



express the associated exponential decline curve as a two dimensional vector;  
determine a mean and a covariance for the two dimensional vector;  
determine an updated mean and an updated covariance for the two dimensional vector;  
generate an updated exponential decline curve utilizing the updated mean and the updated covariance; and  
design or augment production facilities, or plan future well or field development, or shut down unproductive wells using the updated exponential decline curve.

12. A computer system for forecasting oilfield production comprising:

a computer processor operative to:

receive measured oilfield production data from one or more sensors positioned about an oilfield;  
identify an exponential decline curve associated with the measured oilfield production data;  
express the associated exponential decline curve as a two dimensional vector having an amplitude parameter and a rate of exponential decline parameter, wherein the amplitude parameter and the rate of exponential decline parameter are uncorrelated;  
determine a mean and a covariance for the two dimensional vector;  
determine an updated mean and an updated covariance for the two dimensional vector;  
generate an updated exponential decline curve utilizing the updated mean and the updated covariance;  
determine an uncertainty associated with the updated exponential decline curve;  
generate a graphical representation illustrating the updated exponential decline curve and the uncertainty; and  
design or augment production facilities, or plan future well or field development, or shut down unproductive wells using the updated exponential decline curve.

16. A computer readable medium for forecasting oilfield production comprising instructions which, when executed, cause a computer to:

receive measured oilfield production data from one or more sensors positioned about an oilfield;  
identify an exponential decline curve associated with the measured oilfield production data;  
express the associated exponential decline curve as a two dimensional vector;  
determine a mean and a covariance for the two dimensional vector;  
determine an updated mean and an updated covariance for the two dimensional vector, wherein the updated mean and the updated covariance are determined utilizing a Bayesian probabilistic updating algorithm;  
generate an updated exponential decline curve utilizing the updated mean and the updated covariance; and  
designing or augmenting production facilities, or planning future well or field development, or shutting down unproductive wells using the updated exponential decline curve.

## The law

6 Section 76(2) relates to the adding of matter to a patent application, and states that:

No amendment of an application for a patent shall be allowed under section 15A(6), 18(3) or 19(1) if it results in the application disclosing matter extending beyond that disclosed in the application as filed.

7 In his written submission dated 14 February 2017, the attorney referred to *Bonzel and Schneider (Europe) AG v Intervention Ltd* [1991] RPC 553 ("*Bonzel*"), where Aldous J (as he then was) stated:

The decision as to whether there was an extension of disclosure must be made on a comparison of the two documents read through the eyes of a skilled addressee. The task of the Court is threefold:

(a) To ascertain through the eyes of the skilled addressee what is disclosed, both explicitly and implicitly in the application.

(b) To do the same in respect of the patent as granted [or, in this case, the application as amended].

(c) To compare the two disclosures and decide whether any subject matter relevant to the invention has been added whether by deletion or addition. The comparison is strict in the sense that subject matter will be added unless such matter is clearly and unambiguously disclosed in the application either explicitly or implicitly.

8 The attorney also referred to a passage from *Richardson-Vicks Inc.'s Patent* [1995] RPC 568 ("*Richardson*") where Jacob J (as he then was) referred to the test in *Bonzel* and stated:

I think the test of added matter is whether a skilled man would, upon looking at the amended specification, learn anything about the invention which he could not learn from the unamended specification.

9 I agree with the attorney that these cases set out the correct approach to assessing added matter, and I shall apply it here.

10 Section 1(2) declares that certain things are not inventions for the purposes of the Act, as follows:

It is hereby declared that the following (among other things) are not inventions for the purposes of this Act, that is to say, anything which consists of –

(a) a discovery, scientific theory or mathematical method;

(b) a literary, dramatic, musical or artistic work or any other aesthetic creation whatsoever;

(c) a scheme, rule or method for performing a mental act, playing a game or doing business, or a program for a computer;

(d) the presentation of information;

but the foregoing provision shall prevent anything from being treated as an invention for the purposes of this Act only to the extent that a patent or application for a patent relates to that thing as such.

11 Based on the attorney's submissions and the examiner's reports, it is clear that the examiner and the attorney agree that the assessment of patentability under section 1(2) is governed by the judgment of the Court of Appeal in *Aerotel Ltd v Telco Holdings Ltd and Macrossan's Application* [2006] EWCA Civ 1371 ("*Aerotel*"). In this judgment, the court reviewed the case law on the interpretation of section 1(2) and approved a four-step test for the assessment of what is often called "excluded matter", as follows:

Step one: properly construe the claim

Step two: identify the actual contribution (although at the application stage this might have to be the alleged contribution)

Step three: ask whether it falls solely within the excluded matter

Step four: check whether the actual or alleged contribution is actually technical in nature.

- 12 Subsequently, the Court of Appeal in *Symbian Ltd's Application* [2008] EWCA Civ 1066 made clear that the *Aerotel* test is not intended to provide a departure from the previous requirement set out in case-law, namely that the invention must provide a "technical contribution" if it is not to fall within excluded matter.
- 13 Lewison J (as he then was) in *AT&T/CVON Innovations* [2009] EWHC 343 ("*AT&T*") set out five signposts that he considered to be helpful when considering whether a computer program makes a technical contribution. These signposts were modified slightly in *HTC Europe Co Ltd v Apple Inc* [2012] EWHC 1789. The signposts are:
- (i) Whether the claimed technical effect has a technical effect on a process which is carried on outside the computer.
  - (ii) Whether the claimed technical effect operates at the level of the architecture of the computer; that is to say whether the effect is produced irrespective of the data being processed or the applications being run.
  - (iii) Whether the claimed technical effect results in the computer being made to operate in a new way.
  - (iv) Whether the program makes the computer a better computer in the sense of running more efficiently and effectively as a computer.
  - (v) Whether the perceived problem is overcome by the claimed invention as opposed to merely being circumvented.
- 14 The attorney's written submissions covered various points concerning how the *Aerotel* test should be applied to the present invention, and referred to other decisions of the Comptroller. I consider these submissions as part of my analysis.

## Analysis

### I. Added matter

- 15 Following earlier amendments to the claims and the examiner's resulting objection to added matter, the applicant further amended independent claims 1 and 12 to include the following text (with cognate wording included in independent claim 16):
- "design or augment production facilities, or plan future well or field development, or shut down unproductive wells"
- 16 Thus the independent claims now refer to a computer-implemented method, system or medium for forecasting oilfield production, with various steps which use measured production data to generate an updated exponential decline curve, and where that updated decline curve is used to take one or more of the steps referred to in the additional wording.
- 17 The examiner argues that this amendment results in the application disclosing subject matter which was not present in the application as filed. His view is that there is no disclosure of any particular application or use for the claimed method and system of production forecasting.

- 18 The attorney argues, in particular, that the examiner fails to take account of the support provided by the “Background” section of the description as filed, and in particular paragraph [0002], which states:

Oilfield production forecasting involves the analysis of oilfield data in order to estimate future oilfield production. Production forecasts may be utilized to estimate the amount of fluid(s) recoverable from a hydrocarbon reservoir at different points in time. Production forecasting at each stage of the oilfield operation allows one to forecast future cash flow, design/augment production facilities, plan future well/field development and/or shut down unproductive wells.

- 19 The attorney says that this sets out the background *to the invention* as described in the rest of the application, and that it clearly and unambiguously teaches how forecasts, of the type that the invention produces, are used. The attorney contends that the examiner’s reasoning incorrectly concentrates on *where* the support is located rather than *what* the application teaches.
- 20 The examiner argues that, in the “Background” section, the description is not at that point stating a certain application for the forecasting method. Since the passage is not located in the “Summary” or “Detailed description” of the invention, the examiner argues it cannot be considered an explicit teaching of how the updated decline curve of the invention is used. More widely, he argues that there is nothing else in the description which discloses or implies that the curve resulting from the steps of the claimed invention would be used in the way now set out in the amended claims.
- 21 I agree with the attorney’s contention that the “Background” section forms part of the application as filed, and there is no requirement that the only material which can be added to claims must always derive from the summary or detailed description of the invention. On the other hand, inserting information from the “Background” section into the claims could well result in added matter in certain cases, particularly where it involves taking information out of context, or putting it into a different context. What matters is of course whether the skilled person would then learn something which they would not have been taught from the application as filed. This leads me to follow the structured approach set out in *Bonzel*, and referred to above.
- 22 The first step is to ascertain through the eyes of the skilled person what is disclosed, both explicitly and implicitly, in the application. The first part of this step is to identify the skilled person. For the purposes of determining the presence of added matter in previous amendments, the examiner identified the relevant skilled person in the examination report dated 13 May 2016. In their response to that report, the attorney was willing to adopt the same identification of the skilled person – and there has been no further discussion of this specific point. I think the skilled person identified then remains appropriate now. The skilled person is therefore an oilfield production analyst, who has good knowledge and experience of using real-world data for the purpose of forecasting oilfield production decline. They would be aware of a range of mathematical techniques available for estimating future production and understanding the uncertainty in future production.
- 23 Turning to the originally-filed application, the “Summary” section states that the disclosure describes a “system, method and computer readable medium capable of improving the efficiency, accuracy and uncertainty description of oilfield production forecasting”. Throughout the specification, the invention is consistently disclosed as essentially involving: receiving measured oilfield production data, carrying out a

number of processing steps on the data, and generating a decline curve from the data. The exact processing steps differ between claims, and between different embodiments in the description, but there is clearly explicit teaching that the updated decline curve is used to forecast oilfield production. However, I agree with the examiner that there is no explicit statement that the invention goes beyond forecasting and so is specifically used to “design or augment production facilities, or plan future well or field development, or shut down unproductive wells”.

- 24 The question is then whether the skilled person would find this step to be disclosed implicitly in the application as filed. I agree that the skilled person would not read the Background section in isolation from the rest of the application. They would understand that it gives context for and background to the invention itself, and helps the reader understand the invention. In particular, it is clear that paragraph [0002] teaches the skilled reader (if they did not already know) that production forecasting at each stage of oilfield operation allows them to carry out the listed actions regarding oil facilities. I agree with the attorney that this is explicitly disclosed.
- 25 Furthermore, it seems important that paragraph [0003] then goes on to explain to the skilled reader the problem with known forecasting methods and how there is a need for an improved forecasting system for estimating future production and uncertainty. Paragraph [0004] then clearly follows directly from these points in setting out the invention’s features (“Accordingly, the present disclosure describes...”). Thus, reading these paragraphs together, there is a clear flow of reasoning and explanation which amounts in my view to a clear implicit disclosure that the improved forecasting method of the invention will be used to take the various actions in relation to oilfield production which prior forecasting methods are used for.
- 26 Following *Bonzel*, the second step is to consider the amended specification through the eyes of the skilled addressee. This is straightforward in the present case. The amended claims explicitly disclose to the skilled person the step of using the oilfield production forecast to design or augment production facilities, or plan future well or field development, or shut down unproductive wells.
- 27 The final *Bonzel* step is to compare the amended disclosure with the unamended disclosure and determine if any subject matter relevant to the invention has been added. Clearly, from my reasoning above, the only difference between the two disclosures is that the amended specification discloses the uses of the forecasting method explicitly, whereas the unamended specification contains a clear and unambiguous implicit disclosure as to these uses. The *Bonzel* test is clear that there is no difference between disclosures on this basis. It follows that there is no added matter.
- 28 I will now use the *Richardson* approach to check this result. Would the skilled person learn something from the amended application which they could not learn from the application as filed? For the reasons set out above, I am content that they would not. The skilled person would understand, from both disclosures, the various ways in which the disclosed forecasting method can be used. That person would therefore not learn anything more about the invention when those uses are explicitly inserted into the claims.

- 29 There are two further points to consider briefly, in relation to paragraphs 4 and 5 of the examiner's pre-hearing report of 13 January 2017.
- 30 First, in paragraph 4 of the pre-hearing report, the examiner notes that claim 1 relates to a computer implemented method but also notes that there is nothing in the description as filed to indicate that the steps added by amendment to the claim are performed by a computer. In light of my reasoning above, the implicit disclosure and the skilled person's understanding, I do not agree that this leads to added matter. However, I agree that there is an inconsistency between the claim's pre-ambble and the final steps, insofar as the pre-ambble states that the invention relates to forecasting oilfield production, whereas the final steps now relate to steps which follow from the production forecast, such as designing production facilities or planning future well development. As identified by the examiner in paragraph 8 of the pre-hearing report, this is a clarity issue – and I note the attorney's offer in his letter of 14 February 2017 to amend the pre-ambble, if required.
- 31 Second, in paragraph 5 of the pre-hearing letter, the examiner contends that “there is nothing in your specification which explains ‘how’ the [decline] curve can be used to design/augment/plan/shut down oil facilities”, and argues this is further support for the added matter objection. For the reasons given above, I do not agree. The examiner also alludes briefly at this point to possible sufficiency or support issues, but no objection is raised formally and this is not a matter before me.

## **II. Excluded matter**

- 32 The examiner maintains that the claims define an invention consisting of a mathematical method which is implemented by a computer program as such. His position is set out in his pre-hearing report of 13 January 2017. The examiner, having come a view that there is added matter in the claims, determined the issue of excluded matter by construing the claims without the alleged added matter. However, in paragraph 25 of the pre-hearing report, he briefly considers that the alleged added matter would be “unlikely to provide” a technical contribution.
- 33 The latest arguments against the examiner's position are briefly referred to in the attorney's letter of 14 February 2017, which in turn refers to his earlier submissions on excluded matter. These are contained in the attorney's letters of 13 June 2016 and 7 November 2014, although the earlier of these letters was written on the basis of a previous version of the claims. Taking all the arguments into account, I must determine whether the claimed invention relates solely to excluded subject matter under s.1(2).

### Construing the claims

- 34 In his letter of 13 June 2016, the attorney wrote that “construing the independent claims does not appear to pose any difficulty”. The examiner's pre-hearing report confirms his view that the only issue regarding construction of the claims is whether they should be construed to include the alleged added matter. In light of my finding above regarding added matter, I shall construe the claims in their present state.
- 35 Claim 1 relates to a computer implemented method of forecasting oilfield production. There is a computer processor which receives measured oilfield production data

from one or more sensors positioned about an oilfield. The method involves identifying an exponential decline curve associated with the data. The exponential decline curve is expressed as a two dimensional vector. A mean and a covariance are determined for the vector. An updated mean and covariance are determined. And an updated decline curve is generated using the updated mean and covariance. The updated exponential decline curve is used to design or augment production facilities, or plan future well or field development, or shut down unproductive wells.

- 36 Claim 12 concerns a computer system for forecasting oilfield production. A computer processor receives measured oilfield production data from one or more sensors positioned about an oilfield. It identifies an exponential decline curve associated with the data. The associated decline curve is expressed as a two dimensional vector having an amplitude parameter and a rate of exponential decline parameter, wherein the parameters are uncorrelated. A mean and a covariance for the vector are determined. An updated mean and covariance are determined, and an updated decline curve is generated using the updated mean and covariance. An uncertainty associated with the updated decline curve is determined. A graphical representation is generated – illustrating the updated decline curve and the uncertainty. The updated exponential decline curve is used to design or augment production facilities, or plan future well or field development, or shut down unproductive wells.
- 37 Claim 16 relates to a computer readable medium for forecasting oilfield production. The medium comprises instructions which, when executed, cause a computer to carry out a process. The process involves receiving measured oilfield production data from one or more sensors positioned about an oilfield. An exponential decline curve, associated with the data, is identified. The exponential decline curve is expressed as a two dimensional vector. A mean and a covariance are determined for the two dimensional vector. An updated mean and covariance are determined for the two dimensional vector, using a Bayesian probabilistic updating algorithm. An updated exponential decline curve is generated using the updated mean and the updated covariance. The updated exponential decline curve is used to design or augment production facilities, or plan future well or field development, or shut down unproductive wells.

#### Identifying the contribution

- 38 In paragraph 43 of *Aerotel*, it is made clear that identifying the contribution is probably best summed up as determining what the inventor has really added to human knowledge, and this involves looking at the substance and not the form of the claims (as construed in step one). However, the court in *Aerotel* acknowledged that, for a patent application (as opposed to a granted patent), it may only be possible to identify the alleged, and not the actual, contribution.
- 39 The examiner's view is set out in paragraphs 14-17 of the pre-hearing report. He concludes that the contribution of claims 1, 12, and 16 is the same, and is "a method of using oilfield data to derive an exponential decline curve expressed as a vector, determining a mean and covariance for the vector which are then updated, and using the updated parameters to determine an updated exponential decline curve. This method is implemented using a computer processor". However, as noted above, this contribution was determined after construing the claims as if they did not include the alleged added matter.

40 The attorney argued in his submissions of 14 February 2017 that the examiner's reasoning in regards to excluded matter is based on an incorrect interpretation of the claims because of (what in his view was) the examiner's erroneous added matter objection. He does not at this point set out his view of the contribution, but in his letter dated 13 June 2016 he states that the contribution includes "the design of better production facilities, the better well or field development, and better operation of the field (through the better timing of shutting down of unproductive wells)".

41 A useful starting point is to consider the problem said to be solved by the invention, how the invention works, and what its advantages are. The description helpfully characterises the problem to be solved in paragraph [0003]:

Known oilfield production forecasting methods are computationally intensive and sensitive to both the amount of available data and the manner in which the available data is sampled and analyzed. As such, there remains a need for an oilfield production forecasting system capable of efficiently estimating future production and the uncertainty in future production, utilizing varying amounts of data.

42 The advantages are set out in paragraph [0004], the first sentence of which reads:

Accordingly, the present disclosure describes a system, method and computer readable medium capable of improving the efficiency, accuracy and uncertainty description of oilfield production forecasting.

43 The aim of the invention is therefore to overcome the identified problems by creating a better forecasting method and system – one that is less computationally intensive, and less sensitive to the amount of data available. The claims set out how this is done; essentially, it is by generating an exponential decline curve based on oilfield production data, where the curve is expressed as a two dimensional vector, and a mean and covariance are determined for that vector. An updated mean and covariance are determined and used to create an updated exponential decline curve.

44 The claimed invention also includes some hardware, in particular a computer processor and one or more sensors. There is no suggestion that the use of sensors to gather data, and use of a computer processor to carry out processing of the data, is in itself anything other than conventional when forecasting oilfield production. Furthermore, although the claims include the step of using the forecast to "design or augment production facilities, or plan future well or field development, or shut down unproductive wells", it is immediately clear from the opening paragraphs of the description that using forecasts to do these things (for example, to plan future well development) is known.

45 However, I must bear in mind that it does not necessarily follow, when a particular aspect of a system is known, that any contribution made by that aspect can be dismissed. What I must do is assess the contribution made by the claimed invention as a whole, and so the interaction between the various aspects (known or otherwise) needs to be considered when making that assessment.

46 Of course in one sense, the use of the forecast is an important step. If the forecast is not used in some way, it seems pointless to create it in the first place. Obtaining data from sensors positioned about an oilfield is also clearly an important step. Without data it would not be possible to produce a meaningful forecast. However,

that these steps are necessary steps does not mean they form part of the contribution – what has really been added to human knowledge. Looking at the specification as a whole, there is little emphasis placed on the hardware, and there is no suggestion that the hardware (for example as shown in figure 6) is arranged in a new way. Similarly, there is no discussion of how the forecast is used other than, as discussed, an implicit disclosure that it is used to do the same actions as prior art forecasting methods. The relationship between the elements of the claimed invention is entirely conventional: conventional oilfield data is obtained in a conventional way, the data is processed to create a more efficient and accurate forecast, and that forecast (once generated) is used in a conventional way. Thus, in my view, it is not right to take the view that it is the system as a whole (hardware, processing steps, and use of the forecast) which makes the contribution to the sum of human knowledge. In my view the specification makes it very clear that the focus of the disclosure is on the processing steps undertaken to create a better forecast.

- 47 It seems to me that a forecasting method has been added to human knowledge, with particular mathematical steps and analysis being carried out – but not an overall method for obtaining data, forecasting based upon that data and then using those forecasts. My view is based on the specification as a whole, and is reinforced by how the specification sets out the problems to be overcome and the advantages of the invention – both of which are focused on the way data is processed. As already noted, the specification states the aim of the invention is to create a forecasting method which is less computationally intensive, and less sensitive to the amount of data available, to generate a more efficient and accurate forecast. The contribution should be correctly framed to reflect this and the overall disclosure.
- 48 The contribution is therefore: a computer implemented method of forecasting oilfield production, where an exponential decline curve is created based on oilfield production data, the decline curve is expressed as a two dimensional vector, a mean and covariance are determined for that vector, and an updated mean and covariance are determined and used to create an updated exponential decline curve.
- 49 I note for completeness that claim 12 additionally refers to determining the uncertainty associated with the updated decline curve, and identifies two uncorrelated parameters of the two dimensional vector. Claim 16 additionally specifies the type of probabilistic algorithm used to determine the updated mean and covariance.

Does the contribution fall solely within excluded matter / is it technical in nature?

- 50 What I must now decide is whether the contribution identified above relates solely to a program for a computer or a mathematical method. This corresponds to step three of the *Aerotel* test.
- 51 The fourth step of the test is then to check whether the contribution is technical in nature. In paragraph 46 of *Aerotel* it is stated that applying this fourth step may not be necessary because the third step should have covered the question. This is because a contribution which consists solely of excluded matter will not count as being a “technical contribution” and thus will not, as the fourth step puts it, be “technical in nature”. Similarly, a contribution which consists of more than excluded matter will be a “technical contribution” and so will be “technical in nature”.

- 52 In the present case, I think it makes sense to consider whether the contribution is excluded alongside the question of whether the contribution is technical in nature. I have therefore considered the third and fourth *Aerotel* steps together.
- 53 Having considered the *AT&T* signposts, the examiner comes to the view that no process is performed by the computer program except the processing of data, and that the data processing and mathematical techniques are not technical for the purposes of section 1(2).
- 54 As I have noted already, the attorney argues that the contribution includes “the design of better production facilities, the better well or field development, and better operation of the field (through the better timing of shutting down of unproductive wells)”. On this basis, he states that the contribution is both technical and outside the exclusions from patentability. He argues that the designing of a production facility – like the designing of a drill bit – is a fundamentally technical operation. He also states that obtaining better well or field operation is an effect on something outside the computer.
- 55 But I must of course use the contribution as I have determined it. The contribution does not include the step of designing a production facility or using a forecast to give better well operation, or other such uses. Therefore the attorney’s arguments on these points fall away. For the same reason, the attorney’s analogy between design of a drill bit and the design of a production facility (and the examiner’s arguments in response) are not relevant – given the contribution I have found. I do not need to determine whether the step of designing of a production facility is technical, since that step is not part of the contribution made by the invention.
- 56 The attorney also states that “the examiner may be minded to view the claimed invention as involving a human operator between the forecast and the action outside of the computer. Whilst we do not agree that this is necessarily correct, we note that intervening human interaction in such a manner is not a bar to patentability or an indication that the invention is excluded”. He refers to *The Boeing Company’s Application* (BL O/312/15) to support this argument. Again, however – given the contribution I have found, which does not involve the step of taking action outside the processing of the data in the computer – this argument is not relevant. A human operator taking such action does not form part of the contribution.
- 57 So, where does this leave me, based on the contribution as I have identified it? In my view, the contribution is concerned wholly with computer processing of data to generate a forecast, where that processing takes place using a different mathematical approach from the prior art. It is concerned with processing the data in a particular way in order to determine and express a decline curve, an updated decline curve and (for one claim) an uncertainty measure – and with various mathematical parameters and operations involved in that analysis. On that basis, it seems to me that the contribution resides wholly within the definition of a program for a computer and a mathematical method. However, I will also consider the *AT&T* signposts, and what they may indicate in terms of whether the contribution is a technical one.
- 58 On the first signpost, the contribution concerns computer processing of data to generate a forecast by way of an updated exponential decline curve. This

contribution therefore resides wholly within the processing done by the computer and the mathematical techniques which lie behind that processing. It is clear that this does not amount to something which, in itself, has a technical effect on a process external to the computer.

- 59 In terms of the second, third and fourth signposts, it is also clear that the updated decline curve produced will be very much dependent on the data being processed, and that the forecast itself does not affect the operation of any computer. The program does not work at the level of the architecture of the computer, nor does it make the computer run in a new, or more efficient or effective, way.
- 60 With regard to the fifth signpost, the perceived problem is that known forecasting methods are computationally intensive and sensitive to the amount of available data available. I do not think this problem has been circumvented; rather, it has been overcome by creating a forecasting method which uses mathematical and data processing techniques to deliver a forecast which is less computationally intensive and less sensitive to the amount of data available. Thus I think this makes clear that the problem addressed (as the specification also clearly explains) is one of how to create better forecasts from the data available. It thus resides wholly within the realm of computational and mathematical techniques. Thus I think the solution provided by the invention resides wholly in that realm too. The problem identified does not bestow on the contribution the required technical character.
- 61 Based on all of the arguments, and consideration of the guidance given by the *AT&T* signposts, I am satisfied that the contribution made by the invention is not technical and resides wholly within excluded matter. It is a mathematical method and a program for a computer and, as such, it fails steps three and four of the *Aerotel* test.

### **Conclusions**

- 62 I conclude that the claimed invention is excluded from patentability under section 1(2)(a) because it consists of a mathematical method, and under section 1(2)(c) because it is no more than a program for a computer.
- 63 Based on the information before me, I cannot identify any material in the specification that could reasonably be expected to form the basis of a patentable claim. I therefore refuse the application under section 18(3) for failure to comply with section 1(2)(a) and (c).

### **Appeal**

- 64 Any appeal must be lodged within 28 days after the date of this decision.

**Dr J E PORTER**

Deputy Director, acting for the Comptroller