not open to the claimants. The evidence had not been directed to such a case and it was unfair and wrong to permit the point to be run now. These new submissions by the claimants highlight a difficulty in the claimants' case based on claims 1 and 2 of the PCT but that is no excuse. The defendants submitted that if the claimants had wanted to advance a case on this new basis they could and should have raised it before trial so that the evidence could have been directed to it.

304. I will permit the claimants to argue the point. However I reject it. I am not persuaded that the advice was that "broad defensible patents" were available. I have set out my conclusions on what advice was given above. Advice that "broad defensible patents" were available is not the same as the advice I have found Dr Spencer did give, which was directed to the core inventive concept.

305. Moreover I am not persuaded that without a portfolio of "broad defensible patents" anything would have been different at least prior to April 2008 or January 2009. DualGlo did rely on Dr Spencer's advice that the core inventive concept was patentable to continue prosecuting the international applications but they did not rely on advice about the availability of a claim in the form of claim 1 plus claim 2 with or without high opacity.

(5) What was the position of Lacomp?

306. Lacomp first invested in DualGlo in 2003 and the last investment was in 2009. The annual sums invested were £300,000 in 2003, £210,000 in 2005, £276,000 in 2006, £600,000 in 2007, £370,000 in 2008 and £156,562 in 2009. The investments in 2008 and 2009 are different in character from the earlier investments. By that time it was clear that DualGlo was under funded and the investments were made in the form of a succession of somewhat smaller sums than before but spread out over time. This reflected Lacomp's strategy in this period to keep DualGlo going while attempts were made to secure funding from elsewhere.

307. Although in his witness statement Mr Buxtorf stated that the potential of DualGlo was always predicated on strong patents, it became clear in his testimony that Mr Buxtorf had very little understanding of or interest in patents and I do not accept they played a significant role in Lacomp's decision making beyond the simple point that DualGlo were applying for patents. I do not accept that Mr Buxtorf even saw the due diligence documents produced by Catalyst at the very start of Lacomp's investment in DualGlo. The business plans and other documents show that DualGlo's business strategy as far as investors like Lacomp was concerned was to develop and sell safety and consumer products in the US and elsewhere. That is where the emphasis lay.

308. The basis on which Lacomp started investing in DualGlo and continued to do so until DualGlo's business strategy changed to stop focussing on selling products was because the investors believed that DualGlo would be able to deliver on its strategy of selling products. I reject the claimants' case that Lacomp's investments in this period were reliant on the idea that a strong patent portfolio existed or would be obtained by DualGlo save for a distinct question arising in relation to Hirotec, which I will address separately.

309. Accordingly I do not accept a key point raised in the 11th April 2014 proposed findings of fact on its merits. The argument is that without a portfolio of "broad defensible patents", the business would not have been able to continue because it would not have been able to secure funding. In my judgment prior to the termination of the product business (April 2008 to January 2009) Lacomp's investment decisions were not driven by a consideration of the strength of any patents which might emerge from the DualGlo applications in any material way. Thus the losses generated from the failed product business which were incurred while the business was kept going because it was funded by Lacomp, were not caused even indirectly by advice about the DualGlo patents.

310. The defendants also submitted that to the extent to which they reported to Lacomp about the status of ongoing patent applications, Mr Baillie and Mr Lambert had a tendency to overstate the prospects of securing grants and/or the likely scope of grant. I agree. Two examples will do. First, as Mr Hall accepted, a business plan from June 2005 written by Mr Baillie and Mr Lambert states that the masterbatch process has been patented when in truth no patents had been granted at that stage at all. Second, there is no evidence of Mr Baillie or Mr Lambert telling Mr Buxtorf about the problems being encountered with the US examiner at any stage.

311. The only exception to my general finding that Lacomp did not invest in reliance on any assertions about the strength of DualGlo's patents was concerned with the Hirotec patent. When DualGlo decided to buy the Hirotec patent the purchase price was

funded by investments from Lacomp and to make those investments Lacomp did rely on what was in fact Dr Spencer's advice about the Hirotec patent.

(6) why did the DualGlo companies cease to trade?

312. From the outset until January 2009 DualGlo primary business was a trading business based on developing, making and selling products. The failure of that business was the result of the inadequacy of the individuals concerned (Mr Baillie, Mr Lambert and latterly Mr Hall) as business men in general and salesmen in particular. The final blow was the inability to raise funds but that was only a consequence of the general failure of the business up to that point. This failure had nothing to do with patents.

313. In January 2009 the DualGlo trading business was "put on ice" but the companies continued to trade to try and earn income from the patents (both Hirotec and the DualGlo patents themselves) and also from trading in ingredients. DualGlo stopped trading altogether in 2010 when the patents were transferred to Visible 24. The true reason DualGlo stopped trading at this stage was because the business was not fundable. Given its history and its financial position, outside investors were not going to be prepared to put money into the DualGlo companies in order to allow litigation on the patents to be pursued. That was not because the litigation had no prospect of success. It was because the corporate vehicle holding the patents (i.e. the DualGlo companies) was not fundable. The reason it was not fundable was because of the wasted costs and expenses incurred as a result of the failure of the product oriented business. In fact if DualGlo had been properly funded, there is no reason why it could not have started litigating the patents it held already. The significance of this point is also that one should not take the fact that DualGlo did not take US infringement proceedings either relating to the Hirotec patent or its US white DualGlo patent as an indication of a lack of merit in those cases. It is not.

The duties owed by Dr Spencer

314. I have rejected the two key negligence claims on the facts but nevertheless I will consider the scope of Dr Spencer's duties to the DualGlo claimants and his liability for the kinds of losses claimed if he had been negligent and also the question whether Dr Spencer owed a duty to the investors at all.

(i) the scope of Dr Spencer's duties to the DualGlo claimants

315. The claimants submitted that Dr Spencer had a general retainer, in other words a broad duty to advise as to the course of action to be taken rather than a narrow one to give information as to a specific course of action. They relied on the lack of any statement of or discussion about Dr Spencer's duties at the outset (or ever), the inexperience of Mr Baillie and Mr Lambert, the fact that Dr Spencer suggested courses of action such as patenting the material itself and various other aspects of the relationship over the years. The main further points were: his involvement in negotiations to buy or licence Hirotec; the terms of his advice in the Nov/Dec 2004 letter; his involvement with DualGlo's investors, his involvement with patent insurance; his general involvement with licenses and secrecy agreements; and the "to whom it may concern" letter in 2008.

316. Like any other professional person a patent attorney can apply their skill in different ways. The duties of a patent attorney could be, at its narrowest, simply to act as a technician, purely to prosecute a patent application pursuant to a client's instructions. At the other end of the spectrum a patent attorney may well give his clients advice which concerns not only intellectual property matters directly but also business and scientific issues. This may well occur when, as here, the client is inexperienced and small. Many patent attorneys have very long term relationships with their clients, as here, and again in that situation the scope of the patent attorney's duties may be wider.

317. Nevertheless the normal duties of a patent attorney are focussed on patents and patent prosecution. The normal advice is about validity, infringement and what steps to take in the process of patent prosecution. Patent attorneys do not normally advise their client what commercial steps to take. This is not the same as the point made in ***Halifax***. The fact that an attorney may be required to warn a client of possible commercial consequences of a step rather than its purely legal consequences does not mean that they have to advise their client what to do and take responsibility for the commercial risk.

318. The fact that Dr Spencer's duties were never discussed let alone recorded in writing has two consequences. First, the only way to work out what the scope of his duties was is to look at all the circumstances over what was a ten year relationship. Second, Dr Spencer can hardly complain if a court decides that the scope of his duties was wider than he might have assumed at the very start.

319. I reject the claimants' submission that Dr Spencer had a "general retainer". In the context of this case the expression "general retainer" is apt to mislead. It is too broad. The purpose of the submission is to fix the defendants with liability for the failure of the DualGlo business. That is a different question and in my judgment is it too simplistic to approach it by trying to apply this blanket expression to the duties undertaken by Dr Spencer. His role from beginning to end was as a patent attorney but that does not mean the scope of his duties was confined to purely technical advice about patenting.

320. Dr Spencer's primary role was to draft patent applications and prosecute those applications in accordance with his instructions. Beyond that, in general he was only required to do what was asked of him. In my judgment the scope of Dr Spencer's duty cannot be characterised in a single way for all purposes. The right approach is to look at particular elements of his advice and work and consider what the scope of his duty was in relation to that. There are two relevant elements in this case, his advice about Hirotec and his advice about the DualGlo PCT.

321. In relation to the Hirotec patent the scope of Dr Spencer's duty as an adviser was a wide one. His advice was not confined simply to an assessment of the questions of validity or infringement of that patent. He was advising Mr Baillie and Mr Lambert what to do, e.g. at one stage to pay a 5% royalty. In the end he advised them to buy the patent. He knew what the price was and that it was not a nominal sum and his clients knew he knew. His clients were entitled to think that he was advising them to buy it in those circumstances. He was not simply evaluating the Hirotec patent and leaving it to his clients to decide what to do. I am far from convinced Dr Spencer actually had a sufficient knowledge or appreciation of the DualGlo business in order

to give advice of that kind rather than simply to provide an informative opinion about validity and infringement but nevertheless that is what he did. It is fair for him to bear the commercial risk for that transaction if it turned out that his advice about the Hirotec patent was negligent. The kind of loss for which Dr Spencer would be liable in the context of the Hirotec patent would be all losses flowing from the purchasing transaction. In this case that would include the price paid for the Hirotec patent if (contrary to my findings) it was worthless. If it is necessary to characterise the scope of Dr Spencer's duty in ***SAAMCo*** terms, it was an "advice" case rather than an "information" case.

322. In relation to the DualGlo PCT the position is distinct. Drafting and prosecuting the DualGlo applications in accordance with his instructions was his primary task. The fact that he advised Mr Baillie and Mr Lambert at the start to file an application directed to the material itself does not take the claimants anywhere. It indicates his duties were wider than simply filing what he was told to file but it does not support a claim for losses of the kind flowing from the failure of the business. Dr Spencer's involvement with investors is not a weighty point. He was not involved with Lacomp, the main investor, at all. Dr Spencer's actual involvement with investors was modest and when it did take place it was in identifiable circumstances. His actual involvement militates against the claimants' case. Dr Spencer's involvement with licences and secrecy agreements does not support the claimants' case either. It was not advice about what commercial steps to take, it was part of a normal specialist patent advice.

323. Considering Hirotec, the claimants effectively contend that because he assumed a wide role in relation to Hirotec, Dr Spencer also had a similarly wide role for the DualGlo applications. I do not accept that. The correct way of looking at the advice relating to Hirotec in the context of considering the DualGlo PCT is by way of contrast. It does not support the claimants' case on DualGlo, rather it undermines it. Mr Baillie and Mr Lambert wanted to seek patent protection for the invention they had made and which their business was set up to exploit. In relation to the DualGlo PCT the scope of Dr Spencer's duties was wide in the sense that it was not confined to detailed technical points arising from patent prosecution (e.g. he advised that it was vital they secured a US patent) but on the other hand it was not so wide as to mean that he assumed responsibility for DualGlo's business. The DualGlo PCT was important to DualGlo as an international patent application intended to protect and support DualGlo's core business, which was focussed on developing, making and selling products. That is all.

324. The scope of Dr Spencer's duties did not extend to the success or otherwise of DualGlo's core business or to bear the risk if that core business faltered. In my judgment if and insofar as his advice about the DualGlo PCT up to April 2008 was negligent then it would not be fair for him to be liable for losses caused by the failure of the DualGlo business. He never advised his clients to sell product X into territory Y or anything of that kind and the clients never thought he did. A sum of about £1.9 million is claimed as the wasted operating costs and expenses of DualGlo Ltd. Those kind of losses are not losses for which the claimants are entitled to be compensated even if Dr Spencer's advice concerning the DualGlo PCT had been negligent. The failure of that business was not a consequence of the filing or prosecuting the DualGlo PCT nor was it a consequence of the fact (if true) that no claim which protects the

core inventive concept is available based on them. Even if Dr Spencer had not advised Mr Baillie and Mr Lambert to file a materials application at the outset and they had stuck to their product focussed patent applications, I am not satisfied anything else would have been different. They would have sought to develop the product business in exactly the same way. The funding from investors would have been just the same and the failure of that business by January 2009 would also have been just the same.

325. A different question would arise if the DualGlo business had been, either from the outset or from an early stage, a business of the kind it became after January 2009. In other words what if DualGlo had always been intended to be merely a patent assertion entity or "patent troll". Then the business would never have been on focussed on developing, making and selling products. The point of the DualGlo PCT would always have been simply to get patents to use to sue third parties in order to generate revenue. Assuming Dr Spencer had known that then I can see that the scope of his duty in advising about the DualGlo PCT would have been wide enough to bear the risk if that business failed. But this is a very long way from what happened. It is related to the direction in which the directors decided to try and take DualGlo starting in April 2008 but by then no further substantial investments were made. The sums put in by Lacomp were intended to keep the companies going in order to attract further substantial investment.

Did the defendants owe Lacomp a duty of care?

326. I turn to consider whether the defendants owed Lacomp a duty of care. First I will consider the position prior to the 20th November 2008 "To whom it may concern" letter. I will structure the consideration bearing in mind the ***McNaughton*** factors. The relevant advice was about the Hirotec patent and the prospects for the DualGlo PCT. The purpose of this advice was in order for Mr Baillie and Mr Lambert (and latterly Mr Hall) to make decisions running their business. Those decisions would include decisions to instruct Dr Spencer to act directly on their behalf or instruct him to instruct foreign agents to act. They might include filing, amending or abandoning a patent application or a claim. The decisions could also include decisions to seek funding from outside investors but, apart from specific occasions which were different, such as in September 2005 when Dr Spencer advised an investment broker (Nathan Alexander) directly, the purpose of the advice as communicated to Dr Spencer never included providing advice to be passed on to investors or putative investors generally or Lacomp in particular. The purpose for which the advice was communicated by Dr Spencer to the DualGlo claimants was the same. Dr Spencer never communicated his advice to investors in general. Nathan Alexander was a specific occasion and did not indicate a general communication of Dr Spencer's advice either to investors as a class or Lacomp in particular.

327. The relationship between the various entities was that the defendants were acting for and advising the DualGlo claimants. Lacomp was an investor and shareholder in the DualGlo companies. There was no contract between the defendants and Lacomp and no direct communication between them. Lacomp was not the only investor in DualGlo although it did put the most money into the companies. As regards Dr Spencer's state of knowledge, he knew that there were investors in DualGlo but he did not know who they were nor did he know anything about their view about patents. The only exception related to Nathan Alexander but there was no reason why Dr

Spencer should have drawn any wider conclusions from his interaction with that investment broker. To the extent that Lacomp did rely on any advice presented to them which had been given by Dr Spencer, such as the Nov/Dec 2004 letter, Dr Spencer did not know that his advice was being communicated to them and Lacomp were not told that he did know. I find that prior to the 20th November 2008 "To whom it may concern" letter Dr Spencer did not owe a duty of care to the fifth or sixth claimants (or Lacomp to the extent that it might be or include a different entity).

328. Dr Spencer knew that the 20th November 2008 "To whom it may concern" letter was to be given to putative investors. In my judgment he owed a duty of care to any investor who did in fact rely on that advice. But none did.

329. I have asked myself whether the November 2008 "To whom it may concern" letter means that Dr Spencer owed a duty of care to Lacomp in relation to any advice he gave afterwards. I do not believe that he did. The analysis is the same as for the period before. The November 2008 "To whom it may concern" letter is simply another specific occasion like the episode with Nathan Alexander in which Dr Spencer advised someone other than DualGlo and knew he was doing so.

Quantum

330. In the light of my findings, there is no need to resolve the disputes about the quantum claimed by the claimants. There is one point which I will mention. There are patents still in existence, at least the Hirotec patent and the DualGlo US patent, which are now held by Visible 24/7 Ltd. DualGlo Ltd holds shares in Visible 24/7 Ltd. These patents have a real commercial value. They are not worthless. All the pleaded losses assume these shares have no value but in my judgment that is wrong. None of the various ways of putting the claimed loss take any account of this value.

Counterclaim

331. In the light of my findings, the counterclaim for unpaid professional fees succeeds. It was not the subject of any focus at trial. I understand there is no dispute it is worth £57,328.58 plus interest.

Conclusion and summary

332. In summary I find that:

i) Dr Spencer was not negligent in relation to the mix up with priority and the 7th June 2000 application;

ii) In relation to the Hirotec patent Dr Spencer's advice was not confined to patent matters, it was commercial advice to buy the patent. If the patent had proved to be worthless then it would have been negligent advice and the defendants would have been liable for all losses flowing from the purchase transaction. The scope of his duty of care in this respect was a wide one. However the patent was not worthless. The coloured DualGlo products fall within it and Dr Spencer's advice in that respect was correct and not negligent. Also it was reasonable to infer the competitor products infringed Hirotec too. The claim for negligence relating to the Hirotec patent fails.

iii) In relation to the DualGlo PCT, Dr Spencer's advice was not as widely drawn as for Hirotec. The advice was concerned with patent prosecution and validity. Commercial decisions based on that advice were a matter for DualGlo. After 2004 he did not advise that a claim in the form of claim 1 plus claim 2 of the DualGlo PCT would be obtained or would be valid. He did advise that the core inventive concept was patentable. DualGlo relied on that advice to continue the prosecution of the applications around the world.

iv) The relevant advice Dr Spencer gave relating to the DualGlo PCT was not negligent.

v) If no valid patents or only worthless patents had been obtainable from the DualGlo PCT then Dr Spencer's advice to the contrary would have been negligent advice but in that case the loss for which the defendants would be liable does not include the losses resulting from the failure of DualGlo's product business. The scope of Dr Spencer's duty was not wide enough to encompass liability for those losses. The only pleaded losses which would be recoverable in this case would be the claim to recover the fees paid to the defendants.

vi) Lacomp's claim fails:

a) Dr Spencer did not owe a duty to Lacomp at all.

b) In relation to Hirotec Lacomp did rely on Dr Spencer's advice (unknown to him) and if he had owed them a duty of care and had been negligent then the loss of the investment to fund the purchase would have been recoverable.

c) In relation to the DualGlo PCT, Lacomp did not rely on any view about the specific scope or strength of patents obtainable from that application when making their investment decisions.

333. Although I find for the defendants in this action, Dr Spencer should not regard this as a vindication of his professionalism. A number of the claimants' criticisms of Dr Spencer were well founded. The action has exposed inexplicable and negligent advice given by him. As things have turned out the negligent advice has not caused any loss and the loss claimed was not caused by the negligent advice. I will dismiss the claim and allow the counterclaim.