

## **PATENTS ACT 1977**

IN THE MATTER OF

a reference under section 12

by AEA Technology plc

in respect of PCT Application No PCT/GB 95/01236

and US Patent Application No 08/608247

## **INTERIM DECISION**

### **Introduction**

1. This reference under section 12(1)(a) of the Patents Act 1977 ("the Act"), dated 19 May 1997, was filed by AEA Technology plc ("AEA") in respect of a patent application made under the Patent Co-operation Treaty ("PCT"), which is application No PCT/GB 95/01236, and a patent application made in the United States, which is application No US 08/608247. The applications in suit claim priority from UK Application No GB 9503949.1 filed on 28 February 1995 by the United Kingdom Atomic Energy Authority ("UKAEA"). The PCT Application, which was published on 6 September 1996 as WO 96/27070, and also apparently the US application which has yet to be published, were both filed by UKAEA naming Peter Arne Read and Hugh Malcolm Bourne as inventors. AEA is the successor in title to UKAEA, and for convenience both are referred to below as AEA. In its statement, AEA requests a Declaration from the comptroller that AEA is entitled to be granted, as sole proprietor, any patents pursuant to the applications in suit and an Order that Peter Read signs all necessary documentation to effect the assignment of the ownership of the invention and of the applications to AEA or, in the alternative, an Order to authorise another person, in particular AEA's company secretary, to execute the relevant documentation on behalf of Peter Read. A counterstatement by Mr Read seeking a similar Declaration and Order but in his favour was filed on 23 September 1997.

2. Evidence was filed by AEA in December 1997 and April 1998, and by Mr Read in February and April 1998. Certain issues concerning this evidence were considered at a

preliminary hearing on 30 July 1998, when I held that some of the evidence filed by Mr Read should play no part in the hearing of the substantive matter insofar as that evidence was directed to without-prejudice negotiations between the parties. In addition, I rejected an objection by Mr Read that the evidence-in-reply filed by AEA in April 1998 should not be admitted, on the grounds that it was late and went beyond matters strictly in reply, and I admitted that evidence under rule 7(5). I also refused a request by Mr Read to submit further evidence.

3. It is also worth noting that at the preliminary hearing I suggested to the parties that they might try to agree some form of technical primer. I made the suggestion not because I felt I needed an introduction to the technology involved; rather, I had in mind the fact that a good deal of the evidence appeared to go to disputes between the parties as to the meanings of various technical terms. It seemed to me that such disputes over terminology might be narrowed, and some time, difficulty and cross-examination at the substantive hearing might therefore be saved, if they could agree such a primer. In the event the parties were, very shortly before the hearing, able to supply me with a technical primer of 23 pages setting out in some detail the basic technology with which this reference is concerned. Although there are areas in the text of the primer on which the parties were unable to reach agreement, these are comparatively few in number. I believe this exercise, which is relatively unusual in proceedings before the comptroller, was helpful in serving the purpose I envisaged, and I would like to place on record my gratitude to the parties for their effort and co-operation in producing this helpful piece of work.

4. Without prejudice to a full consideration of the applications in suit and the technical field in which they lie, it will be helpful if I very briefly introduce here the subject matter with which these proceedings are concerned. The applications in suit are concerned with delivering chemical treatment agents to wells, particularly oil wells. Treatment with such agents is well known and may be used, for instance, to inhibit scale formation. The patent applications are particularly directed towards delivering such a chemical treatment agent by means of an insoluble porous inorganic material containing the agent, the preferred material being porous particles used in "gravel packing" or as "proppants" in "fracturing" processes.

5. Drawing immediately on the technical primer to explain those terms, which are central to the present proceedings, "gravel packing" is the use of fine gravel particles held in place in a well by screen(s) in order to keep the interior of the well free of solid detritus. "Fracturing" is the process of cracking open the rock formation around a well bore, normally by applying hydraulic pressure; "proppants" are particles used to prevent closure of the resulting fractures. An area of dispute in these proceedings is the terminology used in theory and practice to describe such particles, in particular whether reference to gravel packing encompasses proppant particles and *vice versa*. This is an issue I shall deal with later. Without prejudice to that, in the following discussion, unless the context demands otherwise, I shall use the terminology as used in the patent applications.

6. The substantive matter came before me at a hearing on 2, 3 and 14 December 1998, at which Miss Mary Vitoria QC, instructed by Eversheds, appeared as Counsel for AEA, and Mr Roger Wyand QC, instructed by Murgitroyd and Company, appeared as Counsel for Mr Read.

#### **Evidence and witnesses**

7. Setting aside the evidence which I excluded at the preliminary hearing, the written evidence for AEA comprises fourteen statutory declarations with exhibits: one each from Andrew Derek Turner, Neil Beatham, Philip Leslie Holden and Brian James Walker, two from David Leslie Segal, and two from Alan Wilcockson, all employed in managerial or technical positions by AEA; three from Peter Turquand Mansfield, a Chartered Patent Agent and European Patent Attorney employed by AEA; one from Martin Laerum, Manager of Intellectual Property Rights, Statoil; and two from David Max Milton-Taylor, Managing Director and Technology Manager of FracTech Limited.

8. Again setting aside the evidence excluded at the preliminary hearing, the sworn written evidence for Mr Read comprises six statutory declarations with exhibits, being one each from: Mr Read himself; Iain S C Spark, a geologist; Kjetil Alfsnes, Marketing Manager at Baker Oil Treating; Robert Turnbull, a chartered engineer and Managing Director of Environment & Resource Technology; Graham John Murnane, of Murgitroyd and Company, Chartered Patent

Agents instructed on behalf of Mr Read; and Hugh Bourne, previously employed by AEA. In addition, in the bundles supplied for the hearing there was included as though formally submitted in evidence an affidavit by Mr Bourne dated 6 August 1997. I would note that while a photocopy of this affidavit was submitted with Mr Read's counterstatement, an original was not lodged as sworn evidence before the Office. However, as the other side have taken no point on the matter, and indeed both sides have relied on it, I am prepared to take the affidavit at face value.

9. At the hearing, Messrs Segal, Wilcockson, Mansfield, Milton-Tayler, Read, Turnbull and Bourne were cross-examined on their evidence, and it is convenient at this juncture to indicate the impression they made upon me under cross-examination. I start with the referrer's witnesses, beginning with Mr Mansfield. Since he drafted the applications in suit in consultation with Mr Read and Mr Bourne, his testimony necessarily stands to play a significant role in these proceedings. Mr Mansfield struck me as a careful, well-prepared witness with a good knowledge of the technology in question, albeit largely gained second-hand from reading and discussion rather than first-hand from practice. His evidence on the handling of the various patent filings I found generally thorough and helpful. I have to say I found him less assured on events subsequent to Mr Read's leaving AEA, particularly in his apparent negotiations with Mr Bourne on the possible wording of the latter's evidence. Miss Vitoria attempted to anticipate and defuse an attempt to discredit Mr Mansfield in this regard by suggesting that he was merely trying to obtain clarification from Mr Bourne as to his evidence, and that Mr Mansfield had made it clear he was not trying to put words into Mr Bourne's mouth. Mr Wyand, however, submitted that it was clear that that was what Mr Mansfield was attempting, and it looks rather close to that to me. Nothing turns on the issue, though, and I take it no further than that.

10. Mr Segal I found to be a persuasive witness. He was authoritative on matters within his direct knowledge, principally sol-gel technology, and not prepared to go beyond that direct knowledge, making clear several times that he was not an expert in oil wells or oil well technology. Mr Milton-Tayler spoke competently and confidently, unafraid to seek clarification of questions he did not fully understand. I felt he was persuasive on technical matters within his area of expertise, although he was not unwilling to venture outside that area into regions where it seemed to me he was less assured. Mr Wilcockson was in general a confident witness,

although clearly not a technical expert. His recollection of certain events, particularly those regarding the involvement of British Petroleum Exploration Operating Company Limited ("BP") in the research project described below, seemed at variance in places from the documentary evidence submitted, and this threw some doubt to my mind on the accuracy and reliability of his recollection.

11. I turn next to Mr Read's witnesses, and begin with Mr Read himself, whose testimony is self-evidently of central importance. He spoke with conviction, at times with passion. I found Mr Read authoritative and persuasive on technical matters, with the justified assurance characteristic of an expert working engineer. He seemed to be straightforward in his answers, although in his recollection of certain events I detected some uncertainty. It is also clear from Mr Read's own written evidence that when he thought the circumstances demanded he was prepared to be "truthful but evasive". Indeed, a thread running through his evidence was an apparent willingness on his own admission to guide discussion passively or actively away from topics on which he might not wish to be drawn. His motivation for adopting this attitude it seemed to me was an attachment to principles which he had established quite clearly in his own mind but which others might regard at least as misguided.

12. Miss Vitoria took me through aspects of Mr Read's written evidence and cross-examination to show how he had in her view been inconsistent in his story and his principles. She pointed out that whereas Mr Bourne said in his affidavit and orally that Mr Read was present at a meeting when BP's interest in the particles as fracture proppants was discussed, Mr Read's evidence was that nothing was said there about fracture proppants. Moreover, under cross-examination Mr Read had adjusted his story to say that he had no recollection of the matter. Miss Vitoria also pointed out that whereas Mr Read had ascribed his attempts to suppress or "deadball" the use of certain ideas to his loyalty to a previous employer, Statoil, and to avoid conflict with his work there, he had later admitted that he had known since March 1992 that he, and not Statoil, had the rights in those ideas. This is because he had made a disclosure of his ideas to Statoil in a memorandum in October 1991; as Statoil had not acted on that within four months, under Norwegian law the rights in the ideas as an invention reverted to Mr Read. Thus he was protesting prior loyalty of rights owed to Statoil when he knew those rights were actually

his. However, Mr Read then suggested that even so he still owed Statoil a moral if not a legal obligation, so that he would not have dreamt of exercising those rights without consulting Statoil. Miss Vitoria certainly regarded this protested loyalty to his former employer Statoil to be at odds with his apparent lack of loyalty, or at least openness, to his then current employer AEA. Mr Read's loyalties and sense of principle may seem hard to understand, but I am persuaded from seeing Mr Read in the witness box that he at least firmly regarded this as a tenable, even honourable, position. To an outside observer, however, it may seem unreasonably weighted to Statoil, against AEA, and give scope for allegations that his motives were in fact for his own advantage.

13. Miss Vitoria submitted that where Mr Read's evidence is in conflict with that of other witnesses, their version is to be believed, especially if that version is Mr Bourne's. I do not think it is as simple as that. I need to approach Mr Read's evidence with care but I do not believe I should disregard all or even most of it. Rather, I think I should be alert to Mr Read's principles and loyalties and take account of them when trying to decide what the facts of the case are.

14. Mr Bourne impressed me as a very honest witness, careful and conscientious - Miss Vitoria also accepted as much. He seemed determined to give as full and complete an account of events as he was able, but very careful not to go beyond what he was sure of from his own personal experience. I find support for this view from, for instance, his careful reading of his sworn evidence at the hearing prior to his confirming that the contents were true to the best of his knowledge and belief, and by the pains, obvious from the written evidence, which he had taken in his negotiations with Mr Mansfield to ensure the accuracy of his sworn evidence. His manner was straightforward and persuasive.

15. Mr Turnbull I felt spoke from a position of long experience in offshore engineering and in general with direct experience of the matters on which he gave opinions. He was a relaxed and authoritative witness. Miss Vitoria tried to suggest that he had an unfocused approach and jumped to conclusions. I cannot say I share this view; he was simply trying to be helpful, I think, and answered drawing on his own experience. She also suggested that his close personal links with Mr Read placed him a little too much in Mr Read's camp. While I recognise that it is

preferable for witnesses giving expert evidence to be wholly independent, it is not unusual for them not to be so. I do not believe that Mr Turnbull approached his task as a witness expert on technical matters in a partisan fashion.

### **The law**

16. This reference in respect of PCT/GB 95/01236 and US 08/608247 has been brought under section 12 of the Act, which governs the determination of questions of entitlement to foreign and convention patent applications, including applications made under the PCT. The relevant parts of section 12 read as follows:

"**12.-** (1) At any time before a patent is granted for an invention in pursuance of an application made under the law of any country other than the United Kingdom or under any treaty or international convention (whether or not that application has been made)-

(a) any person may refer to the comptroller the question whether he is entitled to be granted (alone or with any other persons) any such patent for that invention or has or would have any right in or under any such patent or an application for such a patent; or

(b) ...

and the comptroller shall determine the question so far as he is able to and may make such order as he thinks fit to give effect to the determination.

(2) ...

(3) Subsection (1) above, in its application to a European patent and an application for any such patent, shall have effect subject to section 82 below."

17. As far as US 08/608247 is concerned, in regard to the determination of entitlement, as opposed to the terms of any Order to give effect to it, I need say no more on the law for the moment. As regards PCT/GB 95/01236, this application designates 54 individual states, as well as various other states covered by three regional patent arrangements, including a European

patent. The PCT does not include provisions that govern entitlement, this being a matter for the law of each designated state, or in the case of regional arrangements the relevant convention, such as the European Patent Convention ("EPC"). In regard to the European patent element of the PCT application, further provisions come into play, beginning with section 82 of the Act.

18. The relevant part of section 82, to which section 12(3) quoted above refers, reads as follows:

"82.-(1) ..

(2) Section 12 above shall not confer jurisdiction on the comptroller to determine a question to which this section applies except in accordance with the following provisions of this section.

(3) This section applies to a question arising before the grant of a European patent whether a person has a right to be granted a European patent, or a share in any such patent, and in this section "employer-employee question" means any such question between an employer and an employee, or their successors in title, arising out of an application for a European patent for an invention made by the employee.

(4) The court and the comptroller shall have jurisdiction to determine any question to which this section applies, other than an employer-employee question, if either of the following conditions is satisfied, that is to say-

(a) the applicant has his residence or principal place of business in the United Kingdom; or

(b) the other party claims that the patent should be granted to him and he has his residence or principal place of business in the United Kingdom and the applicant does not have his residence or principal place of business in any of the relevant contracting states; and also if in either of those cases there is no written evidence that the parties have agreed to submit to the jurisdiction of the competent authority of a relevant contracting state other than the United Kingdom.



(5) The court and the comptroller shall have jurisdiction to determine an employer-employee question if either of the following conditions is satisfied, that is to say-

- (a) the employee is mainly employed in the United Kingdom; or
- (b) the employee is not mainly employed anywhere or his place of main employment cannot be determined, but the employer has a place of business in the United Kingdom to which the employee is attached (whether or not he is also attached elsewhere);

and also if in either of those cases there is no written evidence that the parties have agreed to submit to the jurisdiction of the competent authority of a relevant contracting state other than the United Kingdom or, where there is such evidence of such an agreement, if the proper law of the contract of employment does not recognise the validity of the agreement."

19. At the hearing, in response to a question from me, both Counsel confirmed that they saw no problem over jurisdiction. I too am satisfied that, having regard to the provisions of sections 12 and 82, I have jurisdiction to hear the matters raised in these proceedings.

20. Still having regard to the European patent element of the PCT application, I note that Article 60(1) of the EPC states as follows:

"The right to a European patent shall belong to the inventor or his successor in title. If the inventor is an employee the right to the European patent shall be determined in accordance with the law of the State in which the employee is mainly employed; if the State in which the employee is mainly employed cannot be determined, the law to be applied shall be that of the State in which the employer has his place of business to which the employee is attached."

21. Thus, in regard to the European patent element of the PCT application, it seems to me that I am required to determine the matter of entitlement in accordance with the law of the United Kingdom. In the United Kingdom, section 7 of the Act governs the right to apply for and obtain a patent and section 39 governs rights to employee inventions. The most relevant parts of those sections are:

"7.- (1) ...

(2) A patent for an invention may be granted-

(a) primarily to the inventor or joint inventors;

(b) in preference to the foregoing, to any person or persons who, by virtue of any enactment or rule of law, or any foreign law or treaty or international convention, or by virtue of an enforceable term of any agreement entered into with the inventor before the making of the invention, was or were at the time of the making of the invention entitled to the whole of the property in it (other than equitable interests) in the United Kingdom;

(c) in any event, to the successor or successors in title of any person or persons mentioned in paragraph (a) or (b) above or any person so mentioned and the

successor or successors in title of another so mentioned;

and to no other person.

(3) In this Act "inventor" in relation to an invention means the actual deviser of the invention and "joint inventor" shall be construed accordingly."

"39 - (1) Notwithstanding anything in any rule of law, an invention made by an employee shall, as between him and his employer, be taken to belong to his employer for the purposes of this Act and all other purposes if-

(a) it was made in the course of the normal duties of the employee or in the course of duties falling outside his normal duties, but specifically assigned to him, and the circumstances in either case were such that an invention might reasonably be expected to result from the carrying out of his duties; or

(b) the invention was made in the course of the duties of the employee and, at the time of making the invention, because of the nature of his duties and the particular responsibilities arising from the nature of his duties, he had a special obligation to further the interests of the employer's undertaking.

(2) Any other invention made by an employee shall, as between him and his employer, be taken for those purposes to belong to the employee."

## **Line of approach**

22. With this legal framework in mind, I propose to turn first to the subject matter of the applications in suit, and hence attempt to identify the main inventions with which this dispute is concerned. I shall briefly touch on onus and concessions made by both sides before setting out the history of events. I shall then consider the entitlement in each invention in turn by reference to who invented it, when, and what conditions applied.

## **The applications in suit**

23. The first paragraph of PCT/GB 95/01236 explains that the invention relates to a method for treating an oil well, for example so as to inhibit scale formation, corrosion or other deleterious processes, and to an apparatus for performing this method. It is acknowledged on page 1 of the specification that a wide variety of different oil-field treatment chemicals, including inhibitors, are known and used, but their injection as a liquid, for example, suffers some disadvantages. Against this background, the invention (or inventions) to which the application is directed is set out in eleven claims, of which claim 1 is the only independent claim. It reads:

“1. A method for treating an oil well the method comprising providing within the oil well one or more elements comprising an insoluble porous inorganic material containing a chemical treatment agent.”

24. Appendant claims 2 to 5 read as follows:

"2. A method as claimed in Claim 1 wherein at least one element is a rod, bar or ring of porous material containing the chemical treatment agent.

3. A method as claimed in Claim 1 wherein the elements are particles arranged to form a tubular filter bed.

4. A method as claimed in Claim 3 wherein a filter comprises two generally coaxial tubular filter screens defining a region between them, the region containing the filter bed of the particles.

5. A method as claimed in any one of the preceding Claims wherein a tubular filter screen is installed within the oil well, the method comprising injecting particles into a gap outside the filter screen at least some of the injected particles being said elements."

Claim 8 is a claim to a tubular filter for use in the method of claim 4.

25. Claim 6 involves the use of proppant particles and fracturing, and reads:

"6. A method as claimed in any one of the preceding Claims wherein at least some of the elements are particles, and wherein a formation through which the well extends is subjected to a fracturing treatment with high pressure fluid and proppant particles, at least some of the proppant particles being the said elements."

26. Claim 7 specifies a preferred composition and size for the particles. Claim 9 is directed to the elements themselves in the following terms:

"9. Oil well treatment elements comprising an insoluble porous inorganic material containing a chemical treatment agent, suitable for use in a method as claimed in any one of Claims 1 to 7."

Claim 10 specifies that the agent in claim 9 is selected from scale inhibitor and corrosion inhibitor, while claim 11 concerns a method of making elements for use in the method of claims 1 and 7.

27. I ought to mention that for reasons given by Mr Mansfield the PCT claims when granted will be narrower than this. However, Mr Wyand submitted that in section 12 proceedings what is the invention for entitlement purposes is to be determined by looking at the specification of

the application, not by subsequent limitations of the claims. As he pointed out, one does not know whether claims the same as or different from those in the US application will be accepted in the various jurisdictions. I accept his submission, and shall accordingly be focusing on the applications in suit as filed.

28. US 08/608247 has yet to be published, but exhibit PTM13 to Mr Mansfield's first declaration gives the text of the US application as filed. The introductory paragraph indicates that the invention relates to a method for treating a well, but not necessarily an oil well, to supply chemical treatment agents to it, once again to inhibit scale formation, corrosion or other deleterious processes. It is acknowledged on page 1 of the specification that it is well known to add material to an oil well for this purpose. The invention (or inventions) to which the application is directed is set out in eight claims, of which claim 1 is the only independent claim. It reads:

“1. A method of treating a well so as to supply a chemical treatment agent, the method comprising subjecting the well to a fracturing treatment with a high pressure fluid and proppant particles, wherein at least some of the proppant particles comprise a porous, insoluble, inorganic material of porosity no more than 30% containing the chemical treatment agent in a form such that the chemical treatment agent then gradually leaches out into the well fluids over a prolonged period.”

29. Appendant claims 2 to 7 further define the method by specifying the material, size and strength of the porous proppant particles, while appendant claim 8 concerns the agents the particles contain.

### **The inventions in issue**

30. Having regard to the claims and description of the specification of PCT/GB 95/01236 as filed, one could conceivably distil a large number of concepts to which the label "invention" might arguably be applied. However, the technical areas on which this dispute has focused

suggest to me that the only concepts or inventions that it seems necessary for me to consider in any detail can be expressed in broad terms as follows:

(i) a method for treating an oil well by providing within the well one or more elements comprising an insoluble porous inorganic material containing a chemical treatment agent (claim 1); and such elements themselves (claim 9);

(ii) a method as in (i) in which the porous material comprises particles arranged to form a tubular filter bed (claim 3); this invention can be further sub-divided as between the use of pre-assembled units (claim 4) and other methods giving rise to a tubular filter bed (claim 5);

(iii) a method as in (i) wherein a formation through which the well extends is subjected to a fracturing treatment with high pressure fluid and proppant particles, at least some of the proppant particles being the said elements (claim 6).

31. As regards US 08/608247 as filed (at exhibit PTM13), the only invention that it seems necessary for me to consider in any detail is essentially the same as invention (iii) above. There is an additional limitation in claim 1 of the US application that the porosity of the porous particles is no more than 30%, but this does not seem to me to be a difference of any great significance since the two applications in suit share an identical example for the preparation of proppant particles. I note also that the US application is not limited to oil wells, and its claim 1 refers to "wells" without qualification. Again, however, this does not seem to me to be of any consequence so far as my determination of entitlement is concerned.

32. I might observe that neither side at the hearing was consistently very specific as to what they regarded as the inventions in question. Indeed, it was striking that frequent reference was made to "the invention" without further qualification. I suspect that this betrayed a predominant interest in invention (iii), perhaps because on Mr Mansfield's analysis a published Norwegian patent application means that the PCT application can only have valid claims to the use of the particles as fracture proppants. Nonetheless, I believe my consideration of entitlement needs to

be wider than that, but as I have indicated not so wide as to deal individually with every component of the two specifications.

33. Miss Vitoria very early in the hearing submitted that in view of the provisions of section 12, only the proppant invention (iii) can be considered in these proceedings. She did so by noting that a UK patent had already been granted on the application to be found in exhibit PTM10 to Mr Mansfield's first declaration, which I think must be GB2284223B, and that Mr Read has already acknowledged that this belongs to AEA, the agreement also being exhibited at PTM10. She argued that having regard to the provisions of section 12 this tribunal is only concerned with inventions for which no patent has been granted; that it followed that it was not open in these proceedings for Mr Read to challenge ownership of any matter for which AEA has a granted patent; and that in consequence these proceedings could only be directed to matter which was both in PTM12 and not in PTM10, that is to say only the proppant invention.

34. I do not believe this submission is well founded. Looking again at the relevant part of section 12(1), it reads:

“**12.-** (1) At any time before a patent is granted for an invention in pursuance of an application made under the law of any country other than the United Kingdom or under any treaty or international convention (whether or not that application has been made)-  
(a) any person may refer to the comptroller ...”

My interpretation of this provision is that the reference in section 12 to a granted patent is directed to “a patent granted in pursuance of an application made under the law of any country other than the United Kingdom or ...”, and that in consequence the existence of granted patent GB2284223B is in this context immaterial.

### **Onus and concessions**

35. Both Counsel made submissions on the onus in these proceedings. Mr Read and Mr Bourne are both named as inventors on the applications in suit. The presumption is that they are

each entitled to the benefit of what they respectively invented, unless an appropriate condition of law or contract alters that. On this basis, the onus is on AEA to show that Mr Read did not invent something, or that it is entitled to anything Mr Read may have invented; on the other hand, the onus is on Mr Read if he wishes to show that Mr Bourne did not invent something, or that Mr Bourne is not entitled to what he may have invented.

36. That said as to onus, I believe my task has been simplified to some extent by two important concessions made known at the hearing. First, Mr Wyand conceded that, despite what his counterstatement may have said, Mr Read now accepted that what he invented while at AEA belongs to AEA. The second concession was made by Miss Vitoria on behalf of AEA and that is that anything that Mr Read invented before joining AEA belongs not to AEA but to him. These concessions mean that once I have determined what, if anything, Mr Read invented, I only need to decide when he did so and the entitlement to that thing should become clear.

## **History**

37. Mr Read is a graduate chemist with a great deal of experience in the oil industry. He was employed by The British Petroleum Company from 1968 to 1979 and by Statoil in Stavanger, Norway from 1980 to 1992. He was employed by AEA from 2 March 1992 to 1 March 1995, but was suspended from duty from 16 December 1994.

## ***Statoil***

38. During his period of employment with Statoil one of Mr Read's major concerns was with the chemical treatment of oil wells to prevent scale deposition using aqueous solutions of dissolved inhibitor. These treatments were applied in the Gullfaks field, though problems remained in that the aqueous solutions used in the treatments restricted oil flow for unacceptably long periods. These problems were addressed at a meeting held on 16 September 1991, following which in a memorandum ("the memorandum") dated 8 October 1991 and headed "Formation damage due to scale squeeze treatments in gravel packed wells", Mr Read notes that the problem is due to excess water and lists four possible methods of dealing with that problem. The most



relevant part of the memorandum, which forms exhibit PAR2 to Mr Read's declaration, concerns the method numbered (4) which reads as follows:

"4) Use a porous gravel for the whole of the pack, including prepack. This porous gravel could be pretreated with the precipitated inhibitor [*sic*] and might slowly dissolve back. We would then, in effect, not need to separately treat the well for scale. The inhibitor would be placed during completion."

In the memorandum's final paragraph Mr Read adds:

"... For option 4 I would only be guessing at how long such a treatment could last. Theoretically it should first start working when the water breaks through at the well, but coating by asphaltenes and waxes might lead to problems. The method does have some interesting aspects, but maybe more in high angle wells than in the current Gullfaks producers."

The meaning and scope of this disclosure in the memorandum has considerable significance in these proceedings and I shall return to it in due course.

### ***AEA - conditions of employment***

39. On 2 March 1992 Mr Read joined AEA. Certain of the evidence before me is directed to the terms and nature of Mr Read's duties at AEA, and in particular as to whether or not inventions would be expected to arise from the performance of those duties. I see no need to go further into this issue, however, since as I have said it was made clear at the hearing that Mr Read now accepts that if an invention was made by him during the period of his employment by AEA then it belongs to AEA. His case is that it was made before he joined AEA.

### ***AEA - patent history involving Mr Read***

40. The patent history is a complex. On 5 May 1993 Mr Read reported to Mr Mansfield the idea of providing scale inhibitor in the form of prepacked solid pellets between wire screens. This idea was recorded on that same day in an invention report by Mr Mansfield, as he exhibits at PTM1, and subsequently described more fully by Mr Read in a minute exhibited at PTM2. Also in May 1993, in the course of discussion between Mr Wilcockson and Mr Read it was realised that the solid pellets would have insufficient inhibitor-retaining volume and the use of porous beads was suggested. On 13 July 1993 there was a meeting involving Messrs Read, Wilcockson, Segal, Bourne and another to discuss whether AEA's sol-gel group could develop the porous particles. Other developments also followed. Mr Mansfield's exhibit PTM3 is a handwritten draft patent application dated 12 August 1993 based on these ideas. Exhibit PTM4 is a revised version of that draft signed on every page by Mr Read on 18 October 1993 and accompanied by a form acknowledging AEA's ownership. On 27 November 1993 patent application GB 9324434 was filed. This is exhibited at PTM5 and comprises the text of PTM4 without the claims but with an extra constructional option which I do not need to go into here.

41. Further information and ideas from Mr Read, namely alternative methods of manufacturing porous silica identified by Mr Segal and the idea of incorporating ion exchange material in pellets to absorb materials causing scale and corrosion, were incorporated in a revised patent application GB 9410702 filed on 27 May 1994. The text of this application and a form signed by Mr Read on 3 May 1994 to acknowledge AEA's ownership are to be found in exhibit PTM8. I note that on this occasion Mr Read did not sign any of the pages of the patent specification. The specification itself refers in broad terms to providing inhibitor in the form of fluid permeable element(s), including absorber materials such as ion exchange materials. The example given in the specification is an annular filter, but there is also, as Miss Vitoria put it, a conventional sort of gravel packing method. On 1 July 1994 in a memorandum headed "Invention Pelleted Inhibitor: Ion Exchange", exhibited at PTM9, Mr Read gave instructions regarding patent filings, and on 2 November 1994 signed assignment forms in respect of patent applications in the United States, Japan and Norway claiming priority from GB 9324434 and GB 9410702 (although the form for Japan does not give any numbers). In relation to the US

application, he also signed a combined declaration and power of attorney. The forms and the application are to be found in exhibit PTM10.

### ***AEA - research and development project***

42. A research and development project entitled "An evaluation of the use of matrix containment techniques for control of scale in long reach horizontal wells" was established to take forward certain ideas in this area, an initial meeting being held on 28 September 1993 to discuss the draft proposal. Minutes of project meetings held on 16 December 1993, 10 January 1994, 24-25 March 1994 and 13 June 1994 are exhibited by Mr Segal as exhibits DLS1 to DLS4. As well as AEA staff, representatives of Saga Petroleum and Norsk Hydro, who provided funding for the project, were present at each meeting as sponsors or partners in the enterprise. For AEA, Mr Read's role included that of business development manager. Mr Bourne was responsible for the management of the project from March 1994, which was when according to Mr Wilcockson's first declaration the full scale research and development programme began in earnest, although as he and the note exhibited at DLS2 indicate limited work began earlier on 4 January 1994. Mr Segal's role was to investigate the production of porous particles by means of a technique known as sol-gel processing.

43. Two of the project meetings, those of 10 January 1994 (DLS2) and 13 June 1994 (DLS4), are particularly noteworthy, in part because in the minutes there is specific mention, by Dr Knapstad of Norsk Hydro, of fracturing. In DLS2 it is noted in paragraph 4.3 that "Dr Knapstad asked whether the matrix contained inhibitor could be employed as a *fracturing gravel*. Mr Read replied that this may be possible and thought this should be covered in the Patent filing" (my italics added). In his declaration at paragraph 9, Mr Read states that this answer was "truthful but evasive ....I did not wish at this time to reveal that I had investigated the use of a matrix containment as fracture gravel during my time with Statoil. Because this invention had been made when I was with my former employer, Statoil, I did not wish to introduce it into the Patent Specification 14961 MdWf" (ie PTM5). In DLS4 it is noted in paragraph 3.6.2 that Dr Knapstad, in a discussion of bead or particle strength "... added that if the beads were applied as a *fracture proppant* they may need to withstand even greater compressive forces" (my italics

added). Thus he again refers to fracturing, this time as reported by the term proppant rather than gravel.

44. Mr Bourne in his affidavit of 6 August 1997 at paragraph 6 also refers to a meeting in October 1994 to which BP were invited to introduce them to the project concept and to encourage them to join, and at which BP stated their interest in fracture pack completions. There is some dispute over what was said and when at that meeting and the lunch accompanying it, and it is perhaps unfortunate, as Mr Wyand observed, that no note of that meeting was put in evidence. Mr Wilcockson, in paragraph 6 of his second declaration, says that BP indicated at the meeting in October 1994 that "they would only support the project if the porous beads were developed so as to be suitable as fracture proppants rather than just for use as gravel pack material". However, under cross-examination by Mr Wyand he accepted that he was not at that meeting and had no direct knowledge of such a condition. Despite the uncertainty over what was actually said and to whom in whose hearing, I am satisfied, principally on the basis of Mr Bourne's affidavit, that some reference to fracturing was made on that occasion.

#### ***AEA - patent history after Mr Read had left***

45. In December 1994, Mr Read was suspended from duty by AEA, and Mr Bourne was then given the responsibility for looking after the patent filings. In February 1995, following discussions with Mr Bourne, Mr Mansfield filed patent application GB 9503949.1, exhibited at PTM11, which is the first in this series of applications specifically to refer to fracturing. It is application GB 9503949.1 from which the applications in suit, PCT/GB 95/01236 and US 08/608247 claim priority. For completeness I should also refer to patent number GB 2298440B, which, in common with the PCT and US applications in suit, was filed by AEA naming Mr Read and Mr Bourne as inventors and claiming priority from GB 9503949.1. The rights in this patent do not form part of these proceedings as pleaded, although I note that according to Mr Read the filing was without his knowledge or consent.

## **Entitlement**

### ***Invention (i)***

46. Invention (i) essentially corresponds to the concept very broadly claimed in claim 1 of the PCT application. Looking at the memorandum, from which I quoted more fully earlier, it clearly discloses the broad idea of using a porous gravel for the whole of the pack, including prepack, this porous gravel being pretreated with precipitated inhibitor which might slowly dissolve back. On this basis, it seems to me that invention (i) corresponds to the broad idea originated by Mr Read while at Statoil. Since AEA has conceded that anything which Mr Read invented before he joined AEA belongs to him, and since Statoil did not act on the disclosure of the invention contained in the memorandum within four months, I find that entitlement in invention (i) belongs to Mr Read.

### ***Invention (ii)***

47. Certain matter relating to invention (ii) is acknowledged by Mr Read to belong to AEA. Of particular importance in this respect is the matter agreed by Mr Read as belonging to AEA following his signature of the documents exhibited at PTM4. Unfortunately, it is not entirely clear what Mr Read was signing over here, or intending to sign over. At the hearing he confirmed that he was not seeking to go back on his signature to that. Mr Wyand also made clear that "PTM4 belongs to AEA". However, Mr Wyand then went on to emphasise differences between PTM4 and the PCT application, arguing that they are different documents and you cannot construe one by the other. While the fact that they are different documents may be true, it does not mean that PTM4 is not relevant.

48. Under cross-examination Mr Read seemed prepared to acknowledge that AEA is entitled to the use of the material delivered as pre-assembled units or pre-packed screens which can be screwed together and put into a hole, but that if the material comes as a free-flowing material which is pumped into any sort of cavity, either into an open-hole or a cased hole, or a fracture, then it involves, and conflicts with, work he did at Statoil. Clearly Mr Read's view was that this

latter aspect was not something he had signed over and it belongs to him. Miss Vitoria's response was that the whole of this concept, pre-assembled units and free-flow, was covered by PTM4 which Mr Read had signed over and could not now go back on. Miss Vitoria took me through PTM4 in some detail, and sought to establish that the passage on page 7 in particular provided disclosure of material pumped down into a lined hole.

49. It seems to me that in considering invention (ii) I must also consider the content of the memorandum. As I have said, this discloses the broad idea to "use a porous gravel for the whole of the pack, including prepack", this porous gravel being pretreated with precipitated inhibitor which might slowly dissolve back. On the face of it, this envisages the use of prepacks containing treated gravel, but also seems to go wider to "the whole of the pack", not just prepack. Of course invention (ii) as I have formulated it requires the use or creation of a *tubular* filter bed. However, it could perhaps be argued that following the directions contained in the memorandum would necessarily and unavoidably lead to the creation of a tubular bed.

50. It seems to me that the issue of invention (ii) involves several contradictory considerations. On the one hand, on the basis of the memorandum, Mr Read might have argued that he invented the whole of invention (ii) while at Statoil. To the contrary, however, in these proceedings Mr Read has confirmed that the subject matter of PTM4 belongs to AEA, although he would limit the scope of that assignment to AEA to pre-assembled units containing the material. AEA argue that the whole of the matter of PTM4 belongs to them. However, this position is arguably contrary to their concession that anything Mr Read invented before joining AEA belongs to him, insofar as invention (ii) appears to be disclosed in the memorandum.

51. As I indicated in formulating as I saw them the main inventions under consideration in these proceedings, invention (ii) in its broadest sense comprises a method as in invention (i) in which the porous material comprises particles arranged to form a tubular filter bed, but can be further sub-divided as between the use of pre-assembled units and other methods giving rise to the tubular filter bed. It seems to me, attempting to resolve as best I can the contradictory threads of argument and evidence in relation to this invention, that the use of pre-assembled units, including in particular the use of an annular filter comprising two filter screens containing

a fluid permeable bed of particles comprising inhibitor material, belongs to AEA; I reach this conclusion principally on the basis of the firmness with which Mr Read confirmed that he saw this aspect as belonging to AEA, and therefore regard that as overriding what might otherwise flow from the terms of the memorandum, in particular its reference to prepacks. As regards the aspect of invention (ii) concerned with methods other than using pre-assembled units to create the tubular filter bed, I believe that this aspect was invented by Mr Read while he was at Statoil, before he joined AEA, and still belongs to him. I take this view on the basis of the memorandum, which in this respect I do not believe is overridden by PTM4, and for two main reasons. First, I am not persuaded that there is clear disclosure in PTM4 of the use of free-flow material, and second Mr Read asserts that this aspect concerns work he did at Statoil and this assertion is supported by the memorandum. I might add that I have also taken into account the fact that the onus is on AEA to show its entitlement, and in respect of invention (ii) I do not believe they have been able to clarify the position to a point where I could find other than I have. In consequence, I find that AEA is entitled to invention (ii) insofar as it involves the use of pre-assembled units to form a tubular filter bed, but that otherwise the entitlement to invention (ii) is Mr Read's.

### ***Invention (iii)***

52. The memorandum from which I quoted earlier does not explicitly mention proppants or fracturing. It follows that if Mr Read is to establish that he invented invention (iii) before joining AEA he needs to persuade me, that is the onus is now on him, that the reference in the memorandum to the use of gravel encompasses the use of proppants in fracturing, unless of course there is some other evidence on which he can rely. In this last regard I should briefly consider the evidence of two of Mr Read's witnesses who were not present for cross-examination. Mr Spark, a geologist, testifies that Mr Read had in March 1994 at a conference discussed privately with him the application of impregnated beads in gravel pack completions and in fracturing operations. He also suggests that the invention was developed during Mr Read's employment at Statoil. Mr Alfsnes attests that in January or February 1992 he discussed with Mr Read a method of encapsulating solid scale inhibitor into porous beads for use in oil well applications. However, the evidence of these witnesses is not specific as to what Mr Read

invented himself, nor when, and I therefore agree with Miss Vitoria that this evidence is of no help.

53. A key passage in the written evidence is paragraph 23 of Mr Read's declaration, in which he says:

"In paragraph 14 Mr Mansfield states that the memo PAR2 does not describe the use of a porous "proppant". This is an incorrect deduction. The memo describes the use of "porous gravel", but "gravel" is a generic term for material used as proppants. In the Minutes of Meeting from 10 January 1994 (DLS2), Dr Knapstad has used the term "fracture gravel" (paragraph 4.3) to describe the medium. At the meeting held on 13 June 1994 (DLS4) the same Dr Knapstad is recorded as describing the same medium as "fracture proppant". Professionals working in the well technology area freely commute the terms gravel and proppant. By my use of the term "porous gravel" in my memo PAR2 I did not intend to limit the term to sand used in gravel packing operations."

54. Miss Vitoria submitted that the memorandum simply discloses the idea of using impregnated porous particles in a gravel pack. She said there is no evidence, in the memorandum or from other parties, that the idea was wider. She contended that Mr Read in his declaration conceded that the memorandum did disclose a particular application and not the broad idea. In paragraph 24, however, he says that his original idea was the broader concept of the use of a porous particle impregnated with treatment chemicals for oil wells, and that the memorandum suggested the application of that idea in a gravel pack in order to overcome a particular problem. This seems to answer Miss Vitoria's point. Under cross-examination, however, Mr Read seemed to be accepting that the memorandum specifically relates to the use of gravel in a gravel pack, although even then he maintains that the idea is clearly broader than this. He said that the fact that the invention happened in a gravel pack context should not detract at all from the wider issue. Mr Wyand also emphasised that while the memorandum contained what was relevant to a particular application, Mr Read was clearly not limiting himself to that, relying on the last sentence of the memorandum to support his submission.



55. Mr Wyand put forward two further submissions why the invention in the memorandum went wider than the specific disclosure of using porous gravel impregnated with scale inhibitor in packs and prepacks in wells. He suggested as I understand it that one should look at the disclosure in the memorandum and say "what would Mr Read have been entitled to apply for a patent for?" In other words, he should not be limited, in the invention attributed to him, to the specific disclosure of the memorandum. Later, Mr Wyand ran a related but slightly different point. This was that it is not appropriate to limit Mr. Read's invention to gravel packs, even if his actual invention at the time was only to use it in a gravel pack and it did not go wider than that. Based on a specific embodiment one was entitled to a wider claim, covering in particular what Mr Wyand called workshop variants or variations of the specific embodiment. Thus the use of a material from a gravel pack as a fracture proppant was a mere workshop variant as all that would be required would be some routine testing.

56. I have trouble with both lines of submission. I do not believe I can look at the memorandum and say how wide a patent claim, embracing many workshop variants, could have conceivably been written based on it, and regard that as the breadth of what Mr Read was really disclosing, explicitly or implicitly, as his idea. To do that could embrace many things were not in Mr Read's mind at the time at all. I believe I must simply look at the memorandum and decide by construing it naturally what he was disclosing as having invented at the time. Clearly in relation to invention (iii) a highly relevant issue is the scope of the terminology used.

57. As I have already indicated, much of the dispute and a great deal of the expert testimony in these proceedings has been directed towards this question of terminology, and especially whether references to gravel in the memorandum encompass proppants. It is Mr Read's case that they do and hence that the idea disclosed in the memorandum includes fracture proppants; it is AEA's case that the two terms are quite different and hence that the memorandum discloses only what it overtly says, that is gravel as used in gravel packing.

58. Much of the testimony is directed to the properties required in the two applications or situations: properties of strength, production of fines etc. I do not believe it will help for me to repeat all, or even a substantial part, of that technical evidence here. I would in this context

though note Mr Wyand's submission that the lower crushing pressure limit in the US patent application, that is for proppants, is 1000 psi, while the API recommendation is that material for gravel packs is tested for crush resistance to 2000 psi. He concluded that one starts from the basic position that anything which passes the crush resistance test for gravel packs is going to be within the broadest limitation of the US application. He concluded that some gravel pack materials would be sufficiently strong to pass the test for proppants for the US application.

59. It is clear to me from the agreed technical primer and the expert evidence, although that from Mr Turnbull and Mr Milton-Taylor did differ in places, that certain materials can be used for both applications or situations, and that as a rule of thumb if a material has sufficient strength for use as a proppant in fracturing it may be used in gravel packing, though the reverse is not necessarily the case - some gravel pack materials might be suitable for use as a fracture proppant, but most would not be. Indeed, Miss Vitoria seemed to accept as much, although she added that other considerations such as cost might also come into play, as well as particle size and sphericity.

60. However, despite the mass of evidence filed on the terminological question, I am not persuaded that it has been resolved in a way that is determinative. It is quite possible, even probable, that materials used for gravel packing might have all sorts of applications - in the field of oil drilling and elsewhere - and it might be evident to the skilled man that such applications exist. The existence of such materials would thus tend to destroy the novelty of any *per se* claim to such a material for whatever use and would arguably render obvious any claim to a method of use where such materials are known to have been used in a related field. I agree therefore with Mr Wyand that it is unlikely to be a "new invention to say that a particle that can be used in a gravel pack can also be used as a proppant in fracture". However, this is not I think a key issue (especially as patentability is not a factor in entitlement proceedings). Again, the issue of "fracpacking" in the Gullfaks field is to my mind not of great significance, since this also goes essentially to the issue of terminology dealt with above, and in any case is subject to doubt on the evidence as to what exactly took place when.

61. It seems to me that the question that I have to address here is that of whether or not there is evidence which, on the balance of probabilities, demonstrates that prior to Mr Read's employment at AEA, not that he invented a material or a method of well treatment which an expert might at that time have considered to be suitable for use in fracturing, but that he invented such a material or method which he clearly and unambiguously disclosed at the time as being useable or intended for use in fracturing. Despite the fact that a limited range of materials can clearly be used for both gravel packing and fracturing, and the fact that there may be a certain looseness or inconsistency of terminology in this area from time to time even amongst experts, I am not persuaded that Mr Read has discharged the burden I have already mentioned is now required of him here; there does not seem to me to be clear and unambiguous disclosure prior to Mr Read's employment at AEA of the materials in question being useable in or intended for use in fracturing. In particular, for reasons I have given I do not believe references to the use of porous gravel in the memorandum would have been understood by the skilled addressee as being to or including use as fracture proppants. I also find support for my view from the circumstances of the project meeting of 10 January 1994 (DLS2), where I think it is clear that Mr Read himself makes a distinction between gravel packing and fracturing, he being keen to deflect Dr Knapstad's enquiries concerning fracture gravel. I find further support from Mr Read's co-operation in the many and various patent applications filed during his time at AEA, which refer to gravel packing but not to fracturing or to proppants. It seems to me that Mr Read's compliance in this respect indicates that he too is interpreting gravel packing in a restricted sense here. I conclude therefore that invention (iii) was not made prior to the period of Mr Read's employment at AEA.

62. The next question is who did then invent the use of these materials in fracturing while Mr Read was employed by AEA. There are references to fracturing or proppants dotted throughout the evidence relating to the history of these inventions. Mr Wyand may be right in his submission that the central aims of the research and development project I described earlier did not encompass proppants. The references to proppants or fracturing in the minutes of the project meetings in January and June 1994 and by Mr Segal under cross examination are largely peripheral, although the references in subsequent meetings attended by BP seem to me to be of greater consequence. According to Mr Bourne, some of the particles that were examined in the

earlier stages of the project were proppants - in particular carbolite - because of their porosity, although it seems to me not unlikely that the significance of the proppant use may not have been apparent to him at that time.

63. So where and when did the fracture proppant idea emerge? Mr Read in paragraph 20 of his declaration alleges that he introduced the idea to Mr Bourne during the research project. However, under cross-examination he said that to his recollection he had never disclosed to AEA the idea of using the particles as a fracture proppant. Under further cross-examination, Mr Read seemed in his own mind able to reconcile these two apparently contradictory statements on the basis of the following distinction: "the idea" in paragraph 20 of his declaration was not in fact the idea of using the particles as proppants but "the idea of a porous carrier of chemicals, and that is proppants". In other words, he had "not specifically" disclosed to AEA that the particles could be used as fracture proppants. I took all this to mean that Mr Read had spoken within AEA of the use of the particles as porous carriers, which might well be proppants but he had not explicitly said so.

64. I turn now to Mr Bourne's evidence on the matter. The discussions and correspondence between Mr Bourne and Mr Mansfield leading up to the filing of GB 9503949.1 are centred on proppants. However, Mr Bourne states in paragraph 5 of his affidavit, and confirmed under cross-examination, that "At no point during this business relationship did Peter Read suggest to me that the scale inhibitor impregnated particles could be used as fracture proppants ..." Thus he is agreeing with Mr Read in categorically saying that Mr Read did not discuss the proppant idea with him. Mr Bourne also states in his statutory declaration that "the use of scale inhibitor impregnated particles within a fracture pack completion was a natural extension of the original concept as explained to me by Peter Read" and that "I understood the idea to have originated from Peter Read". Mr Wyand submitted that looking at Mr Bourne's evidence *in toto* he is clearly not claiming to have made the invention. Mr Wyand's submission was in effect that Mr Bourne did not make the invention: all Mr Bourne did in Mr Wyand's view was to notice that although they had been looking at proppants, Mr Read had failed to apply for a patent in respect of its use as a proppant. Mr Bourne realised the invention was wider than Mr Read was disclosing to him specifically, and it was therefore obtained by Mr Bourne from Mr Read.

65. Miss Vitoria argued that if Mr Read did not suggest the proppant idea, and both Mr Read and Mr Bourne agree he did not, the idea can only have come from Mr Bourne, and must have arisen in his mind from his work on the various particles which were being used in the project. She also argued that Mr Bourne had made a sufficient contribution in relation to the details and the lab work which had been carried out to be named co-inventor. In her submission, Mr Bourne was saying that the only reason Mr Read was named too was because he came up with the original idea of using these particles in prepacked screens, and it was that idea which started the project off.

66. At the hearing Mr Read first spoke to the effect that he was the sole inventor of the proppant idea but later indicated that he would give ground for Mr Bourne to be named as a co-inventor if he, Mr Bourne, so wished. Miss Vitoria pointed out that Mr Read had also seemed content to accept a status as co-inventor in his correspondence with Mr Mansfield, implying an acknowledgement of Mr Bourne's contribution. Mr Wyand, on the other hand, argued that despite what Mr Read had said, Mr Bourne in his evidence does not claim to have made an invention, and therefore either Mr Read is the inventor or there is no inventor.

67. I have confidence in Mr Bourne as a witness for reasons I have previously given, and he was personally as close as anyone, other than possibly Mr Read, to events as they unfolded. His evidence is both that Mr Read did not suggest the use as a fracture proppant to him and that the idea originated with Mr Read. It is clear that Mr Read, in his dealings with AEA in this matter, including with Mr Bourne, was choosing his words with care, and it may be partly for that reason that the proppant idea cannot clearly be attributed. In a sense, the extension of the original concept to proppants seems to have emerged almost under its own volition within the working relationship between Mr Read and Mr Bourne.

68. Taking all the evidence and submissions into account I am satisfied that Mr Read played a key role in inventing the basic idea of using these materials in fracturing. There is a fine line between Mr Bourne contributing to the invention and, alternatively, his merely providing non-inventive support and recognising and reporting, for patenting purposes, Mr Read's invention. However, Mr Bourne is named in the patent applications as inventor and, as Mr Wyand

acknowledged, the onus is on Mr Read to show that his name should be removed on the ground that he made no contribution to the invention. Mr Bourne's exact role is not wholly clear, but I am not persuaded that Mr Read has discharged the burden on him. I am not therefore prepared to find that Mr Bourne should have his name as co-inventor removed.

69. In the result therefore, I find that invention (iii) was made during the period of Mr Read's employment at AEA, not before, by Mr Read and Mr Bourne. Since Mr Read has conceded that anything he invented while he was employed by AEA belongs to them, I find that AEA is entitled to invention (iii).

### **Conclusions**

70. In summary, having considered carefully all the evidence and argument before me, I have found that:

- ! in relation to invention (i), namely a method for treating an oil well by providing within the well one or more elements comprising an insoluble porous inorganic material containing a chemical treatment agent (PCT claim 1), and such elements themselves (PCT claim 9), Mr Read was the sole inventor before he joined AEA, and hence that the entitlement in it belongs to him;
- ! in relation to invention (ii), namely a method as in (i) in which the porous material comprises particles arranged to form a tubular filter bed (PCT claim 3), Mr Read was the sole inventor before he joined AEA and therefore that the entitlement in it belongs to him, except that, for reasons I have explained, AEA has the entitlement in this method when using pre-assembled units (PCT claim 4);
- ! in relation to invention (iii), namely a method as in (i) wherein a formation through which the well extends is subjected to a fracturing treatment with high pressure fluid and proppant particles, at least some of the proppant particles being the said elements (PCT

claim 6 and US claim 1), Mr Read and Mr Bourne were joint inventors while Mr Read was employed by AEA, and hence that the entitlement in it belongs to AEA.

## **Relief**

71. I note that both sides request a similar form of relief. AEA, although it uses a slightly different form of words at the end of its statement, seeks in paragraph 3 of its statement:

"... a Declaration from the Comptroller that the Applicant is entitled to be granted, as sole proprietor, the Patents and an Order that ..Peter Read signs all necessary documentation to effect the assignment of the ownership of the invention and of the Applications to the Applicant or in the alternative, an Order to authorise another person to execute the relevant documentation on behalf of Peter Read."

In paragraph 3 of Mr Read's counterstatement, aside from what appears to be a clerical error, he seeks relief in similar terms but in his favour.

72. I am, however, faced with some difficulty in deciding what is the most appropriate form of Declaration or Order to make to give effect to my findings, and for two main reasons. The first derives from the fact that a reference under section 12, by its very nature, is concerned with foreign or convention applications. I have already noted that in the case of the PCT application in suit, entitlement is a matter for the various laws of each of its designated states, and that in the case of the US application in suit entitlement is a matter for the law of the United States. Although I have some general awareness of the laws of some of the countries involved, and there is a small amount of information in the evidence filed in the present proceedings, my knowledge is by no means detailed nor does it cover all of the countries concerned. In any event, it would be wrong for me to proceed on such an imperfect basis unless there were no other option..

73. The second difficulty stems from my finding that AEA and Mr Read have entitlements in different aspects of the inventions involved in the patent applications in suit. If I were to make a Declaration or Order simply reflecting in some way a finding of joint entitlement, this may be

difficult and impractical for both parties. It might as an alternative be possible to accommodate the situation better by, for instance, an agreement between the parties on a one-off payment from one party to the other, or by a suitable licensing arrangement. It may be a relevant consideration for the parties that, as I have already noted, on Mr Mansfield's assessment the publication of a Norwegian patent application means that the PCT application can only have valid claims to the use of the particles as fracture proppants.

74. It seems to me therefore that before I make any Order or Declaration to give effect to my findings on entitlement to any patents pursuant to PCT Application No PCT/GB 95/01236 and US Patent Application No 08/608247, the parties ought to be given an opportunity to make submissions on the matter in the light of my findings so far. This is also consistent with the wishes expressed at the hearing by both Counsel.

75. For these reasons, it seems to me that the parties should have an opportunity to negotiate an agreement between themselves, and failing that an opportunity to make submissions to me on the form of Order or Declaration I should make. **I therefore allow the parties a period of two months from the date of this interim decision to make written submissions on this issue. Submissions should be copied to the other party who will then have one month from the date of receiving the submissions to comment on them. If the parties reach agreement within the two-month period then the comptroller should be informed of the terms of that agreement.** I will consider any such submissions and comments before making a final Order or Declaration.

### **Costs**

76. In considering the issue of costs I have to bear in mind the extent to which each party was successful, at the preliminary hearing as well as at the substantive hearing. At the hearing on 14 December 1998 I heard submissions on costs in case the present decision were the final one. As it is not, I think it appropriate to defer consideration of costs until the issue of my final decision. Also, since my findings on entitlement given above may cause the parties to have fresh thoughts on costs, I leave it open to them to put in further submissions on costs, should they wish to do



so, within the same timetable as I have set out above for submissions on the Order or Declaration.

### **Appeal**

77. As this is a decision other than on a matter of procedure, under the Rules of the Supreme Court any appeal shall be filed within six weeks of the date of this decision.

Dated this 3<sup>rd</sup> day of February 1999

S N DENNEHEY

Divisional Director, acting for the comptroller

**THE PATENT OFFICE**