JUDGMENT : Mr Justice Morison : QBD. 27th June 2003.

1. The Claimants, whom I shall call 'Mabey', are an engineering company whose activities include the design, fabrication and supply, world-wide, of steel bridges. The Defendants, 'the Insurers', wrote Mabey's primary layer professional indemnity insurance for the 1996/7 year, incepting 15 March 1996. The slip policy was scratched and stamped on 15 March 1996 by an underwriting agency authorised to write business on the insurers' behalf. During the policy period, on about 24 September 1996, the steelwork structure supplied by Mabey to an Italian company and erected in Ethiopia became unstable and partially collapsed. This meant that Mabey had to review the designs and construction of a number of their bridges, including, relevantly, steel bridges which had been erected or were due to be erected in Ghana. In rectifying the actual and potential faults in the Ghana bridges, Mabey incurred costs which exceeded £2 million. The policy limits the indemnity to £2 millions "for a single claim". Does Mabey have one Claim or two Claims within the meaning of the policy? Mabey say they have two; the insurers say they have just one.

2. Unit Construction Bridges [UCBs] are one of Mabey's products. The expression describes all bolted steel truss bridges. This differentiates them from other steel bridges such as panel bridges. The trusses comprise individual structural sections connected by a number of bolts and plates. UCBs were sold and delivered by Mabey to a number of different countries: one to Ethiopia; 39 to Peru pursuant to a contract dated 14 June 1995; one to the Dominican Republic pursuant to a contract dated 3 October 1993, and 9 to the Republic of Ghana.

3. This is the second time that the proper interpretation of the policy has been before the court. On the first occasion, the court was asked to determine whether a 'series' provision had been incorporated into the policy. The precise question was whether the Insurers' liability was limited in the aggregate during that policy year to £2,000,000 in respect of *"all claims arising out of the same act of negligent omission or error or series of such acts consequent upon or attributable to the same cause or original source…"?*

   The answer was no: none had been agreed expressly and none could properly be implied. The decision, given by me on 20 July 2000, was not the subject of an appeal.

4. Had the decision been to the opposite effect then the Insurers would have wished to argue that the claims relating to all the bridges represented just one claim, regardless of the number of Claimants, with an indemnity limit of £2 million. It was, no doubt, the view of the parties' that a resolution of the preliminary issue was likely to enable them to resolve their differences. Such was not the case. In relation to the Ghana bridges the Insurers case has changed. The original defence was filed on 2 September 1999. The defence has been the subject of 6 amendments. The sixth amendment was served on 9 January 2003 and for the first time the point was taken that in relation to the Ghana claims there was only one contract; hitherto there appeared to be no issue that there was more than one contract, although the number of 'claims' was in issue.

5. The Insurers' new case in relation to the number of contracts is pleaded thus: *"These Defendants will contend that there was in fact one contract between the Claimant and the Government of Ghana['s] … to provide the Ghana I bridges and that this contract was subsequently varied and/or extended so as to provide for the supply of the Ghana II bridges"* - and extensive particulars were given.

   In this pleading it was also asserted for the first time that *"each of the Ghana I and II UCB bridges suffered or would have suffered if they had been built, from the following design faults …*
   (1) Eccentricity of joints at Chord/web …
   (2) Compression chord U frame action …
   (3) Battens"

6. In effect, the Insurers are saying that the design errors made in connection with the UCB bridges supplied in phase 1 were *"incorporated into the calculations [for] the Ghana II bridges."* In the light of the ruling made in July 2000, the Insurers accept that there are separate claims in relation to Ethiopia, Peru, the Dominican Republic and one Ghana claim. The only issue at this trial relates to the question whether there are one or two Ghana claims.

7. As a result of the Insurers' positive averment that there was only one claim in relation to Ghana, it was necessary for Mabey to join the participants to the Excess layers in their claim. The excess layer's insurers were joined as the 7th to 12th defendants. The issues between Mabey and those defendants have been compromised. Therefore, I am concerned solely with the issue between Mabey and the first five defendants – the claim against the sixth defendant, which is in provisional liquidation, is not pursued - which Steel J ordered to be tried on 12 July 2002, namely *"How many 'claims' are there for the purpose of the calculation of the sums for which the Defendants are obliged to indemnify the Claimant under the contracts for the policy year beginning 15th March 1996?"*

Had the Insurers' case been clearer from the outset then it is possible that this case would have been managed differently.

8. I start with the relevant policy provisions of the Insurance Policy. The Policy Schedule contains, at the top right a "Notice" which reads, in capital letters: *"This is a claims made policy. Please read this policy carefully and discuss the coverage with your insurance broker."*

The Excess is £100,000 "*each and every Single Claim*"; the Limit of Indemnity is *"£2,000,000 for a Single Claim"*. The period of Insurance is stated to be from 15 March 1996 to 14 March 1997, both days inclusive. There is a world wide geographic limit, excluding the USA and Canada. The Policy wording is "DCW1 92 (Amended)".

The following provisions of the Policy Wording are relevant:

*"**Section I: Basis of Contract***
WHEREAS the "Insured" has submitted a written proposal and declaration dated as shown in the Schedule attached to this Policy containing particulars and statements which (together with any other information which may have been supplied) shall be the basis of this Policy and are to be considered as incorporated herein and in consideration of the payment of the premium stated in the Schedule.

Section II: Coverage
NOW THEREFORE, we the Insurers hereby agree to indemnify the "Insured" for any sum the "Insured may become legally liable to pay which arises from any "Claim" first made against it during the Period of Insurance stated in Item 2 of the Schedule as a direct result of negligence on the part of the "Insured" in the conduct or execution of "Professional Activities and Duties".

A "Claim" first made against the "Insured" shall be the first demand made against the "Insured" for, or the first expressed intention to demand money or services from the "Insured" in respect of "Professional Activities and Duties" of the "Insured".

***Section V: Definitions :** "Professional Activities and Duties" in respect of which cover is granted by this Policy shall mean the performance of any professional:*

Design [or] Specification
Supervision of Construction
Feasibility Study
Technical Information Calculation
Surveying

undertaken only by or under direction and direct control of a Qualified Architect or Engineer or Surveyor.

For the avoidance of doubt, "Professional Activities and Duties" do not include supervision by the "Insured" in its capacity as Building or Engineering Contractor of its own or its Subcontractors' work.

Section VII: Extensions : The following extensions do not operate unless referred in Item 9 of the Schedule [which it was]:-

1. The Insurers will, subject to the terms, definitions, exclusions, conditions and endorsements of this Policy, indemnify the "Insured" against all costs and expenses necessarily incurred in respect of any action taken to mitigate a loss or potential loss that otherwise would be subject of a "Claim" under this Policy. The onus of proving coverage under this Extension shall be upon the "Insured"."

Endorsement No:2 [the only relevant endorsement] is headed *"Limits of Indemnity Each and every claim basis"* and reads: *"In consideration of the premium charged, it is agreed that Section III of the Policy Wording is deleted in its entirety and replaced by the following:*

The liability of the Insurers hereunder to indemnify the "Insured" for all legal liability for "Claims" made against it and costs and expenses incurred by the "Insured" with the Insurers' written consent, in the investigation, defence and/or settlement of any "Claim", shall not exceed the amount specified in Item 6 of the Schedule."

9. The Proposal Form, which was completed after the risk incepted, is dated 22 April 1996. This was a renewal of an existing cover. Paragraph 6 of the Form asked the prospective insured to give details (a) "on seven largest contracts commenced during the last five years where the Design and Consulting Department has been involved" and (b) "of any major new operations being undertaken during the next twelve months". Details were provided in the form of an Appendix to the Proposal Form. In response to the first request there was a table, which included:

Date Started	Name & Type of Project	Services Performed	Total Contract Value	Estimated Completion
Feb 1992	Ghana	Bridge Supply and erection of assoc.civils	£17,185,000	March 1996

In response to the second request, there were two items of which the first, and relevant, was:

"Ghana Priority Bridge 2 – Bridge supply and erection plus associated civils total £8m."

10. The claim under the policy is brought under the policy extension. In other words, after the Ethiopian Bridge problem revealed itself, Mabey had to remedy actual and potential defects in bridge design and incurred expenditure in doing so. It is common ground between the parties that that extension clause was "subject" to other conditions of the policy including the limit of indemnity on an "each and every claim" basis. It is also common ground between the parties that the court must determine whether there is one or more than one claim by reference to the underlying facts. In the event I have been presented with detailed evidence about the various acts of negligence which gave rise to Mabey's liability and have had the benefit of two expert engineers. As with issues as to what used to be called 'the factual matrix' in cases involving the proper interpretation of contracts, it is often difficult if not impossible for the court to form a clear view at the outset as to where the boundary lies between evidence that is permissible and that which is not. At the end of the day, although I appreciate the enormous care that has been taken with looking at the details of the reasons why the bridges were defectively designed, it would have been quicker and cheaper if the parties had managed to achieve an agreed statement of facts, as was contemplated at the outset. In fact, during the trial, agreement was reached on a statement as to the contractual position. But both parties have been properly careful not to admit in the statement more than they felt appropriate and, in consequence, the guarded agreement was not of great assistance. I was not referred to it by either party during the presentations of their case.

11. I was referred to a number of authorities: ***Alliance & Leicester Building Society v Edgestop Limited*** [unreported] 18 January 1991 per Hoffmann J; ***Haydon v Lo & Lo*** [1997] 1WLR 198 at 200E and 204G-H; PC; ***Citibank NA v Excess Insurance Company Ltd*** [1999] 1 Lloyd's Rep. 122 at 127; Thomas J; And, finally, I was shown an Australian case ***Murphy & Allen v Swinbank*** [1999] NSWSC 934; Einstein J sitting in the New South Wales Supreme Court and also ***Schipp v Cameron, Harrison & Ors*** (1999) NSWSC 997.

12. It seems to me that the following points emerge from the cases and from the policy of insurance in this case.

(1) Because the basis of the claim is that Mabey did remedial work to avoid any claim being made against them, the court cannot observe how the potential claimants, an organ of the State of Ghana, formulated or would have formulated their claim or claims against Mabey. In some cases where a claim is formulated, it may be possible to say with some confidence whether there are one or two claims being made. However, the *"formulation by the third party of its claim cannot be decisive of the*

Insurer's liability" rather *"…it is the underlying facts which are determinative":* see page 204 at H of the ***Haydon*** case.

(2) The claim concerned is not necessarily one made in legal proceedings. On the contrary, the policy is looking for the existence of a claim in the policy period made by a third party against the Insured arising from his alleged negligence. It does not follow that where there is a separate cause of action there is a separate claim. As Devlin J put it in ***West Wake Price & Co v Ching*** [1957] 1 WLR 45, *"I think that the primary meaning of the word claim – whether used in a popular sense or in a strict legal sense – is such as to attach it to the object that is claimed; and is not the same thing as the cause of action by which the claim may be supported or as the grounds on which it may be based."*

(3) The first intimation by a third party of a claim fixes the time when the claim is made. Thus, if a claim were intimated in year one but proceedings were commenced in year two, only the year one policy would respond. The significance of the *"first demand*" provision is to ensure that Insurers are not faced with a claim under the policy when a claim against the Insured had been made before the risk incepted. Because Mabey acted promptly immediately after the Ethiopian bridge collapse, they avoided any claim being made in relation to the Ghana bridge programme.

(4) In summary, therefore, as it was put by Thomas J in the ***Citibank*** *case,* at page 127: *"It is clear from [**Haydon v Lo & Lo**] that it is the underlying facts that are determinative of the question whether there is one claim and not the formulation of the claim by the claimant, but that it does not follow that there is a separate claim for each separate cause of action. The way the demand is made initially is a useful starting-point, but what is paramount is the reality of the position."*

(5) At the end of the day, I did not consider that the Australian case added anything to the above propositions. Mabey relied on what was said, in particular, at paragraph 494 of Einstein J's judgment. But with great respect, I do not think that his statements add any new principle, and an analysis which examines the nature of the causes of action might be thought diverting rather than helpful. The previous decision of this Judge in *Schipp* upon which the Insurers rely does not assist either, for much the same reason.

13. As is so often the case when the court is engaged on an issue of construction, the word concerned, in this case, "claim", is one in normal use and does not take on any new meaning when it appears in the contractual document, the policy. The process of reasoning which leads the court to a conclusion will involve an examination of the underlying facts so that it can assess whether the characteristics of a claim suggest that there is one or perhaps two claims. Those characteristics will include the number of claimants, the number of contracts and their relationship one with another, the nature of the claims; and the timing of the claims. In fact, Mr Harvey QC who, if I may say so, represented the Insurers' interests with skill, has identified three key sub-issues, which I would categorise as follows:
(1) was there one Ghana contract or two;
(2) does the Ghana Highway Authority's claim(s) against Mabey arise out of the same design errors in relation to both phases of the bridge programme;
(3) was there any separate negligence in relation to the design of the Ghana II bridges or was there, simply, a perpetuation of the same mistakes as had been made with Ghana I bridges.

14. I start with the facts.

15. At the time of the Ethiopian bridge collapse, 2 UCBs had been constructed under phase I of the Ghana priority bridge programme, and were up and running, namely those at Damanko and Sabari; the third UCB bridge which, at least according to Mabey, formed part of the Ghana I phase, namely the bridge at Tano, had been designed and fabricated but not erected, as the steel parts were then in transit. The fourth bridge of this phase was not a UCB and had been completed, and did not require any remedial action. In relation to the Ghana II phase, three had been constructed and three had been designed and fabricated but had not been constructed. The eventual outcome was that remedial works were carried out to the two main Ghana I bridges; the Tano bridge was re-designed and a replacement bridge was supplied using some of the existing components. The three UCBs constructed under Ghana II were eventually replaced, and the three awaiting construction were re-designed and replacement bridges

were supplied. The significance of the terms Ghana I and Ghana II will become apparent from the account that follows.

16. As to the design faults, there is a British Standard (BS5400), part 3 of which governs the making of bridges such as the UCBs. This provides formulae whereby stresses and deflections can be calculated. The Standard contains recommendations and requirements. The words 'may', 'should' and 'must' appear in the Standard: each with its own significance. For present purposes it is sufficient at this stage to say that there are a variety of faults all of which appear to offend the relevant provisions of the Standard. In relation to Ghana I bridges, a Mr Ash prepared calculations which ignored "joint eccentricities"; he miscalculated the strength of an unbraced compression chord (which can be visualised as the top rail of the bridge); and he produced a design of batten for the UCB bridges which was not man enough for the job of providing strength to the compression chord. His miscalculations were fairly basic. He miscalculated the effective length of the compression chord. The standard says that a factor in the equation may be taken as 1.0 but that a lower value may be obtained "where the compression chord is restrained against bending in plan at its section over supports of the truss". He took a factor of 0.85 but since the compression chord was not so restrained he should have taken a factor of 1.0. He failed to apply a factor of 0.9 to the radius of gyration. He also took too low a figure for the f factor, which represents the rotational flexibility of the connection between the horizontal transom beam and the vertical elements of truss. To a large extent these failures were common ground between the parties. What was in issue was the extent to which these were the only faults so that in relation to phase II of the Ghana programme there were no new and separate, culpable, faults in design.

17. Against this background, it is convenient to examine, separately, the facts relating to each of the sub-issues identified in paragraph 13 above.

The Contractual Position

18. It is Mabey's case that 3 of the 9 Ghana UCB bridges were supplied under a deed of Agreement dated 13 August 1992, which they characterise as the Ghana I contract, and that a further 6 UCBs were supplied to the Ghana Government under a contract made in April 1995, which Mabey characterise as the Ghana II contract. The Insurers say that the bridges were supplied under one contract, which was initially for just the 3 UCBs but was varied or extended to cover the remaining 6; so that there was but one contract. Alternatively, the Insurers say that if there were two contracts they were closely related in time, subject matter and purpose, so that the Court must assess the degree of relationship between the two in considering the question at issue.

19. I make the following findings based largely on the documents but assisted by a Mr Potter who gave evidence on behalf of Mabey. He was based in Ghana at the relevant times and negotiated the deals with the Ghana Government. I was favourably impressed by him, as a witness. He seemed to me to be very much on top of the facts and issues. He was able to explain to my satisfaction some obvious mistakes which had been made about dates in various documents. Much of what he said made obvious sense.

20. In about 1991, Ghana's Ministry of Roads proposed the construction of a flyover in the heart of Accra, for which project £14.5 millions had been allocated through ECGD financing, under the Buyer Credit scheme. Mabey were to be awarded the contract. Under the Buyer Credit scheme, the Government would enter into a loan agreement with a UK bank to finance the contract between the relevant department and the UK exporter. The lending bank would pay the exporter under the supply contract as the payments became due. The ECGD would provide to the lending bank a guarantee of re-payment. The exporter would provide the ECGD with a premium pursuant to a premium agreement. For a variety of reasons this project did not go ahead and thus there was an unused financial facility. When the flyover programme was cancelled, Mr Potter saw the opportunity to put forward a road bridge programme, which he named the Priority Bridge Programme. As he explained, to be able successfully to obtain business for Mabey he had to work closely with the Finance Ministry. Once the funding was in place, he was then in a position to put forward proposals to the relevant spending department. It was more a question of finding projects to fit the money rather than the other way about. As he put it *"Once an amount had been secured for the project, I could negotiate the specific details of the project with the MRH [The Ministry of Roads & Highways] with reference to the sum secured."*

21. Eventually, the Ministry decided that the £14.5 million secured for the flyover project should be re-allocated to a rural bridging programme. This involved the supply of bridging to the MRH at strategic sites within Ghana and the project was to be overseen by the Ghana Highway Authority [GHA]. Mr Potter originally suggested the supply of a large number of panel bridges suitable for rural roads. But it became clear that the Government's preference was for a heavier duty bridge, such as a UCB, more suitable for national highways. A firm of consulting engineers had carried out an initial survey of potential bridge sites and these were contained in a book [or bible as it was known] a copy of which the GHA gave to Mr Potter. Armed with this information, Mr Potter identified two sites for major bridges and several sites for smaller ones, all within the budget limit. He used the words "Priority Bridge Programme" as a convenient shorthand for describing the project.

22. By a deed of Agreement dated 13 August 1992:

    (1) MRH appointed Mabey [the "seller"] to *"design and supply goods and technical services as per items 1-5 in the proforma invoice and agrees to purchase the goods and technical services"*.

    (2) The parties agreed that "[T]he supply and purchase of the goods and technical services shall be governed by the pro forma invoice and the Annex A: Terms and conditions of contract which form part of the proforma invoice, all of which are annexed to this Agreement."

    The pro-forma invoice attached to the deed of agreement provided for the manufacture of the bridges at Damanko, the Sabari Bridge, the bridge over the river Tano and a panel bridge at Kedjebi. Item 5 of the proforma invoice was for the sale and supply of technical services covering the piling and erection of the bridges in the form of technical supervision of the pile driving, the completion of the abutments to the bridges and of the erection of the bridge structures. The Invoice gave a price for each of the four bridges; and for item 5 the cost was just over £3.5 millions. The total amount of the invoice equalled the amount of finance available, namely £14.5 millions. Under the Invoice, 15% was to be paid as an advance, and the balance was to be paid from the Loan Agreement between the Midland Bank and the Ministry of Finance. Clause 2.1 of Annex A provided that *"Unless otherwise agreed in writing by the Seller, the Purchaser agrees to purchase the goods and technical assistance upon these Terms and Conditions only, subject to any variations or additions required by the bank and the relevant UK authorities and subject to final approval by the bank and any relevant authorities."*

    The contract was expressed to be conditional upon there being confirmation by the Bank that the Loan Agreement with the Borrower had become effective. There was an ICC arbitration clause and the contract was expressed to be governed by English law.

23. The loan agreement between the Bank of Ghana and Midland Bank was entered into on 16 October 1992; Mabey entered into a premium agreement with the ECGD on 27 October 1992, and on 3 February 1993 Mabey were informed that ECGD had confirmed that they were satisfied that the pre-disbursement conditions to the Loan Agreement had been met and the Loan Agreement had become effective, thus removing the condition to which the agreement was said to be subject.

24. The 1992 deed did not provide for the erection of the bridges: merely their design and fabrication and elements of supervision during the construction process. Detailed design of the Damanko and Sabari bridges started in March 1993 and was completed by August 1993. The engineer in charge of this process was a Jonathan Ash. He had been recruited by Mabey in the expectation that there were going to be significant demands for UCBs throughout the world. Mabey were looking for a 'one-off' basic design for bridges of this type that was economical and readily adaptable to different locations and lengths. The cost of preparing the design and fabrication drawings for each UCB was significant and, through standardisation, Mabey hoped to be able to make savings in these two areas. In fact, with different loadings and design configurations [such as the inclusion of a footway] rationalisation was difficult to achieve. It is common ground between the parties that his designs for all three UCB bridges comprised in phase I of the Ghana programme contained the same mistakes. Furthermore, in so far as his calculations were checked by another engineer, as Mabey required, the checks were not satisfactory. Another employee, Mr Bishop, who worked to Mr Ash, also made some calculations in relation to the design of the Tano bridge which were in error and were not checked by a third party.

25. The 15% advance payment was received by Mabey in about February 1993. Between July 1993 and February 1994 there were 15 separate shipments of manufactured component parts for the Ghana I bridges. Between January 1993 and November 1994 Mabey issued interim payment certificates in respect of the technical services element [item 5] of the Invoice.

26. As had been contemplated from the outset, the GHA wanted Mabey to construct the bridges in accordance with a construction contract, for which funds would be made available, in local currency [cedis] from the Government of Ghana. An agreement in principle that Mabey should carry out the construction work was reached in October 1992; Mabey then assisted with the drafting of an appropriate contract. The construction contract in relation to the Ghana I bridges was eventually made on 6 January 1993. The work was to start immediately and be completed within 32 months. The contract was subject to the laws of Ghana. The basic contractual provisions were based upon the fourth edition of FIDIC. There was a problem with the Tano bridge since it could only be constructed after the highway itself had been built. Accordingly, there was a special contractual provision in relation to this bridge which noted that if the permanent access road to the bridge could not be made available to Mabey for the purposes of carrying out the construction of the bridge, the Employer [Ghana] reserved the right to change the location to another location or locations for the installation of a bridge or bridges. There was a concomitant obligation on the Government to extend Mabey's time for completion and to pay extra costs caused by the exercise of this right. Although the supply contract, namely the deed made in August 1992, were part of the contractual picture, so also were a bill of quantities drawn up by Mabey. Mr Harvey drew attention to the fact that there appeared to be double counting, in the sense that Mabey were charging a sterling amount for the supervision of piling and an amount in cedis for the same work under the construction contract. In the construction contract there was a provision for arbitration governed by Ghana law. Mabey were obliged to complete and maintain the whole of the works.

27. At about the time of the construction contract, Mr Potter saw the opportunity to suggest that other bridges should be designed and built, whilst there appeared to be money available to the Ghana Government. The Government was intending to put in place a 'general purpose fund' pursuant to which the Midland Bank would loan monies to the Bank of Ghana subject to an ECGD guarantee. This was a form of finance suitable for smaller projects and which did not involve the lengthy approval processes which were necessary under the buyer credit structure which was appropriate for larger and specific contracts. From time to time ECGD would agree on a sum to be allocated to the Bank of Ghana extending the line of credit. As Mr Potter said in his witness statement: *"It was important to apply for funding in respect of a particular contract as soon as possible after such an allocation as there were likely to be other contracts from other exporters for which approval was being sought."*

28. Sensing that GPLOC [general purpose line of credit] funds were available he submitted a pro forma invoice to the MRH on 15 January 1993 for further bridges concentrating on the western region of Ghana. Meanwhile, the Damanko bridge needed to be of a greater length than had been bargained for. He submitted a proposal that a further £1.3 million pounds be made available to cover both the increase in the span of the Damanko bridge, by utilising part of what had been intended for the Tano bridge, and for supplying the Tano bridge with the steelwork which was necessary for that project. In April 1994, he submitted four invoices [one was a mere summary of the other three] in total for £1.5 millions, which covered the supply of spare parts, the supply of a span for the Tano bridge and for the provision of technical services to cover the period from December 1994 to March 1995. Mabey recognised the importance of being paid in sterling as far as possible: the cedis was the subject of considerable devaluation. The technical support services paid for the cost incurred by Mabey in employing supervising engineers in Ghana. The timing of the payments for these services did not relate to the amount of supervisory work done in any period but was simply a continuous stream of monthly payments which lasted until the total sum allowed for that item had been reached. This invoice was approved and Mabey received an advance of 15% of the £1.5 millions at the beginning of May. By means of this amendment, Mabey ensured that the stream of monthly sterling payments for supervisory services was continued from November 1994 to March 1995. The charge for these services was effectively a fixed overhead not payable by reference to the actual work done by the UK based engineers working in Ghana, or to any particular bridge.

29. I am satisfied that on about 14 April 1995 Mr Potter produced three pro-forma invoices with the reference number 93/93A-C. These documents were not produced in 1993. They could not have been, since the telephone number for Mabey had changed and the first time the new number, which was on the invoices, could have been known was August 1994. The explanation for the reference 93/93 is that at the beginning of 1993 Mr Potter was discussing the possibility of a second phase to the bridge programme and had recorded a reference number which was put into Mabey's books. Normally the second 93 would refer to the 93rd order which Mabey had received that year. Mr Potter told me, and I accept, that due to persistent communication problems between Ghana and England, the reference number was simply selected by him: he had no idea how many other previous orders Mabey had taken; but he knew that they would not by then have received over 90. 93 was a safe number and it was also a tidy reference which matched the references for the 1992 proforma invoices which were 92/92. He said that the client was of the view that this might be regarded as a sort of lucky number to use; hence the 93/93 reference. The reason why the date on the invoice of "14.01.93" appeared on the 1995 invoices and was crossed out has nothing to do with the date when these invoices were produced; rather it is a symptom of using a word processor and reproducing standard documentation from a template. Mr Potter's explanation for all this, and his insistence that the invoices were presented to the Government in April 1995 is clearly correct and fits in with the rest of the material. Furthermore, the submission of these proforma invoices followed closely on a loan agreement made between Midland Bank and Ghana Bank whereby Midland agreed to make available up to £80 millions to the Bank of Ghana to assist the financing of contracts between "persons carrying on business in Ghana and persons carrying on business in the UK for the supply of capital plant and equipment and/or for the rendering of services". Mr Potter was aware of this and the likelihood of an allocation being made to the Priority bridge Programme. It would be entirely consistent with his approach that he should submit invoices at this time, to get his foot in the door. In June 1995, GHA wrote to the Bank of Ghana referring to the allocation of an ECGD facility to Mabey for procurement of bridge components and services for the Programme and enclosed copies of supplies invoice EX93/93. The Bank of Ghana made an "Application for Approval" to Midland Bank for the financing of the supply by Mabey with regard to the Ghana 2 bridges of a total cost of £8 million. By a misprint, I think, the date of signature is given as 4 April 1995, rather than 14 April 1995. The request to the Midland Bank was for "the approval of a contract for financing under Loan Agreement" and the figures accorded with the invoices. The terms of payment also accorded with the invoices, namely "15% down payment; 85% under GPLOC". Pursuant to the terms of the proforma invoices, an advance payment of 15% of the total invoiced amount was made to Mabey on 25 July 1995. On 17 August 1995, Mabey entered into a recourse agreement with the ECGD which recites that Mabey "entered into a contract with the Ministry of Roads and Highways, Ghana ("the buyer") dated 14 April 1995 ("the Approved Contract")."

30. The invoice with the reference 93/93/A was expressed to be for £1 million or £800,000 for partial supply of bridge components; the invoice marked B was for the design and supply of 8 further bridges, the Ghana II bridges, and the price was £4,330,000 for delivery c&f Ghana port within 4 – 8 months ex Mabey's works. The third, C, related to the supply of technical services for the period March 1995 to October 1996 in the sum of £2,870,000. Thus Mabey had sterling finance available on a monthly basis for the UK engineers working in Ghana to follow on, seamlessly, from the payments made for this item under the Ghana I contract, as extended. Excluding the first invoice, the total cost of the Mabey II bridge design and associated supervision was £7.2 millions. When it came to designing the bridges, it became clear that one of them required a longer span and thus one bridge was deleted from the programme to allow for this. And one of the bridges was thought not to be important enough to continue with; hence the contract as modified related only to 6 and not 8 bridges.

31. The principal design work for the Ghana II UCB bridges was carried out by an engineer, employed by Mabey, in September 1995. It can be seen from her calculation sheets that elements of her design were from first principles as she sought to follow the design methodology provided for in the Standard BS5400. As a matter of fact, each UCB is designed separately according to the precise dimensions and location. Revisions to calculations were made by another engineer, and the design work was completed by April 1996. The component parts for the bridges were manufactured between December 1995 and

July 1996 and 22 shipments were made. The Tano bridge was a continuing problem in terms of delays and alterations. The manufacturing process in relation to this bridge did not cease until September 1996. Meanwhile, on 12 July 1996 Mabey entered into a construction contract in relation both to the Ghana II bridges and the Tano bridge.

32. By way of background to the Phase II construction contract, I note that the payment in cedis under the phase I construction contract was proving disadvantageous to Mabey due to the very substantial devaluation of the cedi as against sterling. Mr Potter therefore agreed with the Government that for the construction of the second phase, 68% was to be paid in sterling under the GPLOC facility and that the rest would be paid in cedis by MRH. The potential price for construction had been calculated and 68% represented a sum of £4,500,000. A request was made to the Finance Ministry to secure their approval which was given on 8 May 1996. Mr Potter proposed that the original construction contract for the first phase be amended but GHA requested that a new contract was signed to deal with the construction of the Ghana II bridges and the Tano bridge. A new contract for this bridge was GHA's preferred choice as they were incurring penalties under the first contract in relation to delays in completing the necessary highway leading to the bridge. At a meeting on 10 May 1996 it was agreed, by way of compromise, that the parties would sign a second contract which was 'supplemental' to the initial contract. The agreement is described as "Supplemental Agreement No 1" and recites that it relates to the "extension of the Priority Bridge Programme". The parties agreed to modify the original FIDIC agreement, described as "the principal agreement". There was a new programme of works, for commencement on 1 February 1996 and completion on 30 September 1998. There was no separate liquidated damages clause for the second phase. A fresh bill of quantities was drawn up and the payment procedure allowed for the split between payments in sterling and cedis.

33. On sub-issue (1), the parties submissions may be summarised thus:

34. For Mabey, Mr Onslow QC submitted:

(1) There were two separate design and supply contracts; the first in August 1992 and the second in April 1995. It is clear from the facts which I have recited and upon which Mr Onsow relies, that the invoices were accepted by the Ghana Government without further elaboration and hence their applications for GPLOC funds. Although it was contemplated that as a turnkey project Mabey would be invited to agree a construction contract, and did so, that did not alter the fact that there were two separate engagements for the design and supply of bridges. As Mr Potter said, if the installation programme had not been concluded then apart from an adjustment in relation to the supply of technical services, which are not in issue and not covered by the Policy of Insurance, this would not have affected Mabey's entitlement to be paid for the work they had done in design and manufacture and to damages for cancellation, had that occurred.

(2) At the time when the Ghana I contract was made, there was no phase II. There was no 'umbrella' scheme under which phase I was to be completed. Even when the initial construction contract was entered into there was no commitment to a phase II programme and nothing materialised in relation to phase II for a further two years. By the time the Ghana II design and supply contract was made in about April 1995 [the proforma invoices of 14 April 1995] the Ghana I design and supply contract was almost complete. The only remaining part was the supply of parts for the Tano bridge.

(3) It was thus the duty of Mabey in relation to both contracts to carry out the design work with care and skill. Each failure gives rise to breaches of two different contracts and thus gives rise to two separate claims. The work was carried out at different times; it was not simply a continuing design process. By entering into the Ghana II contract for design and construction, Mabey were required to perform new and different professional designs or design services in relation to a completely new series of bridges in different parts of Ghana and at a time when the Ghana I contract was all but complete. In terms of creation, performance, breach and loss the Ghana I and II contracts are separate and distinct.

35. For the Insurers, Mr Harvey QC made the following points:

(1) There would have been but one claim here because Ghana were informed of the problems with their 9 bridges at the same time and the design and supply of the Ghana II bridges were carried out as a variation and extension of the contract to design and supply the Ghana I bridges. From the start, it

was the common intention of the Government and Mabey that this would be a turnkey project, that is it was a project which required the design, supply *and* construction of the bridges. Contractually, the supply contract of August 1992 was inextricably linked to the construction contract entered into in January 1993. For example, the construction contract expressly refers, in numerous places, to the supply contract and the superintendence element under the FIDIC contract was to be provided under the technical services element of the supply contract.

(2) The FIDIC contract was varied by the supplemental agreement and the FIDIC contract remained unaltered in every other respect. Mr Potter had wanted a variation. "The fact that one of the linked contracts (the construction contract) was varied to accommodate the Ghana II bridges gives strong support to the Defendants' contention that the other linked contract (the supply contract of 13 August 1992) was also varied to accommodate the Ghana II bridges." At least two of the Ghana II bridges had initially been proposed for inclusion in the Ghana I contract. Since Mabey accept that the 1992 supply contract was extended by way of variation in April 1994, so also the April 1995 invoices should be regarded as further variations of the supply contract. There was a rolling programme and effectively a rolling contract as evidenced by the continuous stream of payments in sterling in relation to supervisory services.

(3) Initially, when Mabey thought it suited them best, and in order to avoid a number of deductibles, Mabey were suggesting that there was really only one contract.

36. On this part of the case, I have no doubt that Mr Onslow is right, largely for the reasons he gives. The substance, rather than the form of the arrangements is all important, because it is to the "realities" that I must have regard. It seems to me quite clear that there were two separate and distinct contracts for the design, manufacture and supply of bridges. The first contract was made in August 1992, the second was contained in or evidenced by the proforma invoices dated April 14 1995. As a result, Mabey were under separate contractual obligations to design two separate parts of one priority bridge programme. Assuming there was a failure by Mabey to do their design work competently in relation to each part of the programme, then that was not just one failure but two. I do not consider that the weaving of the design contracts into the construction contract affects the position. As Mr Harvey accepts, the FIDIC construction contract refers to the design contracts. The design contracts did not become subsumed into the construction contract. The fact that there was a rolling programme in relation to the fixed overheads does not affect the position: the liability of the Insurers relates to Mabey's faulty designs and has nothing to do with faulty supervision or faulty work on the ground under the FIDIC contract. The fact that the first design contract was varied does not affect the issue. Nor does it affect the issue that there was one FIDIC contract which covered the construction of both parts of the programme. In fact, it seems to me that the realities are that there were two construction contracts, albeit that the wording of the first was substantially incorporated into the second. But that is not an issue which arises. If claims had been made in relation to the designs of the bridges, there would, in my view have been separate claims under each of the two contracts, and this is what was contemplated by the Insurers having regard to the questions asked in the Proposal form, which concentrated on a contract by contract approach.

Were there common design defects and was there negligence in relation to the Ghana II bridge design?

37. I can take these two issues together and deal with them both quite shortly. The facts are not substantially in dispute. Once the Ghana I design contract was in place, Mr Carter, the engineering director, was appointed to set up a project team to handle all commercial and engineering matters. Mr Ash was employed "to carry out a design rationalisation and optimisation of UCBs". He produced design rationalisation calculations, which did not deal with the detailed design of chord battening or battens. He prepared spreadsheets, which included mathematical processes, and these were used to calculate the strength of web and chord members, and they appear to have been used in the detailed designs which he carried out on the Ghana I bridges, although the chord and diagonal member sizes differed between the rationalised design and the detailed design of each Ghana I bridge. When he designed the 64 metre and 80 metre spans for the Damanko and Sabari bridges he made a number of errors outlined in this judgment at paragraph 16 above. There was negligent checking of this work; there was negligence in relation to the absence of checking of the spreadsheets. Mr Bishop's attempts to produce a standard span

construction table were never checked or verified. Between the Ghana I and II programmes, Mabey's managing director, Mr Forsyth, who was also an impressive witness, suggested the use of simpler and cheaper battens or spacers by using U shaped battens to replace the "I" columns used on the Ghana I design. The design work for this new arrangement, which was incorporated into the Ghana II bridges was designed by another engineer. Her spreadsheet output relating to the design of the diagonal members for a 55 metre span appears to have been derived from Mr Ash's spreadsheet for Ghana I which was derived from the design rationalisation spreadsheet generated by him. However, there were variations in the structural truss layouts and member sizes that this engineer was working on. The spreadsheets were a design tool and not the embodiment of a design process. She miscalculated the effectiveness of the new battens. None of the calculations for the design of the Ghana II bridges were checked, as they should have been.

38. Mr Harvey QC submitted that the evidence showed that the same design concept was used for Ghana I and Ghana II bridges. It is submitted that the female engineer was entitled to rely on the work, albeit mistaken, done by Mr Ash and Mr Bishop and that there was no separate negligence when it came to the design of the Ghana II bridges. I have to say that I remain totally unconvinced by this argument. Yes, there were design faults which permeated from Ghana I through to Ghana II. But to suggest that the engineers were entitled to rely upon work that was defective without checking it, seems to me to be fanciful. Whenever a bridge is designed the engineer takes responsibility for the design calculations which have to be made. In fact the female engineer did observe an error in the factor and used, correctly, 0.9 and not 1. Why she changed to using 1 we will never know. Mr Harvey suggested that she might have thought the spreadsheet would do the reduction. But that cannot be right, since she would have been able to see clearly that a figure of 1 had been used. Furthermore, it was the duty of the engineers to have all their work checked to verify their calculations. It was negligent of them not to do this. The fact that some work was standardised does not relieve them of this obligation. Their duty was to make accurate calculations for themselves of what was needed to produce a design of a working bridge that was safe and suitable for the purpose it was being constructed. It is inconceivable that had a claim been brought in relation to the different Ghana II designs, Mabey would have been able to resist the claim on the basis that the engineers were entitled to rely on incompetent work done by others on a different contract. As I have indicated, the designs for Ghana II were different and Mr Harvey was forced to rely on the bridge designs done by Mabey for Peru, which he said incorporated the same differences. Thus, he said, the engineers at Mabey were entitled to rely on the calculations done under the Peru contracts, which designs also omitted the vertical truss and used the U-shaped batten.

39. At the end of the day, the reality is that Mabey undertook to do designs for bridges under two different contracts. Much of the design work was common to both sets of bridges, but it was not identical. It was Mabey's contractual duty to design each set of bridges carefully and properly. They failed to do so in either case. There was negligence in the design process precisely because work done by others was accepted without checking. Each bridge has to be designed and the engineer responsible must ensure that the design is fit for its purpose. Whilst an assumption that work done previously is satisfactory is understandable it does not excuse anyone from their personal responsibility. The design work for each set of bridges was negligent and the negligence occurred in 1993/94 and 1995.

40. Accordingly, the answer to the question posed by Steel J is: two.

41. Mr Harvey's argument that Mabey's approach is different now from what it had been when they first had discussions with their insurers does not carry the matter forward. The substance and reality of the true position remains the same. Finally, I would like to thank the experts for their reports. Frankly, their evidence was more interesting than useful on the question at issue. And I have not felt it necessary to refer to what they said in giving this judgment.

Mr A. Onslow Q.C and Miss S. Mallinckrodt (instructed by Messrs Herbert Smith) for the Claimant
Mr M. Harvey QC and Mr C. Wynter (instructed by Messrs Davies Arnold Cooper) for the Defendants