Case No: 2009 FOLIO 1039

Neutral Citation Number: [2011] EWHC 3383 (Comm)
IN THE HIGH COURT OF JUSTICE
QUEEN'S BENCH DIVISION
COMMERCIAL COURT

Royal Courts of Justice
Strand, London, WC2A 2LL

Date: 20/12/2011

Before :

THE HONOURABLE MR JUSTICE FLAUX

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Between :

CHANTIERS DE L'ATLANTIQUE S.A	**Claimant**
- and -	
GAZTRANSPORT & TECHNIGAZ S.A.S	**Defendant**

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(Transcript of the Handed Down Judgment of
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Mr Jonathan Hirst QC, Mr Alan Maclean QC and Mr Stephen Midwinter (instructed by **Clyde & Co**) for the **Claimants**
Mr Toby Landau QC and Mr Iain Quirk (instructed by **Orrick, Herrington & Sutcliffe (Europe) LLP**) for the **Defendants**

Hearing dates: 18 –22, 25-28 July; 27-29 September 2011

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Judgment
As Approved by the Court

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THE HON MR JUSTICE FLAUX

The Hon Mr Justice Flaux:

A. Introduction and background

1. The claimant (to which I will refer in this judgment as "CAT") applies under section 68(2)(g) of the Arbitration Act 1996 to set aside an arbitration Award dated 3 February 2009 on the grounds that it was obtained by fraud on the part of the respondent (to which I will refer in this judgment as "GTT"). In order to pursue this application, CAT requires an extension of time under section 80(5) of the Act and CPR 62.9.

2. The arbitration in question was an International Chamber of Commerce ("ICC") arbitration held in Paris in the French language pursuant to the procedural rules of the ICC, which are essentially akin to the procedure in civil law jurisdictions including France, as regards matters such as disclosure. The arbitrators appointed by the parties were French: M Gilles Mauduit for CAT and M Yves Derains for GTT. The president of the tribunal, appointed by the two arbitrators, was a distinguished Belgian law professor, M Bernard Hanotiau. The parties themselves are of course both French companies and were represented before the tribunal by French lawyers. The tribunal found that the Technical Assistance and Licence Agreement ("the Licence Agreement") between the parties, under which the dispute principally arose, was governed by French law.

3. In those circumstances the first question the reader of this judgment will be asking himself or herself is, why the matter is before the English court. The answer is that the Licence Agreement stipulated that the place of arbitration was to be London. Although the parties subsequently agreed to hold all the hearings in Paris, that provision was never amended, from which it follows that the English court is the supervisory court and it is to this court that any application to set aside the award has to be made.

4. I propose to set out in this first section of the judgment as brief as possible a factual overview of the parties, the technology which was in dispute in the arbitration and the course of events leading up to the Award and the present application, before dealing with both the applicable legal principles, the detail of the evidence before the court on this application and my decision on the issues.

5. At the time of the events giving rise to this dispute, CAT was a major French shipbuilding company (part of the Alstom Group) that specialised in building LNG carriers which are built to carry liquefied natural gas held at cryogenic temperatures (-163°C) in vast insulated tanks. Any leak from an LNG tank would be catastrophic for those on board and anywhere in the vicinity, so LNG carriers are required to have a containment system consisting of two non-porous barriers between the LNG and the double hull of the ship, a primary barrier or membrane and a secondary barrier or membrane. The hull itself cannot act as a barrier, because the intensity of the cold temperature at which the cargo is carried would destroy it. The secondary barrier is required to survive for two weeks in the event of failure of the primary barrier.

6. GTT is a company which was jointly owned by Gaz de France ("GDF" with a 40% shareholding), Total, the well-known French oil company (with a 30% shareholding) and SAIPEM (an Italian company, also with a 30% shareholding). It specialises in the

design of containment systems technology for LNG carriers and land-based LNG storage systems and it grants licences for its technology to shipyards across the world. GTT was formed in 1994 by the merger of two companies which specialised in this technology, Gaztransport and Technigaz. Some 85% of the containment systems on board LNG carriers worldwide use GTT technology.

7. Gaztransport had developed a containment system called NO96 and Technigaz a containment system originally called Mark I, but in its final form, Mark III. Each had advantages and disadvantages from an economic and practical point of view. The Mark III process enabled a lesser thickness of insulation, maximising tank capacity, and also had a secondary barrier which is easier to produce. The NO96 process was distinguished by a primary membrane which was economical to produce and made from Invar, a nickel steel alloy notable for its uniquely low coefficient of thermal expansion.

8. After the merger of the two companies, from about 1997 onwards GTT developed a new technology called "CS1" which combined the two processes. This containment system involved a number of layers between the LNG and the hull. A simplified diagram illustrating the system is attached to this judgment at Appendix A. The summary description below should be read in conjunction with that diagram.

9. The Invar formed the 'primary barrier'. The combination of Triplex and PU foam formed the 'secondary barrier'. Rigid Triplex is a composite material made up of a thin aluminium sheet covered with resin-impregnated glass fibre. The joints between panels of rigid Triplex were sealed with strips of flexible Triplex, which was bonded by the shipyard to the rigid Triplex using green epoxy glue manufactured and supplied by Huntsman. The PU (polyurethane) foam was used merely for insulation. Pre-fabricated complete panels of PU foam/rigid Triplex in which the rigid Triplex had been pre-inserted in the foam were delivered to CAT's yard by the manufacturer, in this case Hankuk in South Korea. The panels had thin layers of plywood on the top and bottom. The flexible Triplex was also provided in sheets by Hankuk and would be cut into the correct size and shape by CAT. The piece of PU foam (or "top bridge pad") located above each flexible Triplex panel was stuck to the flexible Triplex using brown thixotropic glue also manufactured and supplied by Huntsman.

10. The cooling process causes materials to contract, and different materials contract at different rates. Invar contracts very little (due to its very low coefficient of thermal expansion). This means that the cooling process places significant strains on the bonds between the various elements in the containment system, as they all contract at different rates. The CS1 system had to withstand those strains, as well as the strains caused by the sloshing of the LNG within the tank and the usual stresses caused by the flexion of the hull at sea.

11. Pursuant to the Licence Agreement dated 17 December 2001, GTT licensed CAT to use the CS1 system in the construction of three vessels bearing the hull numbers "M32" ("*Gaz de France Energy*"), "N32" ("*Provalys*") and "P32" ("*Gazelys*"). During the course of manufacture of the first vessel, M32, between about December 2003 and November 2004, a number of issues arose between CAT and GTT as to whether there was poor workmanship in the shipyard in the adhesive bonding of the secondary barrier. These are set out in considerable detail in the Award. Somewhat unusually perhaps, the tribunal does not make any actual findings on the question whether there was poor workmanship, it would appear because it concluded that GTT's technology was not affected by a design fault (see [975]-[977] of the Award). However, it is tolerably clear that there had been poor workmanship in the bonding at the yard, which had contributed to the problems which were being encountered.

12. In November 2004, sea trials of M32 took place and the tanks were cooled down. It was found that nitrogen gas (which was used for testing) was passing through the secondary membrane, which suggested a serious fault which needed to be resolved before the vessels could enter service. The parties investigated possible causes of the problem. One possibility raised was that there was a weakness in the bonding between the rigid and the flexible Triplex, which seemed to be confirmed when adhesion tests carried out on the N32, which was still under construction, revealed that about 5% of the bonds between the rigid and the flexible Triplex were insufficiently strong and had suffered adhesive failure. Investigation revealed a similar level of weakness and adhesive failure in the bonds of M32. GTT sought to blame CAT and poor workmanship in the yard for the problem of bonding, but CAT was concerned that the problem might well be an inherent difficulty in bonding the rigid Triplex to the flexible Triplex, which would be a problem with the design of the technology.

13. It was agreed that GTT would carry out a series of laboratory tests in order to establish if there was such an inherent difficulty and, if so, how it could be solved. To that end, CAT supplied GTT, at the latter's expense, with ten pre-fabricated CS1 panels (i.e. the rigid triplex/PU foam), 50 metres of flexible Triplex and Huntsman green and brown epoxy glue from the stocks in CAT's warehouse. GTT carried out a number of tests on various samples, presumably on other materials as well as these. In fact between December 2004 and the end of June 2005, according to M Fabien Devillechaise, the head of GTT's laboratory, who gave evidence before me, more than 2,100 samples were tested by GTT, compared with the normal number of tests for a six month period of 1,200.

14. The particular test programme on which CAT has focused its attention in the application to the court is test programme 2320. The purpose of this programme, as stated in the Test Request, was "to determine the stress induced by cooling to -110°C as well as the stress to rupture, of a cold glued CS1 joint [i.e. where the glue was applied at ambient temperature] according to different configuration of bonding". This was a reference to a number of different configurations which CAT's consultants, CETIM, had postulated might make some difference to the strength of the secondary barrier, for example with continuous or discontinuous brown or green glue, or in one case with no brown glue or top bridge pad. The samples were to be inserted in the cryogenic machine which GTT already had and cooled down before, using a fatigue machine, increased stress was imposed on the particular sample, effectively pulling it apart.

15. For the purposes of that test programme, GTT initially prepared five "sandwich" samples using the materials supplied by CAT, i.e. the pre-fabricated CS1 panels, the flexible Triplex and the Huntsman green epoxy and brown glues. The purpose of fabricating these sort of sandwich samples, as stated in a subsequent GDF report was to carry out tests on a "slice of real assembly", in other words to replicate, in laboratory conditions, so far as possible the stresses the secondary barrier would encounter on board the ship. These first samples were designated by GTT "B0".

16. There were evidently some problems with the carrying out of the B0 tests, so not all five samples were in fact tested at temperatures where they had been cooled down to -110°C. It will be necessary to look at the detail of these tests a little more closely later in the judgment, but two of them were cooled down to that temperature. What emerged from the tests is that four of the five B0 samples suffered adhesive rupture.

17. I should say a word at this point about the significance of whether a rupture is cohesive or adhesive. In the context of these sorts of tests of the stress to rupture, what is required, if the bonding is satisfactory, is that when rupture occurs at whatever stress level it does, the rupture is "cohesive", that is within the material itself, for example the foam, or internally within the glue. If the rupture is cohesive, that demonstrates good adhesion of the glue to the Triplex. On the other hand adhesive failure is where the bonding of the glue to the Triplex has failed.

18. It was common ground between the parties at the arbitration and remains common ground before me, that adhesive failure is totally unsatisfactory. As M Karim Chapot, the head of the research and development department of GTT at the time of the arbitration, who gave evidence before the arbitrators and before me, put it: "when a bond fails adhesively, it is completely subject to chance and what is subject to chance can't be controlled and is unacceptable in the industry. What is subject to chance cannot be tolerated".

19. The reaction to the B0 results within GTT was evidently one of consternation. Quite how far up the organisation that consternation extended is a matter to which I will have to return in detail later, but that there was consternation there can be no doubt, not least because it was unsatisfactory adhesive ruptures which had been encountered in some 5% of the samples taken from the two ships.

20. At all events, GTT did not tell CAT about the B0 test results, nor did GTT seek further CS1 panels from CAT. Rather, GTT placed an urgent order with Hankuk, which supplied four Mark III panels, which arrived at GTT on 2 June 2005. It was common ground at the arbitration and, indeed, formed part of CAT's case, that Mark III and CS1 technologies are identical so far as the composition of the secondary barrier is concerned. Nonetheless, the pre-fabricated panels of rigid Triplex and foam were of somewhat different dimensions and thinner in the case of Mark III than CS1. An obvious question before me was why GTT did not simply obtain more CS1 panels from CAT.

21. GTT then carried out tests on a number of sandwich samples they prepared using the Mark III panels, flexible Triplex and Huntsman glues with the different configurations of bonding called for in the Test Request (the B1 to B5 samples). There were in fact no B4 or B6 samples, evidently because it was agreed that it was not necessary to test two of the configurations of bonding set out in the test request.

22. The samples were cooled down to -110°C as before, then pulled apart in the fatigue machine. Those tests took place from about 24 June 2005, and were attended (at least in relation to the imposition of the increased stress) by representatives of GDF, Gazocean and Bureau Veritas (the Classification Society for the vessels), but not by representatives of CAT, although they were invited.

23. On 29 June 2005, M Jacques Dhellemmes, the President and Director General of GTT, wrote a letter to M Patrick Boissier, the President and Director General of CAT, in which he stated that results of "the tests planned on the Scale I samples of the CS1 containment [system]" gave results both as regards the level at which they ruptured and the mode of rupture which were "compliant with or (slightly) superior to the calculations made by GTT and validated by many experts". He then stated: "there is therefore no design error in the CS1 [technology]" and that it would be necessary to take particular care when bonding during the repair of M32 and the construction of N32.

24. The letter enclosed a technical note giving the results of the tests (in fact only the B1 tests, which evidently were the only ones completed by the date of the letter). The letter said that the tests were continuing to cover all the configurations of bonding imagined by CETIM, even though the first tests [i.e. B1] corresponded to the case which CETIM regarded as most critical [a reference to the configuration with brown glue discontinuous and not overflowing around the edges of the joints]. The B1 test results enclosed with the letter were satisfactory, in that they showed that the samples had failed at about 19-20KN (Kilo-Newtons), with failure of the foam before any rupture of the joint or otherwise cohesive rather than adhesive failure.

25. The sandwich tests under the 2320 test programme continued thereafter. Overall, the results of the tests were satisfactory, in that the samples mainly failed at between 18.5 and 21KN, with the samples without a top bridge pad and no brown glue (the B2 samples) failing at about 11KN. All the ruptures were cohesive, indicative of good bonding of the glue and the Triplex.

26. In the meantime, the parties had been exploring what improvements might be made to the bonding process, in particular the heat treating of the newly bonded flexible Triplex/rigid Triplex joint under pressure (so-called "hot pad curing") where previously the green epoxy glue had been cured at ambient temperature. This formed part of the so-called "Technical Solution" which was signed by the parties on 5 July 2005, after which work resumed on N32. On 19 July 2005, the parties and GTT's insurers concluded a settlement agreement on a no-fault basis providing for the implementation of the Technical Solution to the bonding failures.

27. Both before and after the Technical Solution, GTT continued to carry out a large number of tests on various samples intended to be representative of the CS1 containment system or integral parts of it. These included both sandwich samples where the rigid Triplex was subject to plasma treatment and the glued joint hot cured (test programme 2397) and extensive shear tests on smaller, so called 50/50 (because their dimensions were 50mm x 50mm) or "coupon" samples. The results of these tests were broadly satisfactory so far as cohesivity of the bonding is concerned.

28. Although CAT pursued complaints about a variety of test programmes both in the arbitration and in its original allegations in the present section 68 application, none of

those is pursued any longer, other than the allegations in relation to test programme 2320 and the deliberate concealment of the B0 results.

29. The Technical Solution worked imperfectly and, in circumstances where the relationship between the parties had broken down, CAT commenced ICC arbitration proceedings against GTT in July 2006 seeking damages for the losses it had suffered as a consequence of the bonding failures. Because of the terms of the Licence Agreement between the parties, CAT had to allege and prove "gross fault" as a matter of French law.

30. In its pleadings, evidence and submissions in the arbitration, CAT advanced a large number of issues in support of its case that GTT was guilty of gross fault. These included that the CS1 technology was under-prepared and defective, that there were problems with adhesion to the rigid Triplex, that GTT was at fault as regards its instructions as to the role and application of the brown glue, that the secondary barrier was not sufficiently resistant to stresses experienced by it [the issue to which the BO results are said by CAT to be particularly relevant], that there was a design fault as regards the design of the step bearings, that the panels had been polluted by adhesive tape and that GTT's bonding instructions were insufficient and unsuitable.

31. I accept Mr Landau QC's submission that CAT criticised every conceivable aspect of GTT's design in its efforts to prove gross fault and that, as matters now stand, although many of those criticisms were replicated in CAT's original application under section 68, the only allegation still pursued which is said to impact on GTT's design is that relating to the concealment of the B0 results. Having said that, although Mr Landau may be said to have a good jury point as to the lengths to which CAT has been prepared to go in seeking to fix GTT with responsibility for the bonding failures both before the tribunal and in its application to this court, what matters ultimately is whether the allegations now relied upon (irrespective of whether they were relied upon originally or whether they represent only a "rump" of the original allegations) establish to the requisite standard that the Award was obtained by fraud.

32. During the course of the arbitration (in circumstances which I explore in more detail hereafter), CAT sought disclosure by GTT of the results of tests carried out in June 2005 on panels supplied by CAT, as well as other test results. In response to that request GTT supplied the results of tests B1, B2, B3 and B5, which showed strong cohesive failures of bonds, supporting GTT's case that there was no inherent problem with the CS1 technology licensed to CAT. GTT did not disclose the B0 results, even though, on any view, they were tests carried out on panels supplied by CAT, indeed strictly speaking, the only tests within test programme 2320 carried out on panels supplied by CAT, as opposed to Mark III panels sourced from Hankuk direct.

33. The hearing before the arbitrators took place in Paris in April 2008. Amongst those who gave evidence on behalf of GTT was M Chapot, who acted as a quasi-expert, although employed by GTT. He had produced an Expert Report to which the B1-B5 results (but not the B0 results) were appended. It was CAT's case before me, explored in cross-examination of M Chapot by Mr Alan Maclean QC, that he had deliberately concealed from the tribunal the existence of the B0 tests and results and also made a number of deliberately misleading statements to the tribunal. I will examine these allegations in detail later in the judgment.

34. In its detailed Award dated 3 February 2009 (running to nearly 250 pages and over 1,400 paragraphs), the tribunal dismissed all CAT's claims, some of them on the grounds that they were factually misconceived, but, as regards the allegations for which there was any factual foundation, on the grounds that CAT could not establish the necessary criterion as a matter of French law of "gross fault". In particular, the tribunal decided that, even if CAT could establish the design fault or the economic fault which it alleged, CAT could not satisfy the test imposed by French law as to the circumstances in which a licensor will be liable to a licensee for a design fault or an economic fault.

35. This emerges clearly from [1073]-[1081] of the Award where the tribunal sets out its conclusions on the issue of GTT's liability:

> "SECTION III. DECISION OF THE COURT OF ARBITRATION
>
> 1073 New problems unarguably appeared after the Settlement executed by the parties on 19 July 2005. As the Court of Arbitration has already stated, these new problems are not covered by the Settlement and CAT is entitled to try and establish the causes thereof.
>
> 1074 CAT considers that the technology licensed by GTT suffered from a technical and economic fault. CAT also calls into question the total lack of preparation of the technology transferred in terms of models, risk studies, the choice of adhesives, certification of materials, the Mark III, and the incident of the step bearings and the heptane pollution.
>
> 1075 As regards the latter point — the lack of preparation of the technology transferred — the Court of Arbitration concludes that CAT has not provided the burden of proof that is incumbent upon it.
>
> 1076 The Court has reached the same conclusion with regard to the existence of a technical or economic fault.
>
> 1077 The burden of the proof of such a fault lies with CAT. As regards the existence of a design fault, CAT situates it at the level of the Rigid Triplex, the role recognised by GTT of the brown adhesive, poor assessment of the strength of the bonded joint and consequently the safety margin in terms of the resistance of the secondary barrier.

1078 The Court of Arbitration has previously concluded that CAT did not succeed in conclusively establishing that these faults existed. In addition, as the Court has already stated, the sole fact that a licensee encounters difficulties in the implementation of the invention is not sufficient to conclude the existence of a fault. It is only possible to consider a technology to be affected by a design fault when it can be established that it is technically unusable or extremely difficult to use. This is not the case here. Even if we were to accept CAT's argument, we would have to note that CAT acknowledges that it was able to implement the technology and finish construction of the vessels in accordance with this technology, after some technical modifications had been made to it. Consequently it is not possible to talk of a design fault. The problem is more one of respect by the licensor of its contractual obligations.

1079 The same situation arises with regard to the economic fault. CAT claims that the discovery after the Technical Solution was signed, of an alleged almost total absence of a safety margin, forced it to develop methods of operation that would allow it to obtain a sufficient safety margin with regard to the bonding carried out on board; and that the implementation of these methods led to the establishment of extremely costly procedures, which considerably exceeded the framework of normal industrialisation. CAT alleges that this economic fault is independent of any technical fault. According to CAT, CS1 technology suffers from an economic fault on the basis of which it is intrinsically inoperable from a financial point of view.

1080 The Court of Arbitration cannot accept CATs argument. As the Paris Appeal Court stated in its judgment of 2 June 1988, the existence of an economic fault supposes that the invention is inoperable except under laboratory conditions or at prices that would preclude access to the market, rendering the technology unusable. This is not the case here. Independently of the question of whether GTT met all its contractual obligations and whether on this basis the difficulties encountered by CAT in implementing the technology are imputable to the Claimant, the exhibits and witness statements seem to indicate that CAT underestimated its costs. The Court furthermore finds that CAT has not demonstrated the need for the investments that it made in order to allegedly rectify or improve the technology. In addition, GTT rightly refers to the

report by Mr. Fraleu in which he emphasises that the bonding speeds of the secondary membrane were better than those allowed for by CAT, which would tend to indicate that if CAT made losses, the causes thereof should on the whole be sought in areas other than the technology and its implementation.

1081 The Court of Arbitration therefore concludes that CAT has not established the existence of a design fault or an economic fault in the technology transferred by GTT. The problem still remains, however, of establishing whether GTT met its contractual obligations. In this regard, CAT states that GTT failed to meet its obligations in terms of delivery, technical assistance, monitoring and supervision, co-operation and safety."

36. In relation to CAT's claim that the secondary barrier was not sufficiently resistant to the stresses experienced by it and specifically that the criterion of 3.5MPa was insufficient and that the sandwich sample tests were not representative or sufficient, the tribunal dismissed all CAT's arguments, holding at [801]-[809]:

"801 The Court of Arbitration is convinced by GTT's position. It holds that the arguments and reports submitted by CAT are not conclusive and do not call into question the conclusions reached by the Claimant and its experts.

802 CAT claims to have observed a cohesive break at 7.9 MPa in the 4500 tests carried out at its request [a reference to quality control tests carried out after the Technical Solution]. This statement runs counter to the tests carried out by GTT which establish that the cohesive bonds have a resistance in excess of 10 MPa. Furthermore, CAT does not give details of the tests in question. In any case it would be difficult to base it on a single bond, and likewise there is nothing that makes it possible to establish that the bond in question was really cohesive.

803 In addition, CAT claims that the stress exerted when the M32 tanks were refrigerated was around 10 MPa. It bases this statement on the fact that the bonds that resisted refrigeration had a resistance of more than 8 or 10 MPa, which would confirm the result of the mathematical modelling carried out by CETIM.

804 As is precisely demonstrated by GTT, CAT's argument is not definite or conclusive.

805 CAT's argument is based on the report by Mr. Jollivet. The expert's reasoning is based on the results of tests in relation to which CAT has not passed on details. GTT, however, emphasises quite rightly that his statement is contradicted by the diagram provided by Mr Gomart in his report (exhibit C181, p.52), which highlights that breaks have been noted in bonds surviving stresses of between 0.7 to 1.4 MPa — a discrepancy which Mr. Jollivet has not managed to explain.

806 CAT bases its case, therefore, on calculations, namely the numerical model, interpreting the results of experimental tests which the latter and the CETIM have carried out. However, details of the numerical model have not been passed on by CAT. Exhibit G211 to which the Claimant refers contents the alleged results of said numerical model but not the elements that have served as the basis for this calculation, as has been confirmed by GTT's expert, Mr. Karim Chapot.

807 The Court of Arbitration has also reached the conclusion that it is difficult to give much weight to CETIM's conclusions in the light of the criticisms and contradictory conclusions and statements from GTT's experts. The latter have all confirmed that the Tsai Wu criterion was a totally unsuitable method, which could explain CETIM's so-called "absurd" results. The latter effectively claims that GTT would have miscalculated by a factor of 9 as to the stress being exerted on the secondary barrier. GTT quite rightly emphasises that the Technical Solution was drawn up jointly by CAT and GTT under the supervision of Bureau Veritas, who, following the problems arising in relation to the M32's secondary barrier, paid more attention to the repair options put forward by the parties. GTT also emphasises that it is astonishing that a mistake of such proportions could have escaped the notice of CETIM, EADS, GDF and numerous other experts appointed to study the resistance of the secondary barrier. In addition, if the stress suffered by the secondary barrier on board was indeed of the order of 12 to 13 MPa, as GTT claims, the Triplex, which has a resistance of 3.5 MPa would not be able to support it. It would follow that that the secondary membrane of the 50 Mark III vessels in circulation, as well as the three vessels that are the

object of these proceedings, would be liable to break at any moment, which appears absurd.

808 GTT has in addition submitted results of tests on sandwich samples that confirm its arguments, and which have been validated by its experts and Bureau Veritas. In order to counter the conclusions of these tests, CAT states that sandwich samples are insufficient as they do not take into account all the stresses that exist on board the vessel: and that in addition, the number of tests carried out by GTT would be insufficient to vest these tests with any statistical evidence of the representative nature of the stress on the secondary barrier. This argument is fundamentally contested by GTT who consider that the sandwich samples simulate perfectly the stresses found under real conditions, and that they were developed in partnership with Lloyd's Register of Shipping and at the time received the approval of CAT and Bureau Veritas, within the framework of the Technical Solution. The results of the tests established definitely that the resistance of the bonded joints vastly exceeded the stresses sustained on board.

809 CAT is responsible for the evidence that it has put forward. It is therefore up to CAT to convince the Court of Arbitration by conclusive evidence, that the resistance of the secondary barrier was not correctly calculated by GTT and that consequently its technology suffered from a fault. In view of the above, the Court of Arbitration deems that CAT has not provided the burden of proof incumbent upon it. It therefore concludes that it has not sufficiently established as a fact the existence of a design fault in GTT's technology in terms of the calculation of the resistance of the secondary barrier. The reports and witness statements produced by CAT have not convinced the Court of Arbitration of the reality of the alleged modifications that it would have made to the procedures in order to remedy what it considered a fundamental design fault."

37. A few weeks after the Award was published, CAT received a tip-off from a whistleblower who was a disaffected employee of GTT, M De Kermadec, who suggested CAT should look at the results of various tests carried out and that CAT had been the victim of a fraud. CAT then examined a number of test programmes (not 2320) and found a number of discrepancies, in relation to which CAT did not consider GTT had any convincing explanation. In those circumstances, CAT launched this application to set aside the Award, on the grounds that it had been obtained by fraud in relation to three sets of tests, 2268, 2273 and 2275. Ultimately, when GTT produced the full test results, it became apparent that whatever inconsistencies there

were, there had been no fraud as regards those results and allegations about those reports in the arbitration were dropped by CAT from its application.

38. Towards the end of 2010, an anonymous whistleblower provided CAT with a document in a plain brown envelope. This was an internal GTT email from M Julien Berthon (the person in GTT's laboratory responsible for devising and implementing the 2320 test programme) widely disseminated within the organisation. This had an attachment labelled "B0" not sent to CAT at that stage. The email referred to the results of tests carried out in June 2005 on the CS1 panels supplied by CAT having resulted in unacceptable adhesive failures. This was the first CAT had heard of the B0 tests. CAT eventually obtained copies of the PowerPoint report of the B0 test results (in other words the attachment to the email) in February 2011. It was this revelation which led to the amendment to the section 68 application.

B. Remaining allegations of fraud and summary of parties' submissions

39. The principal allegation of fraud in the arbitration made by CAT at the hearing before me thus concerned the concealment of the B0 test results and of the fact that the B1-B5 tests had been conducted on Mark III panels, not CSI panels. CAT contended that there was fraud in the arbitration consisting of deliberate concealment of those matters from the tribunal and from CAT in GTT's response to the disclosure request. It is also contended that GTT, through M Chapot, was deliberately misleading and concealed the same matters in his written and oral expert evidence before the tribunal.

40. As to how and why the fraud came about, Mr Hirst submitted that, once GTT had concealed the existence of the B0 tests and their results and the fact that the B1-B5 tests were on Mark III panels from CAT in 2005, GTT was effectively locked into continuing to conceal those matters in the arbitration. Mr Hirst did not shirk from submitting that the original deliberate concealment from June 2005 onwards had been sanctioned at the most senior level in GTT: M Dhellemmes himself and his deputy, M Le Tallec (both of whom gave evidence before me), together with other senior management, including M Chapot (who also gave evidence) and M Michalski, M Chapot's predecessor as head of the Research and Development Department, (who did not give evidence and who apparently left GTT three years ago). In relation to the deliberate concealment and misleading evidence in the arbitration, obviously M Chapot was said to be implicated, but CAT also contended that M Le Tallec and M Dhellemmes were aware of and sanctioned those matters.

41. Mr Hirst submitted that if the matters concealed had been disclosed to the tribunal that would probably have affected the result of the arbitration. Although there had been many tests, test programme 2320 was an important milestone for GTT in establishing the integrity and soundness of the design of the technology, as demonstrated by M Dhellemmes' letter of 29 June 2005 and the fact that, days later, the Technical Solution had been signed. The B0 results could not be explained away as some sort of aberration, but given the consistent adhesive failures, cast doubt on the validity of the design.

42. In particular, if the tribunal had been aware of the true position, it would have known that GTT had committed a fraud in 2005. This would have seriously undermined the credibility of GTT's witnesses and led to the obvious question, why had GTT engaged in a fraudulent cover-up in relation to these tests, if there was no design flaw in the

CS1 system. Furthermore, the tribunal would have been likely to discount both the evidence of M Chapot that test programme 2320 demonstrated the validity of the design, because he had ignored the B0 results and the evidence of GTT's expert, Professor Barquins, which (albeit unbeknownst to him) proceeded on the same partial and unsatisfactory basis. Knowledge of the B0 results would at least have enabled CAT to argue that there was a design problem, as the B0 results showed that cohesive bonding could not be achieved on a consistent basis in the laboratory, let alone in a busy working shipyard. In these circumstances, the court should set aside the Award and remit the case to the arbitrators for further consideration of the true position.

43. In response to those allegations, Mr Landau submitted that there had been no question of any deliberate concealment of the B0 results in the first place, as they were flawed for a number of reasons and not of any technical significance. Accordingly, CAT's starting point for any allegation of fraud was fundamentally misconceived. In relation to the response to the disclosure request, the simple explanation was that none of the GTT staff responsible for dealing with disclosure had been aware of the B0 results and so there was no deliberate concealment.

44. So far as M Chapot's evidence to the tribunal was concerned, Mr Landau submitted that, quite apart from the fact that this was not pleaded (a point which seems to me to be incorrect in view of Paragraph 23A(c) of the Re-Re-Amended Grounds of Challenge which refers to the submissions to the tribunal being misleading), there had been no question of M Chapot deliberately concealing anything or misleading the tribunal, as he said himself in his evidence to the court.

45. Mr Landau further submitted that, if the true position about the B0 results had been disclosed to the tribunal, GTT's explanation would have been that they were flawed and of no technical significance. Even if that point had not been accepted, the B0 results were only one set of results among many and those other results did validate the design. In those circumstances, CAT could not demonstrate that revelation of the true position at the arbitration (even if GTT had deliberately concealed the test results in 2005) would have made any difference to the result of the arbitration, so the application must fail.

46. CAT relied upon three other respects in which it contended that GTT had misled both CAT and the tribunal, which would not by themselves have caused the tribunal to reach a different conclusion, but which are said to provide cogent evidence of GTT's willingness to mislead and thus to support CAT's case of fraud in relation to the B0 tests. Mr Hirst submitted that, had they come to light during the arbitration, they would have assisted CAT in persuading the tribunal to reach a different conclusion about the B0 and B1-B5 tests.

47. These three matters were: (1) the allegedly false statement in response to a disclosure request that document 681, concerned with tests on the Bostik polyurethane (PU) glue, could not be found, when it had been found; (2) the allegedly false statement in response to another disclosure request, that the PowerPoint presentation disclosed represented the output of the GDF study carried out in May 2005. This also involved concealing the existence of the complete Phase 1 GDF report and of the Phase 2 GDF report; and (3) the allegedly false statement in response to a disclosure request that there was no AMDEC study and a further assertion, when the draft study was found, that it was never finalised.

48. Mr Landau submits that the complaint about document 681 is hopeless, since even if it had been disclosed as an unusable draft (which it clearly was) there is nothing in any suggestion that it would have demonstrated that the approval process had not been completed properly. Bureau Veritas was aware that documents 681 and 682 did not exist and was provided with all the underlying test reports on the basis of which it approved the glue.

49. GTT submitted that any failure to disclose the GDF Phase 2 report was clearly not fraudulent, as the disclosure request had not covered that document. The PowerPoint presentation which was disclosed summarised the Phase 1 report, so there was no question of GTT seeking to conceal its existence. Furthermore, the simple answer to the allegations about the GDF reports and the AMDEC study was that GTT had told the tribunal that it was not disclosing GDF documents because they were confidential to GDF, which they were. As for the response to the disclosure request that there was no FMECA (i.e. AMDEC) study in the strict sense of the term, that was true. There never was any AMDEC study for CS1 at design level.

50. In addition to these points about the additional complaints made by CAT, Mr Landau submits that it is not open to CAT to raise these points on the GDF documents and document 681, for two reasons. First, CAT could have pursued these matters by way of disclosure applications in the arbitration and, having failed to do so, it is not now open to it to pursue those allegations before the court.

51. Second, CAT has already raised these matters in resisting enforcement proceedings before the French courts, in which CAT contended, inter alia, that, by reason of the concealment of those documents, the Award was procured by fraud. By its judgment on 1 April 2010, the Cour d'Appel de Paris dismissed all CAT's allegations of fraud and enforced the Award. CAT's appeal to the Cour de Cassation was dismissed on 9 March 2011. In those circumstances, CAT is barred from relying on those matters before this court by reason of issue estoppel.

C. Applicable legal principles

52. Section 68(1) and (2)(g) of the Arbitration Act 1996 provides as follows:

> **Challenging the award: serious irregularity.**
>
> (1) A party to arbitral proceedings may (upon notice to the other parties and to the tribunal) apply to the court challenging an award in the proceedings on the ground of serious irregularity affecting the tribunal, the proceedings or the award.
>
> A party may lose the right to object (see section 73) and the right to apply is subject to the restrictions in section 70(2) and (3).
>
> (2) Serious irregularity means an irregularity of one or more of the following kinds which the court considers has caused or will cause substantial injustice to the applicant—
>
> ....

> (g) the award being obtained by fraud or the award or the way in which it was procured being contrary to public policy;"

53. The legal principles to be applied by the court in a case under section 68(2)(g) of the Arbitration Act 1996 are not seriously in issue between the parties. They were usefully summarised recently by Blair J in **Double K Oil Products 1996 Limited v Neste Oil OYJ** [2010] 1 Lloyd's Rep 141; [2009] EWHC 3380 (Comm) at [33]:

> "The authorities show that the applicable principles are as follows. In accordance with the high threshold applicable to s. 68 Arbitration Act 1996 (*Lesotho Highlands Development Authority v. Impregilo SpA* [2006] 1 AC 221 at 235H, Lord Steyn), it is not enough in an application under s. 68(2)(g) to show that one party inadvertently misled the other, however carelessly (*Cuflet Chartering v. Carousel Shipping Co Ltd* [2001] 1 Lloyd's Rep 707, Moore-Bick J, at [12]). It will normally be necessary to satisfy the court that some form of reprehensible or unconscionable conduct has contributed in a substantial way to the obtaining of the award. A challenge to an award cannot, therefore, be made on the grounds of an innocent failure to give proper disclosure (*Profilati Italia SRL v. PaineWebber Inc* [2001] 1 ArbLR 51, [2001] All ER (Comm) 1065, Moore-Bick J at [17] and [22]), or the innocent production of false evidence (*Elektrim SA v. Vivendi Universal SA* [2007] All ER (Comm) 365, Aikens J at [80]-[81]). Where, as in the present case, the allegation is fraud in the production of evidence, the onus is on the applicant to make good the allegation by cogent evidence (*Cuflet* at [12], *Elektrim* at [81]). The applicant must show that the new evidence relied upon to demonstrate the fraud was not available at the time of the arbitration and would have had an important influence on the result (*Westacre Investments Inc v Jugoimport-SDPR Holding Co Ltd* [1999] 2 Lloyd's Rep 65 at 76-77, Waller LJ, applied by Cooke J in *Thyssen Canada Ltd v Mariana Maritime SA* [2005] ArbLR 62 at [60]-[66] and in *DDT Trucks of North America Ltd v DDT Holdings Ltd* [2007] 2 Lloyd's Rep 213 at [22]-[23]). The latter point (important influence on the result) takes effect within the statutory requirement that the irregularity has caused or will cause substantial injustice to the applicant (*Thyssen* at [65])."

54. A number of aspects of this summary merit some expansion for the purposes of the present case and need to be emphasised in the light of some of the wide-ranging allegations about the extent of any cover-up of B0 test results or conspiracy within GTT.

55. First, as the Departmental Advisory Committee on Arbitration Law said of what was then clause 68 of the Bill at [280] of its Report, section 68 generally is "designed as a longstop only available in extreme cases". That statement has been approved in a

number of cases, see for example [17] of the judgment of Moore-Bick J in **Profilati v Paine Webber** [2001] I Lloyd's 715 at 720.

56. Second, fraud (that is dishonest, reprehensible or unconscionable conduct) must be distinctly pleaded and proved, to the heightened burden of proof as discussed in **Hornal v Neuberger Products Ltd** [1954] 1 QB 247 and **Re H (Minors)** [1996] AC 563. This was emphasised by Rix LJ in **The Kriti Palm**, at paragraphs 256-259, a case which provides a salutary reminder to any judge of the importance of being satisfied to the necessary heightened standard of proof that what is involved is dishonesty and of the fact that the explanation for something is much more likely to be human error than dishonesty.

57. Third, the applicant for relief under sub-section (g) must establish that the Award itself was obtained by fraud: see per Aikens J in **Elektrim v Vivendi Universal** [2007] 1 Lloyd's Rep 693; [2007] EWHC 11 (Comm) at [82]:

> "But an award will only be "obtained by fraud" if the party which has deliberately concealed the document has, as a consequence of that concealment, obtained an award in its favour. The party relying on section 68(2)(g) must therefore also prove a causative link between the deliberate concealment of the document and the decision in the award in favour of the other, successful, party."

58. In other words, there has to have been fraud in the arbitration itself which led to the obtaining of the Award. It will not be sufficient, for the purposes of the sub-section, that GTT concealed the B0 results from CAT at the time of the Technical Solution. CAT has to demonstrate fraud in the arbitration itself, for example that GTT deliberately and dishonestly failed to disclose the B0 results in the arbitration and made submissions or called evidence which deliberately and dishonestly continued that concealment and misled the tribunal.

59. Fourth, the applicant must show that the evidence of fraud now relied upon was not such as could have been obtained or produced at the arbitration hearing with reasonable diligence and then must show that the evidence in question is "so material that its production [at trial] would probably have affected the result and (when the fraud consists of perjury) is so strong that it would reasonably be expected to be decisive at the re-hearing and if unanswered must have that result."

60. That was the test applied by Waller LJ in **Westacre Investments v Jugoimport** [2000] QB 288, in relation to setting aside judgments obtained by fraud, applicable at least by analogy in relation to applications to set aside arbitration awards obtained by fraud: see per Cooke J in **DDT Trucks of North America v DDT Holdings** [2007] 2 Lloyd's Rep 213; [2007] EWHC 1542 (Comm) at [22]-[23], which merits citation in full:

> "22. There was no dispute as to the test to be applied in order to show serious irregularity affecting the tribunal, the proceedings or the Award, where the Award was alleged to have been obtained by fraud in the shape of perjury. I was referred to a decision of mine in **Thyssen v Mariana** [2005]

> EWHC 219 (Comm) where, obiter, I set out the test to be applied by reference to the judgment of Waller LJ in **Westacre v Jugoimport** [2000] QB 288 at pages 306-309. In the context of setting aside a judgment obtained by fraud, where the very issue decided was whether the witness or witnesses were lying and that was the point which the applicant was seeking to resurrect in the context of the application, Waller LJ citing a passage in Dicey & Morris on the Conflict of Laws, stated that summary dismissal of such an application would follow:-
>
> > "Unless the plaintiff can produce evidence newly discovered since the trial, which evidence could not have been produced at the trial with reasonable diligence and which is so material that its production at the trial would probably have affected the result and (when the fraud consists of perjury) is so strong that it would reasonably be expected to be decisive at the re-hearing and if unanswered must have that result".
>
> 23. Whilst Waller LJ had not considered fully the position under the Arbitration Act, he suggested that it was difficult to think that the test would be any different in the context of an arbitration award, rather than a judgment. In **Thyssen**, I held that it could not be a "black letter test" for applications under section 68(2)(g) of the 1996 Act, since the Act contained its own express criteria for such applications, but that the approach of the court in relation to domestic judgments must be a useful comparator when applications were made to set aside arbitration awards, particularly bearing in mind that the decision was reached by the Tribunal of the parties' choice. The question of "substantial injustice" in section 68 is one which should take full account of the factors mentioned in Waller LJ's test. That is the approach which, by the agreement of the parties, I adopt here."

61. Of course, the test cannot be as high as that the evidence would have affected the result, not least because, for the court to reach that conclusion, would be to usurp the function of the arbitrators in the event that the matter was remitted to them. However I agree with Blair J that the statutory requirement that the applicant show that the relevant irregularity (here the fraud in the arbitration itself) has caused substantial injustice necessarily imports that the applicant show that the evidence in question would have had an important influence on the result.

62. In other words, assuming that CAT can show evidence of fraud in the arbitration itself which evidence could not have been obtained during the course of the hearing by the exercise of due diligence, CAT must also show that the evidence would probably have affected the result of the arbitration, before the court will set aside the award under the sub-section.

D. Extension of time

63. The Award was published on 3 February 2009 and accordingly, the 28 day period under section 70(3) of the Arbitration Act 1996 for any application of the present kind to be made expired on 3 March 2009. The present application was not issued until 31 July 2009, almost six months after the publication of the Award, substantially out of time. Accordingly, CAT has to seek and obtain an extension of time under section 80(5) of the Act and CPR 62.9.

64. The factors to be considered on such an application are those set out in [59] of the judgment of Colman J in **Kalmneft v Glencore** [2002] 1 Lloyd's Rep 128:

> "(i) the length of the delay;
>
> (ii) whether, in permitting the time limit to expire and the subsequent delay to occur, the party was acting reasonably in all the circumstances;
>
> (iii) whether the respondent to the application or the arbitrator caused or contributed to the delay;
>
> (iv) whether the respondent to the application would by reason of the delay suffer irremediable prejudice in addition to the mere loss of time if the application were permitted to proceed;
>
> (v) whether the arbitration has continued during the period of delay and, if so, what impact on the progress of the arbitration or the costs incurred in respect of the determination of the application by the court might now have;
>
> (vi) the strength of the application;
>
> (vii) whether in the broadest sense it would be unfair to the applicant for him to be denied the opportunity of having the application determined."

65. CAT's case is that it was first tipped off by a whistleblower about possible fabrication of documents by GTT two weeks after the Award was published. It then investigated the matter and instructed experts. It was only after it had the first report of its experts Minton Trehearne & Davies in July 2009 that the application was issued. GTT complains of this delay and makes the perfectly valid point that CAT issued an application in the Cour d'Appel de Paris on 20 March 2009 challenging the execution order GTT had obtained and could have issued an application to this court at the same time.

66. However, as Mr Hirst points out, at that stage CAT was still investigating the fraud and in my judgment it was responsible for it to do so before issuing the present application. In those circumstances, although there was delay, CAT acted reasonably. It is also the case that CAT was not aware of the B0 tests until late last year and did not have anything like the full picture until just before amending the Grounds of Challenge in February of this year. Furthermore, the importance and significance of the allegations raised (whatever the eventual outcome of the application) are such that

I would be extremely reluctant to shut out CAT on grounds of delay. Accordingly, I will grant the extension sought.

E. The witnesses

67. Before turning to the detailed analysis of the evidence which is required, I should say something about the witnesses. Of GTT's witnesses, there were three who were particularly in the firing line so far as CAT's allegations of fraud are concerned: M Jacques Dhellemmes, who was President and Director General of GTT (equivalent to Chairman and CEO in an English company) at all material times until January 2008, M Jean Le Tallec, who was deputy Director General of GTT from 2002 until January 2008, then President and Director General until September 2009 and M Karim Chapot, who was head of the Structural Department prior to 2007, then head of the Research and Development Department.

68. I found much of the evidence of M Dhellemmes evasive and less than wholly truthful. At many places in his evidence he resorted to saying he couldn't remember matters. Making every allowance for the fact that a considerable time has passed since the events in question and he is no longer at GTT, I was still left with the distinct impression that he could remember more than he was prepared to admit. Ultimately I have concluded that his evidence was not believable in a critical respect, namely his denial of knowledge until recently of the B0 tests and thus of any involvement in any decision in June 2005 not to disclose the B0 tests to CAT. Other aspects of his evidence are open to criticism, as will appear from the detailed analysis of the evidence set out hereafter.

69. I found M Chapot the least satisfactory of the GTT witnesses. Making every allowance for the fact that, even if he had been acting honestly throughout, he would have been on the defensive in evidence in the light of the seriousness of the allegations made against him, from the very outset of cross-examination he was argumentative and evasive. As Mr Hirst said in his written submissions on the witnesses, a simple question about the definition of a megapascal (MPa) was met with a pre-prepared speech on the shear tests GTT had carried out. M Chapot proceeded to lecture the court on the science of the GTT technology rather than answer the questions. Of course I also bear in mind that in giving evidence in an English court where serious allegations were being made against him, he was in a hostile environment compared to the situation at the arbitration hearing, where he was effectively able to "hold the floor" in his technical presentation. Nevertheless, putting it at its lowest, he was not a satisfactory witness.

70. Several aspects of M Chapot's evidence were extraordinary. Two examples will suffice by way of illustration. First was his attempt to demonstrate that seven of the CS1 panels delivered from CAT in January 2005 had been delivered to a welding company in the Puy de Dome, all part of an attempt to demonstrate that the panel received in the GTT laboratory on 11 May 2005 was not one of the ten panels delivered in January. A moment's objective reflection about the dimensions of the pallet delivered to the welding company would have revealed that there could have been no more than four, possibly only three panels sent. This seemed to me indicative of M Chapot's lack of objectivity.

71. The second example is his evidence about the PowerPoint presentation he made to the arbitration tribunal when he gave evidence before them on 10 April 2008. His evidence to the court about this presentation was extremely evasive. He was completely unwilling or unable to accept the clear reality of what he had told the tribunal.

72. Mr Hirst was also critical of M Le Tallec, whom he submitted had adopted a strategy of denying personal involvement. I do not accept that criticism. Unlike M Dhellemmes and M Chapot, I found M Le Tallec an essentially open and frank witness and, for reasons set out in more detail hereafter, I do not consider that he was personally implicated in any dishonest or reprehensible conduct.

73. Perhaps the most impressive of GTT's witnesses was M Fabien Devillechaise, the head of GTT's laboratory, who was a patently honest witness. I found his explanation of the B0 tests particularly impressive. So far as the other GTT witnesses are concerned, Mr Hirst does not criticise them to any great extent, accepting that they were honest and straightforward. He did suggest that the evidence of some of them, M Hughes Malvos of GDF, Mme Sabine Calzon of GTT and GTT's external lawyer Maitre Laurent Jaeger, had to be treated with some caution because of a tendency to stick to a 'party line' or to do their best for GTT. I have borne that point in mind in assessing their evidence, although ultimately I concluded that the limited criticism was not really justified.

74. So far as CAT's own witnesses are concerned, M Patrick Boissier, who was Chairman at the relevant times, was essentially a fair and straightforward witness. I considered that his anger at what he regarded as his deception by M Dhellemmes was genuine, although I found his insistence on the importance of the materials for tests having come from CAT something of an overstatement. Both Maitre Jean-Christophe Thiry (the in-house CAT senior legal counsel) and Maitre Gildas Rostain of Clyde & Co, CAT's external lawyers, were straightforward and honest witnesses.

75. M Bruno Gomart, who acted as an independent technical consultant for CAT in the arbitration, was not challenged in cross-examination on his evidence before the tribunal. I agree with Mr Hirst that the cross-examination was essentially devoted to criticising M Gomart and by extension CAT for having dealt with whistleblowers or informants from GTT. It is not necessary to go into the detail of that at present since it was not critical to the issues I have to decide. M Gomart did seem to have gone to inordinate lengths to disguise the source of payments to whistleblowers, but on the other hand he was quite open with the tribunal and with the court in saying that he had interviewed something like fifty people from GTT.

76. There are criminal proceedings against GTT pending in Paris in which some ex GTT employees (including whistleblowers) have given or will be giving evidence, so that I consider it inappropriate to say more about that criminal investigation than is strictly necessary for the purposes of deciding the issues before me.

77. In assessing the evidence of the witnesses, I have found the observations of Lord Goff of Chieveley giving the judgment of the Privy Council in **Grace Shipping v Sharp & Co** [1987] 1 Lloyd's Rep 207 at 215-6 (to which Mr Hirst referred me in closing submissions) of particular assistance:

> "And it is not to be forgotten that, in the present case, the Judge was faced with the task of assessing the evidence of witnesses about telephone conversations which had taken place over five years before. In such a case, memories may very well be unreliable; and it is of crucial importance for the Judge to have regard to the contemporary documents and to the overall probabilities. In this connection, their Lordships wish to endorse a passage from a judgment of one of their number in *Armagas Ltd v. Mundogas S.A.* (*The Ocean Frost*), [1985] 1 Lloyd's Rep. 1, when he said at p. 57:
>
> > "Speaking from my own experience, I have found it essential in cases of fraud, when considering the credibility of witnesses, always to test their veracity by reference to the objective facts proved independently of their testimony, in particular by reference to the documents in the case, and also to pay particular regard to their motives and to the overall probabilities. It is frequently very difficult to tell whether a witness is telling the truth or not; and where there is a conflict of evidence such as there was in the present case, reference to the objective facts and documents, to the witnesses' motives, and to the overall probabilities, can be of very great assistance to a Judge in ascertaining the truth."
>
> That observation is, in their Lordships' opinion, equally apposite in a case where the evidence of the witnesses is likely to be unreliable; and it is to be remembered that in commercial cases, such as the present, there is usually a substantial body of contemporary documentary evidence."

78. I also agree with Mr Hirst that one of the problems the court faces in this sort of application is that it necessarily proceeds under the Part 8 procedure of the CPR because it is an application under section 68(2) (g) of the Arbitration Act. It follows that, despite the seriousness of the allegations about which I have to reach a decision, there has not been full disclosure by GTT as there would have been if this were a trial of an allegation of fraud pursued under Part 7. Whilst I do not seek to be over-critical of GTT, it seems to me highly unlikely that it has disclosed all relevant internal documents in relation to the B0 tests and discussions about them in 2005 or about the ordering of Mark III panels from Hankuk. Additional documents emerged piecemeal throughout the hearing and I have a strong suspicion that there are others in existence not disclosed.

79. Furthermore, there were a number of potential witnesses who could have provided a fuller explanation, particularly of events and discussions surrounding the B0 tests in 2005, whom GTT could have called but did not, specifically M Pierre Michalski and M Julien Berthon. I was not impressed with the explanation given by Mr Landau that neither of them was still employed by GTT. There was no suggestion that either of them bore any animus towards GTT and no reason why they could not have been put on a plane or the Eurostar to come and give evidence before the court. M Berthon in particular could have given a full explanation of both the B0 tests and the B1-B5 tests

and might very well have been able to assist the court as to the cause of the adhesive ruptures, since he was responsible for the test programme. He could also have provided an explanation of his puzzling email of 29 September 2005.

F. Detailed analysis of the evidence

80. In this Section of the judgment, I propose to deal first with the question whether there was deliberate concealment by GTT of the B0 tests and results, with the misleading impression being given to CAT that the B1-B5 tests had been carried out on CS1 panels. I will then deal separately with the question of whether there was fraud in the arbitration.

81. In so far as it is necessary to set out the detailed factual background to the GDF reports or to the approval process for PU glue which underlie the allegations about dishonest statements by GTT concerning the GDF reports, the AMDEC study and internal document 681, I will do so when I come to deal with those allegations in later Sections of the judgment.

F1. Alleged fraud before the arbitration

The problem encountered and tests implemented

82. As already noted above, during the sea trials of M32 in November 2004, gas was found to be escaping through the secondary barrier in the tanks. In December 2004, tightness tests were carried out on the secondary barrier which showed severe loss of tightness in all four tanks of the vessel. Adhesion tests were then carried out on N32, which was still under construction, which revealed that about 5% of the bonds between the rigid and the flexible Triplex were insufficiently strong and had suffered adhesive failure. After the removal of the first barrier in the tanks of M32, it was found that between 3% and 7% of the bonding of the secondary barrier per tank had suffered adhesive rupture. Detailed analysis of the tank temperature records showed that the ruptures had occurred during the first cooling down.

83. Following the discovery of these adhesive failures, CAT obviously faced the risk that the orders from GDF for the three vessels would be cancelled unless construction could be resumed as soon as possible. Together with its independent consultants CETIM and in conjunction with GTT, CAT investigated the cause of the problem and eventually devised what became the Technical Solution. This involved a number of modifications to the bonding procedure, including cold plasma treatment of the surface of the rigid Triplex just before bonding and hot curing of the glue under pressure, after its application.

84. Both before and after the Technical Solution, GTT embarked on a series of test programmes, some in conjunction with GDF who carried out digital modelling or simulation in parallel with the physical tests carried out by GTT.

The provenance of the materials used in the B0 tests

85. Much energy was expended before me by GTT and, specifically, by M Chapot in his evidence, in seeking to demonstrate that the provenance of the CS1 panel used for the B0 sandwich tests could not be established, effectively with a view to casting doubt

on the integrity of the materials used in those tests. In these circumstances, it is necessary to look a little more closely than one might expect at the delivery and use of the materials.

86. For the purpose of carrying out physical tests, on 27 December 2004, the GTT project manager M Jean-Yves Le Stang, sent an email to M Audouin of CAT stating that as part of GTT's ongoing investigation, he would be grateful if CAT would let GTT have various materials, taken if possible from the materials left from the construction of M32. These were identified as 10 standard panels, 50 metres of flexible triplex and one pot of each of the adhesives used in the secondary barrier.

87. The reference to these materials being, if possible, from those left over from construction of M32 is an implicit recognition that, so far as possible, GTT wanted to carry out tests on materials from the same source as those used in the construction of the vessel. Obviously this made sense, since it would more easily enable the identification or elimination of any problem with the materials which had been used by the yard. M Devillechaise emphasised in his evidence the importance of using materials from the same batch.

88. On 5 January 2005, M Lenhardt of CAT sent an email to M Le Stang of GTT saying that CAT proposed to supply 10 flat panels from M32 stock, 50 metres of flexible triplex from N32 stock and one 54 litre pot of each of the Huntsman glues XB5032, XB5032B and XB5319, with batch numbers written on the pots, at a total cost of €21,000. He asked M Le Stang to confirm that he accepted the proposal, which M Le Stang did on 7 January 2005. On the same day, CAT gave instructions to their freight forwarders Daher, to arrange delivery of these materials to GTT at St Remy les Chevreuse, near Versailles. CAT invoiced GTT for the cost of €21,000 on 21 January 2005.

89. M Devillechaise explained in evidence that the site at St Remy les Chevreuse was an area of about 8 hectares, with some ten buildings, of which the laboratory occupied only two. Any such materials would not have been delivered to the laboratory but rather to a storage facility on the site, which so far as he knew would have been properly controlled. As and when required for tests, materials would then be delivered internally within the site to the laboratory and receipt would be recorded in the laboratory record book. M Devillechaise accepted that if the panels were contaminated or dirty, that would be noted on delivery on the haulier's delivery note or, in due course in the laboratory record book (when received into the laboratory) in the column headed "Observation".

90. The delivery note from the haulier for the ten panels, 50 metres of Triplex and three pots of glue on five pallets is stamped by GTT as delivered on 11 January 2005, with no remarks noted of any issue as to the physical condition of the materials. The laboratory record book shows three of the panels (with serial numbers 0716, 0717 and 0718) as delivered to the laboratory, again with no comment, adverse or otherwise, as to condition. Somewhat puzzlingly the date in that book is 7 January 2005, four days before delivery, but it seems to me that must simply be an error. It is not clear in which tests those panels were deployed.

91. The next entry in the laboratory record book for a panel from CAT is on 11 May 2005, when there is recorded the receipt of one CS1 panel for the samples for the

fatigue tests. It is recorded as having dimensions of 3x1x0.29 and the serial number 0715. It is quite clear from that serial number, when compared to those of the panels received in January 2005 that, as M Devillechaise confirmed in evidence, it came from the same batch, in other words, it was one of the ten panels delivered from CAT in January 2005. Again, there is no adverse comment noted as to its condition.

92. In those circumstances, two aspects of M Chapot's evidence were distinctly unimpressive. First, his apparent recollection of a single panel having been delivered in a hurry from CAT for the sandwich sample tests, with cardboard on the corners, at a time when GTT no longer had any of the ten panels delivered by CAT in January 2005 left. Second, his attempt to bolster that evidence by reference to a consignment note for the delivery in April 2005 of CS1 panels to a small welding company in the Puy de Dome called Auvergne Soudage Industriel, apparently for flame testing for which that entity had the resources. M Chapot contended that this dispatch, which was of a pallet with the dimensions 3m x1m x1.3m, accounted for most, if not all, of the seven panels delivered in January and not already received into the laboratory, which, of course, supported his supposed recollection of one panel being delivered from CAT in a hurry in May 2005.

93. The problem with this second piece of evidence was that the dimensions of each panel, particularly as regards thickness or height (0.29 or 0.3m) was such that, at most four panels could have fitted on a pallet with the height of 1.3m. Mr Maclean QC rightly described the passage in M Chapot's second witness statement where he made these assertions as "a pretty shoddy piece of work". In my judgment, at most four panels (possibly only three) were sent to the welding company in April 2005. That left three or possibly four of the panels from those delivered in January 2005 unused and available for use in the sandwich tests under test programme 2320.

94. Quite apart from the fact that the serial number of the panel received in the laboratory on 11 May 2005 points to it being part of the same batch as was received into the laboratory in January 2005, M Chapot's contention would involve another panel having been delivered by CAT in May 2005, for which CAT would no doubt have sought to charge GTT. However, there is no email request, delivery note or invoice for any such panel, making it inherently unlikely that this is what happened.

95. Regrettably I am left with the firm impression that M Chapot simply invented the evidence about this delivery by CAT in a hurry of a single panel in May 2005, presumably in the misguided belief it would support his thesis that the explanation for the adhesive failures encountered in the B0 tests was contamination of the materials supplied by CAT. In my judgment, the panel received by the laboratory on 11 May 2005 was clearly one of the original ten delivered in January 2005. It is also clear from the absence of any remarks in the "observation" column of the record book, that there was no question of the panel being dirty or (at least visibly) contaminated.

The test request for test programme 2320

96. The test request for test programme 2320 was drawn up by M Julien Berthon, who was in charge of the test programme. As M Devillechaise explained in evidence, although M Berthon reported to him, he had something of an autonomous position in the laboratory. It was he who was responsible for the link-up between the physical tests GTT was undertaking and the digital or computerised simulation (which was in

fact undertaken with GDF). The test request stated the summary object as: "Static cold tests on symmetrical CS1 test pieces for different bonding configurations".

97. The first version of the test request was prepared on 23 May 2005 and the final version on 26 May 2005, being disseminated within the organisation to senior management in the form of M Dhellemmes and M Pierre Michalski (head of the Research & Development Department) and his deputy M Le Gratiet, as well as to Mr Dempsey, M Devillechaise, M Le Stang, M Chapot and the staff (specifically the joiners and gluers) carrying out the tests.

98. As already stated in paragraph 14 above and as confirmed by M Devillechaise in evidence, the test programme had two objectives, to measure stress as the sample cooled down and then, when it had stabilised, to measure the stress to the point of rupture. In that context, I agree with Mr Landau that the sandwich tests were concerned with the overall strength of the assembly when properly bonded, not specifically with the ability of the flexible Triplex and the rigid Triplex to bond to one another. That was the subject of the shear tests on the so-called 50 x 50 samples (samples with dimensions 50 mm by 50 mm prepared by CAT with rigid Triplex and flexible Triplex bonded together and then stuck to an aluminium plate before being subjected to shear testing).

99. As the test request for 2320 explained, the sandwich tests were to be carried out on six configurations of bonding: (1) discontinuous thixotropic epoxy (i.e. brown) glue not overflowing; (2) continuous and overflowing brown glue; (3) discontinuous and overflowing brown glue; (4) discontinuous brown glue not overflowing, without a top bridge pad; (5) without any brown glue or top bridge pad; and (6) with only two strips of brown glue of 50 mm on either side of the top bridge pad, protruding by 30 mm. The test request contained diagrams of each configuration. From other materials, it can be established that it was the first configuration or case (discontinuous and not overflowing) that corresponded with the bonding procedure on board M32.

100. The test request stated that five samples were required for each configuration and that for these tests three CS1 panels would be required. The test request then went on to explain how the sandwich samples were to be prepared, as was confirmed by M Devillechaise in evidence. Each CS1 panel was to be cut in four, then the flexible Triplex (and where appropriate top bridge pad) bonded to the rigid Triplex/PU foam quarter section. Each panel was then to be cut according to a longitudinal axis set out in a diagram. A second transverse cut was then required. One half of the panel was then reversed and the two halves were glued together with Henkel Macroplast. By this method a symmetrical sandwich was created.

101. Each panel was then to be cut into 50mm wide sections. Holes were then to be drilled along the top and bottom edge of the foam and aluminium plates, with corresponding holes, glued to the edge. This would enable the sandwich sample to be inserted and bolted into the cryogenic enclosure in which the sample would then be cooled down. The stresses were to be recorded during cooling down to -110°C, which was to be effected by vaporisation of liquid nitrogen. When that temperature was as constant as possible, the sample was to be pulled on the fatigue machine until the point of rupture. During the displacement of the sample, the stresses were to be recorded over time. The test request recorded that fatigue tests had already been carried out on Mark III

test pieces at GTT's laboratory. The existing positioning system and cryogenic enclosure would be set up and used on the fatigue machine.

102. The test request stated that the cutting of the samples must start as soon as possible, in order to launch the static tests as quickly as possible. That the tests were commenced quickly is borne out by the fact that the B0-1 samples shown in photographs in the B0 test report bear the date 23 May 2005, the date of the first draft of the test request.

The B0 tests

103. M Berthon was responsible for setting up the B0 tests and supervising them, as well as for writing the report on the results which was available in a PowerPoint format. As I have already noted, he did not give evidence before me. However, Mr Devillechaise, as head of the laboratory, was able to give evidence about the tests. M Chapot claimed that of the management, only he and M Berthon had witnessed the tests, but, whether M Devillechaise witnessed the tests or not, I found his evidence about them more helpful and reliable than anything M Chapot had to say on the subject.

104. Five sandwich samples, B0-1 to B0-5, were prepared using the third configuration of bonding, discontinuous and overflowing brown glue. As recorded in the test report, five test pieces were tested, three at -110°C, one at ambient temperature and one maintained at -170°C in a bath of liquid nitrogen then stretched or pulled at ambient temperature.

105. M Devillechaise was able to explain in more detail what had gone on in these tests. Both B0-1 and B0-2 had been cooled down, in the cryogenic enclosure, to -110°C over about five hours, stabilising at a force of about 8KN in each case. There was then a problem with regulating the fatigue machine, so that B0-1 was pulled, then released twice and pulled again twice before the rupture occurred, so that as he said, there was potential damage to the sample during the first two tractions. In the case of B0-2, there was a single traction and the sample ruptured at about 16KN.

106. In the case of B0-3, there had been problems with cooling down. Although it is unclear whether it was the subject of some cooling down either in the cryogenic enclosure or in a bath of liquid nitrogen, it appears that at least the traction test on that sample was carried out at ambient temperature. It ruptured at just over 15KN. In the case of all three of those samples, B0-1, B0-2 and B0-3, the ruptures were adhesive or a mixture of cohesive and adhesive.

107. In the case of B0-4, that was not cooled down at all, but traction was applied at ambient temperature. It was displaced 11mm and the rupture occurred at a stress level of just under 16KN. In fact the rupture which occurred in that sample was in the flexible triplex, so not an adhesive rupture. The fifth sample, B0-5, was cooled down to -170°C in a bath of liquid nitrogen, then subjected to the traction test at ambient temperature. That ruptured at a stress level of 16.5KN and again the ruptures were adhesive or a mixture of adhesive and cohesive.

108. M Devillechaise's explanation for the samples having been tested in different conditions was that on what he described as these "preliminary" tests, they wanted to test several machines and several temperatures. The test report prepared by M Berthon is undated, but M Devillechaise thought that it would have been prepared in

late May or early June 2005. He recalled seeing the report at the time, but could not assist as to who else would have been sent the report at that time. He did not accept that it would just have been sent to all those on the distribution list for the test request, as this included staff such as the joiner.

109. However, it seems to me that in all probability (with the possible exception of the staff engaged on the test) the report will have been sent by M Berthon to those in management who had received the test request, including M Dhellemmes himself, M Chapot (who admitted seeing it) and M Michalski. Since M Le Tallec had not received the test request, it is much more doubtful whether he received the B0 test report.

Internal reaction to the B0 results

110. M Devillechaise gave evidence on 1 June 2011 to the Juge d'Instruction (equivalent to an examining magistrate) in Paris in the criminal proceedings which have been instituted by CAT against GTT. In this examination, he was asked about the subsequent email from M Berthon of 29 September 2005 (with which I will deal in more detail below). He said this:

> "What shocked the managers at GTT was the adhesive component of the break. There was a huge internal debate. For the GTT managers, at the time, a good break was of the cohesive type and not adhesive. Precisely, the breaks identified on the M32 were mainly of the adhesive type, which was not considered satisfactory. Whereas the breaks on the B0 test pieces had been made up from materials from CAT, with the exception of the soft Triplex which came from the laboratory stocks, were mainly adhesive."

111. In his evidence before this court, M Devillechaise (who as I have already said was a palpably honest witness) confirmed the truth of that evidence. He said that 2320 was a relatively important test programme and:

> "we were pushed for time, which meant that these preliminary tests could not let us answer the questions which were being put by the programme, and we had an excessive number of test requests in parallel, so very little time to devote to each."

112. He was asked whether he could identify by name the managers who were shocked to which he answered:

> "Well, by name, obviously no. Certainly, it must have been my boss, who was aware of these preliminary tests, also Mr De Kermadec, and you must realise that all these samples and all those concerning Saint Nazaire engendered a lot of discussion, a lot of internal debate and I wasn't personally invited to all these meetings, the proof being that I discovered the meeting

with Gaz de France between Gaz de France and Mr Berthon, only last week."

113. As I understood his evidence, the thrust of what he was saying was that, whilst he could not be specific as to names and may not have spoken personally to anyone more senior than his boss, M Michalski, he was aware of shock or consternation about the B0 results and internal debate about the matter higher up the company, albeit he may not have attended the relevant meetings.

114. His evidence was that this was part of a debate which had been going on since early 2005 (in other words since the adhesive ruptures at the time of the sea trials) about the importance of the adhesive aspect on the GTT design. When a little later I asked him whether the shock was because this meant there was a problem with the design of the CS1 technology since the adhesive ruptures were the same as had been found on M32 and N32, he said:

> "What was of shock was the adhesive aspect from these B0 samples. After that, I've absolutely got no skill, no competence in knowing whether it was due to design fault. In the light of the information I had, I drew that from my own analysis.

115. I found this evidence that there was shock or consternation amongst GTT management about the B0 ruptures far more compelling than the denials by M Chapot in his evidence that there was any shock. M Chapot tried to maintain that senior managers were not shocked but only concerned about the delay which the B0 results would present for the signature of the Technical Solution.

116. However, notwithstanding his protestations about absence of shock, he seemed to me to be accepting that there was a concern about the potential impact of the adhesive ruptures in the B0 test samples upon the validity of GTT's design:

> "Q. The reason it caused a shock was that this result, at the very least, called for further investigation, and gave, as it were, the wrong answer from GTT's point of view?
>
> A. The GTT management was not shocked.
>
> Q. They were perfectly calm, were they?
>
> A. But on the other hand, we were riding under pressure relating to important timing. So it was vital to supply results quickly. When we saw that the ruptures were adhesive, the compliances for our design requirements not being satisfied, we were therefore not able to show what the safety factor was in terms of our technology, and this delayed by one month the signing off of the Technical Solution, and that's what caused the management to have a headache.
>
> Q. Yes, it was the wrong answer. It gave an adhesive rupture, which as you told the arbitrators, is completely unacceptable in the industry?

A. Absolutely. I would confirm that"

117. M Chapot said he would have reported the results of the B0 tests to his boss, M Michalski and M Michalski's deputy, M Le Gratiet. He agreed that M Michalski would have referred it to M Dhellemmes, if he had thought it important enough, which I am quite sure it was. In any event, as I have already found, in all probability, M Berthon will have sent M Dhellemmes the report of the B0 tests. As M Chapot said, tellingly, at one point in his evidence: "M Dhellemmes was greatly interested in technical matters".

118. As for M Dhellemmes, his evidence initially was that he had not known anything about the B0 results until he returned from Malaysia in May 2011, two months before he gave evidence to the court. However, later in his cross-examination, it seemed to me that he effectively conceded that he had participated in the internal debate about the B0 results, after Mr Hirst had put to him the evidence which M Devillechaise had given to the Juge d'Instruction:

> "Q. I'll come back to read you a few more points in a moment, but he talks about the shock of the managers at GTT, and a huge internal debate. Are you disputing that?
>
> A. I have no recollection at all of a huge internal debate and the shock after the result of the B0 test. I just have some recollection that the question was raised at that time in GTT to know whether we should ask cohesivity as something mandatory for the Technical Solution, but I have no recollection at all of a huge debate and a shock that might have occurred after the result of the test -- of the so-called test B0.
>
> Q. I will have to ask him about what he means by this, but it would be very surprising, I suggest to you, if he was, as the head of the laboratory, wrong about there having been shock and a huge internal debate?
>
> A. What would be interesting is to know who was participating to this so-called shock.
>
> Q. I'm suggesting that, in all probability, you were one of those who did participate in that internal debate?
>
> A. I guess so.
>
> Q. Let's be quite clear of the answer "I guess so", are you saying you guess that that is probably true?
>
> A. Yes, my guess is, probably, one participating in that debate.
>
> Q. Do you guess that that debate was probably on the telephone?
>
> A. I guess that it was a meeting debate, but a face-to-face debate."

119. Accordingly, in my judgment, there was consternation and shock amongst senior management at GTT about the B0 results. This was not just because they were in a hurry to carry out test programme 2320 and get the Technical Solution signed, but more worryingly for them, because of the recurrence, particularly in the B0-2 sample cooled down to -110°C and subject to a single pull traction test (and therefore a sample which had been properly tested), of the very adhesive ruptures seen to have occurred on initial cooling down in 3% to 7% of the bonded joints in the tanks of M32.

120. It seems to me that, on any view, senior management must have appreciated that these test results, particularly if they came to be repeated in relation to subsequent sandwich samples tested under this test programme, might call in question the validity of the design of the CS1 technology. Specifically, further adhesive ruptures might well indicate that the materials could not be glued properly in laboratory conditions, which would cast considerable doubt on whether they could be glued properly in shipyard conditions, effectively an indication of an inherent problem, as Mr Landau put it in argument. That would potentially be extremely awkward for GTT, especially since this test programme was one of those being completed in order to validate the Technical Solution.

121. Furthermore, irrespective of any equivocation in M Dhellemmes' evidence, I find that he was made aware of the B0 results at the time in late May or early June 2005, that he was one of those who was shocked and that he participated in the internal debate. As to who else was involved in the debate at a senior level, on any view it will have included M Michalski.

Concealment of B0 results from CAT

122. In my judgment, at around the same time as the internal debate and consternation about the B0 results, a deliberate decision was taken by GTT management not to inform CAT about the B0 tests and the results of them, at least until further tests under test programme 2320 had been undertaken. I have reached that conclusion for two principal reasons: first that seems to me to be the only sensible explanation for the decision to order additional panels from Hankuk in Korea rather than from CAT and second, it is quite clear that M Devillechaise and possibly others in GTT were instructed by senior management not to say anything to CAT about the B0 tests and results. I deal with these two reasons in more detail below.

123. Rather than simply asking CAT to supply further panels from its warehouse at Saint Nazaire, GTT ordered further panels from Hankuk. Mr Landau on behalf of GTT sought to justify this decision on the grounds that the components of Mark III and CS1 panels were identical, so that if a Mark III panel were cut into the geometric shape of a CS1 panel, as occurred in the B1-5 tests, it would be representative of the CS1 system.

124. I shall have to return to this question of the extent to which Mark III panels and CS1 panels could be regarded as interchangeable or identical in a little more detail later, but for the present, even assuming the premise to be correct, that still does not answer why GTT went to the trouble, after the B0 tests, of ordering panels from Hankuk in South Korea, as opposed to simply picking up the telephone to CAT in Saint Nazaire and having some CS1 panels put on the back of a lorry and driven from Saint Nazaire

to GTT's laboratory near Versailles, a distance of slightly over 250 miles, which could have been easily done within the day.

125. GTT has not disclosed any communications between itself and Hankuk about this order other than a delivery note from Tricontinental Air Cargo Service SAS for a wooden box on which M Devillechaise has written that it is the delivery from Hankuk of four Mark III panels on 2 June 2005. In those circumstances, it remains unclear whether GTT ordered CS1 or Mark III panels from Hankuk. However, since according to Hankuk's own records, it had started manufacturing CS1 panels for the third vessel, P32, on 18 January 2005 and continued until 4 December 2005, there would seem to be no reason why Hankuk could not have supplied GTT with CS1 panels in late May or early June 2005.

126. Either way, the failure to call upon CAT to supply CS1 panels from its warehouse remains curious. That is the course one would have expected GTT to adopt given the urgency which clearly surrounded the 2320 test programme. As M Le Tallec said in evidence, GTT would have wanted panels from CAT in the first place because it was easier to have panels from Saint Nazaire than Korea. He also agreed later that it would have been much easier to use CS1 panels for the sandwich sample tests, rather than having to cut down Mark III panels. In my judgment GTT did not have any satisfactory answer to this point that it was obviously easier to use CS1 panels supplied by CAT.

127. As to who at GTT was involved in the decision to order panels from Hankuk rather than CAT, M Devillechaise said it was well above him in the company. He thought M Berthon would have been involved but was not certain. M Dhellemmes said that he did not remember now whether he was involved in the decision to purchase from Hankuk. He may have been, he was not sure. In my judgment, he was almost certainly involved in that decision, particularly given that it was one aspect of a policy not to inform CAT about the B0 tests, which in all probability would only have been devised with the sanction of the person at the very top of the company, M Dhellemmes.

128. GTT's case is that it wanted to source replacement panels for the 2320 test programme direct from Hankuk because the panels supplied by CAT (or at least that used in the B0 tests) were contaminated. Mr Landau submitted that, if (as I have found was the case) it was one of the ten panels ordered from CAT in January 2005, all the panels cannot have been in their original Hankuk packaging since they were packed in batches of three, which means at least one of them was loose. That may well be correct, but tells one nothing about what the packaging of the loose panel was when it arrived at St Remy les Chevreuse, nor is it necessarily the case that the panel received at the laboratory on 11 May 2005 was the one originally delivered loose. It is pure speculation whether it was or not.

129. In that context, Mr Landau relied upon the fact that throughout 2004 and into 2005, GTT had complained to CAT about lack of cleanliness at the yard. He cross-examined M Boissier about this, to which Mr Boissier's response was that he had been aware of the complaints but did not fully agree with them. In any event, his evidence was that any panels supplied to GTT would have emanated not from the shipyard itself but from CAT's warehouse at Montoire, about three kilometres from the yard, where items were stored until needed at the yard, when they would be delivered to the yard

in batches. Upon delivery to the yard, panels would remain in their original packaging until actually installed on one of the vessels.

130. I consider the suggestion that the panel used in the B0 test may have been contaminated is pure conjecture, not borne out by the contemporaneous evidence. There is no hint in the original delivery note or any of the GTT laboratory records concerning receipt of the panels of any such contamination or dirt as was suggested. M Devillechaise fairly accepted that any visible contamination or dirt would have been recorded in such documents. Furthermore, given that GTT paid some €21,000 for the materials supplied by CAT in January 2005, it is unlikely in the extreme that GTT would not have complained about contamination on receipt and sought replacement panels from CAT at no cost.

131. I found the suggestion of some form of invisible contamination unconvincing and fanciful. As M Devillechaise said in evidence, the panels used for the sandwich samples would have been cleaned with a chemical solvent and a dry rag before the samples were prepared. Then after the samples were cut, there would have been more cleaning. Although, on subsequent tests after the Technical Solution, there was an issue about silicon on adhesive strips which CAT was using on panels, there is no hint of that problem at the time of the B0 tests. Furthermore, I find the idea of invisible contamination in the controlled laboratory at GTT unlikely in the extreme.

132. I also reject M Chapot's evidence that he thought, at the time of the adhesive failures in the B0 tests, that the reason for that failure was that the panels supplied by CAT were contaminated. His evidence had all the air of an *ex post facto* attempt to justify that conclusion by reference to the subsequent successful sandwich tests and shear tests on the so-called 50 x 50 samples.

133. If M Chapot or anyone else at GTT had really thought at the time that the explanation for the adhesive failures encountered in the B0 tests was contamination of the CS1 panels supplied by CAT, it is inconceivable that that conclusion would not have been recorded somewhere in contemporary documentation, either in the PowerPoint report on the tests, prepared by M Berthon, or in some internal memorandum or in M Berthon's curious email of 29 September 2005, to which I return in detail below.

134. Mr Landau submitted, on the basis of Mr Duncan's expert opinion, that GTT had gone direct to Hankuk because the provenance and storage of panels obtained from Hankuk could be assured to eliminate any risk of pollution. Quite apart from the fact that Mr Duncan could not really give evidence about that, it is a suggestion which is contradicted by the fact that, at the time, GTT evidently had concerns about Hankuk's packaging which was fairly basic. Indeed, GTT subsequently lodged a patent application for improvements, which included the use of protective film over the exposed areas of rigid Triplex.

135. I should add that, although I accepted other aspects of Mr Duncan's expert evidence (particularly in relation to the technical equivalence of CS1 panels and Mark III panels, a matter to which I will return in more detail later), I was singularly unimpressed with his suggestion in oral evidence that the adhesive failures in the B0 samples might have been due to the ageing of the CS1 panels. If that had ever been a possible explanation, it seems to me it would have emerged at some point during discussions with Hankuk, since it would have been of considerable significance given

the potential time lag between manufacture of the panels and the stage of construction of one or other of the vessels when the containment system was installed. In my judgment, ageing of the panels can be discounted.

136. There are two other related reasons why any suggestion that M Chapot or anyone else at GTT thought at the time that the panels were contaminated can be eliminated as an explanation for ordering panels from Hankuk. First, given that the context of test programme 2320 was the validation of the design, in circumstances where CAT and its consultants were querying whether bonding could be achieved in shipyard conditions, had GTT been able to fight back by contending that the problem was not the design of its technology but storage conditions in the yard, it seems to me that it is inconceivable that GTT would have passed up the opportunity to make that point to CAT. This is particularly so given the fact that (as the tribunal note in [858] of the Award) from the outset of construction, GTT had been complaining about the dirty state of the shipyard.

137. Second, if GTT had really thought that there was a problem with contamination of CS1 panels at CAT's shipyard, it would have been irresponsible in the extreme not to have alerted CAT to this problem, particularly since CAT was evidently intending to use the panels it had in stock both to repair M32 and to continue with the construction of N32. Again, it is inconceivable that GTT would not have wanted to warn CAT if contamination of CS1 panels at the yard was a possibility which had occurred to GTT. Indeed M Chapot had no explanation why on this hypothesis, CAT had not been informed of the contamination.

138. This ties in with the point that M Boissier made in his evidence when I asked him about it, that if GTT had come to CAT after the B0 tests and said that there had been adhesive failures in the first set of tests it had carried out on sandwich samples made from a CS1 panel supplied by CAT and that GTT believed the cause of the failures was contamination of the panels, M Boissier's reaction would have been to say: "let's carry out more tests on panels from CAT" and if those tests had been successful, there would not have been a problem. In other words, if GTT really had thought the cause of the adhesive failures observed in the B0 tests was contamination of the panels supplied by CAT, there would have been nothing to hide.

139. In my judgment, contamination of panels emanating from CAT is not the real explanation for GTT having ordered the further panels from Hankuk. The real explanation is that GTT did not want to ask CAT to supply further panels, because GTT did not want to disclose to CAT that the B0 test results had demonstrated adhesive failures, which would lend ammunition to CAT's contentions that the problem lay with the design of GTT's technology. In the absence of that compelling reason for not disclosing the B0 test results to CAT, the failure simply to pick up the phone and ask CAT to supply a few more CS1 panels is inexplicable.

140. That GTT did not want to disclose the B0 test results to CAT is also borne out by the fact that, on the afternoon of 25 May 2005, presumably after at least some of the B0 results were available, M Lefevre of GTT sent an email (copied to M Michalski and M Devillechaise) to Huntsman asking for urgent supply of two 25kg tins of 5032A and one 25kg tin of each of 5032B and 5319, in other words further glue for the 2320 tests, as M Devillechaise has written on the email. Given the urgency, the failure simply to telephone CAT and ask for additional supplies of glue is inexplicable.

141. M Chapot sought to suggest that the glue supplied by CAT might have been past its use-by date, but given that there were batch numbers and, presumably use-by dates on the tins, that will not do as an explanation. If the tins were out of date that would either have been picked up on delivery in January 2005 or when the tins were received in the laboratory. A much more likely explanation is that GTT did not want CAT to know it had already carried out sandwich tests under test programme 2320, which had revealed adhesive failures.

142. The second reason why I consider that there was a deliberate decision within GTT not to inform CAT about the results of the B0 test results and that that decision was one which was taken, or at least approved, by senior management, is that, following the management consternation about the B0 results, M Devillechaise was instructed not to say anything about the results to CAT. Similar instructions may have been given to other GTT employees who would come into contact with CAT.

143. M Devillechaise's evidence about this to the Juge d'Instruction was as follows:

> "I was asked not to mention these test pieces or the results. It wasn't Mr Chapot who asked me this. The laboratory was under the orders of LDI (Internal Distribution list) M32-N32, which I suppose became the LDI Legal with a more restrictive headcount. At the start, the LDI grouped together a certain number of scientists at GTT who were working on finding a technical solution with CAT. Later, when the dispute became a more traditional one, the LDI became LDI Legal which didn't include me.
>
> I'm certain I received this instruction. As far as I can remember, it could only have come from my director, Mr Michalski and/or Mr Dhellemmes who was in charge of LDI. The instruction did not refer the destruction but to the fact of not talking to anyone at all about it. Internally, the results were not destroyed."

144. As with his evidence about the shock of management about the adhesive ruptures of the B0 test samples, M Devillechaise confirmed the truth of that evidence to the Juge d'Instruction in his evidence to this court. He went on to give this evidence to the court:

> "I will reply to you as I did to the examining magistrate. I have no clear idea of this, of the name. I -- the only thing was that I took my orders from Pierre Michalski, who was my boss, or from Jacques Dhellemmes, who was the CEO of the company, which is why I am sure that this instruction could not have come from Karim Chapot. I only answered to my bosses.
>
> Q. Your impression was that this instruction came from the top?
>
> A. From my top –

Q. Mr Dhellemmes -- (overspeaking).

A. But not from the top of the company.

Q. But Mr Dhellemmes is the top.

A. Yes, but I was more into taking my instructions and my orders from my boss.

Q. Mr Michalski?

A. Mr Michalski.

Q. Who was himself very senior?

A. Well, yes. He was director of R&D."

145. In my judgment, the clear implication of that evidence is that, whilst the direct instruction probably came from his immediate boss, M Michalski, it was an instruction which was sanctioned by M Dhellemmes. M Dhellemmes' own evidence about this was somewhat circumspect. He did not contend that he had not given the order to keep quiet about the B0 tests. Rather he said that he had no recollection of giving that order. As with various other aspects of his evidence where he purported not to remember matters, claiming it all happened six years ago, I suspect that he could in truth recollect more than he was prepared to admit. I find that, although the specific instruction to M Devillechaise may have come from M Michalski, ultimately the instruction emanated from M Dhellemmes.

146. M Devillechaise's evidence is that after these sandwich tests, he was involved in the shear tests (i.e. the tests on the so called 50 x 50 samples) and visited CAT at Saint Nazaire regularly, but did not discuss the B0 tests as instructed. In this context, M Chapot's evidence was particularly unimpressive. He asserted that it was M Le Stang who was responsible for communicating with the shipyard and that M Devillechaise had no business speaking to CAT, so that he would be surprised if M Devillechaise received such an instruction. M Chapot went so far as to suggest that M Le Stang would have told CAT about the B0 results. I find that M Devillechaise did receive instructions not to disclose to CAT the existence of the B0 tests or their results, instructions which ultimately emanated from M Dhellemmes. I also find that, contrary to M Chapot's suggestion, no-one told CAT about the B0 tests.

147. It is not necessary to decide which other GTT employees received similar instructions not to discuss the B0 tests with CAT. To whoever the instructions were given, the reason for those instructions is clear: GTT had decided not to reveal the inconvenient B0 test results to CAT and to carry out further sandwich sample tests on the Mark III panels supplied by Hankuk, suitably adapted geometrically so that, as far as possible, they were representative of CS1 samples.

148. As to the suggestion that it would have been unthinkable for GTT to conceal inconvenient test results, there is at least some evidence that there were other occasions on which GTT chose to reject or ignore inconvenient test results. M De Kermadec produced in the criminal proceedings in France a form of minute he had

prepared following a meeting on 13 September 2006 to discuss improved reliability of gluing. That meeting was attended by a number of engineers at GTT. It was also attended by M Dhellemmes and M Michalski. It referred (in the translation) to GTT "setting aside" [the verb used in the French is "ecarter" which, in context, suggests ruling out or rejecting] results of test samples when they were unsatisfactory.

149. M Dhellemmes was asked about this in cross-examination and gave some particularly unimpressive evidence. He suggested that this was all a "dream" or "fantasy" of M De Kermadec's. Of course, as Mr Hirst pointed out, that does not answer why, if it was all some fantasy, M Michalski, whose initials were on the minute with the handwriting: "comments noted 28/9/06", did not immediately respond that the minute was nonsense. M Dhellemmes then refused to comment further on the document.

150. Mr Hirst asked whether M Dhellemmes was prepared to comment on the practice at GTT of setting aside test results when they were unsatisfactory. M Dhellemmes' response was that, where you conducted dummy tests, such as he claimed the B0 tests were, it would be quite normal practice for a laboratory to put aside the results. I cannot accept that evidence. Even if the B0 tests were preliminary (a matter to which I return below) they were not the sort of dummy tests M Dhellemmes was describing. I do not consider that it was legitimate to conceal the B0 tests and their results from CAT. Whilst there is no direct evidence that GTT concealed any other test results from CAT, it does appear from the minute of the meeting of 13 September 2006 that GTT had something of a practice of rejecting or ignoring inconvenient test results.

151. The question remains whether M Le Tallec, as M Dhellemmes' immediate deputy, was made aware at the end of May or in June 2005 of the B0 results or participated at the time in the debate about those results and their implications. In one sense, given the position of M Le Tallec in the company, it would be surprising if M Dhellemmes had not discussed this with him. However, M Le Tallec's very firm evidence was that the first he had known of the B0 results was upon receipt of M Berthon's email of 29 September 2005. He said that at the time of the B0 tests, work towards the Technical Solution was being shared out as they had loads to do. He was often absent from GTT either to finalise the Technical Solution or the financial settlement. He said he was not involved in the discussion internally about the B0 results and knew nothing about concealing those results from CAT.

152. When pressed about this by Mr Hirst on the second day of his evidence, he gave graphic evidence about the workload at the time when they were seeking to finalise the Technical Solution, saying that he personally had had to draw up plans for a hundred ships which used both NO96 and Mark III and that his management team was totally submerged in work at the time. That evidence seemed to me to have the ring of truth.

153. Nonetheless, Mr Hirst invited me to conclude that M Le Tallec's evidence was untruthful and that he had known about the B0 results in late May or early June 2005 and participated in the internal discussion which culminated in a decision to conceal those results from CAT. As I have already said, overall I formed a favourable impression of M Le Tallec as a witness. I accept his explanation that he did not know anything about the B0 tests or results before receiving M Berthon's email of 29 September 2005 and that he had nothing to do with any decision to conceal the results from CAT at this stage. Furthermore, that M Le Tallec was not informed of the B0

results was confirmed by M Chapot. Although I found M Chapot's evidence on many matters difficult to accept, I do accept that evidence.

The B1-B5 tests

154. The four Mark III panels supplied by Hankuk were received in the laboratory on 2 June 2005, as recorded in the laboratory record book. The record book records the receipt the following day of the three tins of glue ordered from Huntsman. In fact, if what M Dhellemmes said in his letter to M Boissier of 29 June 2005 about the sandwich sample tests having commenced on 24 June 2005 is correct, there seems to have been a delay of some three weeks in starting any tests using those materials. This is a little surprising given the urgency for the completion of the tests expressed in the test request, but it may just be that the laboratory was overwhelmed with other tasks at the time.

155. There is no evidence either in the witness evidence from GTT or in the documents it has produced about the preparation of the sandwich samples for these B1-B5 tests. Mr Devillechaise was not asked about this and, in any event, it was M Berthon (who did not give evidence) who was responsible for the implementation of the tests. Mr Hirst drew attention to the fact that in contrast to the B0 test report, the B1-B5 test report (the precise date of which is unclear and which was not seen by CAT, other than in relation to the B1 results, until it was annexed to M Chapot's second expert report two years later) contained no photographs during the bonding or details of the temperature to which the glue was heated.

156. Mr Hirst suggested that it was somewhat sinister that there were no details in the report of how the sandwich samples had been prepared from the Mark III panels and that this was consistent with GTT trying to conceal the fact that it had used such panels rather than CS1 panels. He pointed out that even GTT's own expert Mr Duncan had not known at the time that he gave evidence to the arbitration tribunal that Mark III panels were used. It was only when the eagle eye of CAT's expert Mr Peter Moore spotted recently in the photographs of the B1-B5 samples in the report that the edges of the panels used as shown had been chamfered to make them look like CS1 panels, that CAT uncovered the fact that, in effect, GTT had doctored the Mark III panels used in the sandwich samples to make it look as if CS1 panels had been used.

157. Even allowing for the extent of the suspicion engendered within CAT about GTT and whether it had acted honestly in its presentation in the arbitration, I do consider that this suggestion lacks a sense of proportion. The sandwich samples for these tests were almost certainly prepared by the joiners working in the laboratory, making use of the materials they had, which happened to be Mark III panels and the chamfering was not done to disguise or doctor anything, but to achieve the same geometry so far as possible as a sample made from a CS1 panel. For reasons which I elaborate a little later in this analysis, there was a technical equivalence between Mark III and CS1 panels and the sandwich samples prepared by GTT using the Mark III panels were representative of the CS1 system or technology.

158. In any event, the traction test on at least the B1 samples was witnessed by representatives of GDF, Gazocean and Bureau Veritas (as recorded in M Dhellemmes' letter) and representatives of CAT had been invited to attend the tests,

albeit they did not come. Whilst it is true that none of the representatives would have witnessed the preparation of the samples or the cooling down which took some hours, it would nonetheless have been a high risk strategy if GTT was trying to disguise doctoring of samples to have invited third party representatives to attend. That militates against any suggestion that the samples had been doctored or disguised.

159. Four sets of sandwich samples were tested: (1) discontinuous brown glue, not overflowing, corresponding to the bonding conditions on board the vessel (case 1 in the test request- seven B1 samples); (2) continuous and overflowing brown glue (case 2 on the test request-five B3 samples); (3) discontinuous and overflowing (case 3 on the test request-five B5 samples); and (4) without top bridge pad or brown glue (case 5 on the test request-seven B2 samples).

160. The B1 tests began on 24 June 2005 and the whole test programme seems to have been completed in early July 2005. It was M Gomart's evidence that the B2 tests were still going on in July. It was agreed not to proceed with the tests for cases 4 and 6 in the test request, so there were no B4 or B6 samples.

161. The results of the tests were satisfactory. The B1 samples ruptured at stress levels between 19KN and 20.8KN, the B3 samples at between 20.6KN and 21.2KN and the B5 samples at between 15.3KN and 20.8KN. The B2 samples, without top bridge pad or brown glue ruptured at stress levels of about 11KN-12KN. In every case the rupture was cohesive, not adhesive.

162. One of the issues which CAT sought to raise before me was whether the results of the B1-B5 tests were too good to be true, in the sense that the glued joint must have been hot cured (part of the Technical Solution) to achieve the results in the tests at which rupture occurred. The basis for this contention was that, since the whole point of the hot curing, which was an integral part of the Technical Solution, was that the bonding would withstand greater forces than at ambient temperatures, the results for bonding accompanied by hot curing in the tests following the Technical Solution would be expected to demonstrate rupture at greater forces than at ambient temperature. However, CAT pointed out that the force at which the B1-B5 "fully glued" samples ruptured was not dissimilar to the force at which "hot cured" sandwich samples failed, there being only a 3% increase in ultimate tensile strength. In contrast, in the case of the shear test samples, hot curing had led to a 24% increase in ultimate tensile strength.

163. It seems to me that there are three answers to this point. The first concerns the reliability of the comparison exercise. The comparison upon which Mr Hirst relied was set out in the "File of Definition and Validation of the Technical Solution" dated 5 July 2005. This was between 78 50 x 50 samples where the glued sample had been hot cured and 36 "standard" 50 x 50 samples where the glued sample had not been heated up and showed a 24% increase in ultimate tensile strength with hot curing. It remained unclear whether the 36 samples (from test programme 2263) included some where there had been adhesive rupture, which would preclude any meaningful comparison of ultimate tensile strength.

164. Second, there may well be a perfectly sensible scientific explanation for the fact that, in the sandwich samples, the increase in tensile strength was only 3% whereas in the

much simpler joints in the 50 x 50 shear test samples it was 24%. This was explained by Mr Duncan in his evidence:

> "Q. But if we compare the results of programme 2397, which were the tests done on panels that had been glued in accordance with the Technical Solution, compare that with the results of B1 to B5, the results are almost identical, aren't they?
>
> A. Yes.
>
> Q. There's no material difference?
>
> A. No, not in strength.
>
> Q. There's certainly not an improvement of 24 per cent in strength or anything like it?
>
> A. No, but you –
>
> Q. That phenomenon is not repeated?
>
> A. No, you wouldn't obviously expect it to be repeated.
>
> Q. Why not?
>
> A. A simple joint like that shear doesn't automatically translate into what you would expect in a more complicated joint. Within the 2320 and 2397, there's quite a lot of evidence of the foam failing. So even if you can get that 24 per cent increase in joint strength, you may be limited by the fact your foam is not any stronger.
>
> Q. The foam fails?
>
> A. Yes. So what you're doing is improving a bond that's already stronger than it needs to be, is one explanation. There are quite a lot of failures in the foams in these tests."

165. The third answer to the suggestion that the B1-B5 samples had been hot cured is that, whatever the anomalies in the results, the very firm evidence of M Devillechaise (which I accept) was that the green epoxy glue was cured at ambient temperature because the GTT laboratory did not have the necessary tools to increase the temperature over such a large area as the sandwich sample.

166. When Mr Hirst challenged this by suggesting that GTT had heated up the sandwich samples tested after the Technical Solution under test programme 2397, M Devillechaise pointed out that this was incorrect. The sandwich samples had been delivered "ready made" from CAT and all GTT had had to do was bond two half pieces together. In other words, the hot curing of those samples was carried out by CAT. Mr Hirst also suggested that one of the photographs from the B1-B5 test report showed a hot run of glue, showing that it had been heated up, but M Devillechaise

said that was not the case, it was a "squeeze out", where there is excess glue when it is under pressure.

The letter of 29 June 2005

167. Following the successful completion of the B1 tests (but evidently before the remaining tests in the series had been carried out), M Dhellemmes sent the letter of 29 June 2005 to M Boissier enclosing a technical note of the B1 test results. He stated that results of "the tests planned on the Scale I samples of the CS1 containment [system]" gave results both as regards the level at which they ruptured and the mode of rupture which were "compliant with or (slightly) superior to the calculations made by GTT and validated by many experts. There is therefore no design error in the CS1 [technology]."

168. The letter continued: "However, we are continuing the programme of tests to cover all the cases imagined by your consultant (CETIM) even if the first tests corresponded to the cases considered by them as the most critical ones". The attached Technical Note (in fact in the form of a copy of a PowerPoint presentation) was headed: "Eprouvettes [Samples] CS1 Essai de Traction [Traction Test]."

169. It seems to me that M Boissier was perfectly justified in understanding from the letter and Technical Note, as he said in evidence, that the tests had been carried out using CS1 panels and, although neither document said in terms that the panels used were the ones supplied by CAT in January 2005, I consider he was justified in making that assumption. It is also clear from M Boissier's evidence, which I accept, that CAT entered the Technical Solution in reliance on the satisfactory test results and what was said in the 29 June 2005 letter.

170. M Le Tallec accepted that it was possible that he had been shown the letter and had been consulted about it before it went out, but he had no recollection of it. Mr Hirst criticised M Le Tallec's absence of recollection, suggesting that it was not truthful and that M Le Tallec had known about the B0 tests at the time of the letter and in fact remembered more now than he was letting on. I do not accept that criticism. I have already said that I accept M Le Tallec's evidence that he had not known about the B0 tests and that he knew nothing at the time about the ordering in of Mark III panels. In those circumstances, as he confirmed in evidence, if he did see M Dhellemmes' letter, he would have believed that the B1 tests which M Dhellemmes appended were tests done on the CS1 panels supplied by CAT. It seems to me to be a perfectly legitimate explanation for an absence of recollection now that if he saw the letter at the time, there was nothing unusual or untoward about it such as would have stuck in his memory.

171. The same cannot be said of M Dhellemmes. I have already held that I do not accept M Dhellemmes' evidence that, at the time of sending the letter, he was not aware of the B0 results and have concluded that M Dhellemmes was party to a deliberate decision within GTT to conceal the B0 tests and results from CAT. I consider that this letter continued that concealment and was deliberately misleading, both in the sense that it failed to disclose the B0 adhesive failures (or at least that of B0-2 which was the one sample where nothing had gone wrong with the testing) and in the sense that it gave the misleading impression that the B1 tests had been carried out on a CS1 panel,

knowing that M Boissier would assume that the tests had been carried out on materials supplied by the yard.

The Technical Solution and further testing

172. The Technical Solution was entered into on 5 July 2005. It consisted of a twenty page document with extensive appendices. At section 2.1 the fundamental principles of the Technical Solution were said to be aimed at overcoming the weakness of a propensity of the secondary barrier joint to break in adhesive mode, as detected on M32 and N32. This was to be achieved by developing a bond which had a cohesive failure mode at a high level of strength. This would be achieved by cold plasma treatment of the surface of the rigid Triplex, followed by polymerisation of the glues by heating at 60°C for three hours (so called "hot pad curing").

173. M Le Tallec explained in evidence that the crux of the Technical Solution consisted of five points:

a) GTT agreed with CAT that from June 2005 onwards they would test at least 5,000 samples for quality control during production.

b) M32 would be dismantled and the panels saved. This was very difficult because the bonds were incredibly strong when produced correctly.

c) The ring zones and the special zones (everything bonded with polyurethane ("PU") glue) on the ship were to be retained. This was because there was never any problem with the bonds made with PU glue.

d) Training and qualifications were to be issued by the shipyard to the gluing operators.

e) An entire quality control system was to be established by the shipyard from June 2005 onwards.

174. Prior to the Technical Solution being entered into, on 2 July 2005, M Le Stang of GTT had sent to M Audouin of CAT and to Bureau Veritas an email enclosing various draft documents to go into the Technical Solution. These had previously been sent by M Chapot to M Le Stang and M Le Tallec under cover of an email of 30 June 2005. At Appendix B to one of these was a document headed "Analyse par essais des efforts passant dans les plans de collage" which included the results of some finite element analysis.

175. On the second page of this Appendix were two graphs. The first showed a calculation of the effect of cooling down on the stress generated, showing a stress level of 7.2T/m. The second showed the result of a CS1 test which showed that the stress level generated by cooling down during that test was 7.4T/m. The purpose of the comparison was evidently to demonstrate how close the test result had been to the previous calculation. The graph of the CS1 test was in fact from the cooling down of B0-2 and the document stated above the graph "Cooling down of sample B0-2". I was unimpressed by any suggestion by GTT that CAT should have picked up from this

that there had been B0 tests which they had not seen, let alone that those tests had revealed adhesive ruptures.

176. In my judgment, CAT could not have been expected to pick up from this single reference in very small writing that there had been B0 tests (particularly since CAT knew that GTT was carrying out other tests than the ones the results of which had been attached to M Dhellemmes' letter), let alone unravel the whole history of the B0 tests. After all, M Le Tallec, who had been sent the graph under cover of the email from M Chapot of 30 June 2005 (and whose evidence which I accept is that at this stage he did not know about the B0 tests or results) did not pick up from this that there had been B0 tests or raise any query. If he was not alerted, I see no reason why CAT should have been.

177. Mr Landau also relied upon the fact that M Le Stang had volunteered this graph, which had come from M Chapot, as negativing any intention on the part of GTT to deliberately conceal the B0 tests and results from CAT. I can see the force of this point, but ultimately it does not seem to me capable of outweighing the other compelling evidence (particularly that of M Devillechaise) which points to deliberate concealment. Also, since M Le Stang was not called to give evidence, I do not know what his state of mind was or what instructions he received from more senior management.

178. Section 3.2 of the Technical Solution headed "Confirmation by tests on test specimens" referred to the demonstration by mechanical strength tests of the validity of the Technical Solution in terms of bonding parameters. This was a reference to the shear tests on 50 x 50 samples done to verify that the materials used in the CS1 system could achieve a good bond. At that stage some 400 such samples had been tested at -170°C. The materials used to make the samples had been supplied by CAT from the yard or the warehouse and bonded by CAT.

179. The criteria by which those tests were to be judged valid were (a) a cohesive failure and (b) a minimum tensile strength of 3.5 MPa under shear stress. I agree with Mr Landau that this was completely separate from the finite element stress calculations performed by GTT in conjunction with GDF which were checked by the tests on the sandwich samples. The shear tests were tests of the ability of the materials to bond, whereas the sandwich samples were tests of the strength of the joint when the materials were bonded.

180. The results of the 400 tests were positive. As noted by the Technical Solution, "All the failures observed are of a cohesive type, with cohesivity rates exceeding 90%." On that basis, Bureau Veritas as Classification Society was satisfied that the Technical Solution gave a good bond. The Technical Solution recorded the opinion of Bureau Veritas: "The programme of validation by tests on test specimens and its results are acceptable for classification."

181. On 19 July 2005, an Amicable Settlement was entered into between CAT and GTT which annexed a Memorandum signed by the parties on 5 July 2005. It is not necessary to quote that in full in this judgment, but I agree with Mr Landau that it made clear that the sandwich samples were relevant to the overall strength of the assembly but not to the quality of the bond between the flexible and the rigid Triplex which was tested by the shear tests.

M Berthon's email of 29 September 2005

182. On 29 September 2005, M Berthon (who it will be recalled was responsible for all the tests under test programme 2320, including the B0 tests) sent an email headed "Essai sandwich 06/05 Resultats 'tardifs'" ("Sandwich test 06/05 "late" results"), effectively to everyone in the management of GTT, including M Dhellemmes, M Le Tallec, M Chapot, M Michalski, M Devillechaise, M De Kermadec, Mr Dempsey and Madame Cornelius.

183. This email read:

> "Here is a recapitulation of the tests on sandwich samples performed in the month of June 2005.
>
> The panel, the TBP and the epoxy glue (known as green and brown) XB 5032A/B and XB 5032A/5319 were provided by CAT. Only the BSS was provided by GTT (HUTCHINSON). Bonding performed in GTT's laboratory.
>
> Out of the 5 samples tested, 1 was tested at ambient temperature, another dipped in a nitrogen bath then tested at ambient temperature and three at −110° in a cryogenic chamber.
>
> The average rupture value of the last three samples is about 16 KN with rupture of adhesive type on one pad side and of mixed type (superficial cohesive and adhesive) on the other.
>
> The sandwich samples made by GTT from our own stocks (and tested at the end of June) gave rupture values over 20 KN (with the same configuration as those tested at the beginning of June) with ruptures of cohesive type.
>
> Today we asked CAT to prepare a corresponding number of sandwich samples capable of qualifying the scarification procedure and also capable of validating the "technical solution". These samples will be made from their stock.
>
> I apologise to those who knew about this subject, but it seemed to me to be good to clarify the situation."

184. The email is on any view curious and it is difficult to understand why M Berthon headed it "Resultats Tardifs" or why he thought it appropriate to send it at all. Since M Berthon did not give evidence, one can only guess at his motive. It may be that the reference to "late" results in inverted commas was intended to be ironic, because the results attached were for the B0 tests carried out some four months previously, and, as M Berthon infers in the text of the email, not all the addressees would have seen those results previously. Hence also his underlining that the tests had been performed in June 2005.

185. However, that does not answer why he decided to circulate the results of those tests to the entire management of GTT. Mr Hirst submitted and suggested to each GTT witness who received the email that it was because M Berthon had a guilty conscience about the fact that the B0 tests which had shown adhesive ruptures, as again M Berthon underlines in the email, had not been disclosed to CAT whilst the Technical Solution was being finalised.

186. I have thought long and hard about whether Mr Hirst is right that the email shows that M Berthon had a guilty conscience, but on reflection I have concluded that it does not. In my judgment, it is important not to assess the email with the hindsight of the subsequent bitterly fought arbitration and this litigation. In fact, it is clear from the penultimate paragraph of the email that the specific context in which it was sent was that, on that day, GTT had asked CAT to prepare a number of sandwich samples from its own stock, inter alia, to verify the Technical Solution. I take it that this is a reference to what became test programme 2397. As explained by M Devillechaise, those samples were prepared and hot pad cured by CAT. It seems to me that in that context, what M Berthon was doing was ensuring that everyone within the organisation was aware of the results of all the previous sandwich tests undertaken by GTT, including B0, in case any issue came up about previous sandwich tests during the subsequent tests under programme 2397.

187. Another possible reason why M Berthon sent the email emerges from M Le Tallec's evidence. As I have said, I accept his evidence that it was on receipt of M Berthon's email that he first learnt of the B0 results. He also said that he had assumed from the reference to the B1-B5 tests being from GTT's own stocks that this meant materials that GTT already had in stock. He had not known that in fact Mark III panels had been ordered from Hankuk until earlier this year, 2011, presumably when the present allegations by CAT surfaced. He had been puzzled when he learnt that because of what M Berthon had said about the tests being carried out on GTT's own stock.

188. M Le Tallec said that he had not asked M Berthon at the time why he had sent the email, as all the management of GTT were focused on what M Le Tallec described as "a new crisis on the vessel". As he explained work had resumed on M32 in August 2005 applying the methods developed in the technical solution but a problem had then been encountered which he described in graphic terms:

> "Well, the work resumed in August, and there were several hundred panels which were impossible to glue, and it was quite disconcerting -- or it was totally disconcerting for those who had created the Technical Solution, because we had trusted -- we had confidence in the 400 inspection samples, so as I repeat, it was very disconcerting for us.
>
> MR HIRST: This was to do with the Technical Solution?
>
> A. Yes, because the boat is always king, and with the Technical Solution, we thought that we had a reliable system so as to be able to repair the vessel, and nothing bonded on the second vessel when the work resumed.
>
> Q. Using the Technical Solution?

A. Yes. So we thought there was a new poison in the glue, in the bonding. The crisis lasted months before we found the poison, and at the time, I think all of the management -- well, us, that is five or six of us -- had to solve this crisis.

Q. I'm not going into that, unless my Lord wants me to.

MR JUSTICE FLAUX: Was this manifestation on N32 of adhesive ruptures?

A. Well, it was even worse than that (overspeaking). You could have undone the strips with your fingers."

189. One can quite see that in circumstances where, despite the Technical Solution, it was proving impossible to glue several hundred panels and GTT was about to embark on further sandwich testing to verify the Technical Solution, M Berthon's mind may have turned to the previous occasion when problems with adhesion had been encountered during testing and that he wanted to ensure that everyone in management at GTT was aware of the B0 results. However, to an extent that is speculation on my part. All that it is necessary to decide is that the sending of the email was not indicative of a guilty conscience on the part of M Berthon.

190. The problem over adhesion of panels lasted some months before it was found that it was caused by silicon from the adhesive tape which CAT was using. As M Le Tallec explained, GTT management was focused on solving this problem for several months.

191. Mr Hirst suggested that M Le Tallec must have appreciated at the time of receiving the 29 September 2005 email that there had been earlier tests with adhesive ruptures and criticised M Le Tallec's evidence which was to the effect that the email had not struck him particularly at the time. I did not consider the criticism justified. M Le Tallec was clearly focused on solving the immediate crisis which had arisen and, since there was nothing in the email to alert him to deliberate concealment of the results from CAT and he believed from reading it that the B1-B5 tests had been carried out on GTT's own stock (which would have come from CAT), one can quite see why the email may not have made any particular impression on him at the time.

192. Support for the fact that those in GTT not fully conversant with what had gone on in May and June 2005 may not have regarded the email as of any significance is to be found in Mr Dempsey's evidence. He told the Juge d'Instruction that he could not honestly say whether he had read the email at the time. M De Kermadec was the head of his department. His evidence to the court was to the same effect:

"Q. So you didn't take any particular notice -- I don't mean this pejoratively -- or steps in relation to this mail?

A. No. The e-mail came in, I scanned it quickly to see what it was talking about. I may have opened up the Powerpoint attached. I didn't go into much detail and, basically, either I archived it or I deleted it, more so (inaudible) for Mr Christophe De Kermadec to treat [i.e. it was more for M De Kermadec as his boss to deal with]."

Further sandwich tests

193. Sandwich tests on the samples prepared by CAT under test programme 2397 took place, during which the samples were subjected to cooling down and traction in the fatigue machine in the GTT laboratory. Those tests in fact took place in June 2006. Two lots of five samples each were tested, with different configurations of brown glue, continuous or discontinuous, overflowing or not overflowing. In these tests, cracking of the foam was observed, but the ruptures were all cohesive and occurred at stress levels of about 20KN-21KN.

194. The conclusion drawn by GTT from these tests was that there was good bonding of the joint between the flexible and the rigid Triplex following the Technical Solution. The Hankuk PU foam sustained damage during horizontal tension and shearing. The weak point of these samples was not the bonded joint but the foam and it was the foam which broke first, not the bond.

195. By this stage the problems with the Technical Solution were such that CAT commenced arbitration on 28 July 2006.

The status of the B0 tests

196. Before leaving the events before the arbitration, it is necessary to consider two aspects of the history so far which, whilst they may not excuse GTT's deliberate concealment of the B0 tests from CAT, may nonetheless have some bearing on the critical question whether CAT can establish that the Award was obtained by fraud. These are the precise status of the B0 tests and the extent to which there was a technical equivalence between the CS1 panels and the Mark III panels for the purposes of the 2320 test programme.

197. Several times in his evidence, M Devillechaise described the B0 tests as "preliminary tests", a description on which he was not challenged in cross-examination. There are a number of other pointers to the B0 tests being of a preliminary nature. As M Devillechaise explained in evidence, GTT had not conducted traction tests on such large scale samples before and there were, as I noted above, problems cooling down samples and regulating the fatigue machine. One can quite see why GTT would have wanted to set up the equipment and start testing samples as soon as possible after the test request (in fact on 23 May 2005, the day the test request was being drafted), in order to iron out any teething problems. Also, as M Devillechaise explained, after the problems cooling down B0-3, they tested B0-4 and B0-5 at ambient temperature to try to understand what was going on.

198. A further indication that the B0 tests were intended to be preliminary is that only one CS1 panel was received in the laboratory on 11 May 2005, whereas, as the test request made clear, three CS1 panels would be required to manufacture the sandwich samples for all six configurations of bonding. The B0 tests were also only carried out on one of those configurations, case 3, discontinuous and overflowing, so it must always have been contemplated that there would be other sandwich tests. That is not to say that if problems had not been encountered on the B0 tests, the results of those tests could not have stood as results for case 3, just that other tests were clearly required to complete the test programme.

199. The preliminary nature of the tests is also indicated by the very designation of "zero" in B0. It was M Le Tallec's evidence that "0" meant preliminary and "00" pre-preliminary. Of course one cannot read too much into the designation, since one does not know when that designation was ascribed to the tests: it may have been after the adhesive ruptures were encountered. Overall, whilst I consider that M Dhellemmes' attempt to categorise these as "dummy tests" and M Chapot's attempt to suggest that they could be discounted as irrelevant cannot be accepted, it does seem sensible and appropriate to regard them as preliminary tests.

200. The preliminary nature of the tests may not excuse the failure to disclose them to CAT at the time or to the tribunal or CAT during the arbitration and that failure may still have been dishonest. However, the preliminary nature of the tests has some bearing on how significant the results would really have been thought to be by the tribunal if they had been disclosed, particularly given that B1-B5, conducted after any teething problems had been ironed out, were successful in demonstrating the strength of the bonds and cohesive rupture following cooling down and traction.

Technical equivalence between Mark III and CS1 panels

201. One of the issues most hotly debated at the hearing was the extent to which the use by GTT of Mark III panels in the B1-B5 tests could be justified because they were technically equivalent in terms of strength of the rigid Triplex and the ability to form a good bond between the rigid Triplex and the flexible Triplex.

202. There was undoubtedly a physical difference between the Mark III panels and the CS1 panels manufactured by Hankuk, in the sense that Mark III panels used polyurethane foam which had 6 layers of continuous strand mat ("CSM"), blown by a method called 141B, whereas CS1 used polyurethane foam which had 7 layers of water blown CSM. The density specification for CS1 foam was in the range 110-130 and that for Mark III 117-130, so within the range of the CS1 specification.

203. In evidence, GTT's expert, Mr Bruce Duncan of the National Physical Laboratory, who has twenty years experience of this sort of technology, pointed out that whilst there were minor differences in the compressive and tensile properties of the foam in the two types of panel, the stiffness of the foam and the co-efficient of thermal expansion, which are the two properties which will induce the stress within the adhesive layers, are the same.

204. When Mr Hirst put to him that whilst the specifications appeared to be similar, they were not the same, he gave this evidence:

> "They are not strictly identical but from the point of view of having a representative test specimen, those differences are irrelevant.
>
> Q. That's what you say, Mr Duncan, but you don't know, do you?
>
> A. Well, it's my professional opinion. I have 20 years of experience in such technology, testing things. You come to the point of view of what's affecting the stress on the adhesive

> layers. Then the critical properties are the stiffnesses and the coefficient of thermal expansion because that's where the stress is generated from. The minor differences in the compressive and tensile strengths might come into play only in the event the foam is failing early.
>
> Q. Now –
>
> A. From the point of view of the property of that secondary barrier bonding, these differences are irrelevant.

205. In other words, any minor differences in the thickness and specification of the foam in the two types of panel makes no difference to the stresses which the bonding between the rigid Triplex and the flexible Triplex is able to withstand. None of that evidence (which I accept) is surprising, since it is not the foam which is being glued and, in the case of both the B0 and the B1-B5 sandwich samples, although different panels were used, the rigid Triplex, the flexible Triplex and the glues used to make up the sandwich were all the same.

206. The fact that Mark III panels have only 6 layers of CSM in the foam and not 7, obviously means that the panels are of less thickness than CS1 panels, so that the dimensions of the panels are not identical. As I have already noted above, this meant that for the purposes of preparing the B1 to B5 samples, GTT had to cut the panels in a different way and chamfer them in order that the geometry was as close as possible to that of a sandwich sample made up using a CS1 panel.

207. Although both M Malvos of GDF, who gave evidence for GTT, and Mr Duncan agreed that the Mark III samples prepared in that way for those tests were not identical, in terms of preparation, to what the test request contemplated, they both considered that the eventual samples were nonetheless representative of CS1 technology. Thus, M Malvos said in cross-examination:

> "Yes, but what I'm saying is -- in my report I'm not saying that the CS1 samples are part of CS1 panels. I say they are representative. Insofar as the geometric measurements and lengths are correct, I'm happy. I'm sorry, were I to draw a caricature of all of this, then I'm not bothered whether a sample has been cut from a panel which has already been glued, and which has been cut in order to establish the correct geometry of the piece, be it cut or recut, or if the material has firstly been cut and then bonded in order to determine the geometry.
>
> ….
>
> Now, what I feel is important here is the geometry. That I take a panel CS1 or a panel Mark III, it doesn't matter, but if I cut it at a CS1 geometry level, that will be representative of a CS1 system."

208. Mr Duncan's evidence was to similar effect:

> "Q. You would not be complying with this test requirement, would you, if you didn't use a CS1 panel and cut it into four according to the longitudinal and transverse axes set out there?
>
> A. Well, you wouldn't strictly be applying the test requirement but there's no scientific reason why you cannot fulfil the objectives of the test by making samples another way. All you need is a sample with the right materials with the represented geometry. The actual way you get to that geometry is, I think as Mr Malvos said, fairly irrelevant."

209. I see no reason not to accept their evidence, from which it follows that, although the B1-B5 sandwich samples were prepared using Mark III panels, rather than CS1 panels, the samples themselves were representative of the CS1 technology. Of course that does not answer the mystery, not explained by any of GTT's evidence, as to why, having gone to Hankuk for the further panels to conduct the 2320 programme, GTT did not ask for and receive CS1 panels, which Hankuk was apparently manufacturing at the time, thereby avoiding the need to adapt the geometry. Nor does it explain why GTT did not come clean with CAT and explain that the B1-B5 sandwich samples had been prepared using Mark III panels, but that the eventual geometry was the same.

210. However the fact that the B1-B5 samples were representative of the CS1 technology will have considerable impact on the critical question whether the Award was obtained by fraud and in particular whether, if the tribunal had been told the full story about the use of Mark III panels to prepare the B1-B5 sandwich samples, it would have made any difference to the conclusions they reached.

F2. Alleged fraud in the arbitration

211. I turn to the critical question whether there was fraud by GTT in the arbitration. As noted in my summary of the parties' submissions earlier in the judgment, the essence of CAT's case is that, having deliberately concealed the B0 tests and results from CAT (as I have found GTT did), GTT was locked into perpetuating that deliberate concealment in the arbitration. What is alleged is fraud at two stages: first deliberately misleading responses to disclosure requests which did not disclose the B0 tests and second deliberately misleading evidence given to the tribunal by M Chapot.

212. What I propose to do is to set out first the history of disclosure in the arbitration before dealing in detail with these two related allegations of fraud. For convenience, I will include in this history of disclosure the history of the other requests by CAT in relation to GDF reports, the AMDEC study and internal document 681 which are relevant to the present application.

Disclosure in the arbitration

213. Before considering the history of document requests and responses in the arbitration, it is important to have in mind that the ICC arbitration in this case was conducted in accordance with civil law arbitration procedure. In particular the rules for disclosure of documents were based on the IBA rules. There was no duty to disclose relevant

documents, akin to CPR Part 31, such as would be the case with London arbitration, conducted in accordance with English procedure. In these circumstances, the court must be careful not to import into its assessment of GTT's conduct and the serious allegations of concealment made by CAT English law concepts of the duty of disclosure.

214. That the procedure concerning disclosure adopted in the arbitration was akin to the IBA rules is borne out by Procedural Order No 1 of the tribunal, dated 5 December 2006. That provided in the first instance for the parties to disclose the documents they relied upon, then provided for document requests to be served. In the event that documents were not produced, a joint schedule was to be prepared with columns setting out each party's requests, with a brief summary of the grounds for the request, a summary of the grounds of objection and a blank column for the tribunal's decision. This is what is known in international arbitration as a "Redfern schedule". The tribunal would then rule on whether the particular document should be disclosed.

215. On 20 February 2007, Maitre Rostain of Clyde & Co, CAT's French lawyers, served on Maitre Jaeger, GTT's French lawyer, a detailed list of documents requested for production. This included at item 8 a request for: "static tests: detailed results for the first sandwich tests specific to the CS1 system carried out on panels supplied by CAT at the beginning of June 2005". From that request, it is clear that CAT thought that the tests in test programme 2320 had been carried out on the CS1 panels which CAT had supplied earlier in 2005.

216. M Bruno Gomart, who was a technical consultant acting for CAT, told me in evidence that it was he who formulated the request. He had referred to early June 2005 because he had been told by M Audouin, his contact in CAT, on about 11 May 2005 that GTT was in a hurry to do these sandwich sample tests to prove to everyone that there was nothing wrong with the CS1 design. He was surprised at the delay in testing until 24 June 2005 (the date on which the letter of 29 June 2005 from M Dhellemmes said the tests had commenced). He was concerned that in fact some tests might have been carried out earlier in June 2005, hence the way in which this request was formulated.

217. Item 35 of the request dated 20 February 2007 was a request for: "the joint GTT and GDF study report carried out on the bondings of the secondary barrier in May 2005 and mentioned in the email from GTT to GDF a copy of which was sent to CAT on 16 May 2005". From this, it is clear CAT was aware at least of the Phase 1 GDF report.

218. Maitre Jaeger's response on 23 February 2007 to the 20 February 2007 letter was to refuse outright the requests for disclosure on the basis that they were premature and a fishing expedition, a refusal which was maintained when CAT made a further request for disclosure on 20 April 2007. In his evidence he said GTT was also concerned that CAT's purpose in making the request was not to obtain evidence for the arbitration but to obtain secrets relating to GTT's technology.

219. On 13 September 2007, CAT served a request for documents which combined its two previous requests. By the end of September 2007, GTT had provided a response to those document requests and had agreed to produce some documents. There was a meeting between the lawyers, but there remained a number of document requests outstanding. In those circumstances, on 28 September 2007, Clyde & Co sent a letter

to the tribunal, enclosing two schedules. The first, headed "Summary of Requests for Submission of Documents from CAT and GTT" and dated 28 September 2007, set out in tabular form each party's requests, a brief summary of the grounds for each request and the opposing party's response to the request. I will refer to this as the recapitulation schedule.

220. The second schedule, headed "Response to CAT's Request for Submission of Documents" and dated 27 September 2007, contained, so far as CAT's requests were concerned, the same three columns as in the recapitulation schedule but with an extra column headed "Decision of the arbitration tribunal". This was thus the Redfern Schedule contemplated by Procedural Order No. 1. Clydes' letter asked the tribunal to issue a ruling in relation to this Schedule.

221. Four of the requests in the recapitulation Schedule are of relevance to the issues I have to decide. Item 37 contained the same request as item 8 in the original request of 20 February 2007, for the results of the sandwich tests carried out on the CS1 panels supplied by CAT at the beginning of June 2005. The column dealing with the brief summary of the grounds for that request stated:

> "The knowledge of the detailed assembly conditions for the sandwich test pieces, test conditions and results of the first sandwich tests carried out in June 2005-at the GTT laboratory-using panels from the M32 supplied by CAT- should be used to ensure that GTT correctly adopted, for its first series of tests, similar conditions to those encountered on board the vessels (rather than optimum laboratory conditions intended to 'pass' its tests with the sole object of certifying the design of the CS1).
>
> These documents are required to ascertain the relevance of GTT's statements according to which 'there is therefore no design error in the CSI" [a quote from the Dhellemmes letter of 29 June 2005].
>
> …
>
> GTT's failure in its role as licensor and designer of the new 'CS1' technology.
>
> Hidden fault and bad faith on the part of GTT in the preparation and adoption of the Technical Solution.
>
> [The summary then quoted more extensively from the Dhellemmes letter]"

222. The response of GTT to this request was: "The static tests requested have already been submitted in Annex No 5 of Expert Report no. 2 (Series of Tests 2320)." This was a reference to an annex to the expert report of M Chapot dated 26 July 2007, already submitted to the tribunal headed (in translation) "the hypothesis of a design defect". Annex 5 to that report, headed "Eprouvettes CS1 Essai de Traction" ("CS1 Samples Traction [or "Tension"] Test") was the PowerPoint presentation or report

prepared by GTT internally giving the details of the B1-B5 tests and their results. Nowhere in that report was there any date given for when the tests in question had been carried out.

223. I can deal with the other items in the recapitulation Schedule which are relevant to CAT's current application more shortly than the 2320 test results. Item 1 (also item 1 in the Redfern Schedule) was the request for the AMDEC study, to which GTT's response was that there was no AMDEC study in the strict sense of the term and that such a study is not stipulated by the Gas Code.

224. Item 29 in the recapitulation Schedule repeated item 35 in the original request of 20 February 2007 concerning the joint GTT-GDF study. The brief summary of the grounds for that request stated that the document was "required to understand the defects ascertained, in so far as it concerns the modelling tests carried out, at the request of GDF, during the defect investigation stage". The response of GTT to this request was that it agreed to produce the joint GTT-GDF study requested.

225. Finally, item 42 in the recapitulation Schedule contained a request for the complete approval files for the Bostik polyurethane adhesives XPU18018A/B and 18411A/B, including in particular "GTT's internal document 681 and internal document 682". The response from GTT stated "Internal documents 681 and 682 cannot be found".

226. After the Redfern Schedule had been submitted to the tribunal, on 3 October 2007, the tribunal made an order for the production of all the documents referred to in the "live requests" (that is other than the ones where the opposing party had agreed to produce the documents or stated that it had already been produced or stated that the document did not exist or could not be found). In view of the response which GTT had given to the four requests which are of present relevance, the tribunal's order only covered one of those requests, that relating to the AMDEC study. The tribunal's order in relation to the AMDEC study was:

> "In the context of Mark III and CS1, the request is granted so far as the risk analyses [i.e. the AMDEC studies] are concerned connected with the bonding assembly of the secondary barrier and with moving from flexible triplex to rigid triplex."

227. In response to the tribunal's Order for production of certain documents, GTT's lawyers, Latham & Watkins, wrote on 5 October 2007 that a number of the documents to be produced were subject to heightened confidentiality and would be kept in a data room. These did not include the 2320 sandwich test results which had been disclosed as Annex 5 to M Chapot's report. It was agreed that, once CAT had signed a confidentiality agreement, the data room would be open for CAT to inspect documents from 18 to 31 October 2007, with CAT reserving the possibility of further inspection between 5 and 9 November 2007.

228. Having conducted an initial inspection of the documents in the data room, on 23 October 2007, CAT wrote to GTT stating that it did not accept that the documents in the data room should be subject to heightened confidentiality and asked for them to be disclosed unconditionally. In response the same day, GTT reiterated that the data room procedure had been agreed and invited CAT to take part in a joint inspection to determine which passages in documents should be redacted. As Maitre Jaeger

explained in evidence, CAT's insistence on seeing all the documents on an unredacted, non-confidential basis led GTT to suspect that CAT was trying to obtain the secrets of GTT's technology.

229. CAT objected to the data room procedure and on 30 October 2007, wrote to the tribunal setting out its concerns and difficulties, which were said to be acute because CAT was in the middle of preparing its Reply, for which the deadline was 14 December 2007. In that letter CAT also complained about the fact that GTT had said a number of documents could not be found.

230. CAT requested the tribunal to hold a further hearing, which took place on 13 November 2007. In readiness for that hearing, CAT's lawyers prepared a detailed written submission dated 9 November 2007, in which CAT reiterated the difficulties it had encountered in relation to disclosure. It raised issues about supposed non-existence of documents, incomplete previous disclosure, queries about documents disclosed, problems with the data room procedure and whether the documents in the data room were confidential. It is not necessary to consider those issues in detail, save to the extent that they impinge upon the various outstanding allegations of fraud made by CAT.

231. So far as the reply to request 37 about the 2320 tests is concerned, the 9 November 2007 response made the point that the document referred to (i.e. annex 5 to M Chapot's expert report) contained no date. In that context, CAT stated that it did not know whether these tests were the ones carried out at the beginning of June 2005 and also made the point that this uncertainty was increased by the fact that the tests disclosed included those without top bridge pads, which had been carried out in July 2005, so on any view not at the beginning of June 2005. This reflected the concern M Gomart had had, which led to his formulation of the request in February 2007.

232. In the section dealing with instances where GTT's response had been that documents didn't exist, CAT set out its case as to why, in relation to certain documents, that response was not credible. None of CAT's witnesses could really explain why it was that this complaint did not include Request 42 relating to internal document 681, given that that document was referred to in the Bureau Veritas certificate.

233. CAT made the point that, although GTT had made the surprising assertion that there was no AMDEC study, the documents disclosed in the data room, which included a partial AMDEC study, did suggest that there had been AMDEC studies. Complaint was made at some length about the documentation in the data room which was said to be confidential in nature, including this partial AMDEC study. This suggests that it was the problems over supposed confidentiality and blanking out which were of particular concern to CAT and its lawyers. That was confirmed by Maitre Rostain in his evidence. He said that CAT was concerned about non-disclosure of documents, as in reluctance on the part of GTT to disclose certain documents, rather than considering that GTT was deliberately concealing documentation and that the real issue at this stage for CAT was blanking out of documentation.

234. Following the procedural hearing on 13 November 2007, the Chairman of the tribunal, Professor Hanotiau, wrote to the parties the following day stating that the data room must be reopened immediately and CAT must be given access to examine the documents. The parties should meet without delay to resolve all the current

problems. If they were unable to reach agreement, CAT were to indicate which documents they wished to see and GTT were to provide both redacted and unredacted versions to the tribunal for the tribunal to determine what should be disclosed.

235. In the event, following a meeting on 20 November 2007, the parties were unable to reach agreement, but CAT did not follow the procedure indicated by the tribunal. A further meeting set for 26 November was cancelled by Clydes on behalf of CAT. The reasons for this were set out by Maitre Rostain in a letter of 27 November 2007 and confirmed in his evidence. The blanking out was so extensive that Clydes thought there was nothing to be gained by further discussion. As he put it in cross-examination, even the names of the people conducting tests had been blanked out. Rather than making a further application to the tribunal, Clydes decided to concentrate on the preparation of CAT's Reply submissions. It follows that CAT never received any response, satisfactory or otherwise, from GTT to its various repeated requests in the 9 November 2007 submissions.

236. CAT continued to grumble about the data room procedure and about disclosure. For example, it appears that in its Reply submissions dated 31 December 2007, CAT referred to the phase 1 GDF report (of which it seems to have had a draft) and AMDEC study. In March 2008, GTT stated that it could not disclose GDF reports because they were confidential to GDF. In any event, no formal application for disclosure of additional documents was made by CAT to the tribunal.

237. Against that background, GTT submits that CAT deliberately chose not to pursue disclosure requests in relation to the documents which it now contends that GTT fraudulently concealed, in circumstances where it could have pursued those requests and even applied to the tribunal for a peremptory order for disclosure. Given CAT's failure to resort to the remedies which were available to it in the arbitration, GTT contends that it is simply not open to CAT to seek to reopen the same issues before the court.

238. I can see the force of those submissions in the context of what might be described as the "back-up" points made by CAT about document 681, the GDF reports and the AMDEC study, but it does not seem to me the argument has any validity in relation to the B0 tests and their results. Whilst M Gomart had a concern, because the B1-B5 test results at Annex 5 to M Chapot's second expert report bore no date, that the right test results might not have been disclosed, I do not consider that there was any question of his suspecting that GTT had deliberately concealed a set of tests under test programme 2320, nor was it put to him in cross-examination that he had. Furthermore I accept the evidence of Maitre Rostain that, in pursuing Request 37 in the 9 November 2007 submissions, CAT was seeking to clarify the dates of the B1-B5 tests and had no reason to think that GTT was not disclosing a set of test results.

Alleged deliberate concealment of the B0 tests in the disclosure process

239. I turn to the question whether there was deliberate concealment by GTT of the B0 tests in the disclosure process, as Mr Hirst contended. When the arbitration commenced, Mr Dhellemmes appointed two people within GTT to co-ordinate the activities needed, M Le Tallec and M Mokrane Yataghene, at the time the senior project manager. As explained in evidence by M Le Tallec, they were to distribute the work, check that it was done and liaise with GTT's lawyers. These were the in-house

lawyers, specifically M Le Tallec's wife, Mme Le Tallec and Maitre Jaeger then of Latham & Watkins. I should say immediately that it is not alleged by CAT that any of those lawyers was implicated in any fraud or deliberate cover up or acted otherwise than in a totally proper and professional manner. Specifically, it is not alleged that GTT's lawyers ever gave GTT any advice about whether the B0 tests should be disclosed, for the simple reason that none of them was aware of those tests during the course of the arbitration.

240. Furthermore, although M Yataghene produced a witness statement for this application, he was not required to give evidence and no allegation of dishonesty or reprehensible conduct of any kind is made against him. Those allegations are essentially limited to M Dhellemmes, M Le Tallec and M Chapot.

241. M Le Tallec was asked by both Mr Hirst and myself whether it would not have been obvious from the reference in Request 8 in CAT's disclosure requests of 20 February 2007 (which corresponded to Request 37 in the recapitulation Schedule) to the sandwich tests done at the beginning of June 2005 on panels supplied by CAT, that the B0 test results fell within that request. His response was that, at that time, no documents were looked for in response to any of the requests, because GTT's lawyers advised that the request was premature. It was not until September or October 2007 that he was involved in the disclosure exercise.

242. Towards the end of August 2007, Sabine Carzon and her colleague Sandrine Gegauff started work on the various requests for documents made by CAT. As she said in evidence, there were a large number of documents requested and some requests were easier to deal with than others. One of the easier requests to deal with was request 8, the request for the results of the first sandwich tests at the beginning of June 2005.

243. Her initial evidence in cross-examination was that she and Sandrine had arrived at the answer to that request which subsequently appeared in the recapitulation Schedule ("The static tests requested have already been submitted in Annex No 5 of Expert Report no. 2 (Series of Tests 2320).") after looking at the documents and forming the view that the correct answer was that Annex 5 to M Chapot's second expert report was the sandwich test results. This answer (with others drafted by Mme Carzon and Mlle Gegauff) were presented to and validated by her seniors at a meeting to discuss the disclosure responses. She agreed that the decision to refer to Annex 5 in this response had been that of M Le Tallec and his team.

244. In the middle of the cross-examination of Mme Carzon, GTT disclosed an email which she and Sandrine Gegauff had sent on the afternoon of 27 August 2007 to the legal team at GTT on the arbitration (which consisted of the two of them, M Le Tallec, M Yataghene, M Chapot and M Le Stang). The email contained in excel spreadsheet format their preliminary responses to the documentary requests made by CAT on 20 February and 20 April 2007. The spreadsheet contains columns for setting out the disclosure request, then a series of "observations" columns, one for each member of the legal team.

245. The text of the email refers to the fact that there are an important number of documents to be examined and notably, a certain number of documents requested where Mme Carzon and Mlle Gegauff do not know whether they exist or not. It then says: "On this subject, do not hesitate to add your comments to the spreadsheet", self-

evidently an invitation to each other member of the legal team to add his comments in the "observations" column against his initials.

246. GTT has only disclosed the answer in the spreadsheet to Request 8 (i.e. the request for the results of the sandwich tests), quite legitimately because it is only prepared to waive privilege to that limited extent. Having set out that Request as it was formulated by CAT in the 20 February 2007 request, under the observations column for SGE (Mlle Gegauff), they have written; "Campagne 2320 (deja fourni)" [Programme 2320 (already provided)]. There are no comments or observations against any of the columns for the other members of the legal team, specifically M Le Tallec and M Chapot.

247. When CAT served its combined request for documents on 13 September 2007, Mme Carzon said that she was quickly able to ascertain that it did not contain any requests not previously in one or other of the requests of 20 February and 20 April. She sent an email to the legal team on 14 September 2007 telling them that and saying that, as a consequence, their excel spreadsheet was completely reusable. She enclosed it with a few minor alterations. Mr Le Tallec immediately forwarded to Maitre Jaeger what he described as this "first analysis" by Mme Carzon.

248. When asked about whether, when he looked at Request 37 in September 2007, M Le Tallec appreciated that it covered the B0 tests, his evidence was:

> "Well, what I can say is that, according to the information I had at the time, the expert report number 2, which had been submitted during arbitration, had a sentence summing-up, stating that the Technical Solution had been validated with materials employed by CAT.
>
> …
>
> And in accordance with the shipyards, and quoted just afterwards in brackets, the request for the study 2320 and 2397. So I thought, and doubtlessly wrongly at the time -- or perhaps I wasn't wrong -- that the 2320 request corresponded to CAT's request.

249. The passage in Mr Chapot's expert report to which M Le Tallec was referring was at [88]-[89]:

> "**1.3 Description of the programmes conducted on sandwich samples**
>
> 88. Many programmes have been conducted with the following aim:
>
> - to validate the Technical Solution with the materials used by the Shipyard and the shipyard procedure (DE 2320 and 2397);

- to justify behaviour under fatigue in the case of fabrication "drift" (DE2380);

- to invalidate CETIM's thesis (Tests without pads — DE 2320).

2. <u>Programme validating the Technical Solution</u>

89. **Test Report No. 2320**[14] assesses various configurations encountered on board. When samples are pulled at low temperature, stress is produced which increases with movement. Marking elongation of the sample on the horizontal axis and tension stress on the vertical axis, the following result is obtained, perfectly reproducibly, on 17 samples:

[13] 1 7.K.N≈100 kg, therefore 20.12 T/m equivalent to 20.12 KN on the 50 mm bonded joint of the sandwich sample.

[14] See Annexe No. 5: "Results of Test Programme 2320".”

250. Mr Hirst then repeated his question whether M Le Tallec accepted that it was clear that Request 37 covered the B0 tests, which M Le Tallec must have known at the time. The evidence which M Le Tallec gave in response straddled a short break in the hearing and was on occasions difficult to follow, because of interpretation problems caused by the tendency of M Le Tallec to answer the questions in English before the interpreter had translated the question into French and because, although his English was very good, it was clear to me that he did not always understand the questions. However, this part of his evidence seems to me to be critical in considering whether or not M Le Tallec knew at the time that the proposed response to Request 37 was inaccurate because it should have included the B0 results, in other words, whether he was acting dishonestly as CAT alleges.

251. In those circumstances, it is necessary to set out that evidence in some detail. Before the short break, his evidence was as follows:

> “I asked you and suggested to you, that it's clear that request 37 covered the B0 tests. It might have covered other tests as well, but it covered the B0 tests, and you knew that.
>
> A. Well, I think in 2007 I'd completely forgotten the e-mail of Julien Berthon, but I remember very well the expert report which I've just described.
>
> Q. We'll come to that in a moment, but if you could just answer my question.
>
> A. But you're asking whether the unsuccessful tests had to be disclosed.

> Q. I'm asking you whether you accept that this request clearly covered the B0 tests, as you appreciated at the time, that is in September 2007.
>
> A. I thought at the time that we were replying with the whole of the report of the 2320 trials. I'm very surprised to see this request because CAT had all the results, including those of B0-2. They'd had them from between 1st July and 12th August, so they were asking them for a second time.
>
> Q. You're saying that CAT had been provided with the B0 test results?
>
> A. Only B0-2. They were the only ones which were useable."

252. The reference to CAT having received the results between 1 July 2005 and 12 August 2005 was evidently a suggestion that all the B1-B5 results had been sent to CAT at that point, something M Le Tallec said again at another stage of his evidence. I am not sure that there is any documentary evidence to support that suggestion, but it is not necessary to determine that issue, since it is not suggested CAT received the B0 results.

253. The reference to B0-2 was to the graph which formed the comparison with the finite element analysis included in the Technical Solution. On one view, it might be said that by this answer he was accepting that he had appreciated that the B0 tests should be included, but his previous answer was that he had completely forgotten M Berthon's email (which on the findings I have made was the only occasion upon which he had received the B0 results). In my judgment, care must be taken to distinguish between his evidence as to what he thought at the time (i.e. that he had only thought about the B1-B5 results, to which M Chapot's expert report had referred and had forgotten the Berthon email) and his evidence about what he thinks now (which was fairly obviously the context in which he expressed the surprise in the last answer "I'm very surprised to see this request").

254. That his evidence was that, at the time, he had thought that the only test results which needed to be disclosed were the B1-B5 results appended to M Chapot's expert report, was borne out by his evidence after the short break:

> "Q. …Were the B0 test results sandwich tests specific to CS1 carried out with panels supplied by CAT at the beginning of June 2005?
>
> A. If I can just reiterate, all I can do is reiterate my reply. I thought that, certainly because of the information I had, that the B1-B5 tests replied to the question, given the information I had at the time, and that the trial could certainly be used -- the tests could certainly be used.
>
> Q. Are you telling my Lord that you were told, at the time, in September 2007 that the B1-B5 tests were tests carried out with panels supplied by CAT?

A. This was confirmed in, primo, by the expert report number 2 from the arbitration –

Q. You're referring to Mr Chapot's report?

A. -- as well as research conducted by Sandrine at the time of the exchange of documents.

Q. Are you referring to Mr Chapot's report?

A. Yes.

MR JUSTICE FLAUX: He's referring to the passage which talks about the tests carried out on samples provided by the yards -- by the yard, and the test being 2320 and 2397, which you asked Monsieur Chapot about, which again is a very unusual phrasing in the document. But I think, do I understand you correctly, you thought that the B1-B5 tests had been carried out on CAT panels; is that right?

A. (In English): Absolutely.

MR HIRST: Who told you that? He said "absolutely".

MR JUSTICE FLAUX: He said "absolutely" in to answer my question, but Mr Hirst's question was who told you, or was it something that you assumed?

A. I read the report of Karim Chapot in detail. I think it dated from July, so it was still very fresh in my mind, and Sandrine Gegauff reached the same conclusion in researching the documents, so I did not attempt -- so I did not try anything else because the issues seemed clear to me at that point.

MR HIRST: So when you read Mr Chapot's report, you were led to believe, were you, that the B1-B5 tests had been performed on CS1 panels supplied by CAT?

A. That's what I understood from Karim Chapot's report, but there's something surprising, or there was something which doesn't appear in the report the minutes of the trial 2320. Nowhere is it shown where the panels had come from. There's virtually no information as to the manner in which they were glued.

Q. But you believed, having read Monsieur Chapot's report, that the B1-B5 tests had been performed on CS1 panels provided by CAT?

A. Yes. It's a highly succinct sentence, and I would say that these tests were carried out using materials from the shipyard, and my memory, in accordance with shipyard procedures.

…..

> MR JUSTICE FLAUX: He's confirmed I think, that reading the words in paragraph 88, the first bullet point, beginning "Valider la Solution Technique", is what led you to believe that the 2320 tests were carried out on materials supplied by the yard and in accordance with the procedure adopted by the yard.
>
> A. Yes, and since Sandrine Gegauff came to the same conclusion, I admit that I didn't delve in any further."

255. I have quoted extensively from his evidence in fairness to M Le Tallec, in view of the seriousness of the allegations made against him. What is clear from the passage I have quoted is that his evidence was that, at the time, he had forgotten about M Berthon's email of 29 September 2005, that he had read M Chapot's expert report in detail, that he believed, having read the passage I have quoted above, that the B1-B5 tests had been carried out on CS1 panels supplied by CAT and that, in consequence, he had not made any further internal enquiry within GTT which would or might have revealed the B0 results.

256. There remains the question whether I accept that evidence, or, as Mr Hirst invites me to do, reject it and conclude that M Le Tallec had remembered the B0 results at the time and made a deliberate decision not to disclose them, because they were awkward for GTT. As I have said, I formed a fairly favourable view of M Le Tallec and I accept his evidence. As I have already held, M Le Tallec had not been party to any decision made by M Dhellemmes in June 2005 not to disclose the B0 tests to CAT, so that, contrary to Mr Hirst's submissions, at the time that M Le Tallec was considering these disclosure requests in September 2007, there was no reason for him to be deliberately concealing the B0 tests because he was locked into a deception started in June 2005.

257. Furthermore, as I have also already held, M Le Tallec had not known about the B0 tests or results until M Berthon's email of 29 September 2005 and therefore had less reason than others (such as M Chapot) to recollect them two years later. The email did not of course say anything about any decision by GTT not to disclose the tests to CAT. I accept that at the time of the disclosure exercise M Le Tallec had forgotten the email. I also accept that when he read M Chapot's report and particularly paragraphs 88 and 89, he thought that the B1-B5 tests had been carried out on CS1 panels supplied by CAT and that those were the totality of the 2320 test results. Indeed, in my judgment, that is what anyone reading those paragraphs who did not know about or had forgotten the B0 results would have thought. I also accept that M Le Tallec did not know that the B1-B5 tests had been on Mark III panels until earlier this year.

258. In those circumstances, I do not think that there is any question of M Le Tallec having acted dishonestly in putting forward the response to Request 37. However that still leaves the question whether M Chapot and M Dhellemmes (both of whom were aware that the B0 tests had been withheld from CAT and therefore would have had a motive for perpetuating the deception in the context of the arbitration) were aware that this response was being given to Request 37. If they were aware, then it seems to me Mr

Hirst would be right in submitting that they knowingly allowed a misleading response to be provided.

259. M Chapot's evidence in his witness statement and before me was that he was not involved in August and September 2007 in dealing with CAT's disclosure request. In relation to the email from Mme Carzon and Mlle Gegauff of 27 August 2007 attaching the spreadsheet with their draft responses to CAT's document requests, although he appreciated that there had been a column for his comments, his evidence was still that he was not involved:

> "I wasn't involved at all. I know that on the -- in the Excel spreadsheet there was a [column for] me, but I put every trust in Sabine and Sandrine. The spreadsheet was gigantic, and I, given the workload I had, I was incapable of taking on this work.
>
> Q. You're right to bear in mind the Sabine and Sandrine schedule, but just taking a step back from that, more generally, the dealing of the disclosure requests was something that Monsieur Le Tallec was essentially in charge of, not you; is that right?
>
> A. What I can tell you is that I was in no way involved with that part. A priori, Jean Le Tallec was the senior management who was in charge."

260. In one sense that evidence is difficult to accept, since the email clearly invited him to examine the spreadsheets and provide comments and he was one of the people involved with the relevant technical skills. There was also Mme Carzon's evidence about the draft responses being discussed at a meeting with her superiors (who would have included M Chapot) but, understandably, she could not give evidence that any particular response (let alone that to request 37) was specifically discussed at that meeting. On balance, I accept that M Chapot did not examine the spreadsheet or focus on the proposed response to Request 37 and so did not appreciate that that response was misleading in failing to disclose the B0 results.

261. Mr Hirst put to M Dhellemmes that he had known about Request 37 and appreciated that the proposed response was misleading. His evidence was that he was not involved in the disclosure process; he left it all to Mme Le Tallec as in-house counsel. Although Mr Hirst invited me to disbelieve this evidence, it does seem to me unlikely that, having delegated the conduct of the arbitration to others, including his deputy, M Le Tallec, M Dhellemmes would have been involved at all in the disclosure process.

262. Furthermore, by this stage M Dhellemmes was towards the end of his time at GTT. The shareholdings were in the process of being sold, which was finalised in November 2007. He left in January 2008, apparently in somewhat difficult circumstances, as he put it graphically himself in evidence, he was "beheaded". Accordingly, I suspect that he had other things on his mind than the disclosure process in the arbitration.

263. It follows that, although the answer to Request 37 was misleading and inaccurate, there is no question of those responsible for formulating it, Mme Carzon, Mlle Gegauff, M Le Tallec and the lawyers, having appreciated that it was misleading and inaccurate. Accordingly, there was no fraud by GTT in relation to the disclosure exercise, so far as the answer to Request 37 is concerned.

Alleged fraud in relation to M Chapot's evidence

264. However, there remains the question whether M Chapot (and through him GTT) deliberately concealed the B0 results from CAT and the tribunal and deliberately misled CAT and the tribunal. The starting point for consideration of this issue is the expert report filed in July 2007 which M Chapot wrote, paragraphs 88 and 89 of which led M Le Tallec to believe that the B1-B5 tests under test programme 2320 had been carried out on materials supplied by CAT. As I have said, that is what anyone reading those paragraphs and the test report annexed to the expert report would have thought.

265. When Mr Maclean put to M Chapot in cross-examination that these paragraphs were communicating to the reader that the 2320 tests were particularly useful or interesting, because they involved materials actually used by the shipyard, M Chapot was unable to face up to this obvious fact:

> "Well, you have to be very watchful when you read this. When I say "materials used by the shipyard", and I'm talking about a validation of design, I have to have sound properties, and therefore, it was necessary to have the same type of foam, in the event Hankuk, and the same type of rigid Triplex, and also the rigidity of flexible Triplex, which were, in fact, representative of the situation. So what you have to understand is that when you look at the design, you're looking at the stresses and the stresses depend upon the type of materials used, in terms of rigidity.
>
> Q. Can we look at the next paragraph?
>
> A. Just let me finish. In my document, I wanted to stipulate that it was good materials which were used for the design."

266. In my judgment, this response was blustering and obfuscatory. There is nothing in paragraphs 88 and 89 of the expert report to suggest that the materials used were merely representative of the CS1 system. On the contrary, the impression created is that the materials used (including the panels) came from CAT. M Chapot had been involved in the ordering of the Mark III panels from Hankuk and he must have known at the time he wrote this expert report that it was the Mark III panels from Hankuk, albeit altered to replicate the CS1 geometry, which had been used in the B1-B5 tests.

267. Although, for the reasons I have given earlier, I accept that Mark III panels altered in that way did produce a sandwich sample which was representative of the CS1 system, what was said in paragraphs 88 and 89 of the expert report was still misleading. The honest and open thing to have written would have been that Mark III panels from

Hankuk had been used which had been altered to replicate the CS1 geometry, so that the sandwich samples were representative of the CS1 technology.

268. However, the problem with saying that, from GTT's perspective, would have been that it would almost certainly have led to CAT discovering about the B0 tests and the adhesive ruptures suffered during those tests. That would have been inconvenient for GTT in an arbitration where it was trying to demonstrate (including through M Chapot's expert report) that there was nothing wrong with the design of the CS1 technology.

269. M Chapot made a PowerPoint presentation to the tribunal and gave oral evidence before the tribunal in support of his expert reports at a hearing on 10 April 2008. The PowerPoint presentation which M Chapot prepared for that hearing was headed: "Replies to the alleged design defect." This sought to address CAT's allegation in the arbitration that the criterion of strength adopted by GTT of 3.5 MPa was insufficient and to demonstrate that it was more than sufficient, because it was three times the shearing stress encountered on board the vessel of 1.2 MPa. The PowerPoint presentation also described the sandwich tests, stating that they were representative of the stresses encountered on board the vessel.

270. On page 12 of the presentation was a graph showing the stresses imposed during cooling down and at the point of rupture on a sandwich sample. This was in fact the graph of test B1.5 from the B1 tests. It was headed; "Typical result of Test leading to the Technical Solution". At the bottom of the graph in red capital letters was written: "Tests carried out on samples made by CAT during the development of the Technical Solution, which are therefore representative." Imposed on the original graph were red and green arrows, the former representing the "area of utilisation" (in other words the levels of stress in on board conditions) and the latter that the sample ruptured at a stress level four times greater, so that there was a safety factor of 3.

271. At the hearing on 10 April 2008, M Chapot described to the tribunal how he was going to demonstrate that the criterion of strength of 3.5 MPa was sufficient and that the safety factor of the CS1 technology was at least 3. He began by showing the tribunal a short film of how the containment system is subjected to stresses on board the vessel as the hull flexes in sea conditions. After the film was played, he stated:

> "This makes it possible to illustrate the stresses which operate on the level of the planes of bonding. As you have understood, the containment mass is attached to the hull of the ship. The hull will be deformed under the effect of the swell and, as it deforms, it will generate shearing stresses on the level of the assemblies. This is the first of the stresses."

272. Slightly later in his presentation, he produced two pieces of a sandwich sample which had been placed in the cryogenic enclosure and had ruptured, to show cracking of the foam and cohesive rupture of the bonded joint. When asked by the chairman of the tribunal about that, he said:

> "In this case, when the bond is made correctly, there should be cohesive rupture. If the bond is badly made, if you wait too

long, you get rupture of adhesive type which does not comply with our requirements."

273. He then posed the question as to what happens when you pull on the sample and demonstrated what happened by reference to the PowerPoint presentation, which he took the tribunal through, specifically by reference to the graph on page 12. This part of his evidence is of particular significance to the allegation by CAT that there was fraud in the arbitration because he deliberately misled the tribunal, so I shall quote it extensively:

> "What do you get when you pull on this sample? We shall have a graph. You are going to have movement. You are going to pull on the assembly and you are then going to extract movement and the associated stress. The more you pull, the more stress it takes to deform the assembly. This is easy to understand. It is like some sort of big elastic on which you are going to pull.
>
> So we are going to extract a graph and this is the graph which is given here.
>
> On the vertical axis you will have stress. This is the stress which passes on the level of the bond. On the horizontal axes you will have movement. These are the movements which are needed to deform your sample. And you will have a point here which corresponds to the effect of subjection to cold. When you put your sample in your enclosure and you block the whole assembly, there will be stresses which are due to subjection to cold. It is this point. Then you deform the whole assembly and you break it. You break at about 20 tonnes per metre.
>
> The levels of stresses which exist in normal conditions are about 7.5 tonnes per metre. Normal conditions are when the liquid is on the primary barrier. You are here, therefore on the red curve. It is the vertical red arrow which you see here on the left. This is the area of use. The green arrow, this is the area which you never use. The point here which is on the intersection between the discontinuous line and then the red arrow, this point here, it is what the ship will experience in the worst conditions. You must imagine that a wave which occurs every twenty years will come and cause very great deformation of your ship. You will find yourself there, on this point, on this level. It is the worst case. All that zone will never be used *(He shows the green arrow).* This is called the safety margin of the technology.
>
> You should know that part of these samples were made, some of them, from samples made by Chantiers de l'Atlantique in condition. In other words, Chantiers de l'Atlantique made their

> panels, and we then made the sample from the panels made by Chantiers. Therefore you are able to reproduce in reality all the imperfections related to their making.
>
> One point about this sample we keep talking about. Samples are made, but they must be representative. You have seen that it has a geometry which is very close to what there was on board the ship. You should know that this sample, which was designed in the 90s, has received the approval of all the Classification Societies: Lloyd's Register, Det Norske Veritas, Bureau Veritas, American Bureau of Shipping. It is now considered a reference, a representative sample. All the Classification Societies agree on this subject."

274. Before proceeding further, in my judgment the last two paragraphs I have quoted contain the clearest possible representation by M Chapot that the sandwich samples had been made from panels supplied by CAT, which was why the samples were representative of what happens on board the vessel. This was the same representation as was made by the statement in red capital letters at the bottom of the graph which M Chapot was showing the tribunal at this point in his presentation.

275. He then turned to page 13 of his PowerPoint presentation which showed a photograph of sample B1-3, another photograph showing green glue on the rigid Triplex upon rupture (i.e. cohesive rupture) and a third photograph of sample B3-1 showing cracking in the foam. The text on that page stated: "in the case of good bonding, when there is a rupture, the foam cracks. That was never seen on M32" and then the next text was in red: "which demonstrates that the ruptures on M32 are due to poor fabrication".

276. In presenting this page to the tribunal, M Chapot stated:

> "A typical test result.
>
> In the case of a good bond, when there is cohesive rupture, it can be seen well here on the level of the figure at the top on the right, there is indeed a cohesive rupture, there is indeed the presence of green colouring on the rigid Triplex, well, cracks can be seen in the foam. On all our samples, without exception, when these samples we keep talking about are pulled and there is a good bond, there is cracking in the foam. And it turns out that on board the ship cracking of this type was never seen when there was the incident. It has never been noted.
>
> This demonstrates that the ruptures of the M32 are due to poor execution."

277. Page 14 was headed: "What CAT does not dispute" and had two sets of photographs of what was described as "good bonding" and "bad bonding". Good bonding showed cohesive rupture stating that the rupture appears in the adhesive. Bad bonding showed adhesive rupture where the rupture appeared between the adhesive and the underlying structure.

278. M Chapot's evidence about this during his presentation was as follows:

> "Another point which is essential, in my opinion, about the notion of adhesiveness and cohesiveness. You have on the figure at the bottom, on the right, it is Exhibit C181 produced by Chantiers de l'Atlantique, a case in which the Triplex is particularly white. There it says "adhesive rupture". The rigid Triplex is of light grey colour. The flexible Triplex is of green colour. This is, precisely, an illustration of a bad bond, which GTT does not accept in terms of quality. What GTT requires is cohesive rupture. Yet it turns out that on board the ship all the ruptures without exception are ruptures of adhesive type. All the ruptures without exception are non-compliant with our requirements."

279. Page 16 of the PowerPoint presentation stated again: "What CAT does not dispute" and had three bullet points: that the ruptures observed on board M32 were adhesive, that GTT requires cohesive ruptures and that the modes of rupture on board are non-compliant with GTT's requirements. At the bottom of the page again red in capital letters, it stated: "This is proof that it is not a design problem, but rather a problem of fabrication." In his evidence to the tribunal during the presentation, M Chapot read out these points and stated: "This is irrefutable evidence, this evidence is enough to demonstrate that there is no design problem but it is indeed connected to a problem of execution".

280. When M Chapot was asked in cross-examination before me about his presentation to the tribunal, after a certain amount of equivocation, he accepted that the sandwich samples and the results he gave to the arbitrators based upon them had been critical to his ability, which had proved successful, to demonstrate to the tribunal that CAT's claim that there was a design defect in the CS1 system was wrong.

281. I agree with Mr Hirst that M Chapot's reaction to the irrefutable fact that he had repeatedly told the tribunal that test programme 2320 had been carried out on panels supplied by CAT and, for that reason, were representative of what happened on board the vessel, to which he obviously had no answer, was to seek to deflect the questioning with long discursive speeches on matters other than what he was being asked about, despite reminders to answer the question he was being asked.

282. His evidence about the presentation to the tribunal and, in particular, the graph at page 12 of the PowerPoint presentation was particularly evasive, in that he sought to suggest that this was an example of a sandwich test where CAT had made the bonded joint (i.e. from test programme 2397, which was in fact some time after the Technical Solution, as M Chapot must have known).

283. It is difficult to convey how thoroughly evasive that evidence was without quoting from it extensively:

> Q. So if we then go back to your evidence...[in] the paragraph beginning at line 17. C5/147, "Il faut savoir" [i.e. where in the presentation by reference to the graph, he told the tribunal the sandwich tests had been in samples supplied by CAT].

A. Yes, exactly. I remember very well.

Q. What you said there did not apply, did it, to the tests and results of the tests that you went on immediately to present? You were telling the arbitrators that the results you were able to present, at least some of them, were made from samples that came from CAT and which had been tested by GTT, when, in fact, as I'm sure you'll now accept, none of the results from the B1-B5 series had been carried out on samples from CAT at all?

A. So, I need to explain now. I have to explain a bit, without making a lecture, but explaining the situation. So here, what we write in K11/88, page 12, in French is "resultat typique". In English, if you translate that, it's "typical result". So here we have one case, one sample, my Lord, provided it's for illustration only. It's an illustration just to provide a kind of curve you have and when you take B1-B5, but also all the samples that were performed after that, you have always the same curve. So really, independent of the way you bond, typical result is this kind of curve and you have between higher than 19 kilonewton, my Lord, that's what I wanted to say.

MR JUSTICE FLAUX: That's not what counsel is asking you. What counsel is asking you is about what you said to the arbitrators between lines 17 and 21 on C5/147. What was being put to you was that what you told the arbitrators there is that some of the samples, or that the samples I think "en partie", in part, were samples where Chantiers De L'Atlantique had provided the panels, and you had made the samples from the panels provided by Chantiers De L'Atlantique, and that was why, as you put it, you were able to reproduce, in reality, all the imperfections which were involved in their production, and that's what you said, isn't it?

A. Yes, so I confirm that we had some samples taken by -from the shipyard, where the bonded joint was performed by the shipyard and we tested those. I confirm that. So it's not B1-B5. The B1-B5 is result obtained from all that, but we had many other samples that were performed -- well, the bonded joints were performed by the shipyard and were tested in our laboratory, and here, after that, we gave typical result on these kind of sample, and there are no difference between what was obtained in B1-B5, of what was performed by Chantiers De L'Atlantique. We had raised the same kind of strength. That's what I wanted to say.

.....

MR MACLEAN: Mr Chapot, back to C5/147, please. In that paragraph we looked at before lunch, beginning "You should know ..." Take bundle K11, which you should still have, and go

back to page 88 [i.e. the graph at page 12 of the PowerPoint presentation]. This result, which we know comes from the B1 series, is presented by you as being a test carried out on a sample made by CAT during the development of the Technical Solution, and which is therefore representative. Do you see that, at the bottom of page 88, if you turn it through 90 degrees, in the box below the graph? Those were your words, weren't they, in your presentation?

A. Yeah, it's my work.

Q. They weren't true, were they?

A. Okay, they are fully true. What I say, if I come back to the paragraph, I say in French (French spoken). We have to say that these sample were performed, in part, for a certain amount of those(?) samples from Chantiers De L'Atlantique samples so we really wanted to say that we had samples performed by us and samples performed by Chantiers, and here in page 12, when you look at the title, it's typical result from a test to obtain the Technical Solution. So it's typical result. So here, it's B1 someone -- one sample, it could have been another one. All the samples -- the principle, my Lord, is all the samples provide the same curve so --

MR JUSTICE FLAUX: You're not being asked that. That's why I said to you earlier on to listen to the question you're being asked and try to answer the question being asked. What you're being asked about are the words at the bottom of page 12, K11/088. That is what you're being asked about: "Essais effectues a partir d'echantillons realises".

MR MACLEAN: Look at those words. You've agreed that those are your words in your presentation and I suggest to you that they marry up very well with what you told the arbitrators at C5/147, and there are only two slight problems. One is the words aren't true, and secondly, the only tests that were done on samples supplied by CAT were the B0 series, about which you're very careful to say nothing.

A. Okay, so again, I totally disagree. It was for a typical result, and when I wrote "Essais effectues a partir d'echantillons realises par CAT", it's that we had performed some part of the samples, so that's what I explained during the arbitration, that part of the test were performed from sample performed by CAT. So that's what I wanted to say. So there's nothing wrong on what I said.

Q. What about the last two words in the box at page 88?

A. So here, by me saying it's representative, it means it's representative of what was done by the shipyard.

Q. What you're saying is representative because these were carried out on samples made by CAT. That made it all the more powerful evidence to disprove the assertion that CAT were making. That was your whole purpose in presenting these tests to the arbitrator.

A. The objective, by presenting, was to explain to the arbitrators that we had a significant amount of samples that were performed by CAT and that were tested in our laboratory, and that provide results that were similar to what we did from samples performed in our laboratory. The results were similar, so that's really what I wanted to say in my presentation and what I demonstrated.

Q. You never gave the arbitrators any clue of the existence of any of the B0 results, did you?

A. No, not at all. We have not provide any results regarding B0 to the arbitration.

Q. You obviously knew about the B0 results?

A. Absolutely. I knew about the B0 results.

Q. So that was a deliberate choice on your part not to tell the arbitrators about those?

A. B0 result, as I explained in my document, were totally -- the result were totally irrelevant. I could explain why it was irrelevant. So considering that technically, those results were irrelevant, it would be totally from our side -- on an engineering point of view, and technical point of view, it would have been totally irrelevant to present this result to the arbitrators.

Q. I think it follows from that that the answer to my question was, "Yes, it was a deliberate choice, it wasn't an inadvertent omission"?

A. Yes, because we had very good technical reasons. It was a deliberate choice not to present these results.

284. It is striking that in that passage, M Chapot did admit that there had been a deliberate decision not to disclose the B0 results to the tribunal. He claimed that this was because the B0 results were irrelevant. I agree with Mr Hirst that that evidence was incredible. How M Chapot could have maintained that the results were irrelevant, when GTT had used the graph from B0-2 to demonstrate the correlation with finite element analysis in the documents comprising the Technical Solution, defeats me.

285. The truth is, not that the B0 test results were irrelevant, but that they were awkward for GTT, in that they showed adhesive ruptures in laboratory conditions, such as had occurred on board the two vessels. It may very well be that the BO results could be explained or discounted, because, for example, they were the first tests GTT had performed on such large samples (as M Devillechaise said in evidence), so there may have been bonding problems due to inexperience of staff. Equally it may be that they could be explained or discounted as limited examples of adhesive rupture and, as M Le Tallec said, GTT did experience adhesive ruptures from time to time, whereas the overwhelming majority of test results showed good bonding and cohesive rupture. However, the honest and open way to present the case to the tribunal would have been to disclose the B0 results and then seek to explain or discount them, as I have said.

286. The evasion in M Chapot's evidence about his presentation to the tribunal did not end there. When faced with the fact that his own graph at page 12 of the PowerPoint presentation was referable to sandwich tests carried out before the Technical Solution, he sought to suggest that the heading to the graph (which clearly referred to sandwich tests carried out before the Technical Solution was signed, as demonstrated by the fact that the graph was for one of the B1 samples) was a reference to all the work, all the testing, carried out before and during the Technical Solution. He refused to accept that the sandwich tests carried out under test programme 2320 were the only ones carried out without using the Technical Solution (i.e. cold plasma treatment and hot pad curing), but there is no evidence of any other such tests before the Technical Solution was adopted.

287. Again it is necessary to set out his evidence in some detail to convey how evasive it was:

> "Q. It's correct, isn't it, that the only tests which match the description in the box at the bottom of K11/88 is the B0 test series?
>
> A. Not at all.
>
> Q. Those were the only sandwich samples carried out, whether during the course of the Technical Solution --or certainly up to the Technical Solution, the only sandwich tests carried out on samples made by CAT, or on samples supplied by CAT? That's what everybody else has said so far.
>
> MR JUSTICE FLAUX: Before the Technical Solution?
>
> MR MACLEAN: Before the Technical Solution.
>
> MR JUSTICE FLAUX: Because this particular –
>
> A. So what we call -- just for me to understand the question, what we call the Technical Solution is -- because the Technical Solution lasts in 2005 and beginning of 2006, we worked on the Technical Solution and, even in the writing in the document of the Technical Solution, it was said that we had further study to be performed and specific tests to be done and sandwich

samples to be done. So what I called the Technical Solution is all the testing performed not only at the signature of the Technical Solution but all the tests that were due to be performed.

MR JUSTICE FLAUX: No, what counsel is asking you about, not the tests -- because Monsieur Devillechaise told me that there were other sandwich tests after the Technical Solution was signed on sandwich samples where the actual panels -- sorry, the sandwich was provided by CAT, pre-prepared, before -- and, sorry -- and all that GTT did was to cut it. Right?

A. Yes.

MR JUSTICE FLAUX: What counsel is asking you about are sandwich tests before the Technical Solution was signed, which is what this graph is talking about, because it talks about "pour aboutir à", in another words, to arrive at the Technical Solution. So this is something that was done before the Technical Solution was signed.

A. Okay, so when I wrote the document -- just for me to explain -- when I wrote the document, what I called the Technical Solution was not the work performed when it was signed but all the work that were to be performed. So we had a lot of work performed during 2005 and 2006, so it is -- the definition of the Technical Solution is when it was signed, the definition then. Indeed, we had only B0 and B0 one performed, but when I wrote that, it was what we call -- what I considered a Technical Solution is all the work performed during the Technical Solution, and all the work performed during the Technical Solution was not only B0 and the first B1 performed, but all the testing that was done to demonstrate that the Technical Solution was fit for purpose, that the Technical Solution provides enough confidence for the vessel to be repaired."

288. Mr Landau submitted that, although this evidence was unimpressive in that, as I put it, there was a lot of "ducking and weaving" by M Chapot, it does not follow that he was dishonest in his presentation and evidence to the tribunal. Mr Landau urged me not to reach the extreme conclusion that M Chapot was dishonest, given the impact it would have on M Chapot's reputation and career. Of course, that is a matter which I have borne well in mind and it is not lightly that I have reached the conclusion which I have. However, I have formed the very firm view that M Chapot's evidence both before the tribunal and before this court was dishonest.

289. In terms of his evidence before me, both at the time it was given and in re-reading it for the purposes of writing this judgment, I considered that it represented a masterclass in evasion and obfuscation and not the evidence of an honest witness.

290. I have also concluded that, in his second expert report, his PowerPoint presentation and his oral evidence to the tribunal, he deliberately and dishonestly concealed the B0 tests and results from the tribunal and gave them the deliberately false impression that the B1-B5 tests had been carried out on CS1 panels supplied by CAT, which was why they were representative of the CS1 containment system on board the vessels.

291. This went beyond a witness for one of the parties to an arbitration lying to the tribunal and committing perjury, the scenario which Aikens J at [81] of **Elektrim v Vivendi** [2007] 1 Lloyd's Rep 693 considered would not be sufficient to establish that the Award was obtained by fraud. This was serious deception of the tribunal by the head of the Research and Development Department of GTT who had been deputed to present GTT's technical case to the tribunal. That is fraud by GTT as a party to the arbitration for the purposes of section 68(2)(g) of the Arbitration Act.

G. Causation: would disclosure of the true position probably have affected the result of the arbitration?

292. For the reasons set out in the previous section of the judgment, I have reached the firm conclusion that, in M Chapot's evidence to the tribunal, there was fraud in the arbitration itself on the part of GTT. However, it does not follow that CAT's application succeeds. CAT must still establish the element of causation, that the disclosure of the true position would probably have affected the result of the arbitration. It is only if CAT can establish that disclosure of the fraud would probably have affected the result that, pursuant to the applicable legal principles which I set out at in section C above, it will have shown either that the Award was obtained by fraud or that this has caused CAT substantial injustice.

293. Mr Hirst submitted that disclosure of the true position to the tribunal in the course of M Chapot's presentation would not only have involved the tribunal being told about the B0 tests with the adhesive ruptures that had occurred, but also that GTT had made a deliberate decision not to disclose those test results to CAT at the time and that the B1-B5 tests had in fact been performed on sandwich samples made up from Mark III panels. He submitted that this would have caused the tribunal to view GTT's whole technical case with considerable scepticism. He made the point that, contrary to what was being submitted now, these tests were regarded as of considerable significance by GTT at the time and in validating the design for the purposes of the arbitration. Mr Hirst submitted that if the truth had been revealed, it would have been a "scene changer", changing the whole focus of the arbitration.

294. He also made the perfectly valid point that even GTT's own independent expert in the arbitration, Professor Barquins, had not known the true position, being unaware of the B0 tests and adhesive failures and unaware that the B1-B5 tests had been carried out on Mark III panels supplied by Hankuk. Mr Hirst relied upon the fact that, in his evidence before the court, Professor Barquins was emphatic that, if he had known about the B0 results and adhesive ruptures, he would have brought them to the attention of the tribunal. Mr Hirst submitted that this would have meant that the central support to GTT's technical case in the arbitration provided by Professor Barquins' expert report would have been removed, or at the very least that expert evidence would have been discounted by the tribunal.

295. Whilst Mr Hirst accepted that it was not possible to say exactly what the tribunal's conclusion would have been (and indeed for the court to do so would be to usurp the function of the tribunal), he submitted that, putting it at its lowest, the result of the arbitration would probably have been affected and, thus, the relevant legal test is satisfied.

296. Although there is considerable force in Mr Hirst's submissions in the light of the conclusions I have reached about deliberate concealment of the B0 tests and M Chapot's deliberate misleading of the tribunal, on reflection I am unable to accept those submissions. I consider that, even if the true position had been disclosed to the tribunal, it would not, in all probability, have made any difference to the decision of the tribunal. I have reached that conclusion for a number of reasons.

297. First, although (contrary to some of Mr Landau's submissions and as M Chapot accepted in cross-examination) the B1-B5 test results were critical to M Chapot's presentation to the tribunal to demonstrate that CAT's claim that there was a design defect was wrong and disclosure of the B0 tests would inevitably have detracted from that presentation, there were a number of other tests subsequent to B0 which demonstrated the ability of the CS1 system both to withstand the stresses which would be encountered on board the vessels and the strength and effectiveness of the bonding. Quite apart from the B1-B5 tests themselves (on some twenty four samples), there were tests on ten more samples in the 2397 test programme which demonstrated cohesive ruptures and thus good bonding. In addition there were the shear tests on the 400 50 x 50 samples, the results of which were broadly satisfactory, certainly in the context of the present point of demonstrating good cohesivity of bonding.

298. It seems to me that, realistically, the fact that those subsequent tests had produced good bonding and cohesive ruptures militates significantly against the reason for the adhesive ruptures in the B0 tests having been a defect in the design. In that context, the evidence of M Boissier is of some significance. He said that if GTT had told CAT that there had been adhesive failures in the first set of tests it had carried out on sandwich samples made from a CS1 panel supplied by CAT, he would have wanted more tests carried out on other sandwich samples and if those tests had been successful, there would not have been a problem. That evidence suggests that M Boissier at least would have thought that successful subsequent tests would point away from any design defect. I cannot really see why the tribunal should have reached a different conclusion.

299. Second (and following on from that first reason as to why I have concluded that the disclosure of the true position would probably not have affected the result of the arbitration) although the reason for the adhesive failures is not clear from the material which GTT has disclosed, and some problem with the design is a possible explanation of the adhesive failures (and was certainly thought by GTT at the time to be a possibility, hence the decision not to reveal the tests), on reflection, particularly in the light of the successful outcome of the other tests and the subsequent history, I consider a defect in the design is the least likely explanation.

300. I have reached that conclusion, notwithstanding that I have rejected any suggestion that it was dirt or contamination of the panels supplied by CAT and notwithstanding that the concealment of the results from CAT indicates that GTT was obviously

concerned at the time that the adhesive ruptures might be due to some problem with the design. It seems to me that, given M Devillechaise's evidence about the problems encountered in the B0 tests, a far more likely explanation for the adhesive ruptures than defect in design is something to do with the tests themselves, such as the inexperience of the operators applying the glue. Furthermore, as M Le Tallec said, GTT did encounter adhesive failures from time to time, which may be the reason why he does not seem to have been shocked by the B0 results when he first saw them attached to M Berthon's email of 29 September 2005.

301. Furthermore, that the adhesive ruptures encountered in the B0 tests were not attributable to a defect in design is borne out in hindsight by the fact that, as M Malvos pointed out, after the Technical Solution, CAT did successfully install the CS1 containment system in the three vessels and they have now been in service for some years without any apparent problems. Those are matters the tribunal would have been bound to take into account and provide a strong indication that the tribunal is unlikely to have reached a different conclusion.

302. Third, as Mr Landau pointed out, even if the tribunal had known about the adhesive ruptures in the B0 tests, they would not have had the devastating impact for which Mr Hirst contends. The tribunal was aware of adhesive ruptures and failures in bonding in tests on samples conducted by GTT. This was a matter which CAT relied upon as demonstrating that Triplex was difficult to bond in laboratory ideal conditions, let alone onboard the vessels. As Mr Gomart said in his report before the tribunal: "it has been evidenced that a significant number of tests had been failed by GTT, even though they were performed in ideal laboratory conditions." The tribunal rejected the case put forward by M Gomart, both in its Award and in dismissing an application by CAT for rectification of the Award. It seems to me unlikely in the extreme that this set of additional adhesive ruptures in samples would have led to a wholesale volte face on the tribunal's part, so far as CAT's technical case is concerned.

303. Fourth, although, as I have found, GTT deliberately concealed from CAT and the tribunal the fact that the B1-B5 tests were carried out on samples made up from Mark III panels, for the reasons I have given, accepting the evidence of M Malvos and Mr Duncan, the sandwich samples made up using Mark III panels adapted to reflect the CS1 geometry were representative of the CS1 system and technology. If it had emerged before the tribunal that GTT had used Mark III panels rather than CS1 panels supplied by CAT, I do not consider that the tribunal would have concluded that those panels suitably adapted were not representative of the technology.

304. Of course as Mr Landau emphasised, it was CAT's case before the tribunal that Mark III and CS1 technologies are identical so far as the composition of the secondary barrier is concerned. Even assuming in CAT's favour that, if it had known that the B1-B5 tests were carried out on Mark III panels, CAT would have argued that Mark III panels were not representative of CS1 technology, presumably GTT would have sought to counter that suggestion by calling the same evidence from Mr Duncan as he gave before me (and possibly by calling M Malvos as well). I see no reason why the tribunal should not have accepted such evidence in the same way as I have.

305. Fifth, although much is sought to be made forensically by CAT of the fact that the tribunal would have learnt that GTT had deliberately concealed the results of the B0 tests from CAT in 2005, it seems to me that, on closer analysis, this point is much less

significant than might appear at first sight. Whilst it is true that this might have caused the tribunal to look more critically at GTT's contentions and technical case in the arbitration, CAT has been unable to demonstrate before me that this particular concealment was the tip of an iceberg of wider concealment and duplicity.

306. Sixth, whilst CAT sought to emphasise in its submissions the importance of the 2320 test results in validating the design immediately prior to the Technical Solution (which I accept), any suggestion that CAT would not have entered the Technical Solution, if it had known about the B0 results, has to be approached with caution. It may be that the B0 results would have delayed finalisation of the Technical Solution, but as it seems to me, it is unlikely that they would have led to the Technical Solution being aborted altogether.

307. The reality is that if GTT had explained to CAT in an honest and open way the teething problems with the B0 tests, as they were explained to the court by M Devillechaise, and then demonstrated the B1-B5 results showing good bonding with cohesive ruptures and the shear test results, in all probability CAT would have agreed to the Technical Solution. M Boissier's evidence, to which I have already referred, bears out this conclusion. In those circumstances, it seems to me inherently improbable that the tribunal would have concluded that there was a fundamental problem with the design of the CS1 technology.

308. Finally, it seems to me that CAT's case that disclosure of the B0 tests and the previous deception would probably have affected the result of the arbitration faces an additional fundamental and, ultimately, insuperable difficulty. This is that, in concluding that GTT was not liable to CAT, the tribunal decided that, even if CAT could establish the design fault or the economic fault which it alleged, CAT could not satisfy the test imposed by French law as to the circumstances in which a licensor will be liable to a licensee for a design fault or an economic fault.

309. This emerges clearly from [1077]-[1080] of the Award, which I have quoted at [36] above. It seems to me that the critical passage for present purposes is at [1078]:

> "It is only possible to consider a technology to be affected by a design fault when it can be established that it is technically unusable or extremely difficult to use. This is not the case here. Even if we were to accept CAT's argument, we would have to note that CAT acknowledges that it was able to implement the technology and finish construction of the vessels in accordance with this technology, after some technical modifications had been made to it. Consequently it is not possible to talk of a design fault."

310. In other words, the tribunal concluded that, even if it had accepted CAT's argument that there was a design fault, there was no liability on GTT under French law, because CAT was still able to implement the technology. This conclusion as I see it would have been the same, even if the true position about the B0 tests and the use of Mark III panels in the B1-B5 tests had been disclosed to the tribunal and even if that disclosure had led the tribunal to conclude that there was a design fault. That is because the tribunal would still have concluded that CAT could not satisfy the relevant high test as a matter of French law, precisely because CAT was able to

implement the technology after the Technical Solution, an inevitable conclusion on the facts, which would have been unaffected by the disclosure of GTT's deliberate concealment of the B0 tests and of the results of those tests.

311. For all those reasons, although I have concluded that there was fraud in the arbitration, I do not consider that CAT can establish that disclosure of the true position would have had an important influence on or would probably have affected the result of the arbitration. Accordingly, CAT cannot show that the Award was obtained by fraud or that it has suffered substantial injustice. On those grounds alone, the present application must be dismissed.

312. In those circumstances, it is not strictly necessary to consider the additional allegations made by CAT about the GDF documents, the AMDEC study and document 681, since it is accepted by Mr Hirst that, without CAT's main point about test programme 2320, those points would not in themselves mean that the tribunal would in all probability have reached a different conclusion. However, since they were fully argued and involve serious allegations against GTT, I will deal with them, albeit perhaps less extensively than I might have done if they were in any sense determinative of the application. I will deal first with GTT's case of issue estoppel, which is logically antecedent to any of CAT's arguments in this context.

H. Issue Estoppel

313. Even if I had thought there was any merit in CAT's contentions about the GDF documents, the AMDEC study and document 681 (which for the reasons set out hereafter, I do not), I agree with Mr Landau that, since CAT has already raised the allegations of fraud in relation to those documents before the French courts which have given judgment against CAT, CAT is barred by issue estoppel from raising those allegations.

314. The relevant principles of issue estoppel were considered recently by Hamblen J in **Yukos Capital v OJSC Rosneft Oil Company** [2011] EWHC 1461 (Comm) at [42]-[69]. In that case he was applying the principles by reference to a previous decision of the Court of Appeal of Amsterdam. One particular point which Hamblen J dealt with was that it is of no relevance that the foreign court adopts a different procedure or a different rigour in its consideration of the evidence. This was a point raised by CAT in its Reply, although not pursued at the hearing before me. It would have been a hopeless point, for the reasons Hamblen J gave at [67]:

> "It is not relevant that a foreign court system applies different rules of evidence: so, for instance, it is irrelevant that the foreign court has admitted evidence which the English court would have excluded or *vice versa* (see the cases cited in *Dicey, Morris and Collins* at para. 14-152). Nor does it matter that the foreign court has a different procedure from the English courts unless this deprives the judicial process of the quality of substantial justice. Thus in *Brossiére v Brockner* (1899) 6 T.L.R. 85 at 86 Cave J dismissed a 'startling' attempt to impugn the judgment of a French Court of Appeal on that basis: "the only ground for such an allegation [that the proceedings were contrary to natural justice] appears to be that

> the practice differs from our practice. It is, however, hardly necessary to say that the practice of our Court is not the only or even necessarily the best method of arriving at justice…""

315. At the beginning of the hearing of the present application, it was proposed that the court would hear evidence from French law experts. However, that essentially related to whether, if this court set aside the Award, the French courts would pay any attention to that decision. However, as was accepted on both sides, that evidence was of no relevance to whether or not the previous decisions of the French courts gave rise to an issue estoppel, it not being suggested that that question could depend upon some concept of reciprocity on the part of the French courts. Accordingly, the expert evidence was not called.

316. Ultimately, the only point pursued by CAT at the hearing on issue estoppel was to the effect that the points about the GDF documents and the PU glue were raised before the French courts as standalone grounds for setting aside the Award, whereas before this court they are only relied upon in combination with the principal allegation in relation to test programme 2320, which was not raised before the French courts, because CAT had not discovered the relevant facts. CAT's case by the end of the hearing, although not fully articulated, was effectively that the questions: (i) whether those allegations, in combination with the one about test programme 2320 amounted to a fraud justifying a refusal to enforce the Award and (ii) whether there had been dishonesty or discreditable conduct in relation to those matters, were not questions which had been before the French courts and, therefore, no issue estoppel could arise.

317. I agree with Mr Landau that any such argument is hopeless. CAT cannot avoid the bar on re-arguing issues which it has fought and lost before the French courts by simply combining those issues with others or asserting that they have some relevance to a new allegation. If CAT's argument were correct, it would be very easy to circumvent the application of the doctrine of issue estoppel. In my judgment, CAT is estopped from raising the issues concerning the GDF documents, AMDEC study and document 681 before this court.

318. Nonetheless, as I have indicated, because the points about these various documents were fully argued and they involve serious allegations against GTT, I propose to make findings about the various allegations made by CAT.

I. Internal document 681

319. I propose to deal with CAT's case about internal document 681 first, since that involves some examination of the history of approval of PU glues by Bureau Veritas in 2003, some time before the events concerning the 2320 test programme, with which I have dealt earlier. Two points need to be emphasised from the outset in considering the merits of the allegations about document 681. The first is that, whatever may have been the chequered history of GTT's certification of PU glues, Bureau Veritas did issue an approval certificate having considered in full all the various test results for these glues.

320. The second is that this PU glue was only used in limited areas of the containment system on board the vessels, the ring zones or so-called "crapaudines" and there is no suggestion by CAT or anyone else that the bonding in those areas was defective or the

PU glue anything other than wholly effective. In those circumstances, one can see why this allegation is essentially limited to the suggestion that GTT concealed the existence of internal document 681 in order to avoid disclosing to CAT in the arbitration that GTT's procedures for approval of materials were lax.

321. In order to understand the context of the allegation, it is necessary to look at something of the history of the approval of the Bostik PU glue. There were two relevant glues, XPU 18018A/B and XPU 18411A/B. The former was faster setting, but otherwise they were identical. It was the latter which CAT actually used for bonding.

322. In March 2003, GTT provisionally approved XPU 18018 on the basis of a specification signed by M Michalski which set out the additional tests required for definitive homologation (approval). On 3 July 2003, CAT sent GTT a fax stating that the deadline for approval of the PU glues had passed and that CAT required the approval process to be completed by 11 July 2003, as it was planning to start installation on board in early October 2003. That deadline was not achieved.

323. On 17 July 2003, Mme Christine Cornelius, Materials Qualification Manager of GTT responsible for the approval of materials, sent an email to Bostik, pointing out that it was necessary to perform a number of counter-tests on the PU glues. Nevertheless, Mme Cornelius, who was about to go on holiday, recognised the urgency of getting the approval finalised. She prepared a draft approval certificate dated 18 July 2003, for signature by M Dhellemmes as President and Director General of GTT.

324. She attached two post-it notes addressed to M Le Tallec (evidently because M Dhellemmes was on leave) to the front of the draft, which read:

> "I have issued this certificate in case of need. One technical sheet is missing to date (taking into account our comments on 27/05/03) which should be part of the reference done for each product.
>
> I have had Bostik on the telephone this evening and they confirm that they recommend exclusive use of 18018 therefore the DE which comes off is concentrated on this type of bonding, the procedures recommended by B in their fax dated 08/07/03 not having, apparently, ever been tested by GTT."

325. Mme Cornelius left the draft certificate and the post-it notes in the in tray of her new boss, Mr Phillip Dempsey, before going on holiday the following day. He had joined GTT in May 2003 and had only taken over as manager of the materials department a few days earlier on 15 July 2003. As Mr Dempsey explained in evidence, the technical sheet referred to by Mme Cornelius in the first post-it note consists of technical information which would be supplied by the manufacturer and would not include tests by GTT. The draft certificate which Mme Cornelius prepared was addressed to the manufacturer Bostik Findley SA. In the heading "Reference documents", it referred to "GTT's Internal Document 681 and Internal Document 682". Evidently, these were documents intended to summarise the results of the various tests on the glues.

326. However, in fact, neither document was yet in existence (indeed it is unclear whether Internal Document 682 has ever existed in any form). Mme Cornelius did not explain to anyone else in GTT or leave a note saying that these Internal Documents had not yet been prepared. She did not give evidence before me and, although she has provided an interview to the Juge d'Instruction, she has not explained why she did not tell anyone at the time that the internal documents referred to in the certificate had yet to be prepared. Mr Hirst submitted that M Dhellemmes did know at that time that these internal documents did not exist, but I am satisfied that neither he nor M Le Tallec knew at the time the certificate was signed that the documents did not exist.

327. Mme Cornelius told the Juge d'Instruction that there had been a meeting at the beginning of July 2003 attended by herself, M Dhellemmes, M Le Tallec and M Tessier. She thought some of the test results were unsatisfactory and both she and M Tessier thought approval was premature. She said that others, including M Dhellemmes, were pushing for the glue to be approved. It seems likely that she prepared the draft certificate on the basis that she did not consider that all the necessary tests had been carried out on the glue, so that she was not prepared to accept responsibility for signing the certificate, which she felt should be signed by M Dhellemmes.

328. Having said that, there need not be anything sinister in Mme Cornelius thinking M Dhellemmes was the appropriate person to sign. Her boss, Mr Dempsey, was very new to the job. Furthermore, as M Le Tallec explained, historically when the company was much smaller, the seniority ran M Dhellemmes, then M Tessier then Mme Cornelius. M Dhellemmes had often signed approval certificates in the past.

329. M Dhellemmes' own evidence was that he was confident the glues could be approved, because he knew that the tests on the glues had been correctly performed and witnessed by Bureau Veritas. He said that this was a subject close to his heart, because it was at his suggestion that polyurethane glue was being investigated for use on GTT's systems. Unlike Mme Cornelius, he was confident that the certificate was ready for signing. M Le Tallec explained this in his evidence:

> "On the one hand, you had R&D engineers, who felt that this glue, following three years of study, was fit for purpose, and Christine Cornelius, who only had this – who was only responsible for this case file for a few months, who said that trial still had to be carried out."

330. Mr Dempsey passed the certificates and the post-it notes to M Le Tallec, who was his immediate boss. M Le Tallec spoke about the matter on 21 July 2003 in a telephone call with M Dhellemmes, who was on leave. M Dhellemmes said in evidence that he quickly gave instructions for the approval certificate to be issued, as CAT was putting pressure on GTT to have the glues approved. He and M Le Tallec decided that it would look odd for senior management to sign the certificate, so they would ask Mr Dempsey to sign.

331. This was reflected in a note on the post-it notes from M Le Tallec to Mr Dempsey which read:

> "After telephone discussion with Jacques DHELLEMMES on 21/07/03, he requests that you sign the attached certificate as some might find it curious that the management of GTT issues a technical certificate. However, Jacques DHELLEMMES and I take full responsibility for this approval of BOSTIK glues for GTT."

332. Mr Hirst submitted that it was highly irregular and unsatisfactory that Mr Dempsey was asked to sign the certificate, in circumstances where M Dhellemmes thought that it would look odd if he signed it, the implication being that M Dhellemmes did not want to draw attention to the particular certificate because he knew that the glue was not fully approved and he was cutting corners.

333. Mr Dempsey himself did not regard it as odd that he was being asked to sign and that M Le Tallec said that he and M Dhellemmes would take full responsibility. He said in evidence that he regarded that comment as more to put him at ease, that they had confidence in him to sign the certificate. M Le Tallec's own explanation of the comment was that he had joined GTT recently from another company which made high risk products, where there was no formal delegation of responsibility. It seems to me that this is a perfectly legitimate explanation for M Le Tallec telling Mr Dempsey that he and M Dhellemmes took full responsibility, without there being anything sinister about it, so far as M Le Tallec was concerned.

334. The question remains whether M Dhellemmes was cutting corners in telling M Le Tallec to instruct Mr Dempsey to sign the certificate, because he knew that the testing necessary for approval had not been completed. In my judgment, he was, not least because what emerges is that the tests in test series 2095 and 2109, upon the basis of which Bureau Veritas approved the glues in due course were not in fact performed until after Mr Dempsey had signed the certificate. Those tests were completed on various dates between 24 July 2003 and 7 October 2003. In cross-examination, Mr Dempsey (who had not been told about Mme Cornelius' objections at the meeting in early July 2003 that various tests had not been completed) agreed that if M Dhellemmes had insisted on the approval certificate being signed, in circumstances where the approval process had not been completed, that would have been highly irregular.

335. When the approval certificate was sent to Bostik at the request of CAT, they sent it on to Bureau Veritas. On 27 October 2003, M Benoit of Bureau Veritas sent an email to GTT saying that Bostik was saying that it did not have the test reports on the basis of which GTT had issued the approval certificate and asking GTT to provide those reports, without which Bureau Veritas could not issue its approval. M Dhellemmes' evidence was that Bureau Veritas had in fact asked for internal documents 681 and 682 in a telephone call, but those documents were not available, which suggests that at least by this stage he was aware that the reference by Mme Cornelius in the draft certificate to those documents was incorrect.

336. The following day, 28 October 2003, M Fazenda of GTT replied to Bureau Veritas attaching the test reports for the two PU glues, specifically the reports from test series 2095 for XPU 18411A/B and from test series 2109 for XPU 18018A/B. M Fazenda also stated it had finally been decided that the characteristics of use of XPU 18018A/B were sufficient for manual application, therefore the various necessary

counter-tests (tests corresponding to test request 2109) had been performed with that glue, given that Bostik had certified to GTT that both glues were strictly identical. These were evidently the counter-tests which Mme Cornelius indicated in her email to Bostik of 17 July 2003 required to be performed.

337. On 31 October 2003, three days later, Bureau Veritas issued the Certificate of Type Approval for both PU glues. The Schedule of Approval to that Certificate referred to "Type tested by Bostik Findley SA under the supervision of [GTT] …as per test reports 'Programmes No. 2095 and 2109'".

338. Although it is correct that the glue was approved by the Classification Society and gave rise to no problems, I agree with Mr Hirst at least to this extent, that the fact that Mr Dhellemmes was prepared to sanction the issue of the certificate signed by Mr Dempsey, before the tests under programmes 2095 and 2109 had been completed does not reflect well on M Dhellemmes. However, I do not consider that this necessarily demonstrates, as Mr Hirst also submitted, GTT's willingness to engage in deceptive conduct.

339. Clearly Bureau Veritas was not deceived by the certificate signed by Mr Dempsey, since it asked for and received the relevant test results before issuing its own certificate. Furthermore, I am not sure that it can be said that Bostik was deceived by that certificate, since it would appear from Bureau Veritas' certificate that Bostik participated in the various tests under test programmes 2095 and 2109.

340. I do not consider that it would be appropriate to conclude that, in permitting Mr Dempsey to sign the certificate, M Dhellemmes or anyone else at GTT was intending deliberately to deceive anyone. Accordingly, although the circumstances surrounding the signature of the GTT certificate are somewhat irregular, I do not consider that they lend any support to CAT's case that GTT acted dishonestly in relation to test programme 2320.

341. Turning to the question of the response by GTT to CAT's disclosure request, request 42 in the recapitulation schedule was for: "Complete approval files for BOSTIK XPU 18018 A/B and XPU 18411 A/B adhesives, including in particular GTT's internal document 681 and internal document 682". GTT provided access in the data room to the complete approval files (which included test results under test programme 2095 and 2109 on the basis of which Bureau Veritas had approved the glue).

342. So far as internal documents 681 and 682 are concerned. Mme Carzon's evidence was that at the time that she and Mlle Gegauff produced their excel spreadsheet attached to the email of 27 August 2007, she could not find those documents. As she said: "I did state that we did not find the 681, nor the 682, and just like before, I referred to the team and we sent this information to Maitre Jaeger – the lawyer, because, in fact, the first documents were not able to be found within the GTT documentation."

343. M Le Tallec said that he had requested that document 681 be looked for in September 2007 and before that (as CAT accepts) he had known nothing about it. GTT's IT department looked for that document (and others) and reported to M Le Tallec and the legal team by email on 25 September 2007 that it could not be found on the company's servers and in their opinion had never been on the company's servers. M Le Tallec gave authority to the IT department to look, as a last resort, at the local hard

disks at the GTT workstations. Later that day, they found internal document 681, which they attached to an email to the legal team.

344. The document which was found was an incomplete draft. It consisted of an earlier draft document (which seems to have related not to glue but to rigid Triplex) which was being used as a template and which someone had started converting into a summary of the tests results for the PU glues, but not finished doing so. The pagination was awry, going up to "24/13". So far as the tests on the glues were concerned, in my judgment, the draft was so incomplete as to be meaningless.

345. The GTT legal team all read the document and decided that it should not be disclosed but that the underlying test results should be. Accordingly, the answer to the request in the recapitulation schedule is "Internal documents 681 and 682 cannot be found". Mr Hirst was highly critical of this response, submitting that it was simply untrue, because the truth was that a draft had indeed been found. He relied upon the fact that, if the truth had emerged in the arbitration about document 681, that would have been a further indication of the extent to which GTT was prepared to engage in deceptive conduct, which would have supported CAT's case generally and its case in relation to test programme 2320 in particular.

346. Of the three individuals whom CAT seeks to target in the context of its main allegation of fraud in relation to the B0 tests, namely M Dhellemmes, M Chapot and M Le Tallec, only M Le Tallec seems to have had any knowledge of the discovery of the incomplete draft. His evidence about it was as follows:

> Q. Again, this is a case, I suggest, where you could perfectly properly have said, "We've found document 681, this is it, but for all sorts of reasons it doesn't take the case any further." What you couldn't do, honestly, I suggest to you, is simply say you hadn't found them when you had.
>
> A. Our lawyers were within the rules, the arbitration rules, in supplying usable documents, and considering that the 681 was unusable, only covering very little information in terms of PU glue, so I asked for all underlying reports to be supplied, so that CAT would have the same level of information as Bureau Veritas did.
>
> Q. But not this damaging document, which showed that the process had not been properly completed.
>
> A. There was no way I could say that in October 2007. Now, whatever happened to that document in the space of three years, I haven't the slightest idea.
>
> Q. I will be suggesting to his Lordship that this answer, that document 681 was "introuvable" is just a straightforward lie.
>
> A. That's your opinion. It's not mine.

> Q. And that you were party to telling that lie, because you knew that the document had been found, you'd seen it for yourself, and you knew that GTT was telling Clyde & Company and CAT that it couldn't be found.
>
> A. I think we've shown total honesty. This document was incomplete, was totally unusable and we supplied all the documents, files, and the underlying reports."

347. In considering the merits of Mr Hirst's suggestion, as put to M Le Tallec and repeated in his submissions, that the draft document 681 was damaging and was deliberately concealed by GTT, it seems to me important to maintain a sense of proportion and to bear in mind that the decision to provide the answer that internal document 681 could not be found was not made by M Le Tallec alone, but was a team decision.

348. That emerges very clearly from the evidence of Mme Carzon:

> "A. All the participants had read the e-mail, and I think we were all convinced that this draft documents 681 could, in no case, be disclosed in its state, because as Peter Moore explains, we can see very quickly that this document is a fusion of two documents, which do not mention at all the same subject.
>
> Q. Why not communicate that to CAT?
>
> A. Because – and I repeat – we had decided to disclose – communicate, at the time, valid data. It's for this reason that I submitted to the team and to the lawyers all the trial reports which serve as a basis for approval.
>
> Q. I suggest to you, Miss Carzon, that you and the rest of Mr Le Tallec's team, were all party to giving a dishonest response to CAT's request?
>
> ...
>
> A. The reply is in no way dishonest, but perhaps inappropriate or inaccurate. Perhaps we should have written at the time that an unusable draft of the 681 had been found, and that we were sending all the trial reports giving information needed by CAT, but in no case did we want to conceal this unusable draft."

349. Furthermore, the decision that, because the draft found was incomplete and inconsistent, it should not be disclosed, was supported by Maitre Jaeger in his evidence:

> "I think what they decided to do was sensible, which was to provide, instead, the test reports which that draft purported to summarise, and, to me, it makes a lot of sense to say – to decide to produce the documents which contain the real data,

> instead of a draft which was supposed to summarise those documents, but was unfinished.
>
> …
>
> ..it may be considered that this is not document 681, as it was quoted in the approval certificate, which was supposed to be a final document. So they were looking for a final document and they found a sort of working document, which was no the document they were looking for, so they said, I think, honestly, "This document cannot be found""

350. It may be that, if one were looking at this answer in the context of disclosure obligations under English law, it would be open to criticism, but it is important to have in mind that this arbitration was being conducted in the more narrow confines of a disclosure procedure akin to that under the IBA rules, much closer to the procedure applicable before the French courts. With that point in mind and given that Mr Hirst expressly eschewed any allegation of dishonesty against Mme Carzon and Maitre Jaeger, it seems to me impossible to characterise GTT's response to the request for internal document 681, that it could not be found, as a dishonest one.

351. Furthermore, I do not consider in any event that Mr Hirst is right in his submission that this incomplete draft document is damaging. In itself it would tell the reader nothing about the test results for the PU glues. Those were available in the data room and it was on the basis of those test results (not internal document 681) that Bureau Veritas had provided its approval. At most, if the incomplete draft had been disclosed, it would have revealed that it was being drafted in January 2004, six months after the certificate signed by Mr Dempsey which referred to internal document 681 was issued.

352. However, as I have already held, the reason why that happened is that Mme Cornelius, who had drafted the certificate, did not tell M Dhellemmes, M Le Tallec or Mr Dempsey that internal documents 681 and 682 had not been prepared at that time. M Le Tallec said in evidence: "I believe that Christine Cornelius deceived us, misled us. She should at least have told us that document [681] should be a summary of all the tests carried out, but which had not yet been written down." He made the perfectly valid point that Mme Cornelius could either have finalised document 681, which as he said "was no hard task" or she could have modified the certificate by referring to all the underlying reports instead of document 681.

353. Finally in relation to the approval of glue, Mr Hirst put to M Dhellemmes an email of 16 November 2007 from M Chapot to M Devillechaise about creating an approval file for the gluing of the secondary barrier by April 2008. He suggested that this was indicative of a propensity to create a false paper trail after the event. M Dhellemmes' evidence was that there was nothing untoward in this and although I found his explanation difficult to follow, I did say at the time that this was a matter which should be put to M Chapot. In the event, he was not asked about it in cross-examination, so it remains a mystery. However, in any event it relates to epoxy glue not PU glue and I am not prepared to conclude that it provides any support for CAT's case of fraud.

354. Accordingly, even if I had considered that CAT was not estopped from raising its allegations about internal document 681, I do not consider that there is any merit in the suggestion that the response to the disclosure request was a dishonest one. Furthermore, given that CAT could have pursued disclosure of this document before the tribunal, it is too late for it to pursue allegations before the court concerning internal document 681, which was, in any event, neither damaging nor supportive of CAT's case of fraud in relation to test programme 2320.

K. GDF Reports and AMDEC Study

355. There is a short but complete answer to the allegations which CAT seeks to make about the failure to disclose the GDF reports in the arbitration which is that, so far as the Phase 1 report is concerned, CAT raised the issue of its disclosure before the tribunal and GTT's response was that it was not producing GDF documents because they were confidential to GDF. As Mr Landau points out, there was no specific request for the Phase 2 report, but if there had been, GTT's response would have been the same, that it was confidential to GDF.

356. Nonetheless, it is necessary to set out something of the chronology. As already noted in the section of the judgment dealing with the disclosure process in the arbitration, there were two requests in the recapitulation schedule relevant for present purposes. The first was request 1 for the AMDEC study to which GTT's response was that there was no AMDEC study as such. The other was request 29 for the joint GTT/GDF study report carried out on the bondings of the secondary barrier in May 2005, to which GTT's response was that it agreed to provide that study.

357. What GTT in fact provided was a PowerPoint presentation headed "Criteria characterising the bonding of CS1 glued surfaces" which GTT had prepared. It would have been obvious to anyone reading that presentation that it was a GTT document, not a GDF document, let alone a joint study. Indeed CAT must have appreciated that, since it seems to have obtained a draft of the GDF report at some stage and it was in the context of CAT pressing for disclosure, that GTT said these documents were confidential to GDF. It follows that, although Mr Hirst put to GTT's witnesses in cross-examination that disclosure of the PowerPoint presentation was in some way dishonest, that is a point which is of no avail to CAT, since there is no question of it or the tribunal having been misled. Both CAT and the tribunal were aware that GTT had not disclosed the GDF report CAT had asked for because it was confidential to GDF.

358. This was explained in evidence by Maitre Jaeger, who said:

> "GTT told the tribunal that those documents were confidential because this study belonged to Gaz de France, and they were not authorised to disclose that study to the tribunal. There was a debate before the tribunal about that, and that's my understanding of why GTT did not produce the documents."

359. As to why GTT felt able to disclose the PowerPoint presentation, Maitre Jaeger explained:

> "the information itself, as it was reflected in the Powerpoint presentation, is scientific data that does not particularly belong to GDF, but the report belonged to GDF."

360. In my judgment, in so far as CAT still complains about the failure by GTT to disclose two of the attachments to the phase 1 GDF report which it says would have helped it in the arbitration, namely the report of Professor Papon and the "risk analysis" which CAT contends is an AMDEC study, the answer is that those documents formed part of the GDF report and were also confidential. If CAT had thought that there was some basis for challenging that confidentiality, it could and should have done that before the tribunal. It is too late to maintain that complaint now before the court.

361. Various allegations of dishonesty were put to GTT's witnesses in cross-examination with which I should deal. It was put to M Le Tallec that the response to request 1, that there was no AMDEC study in the strict sense of the term, was untrue. His response was that AMDEC studies were limited to off-shore platforms and did not apply to methane tankers. As he explained the matter:

> "When we have an offshore platform, what we do is from the very start of the design, we conduct an AMDEC study as to risks which the operating platform may present and the way in which to overcome these risks. Methane tankers obey completely different rules. They have to comply with what is known as the International Gas Code, which only talks of determinate rules where there is no obligatory risk analysis, which is what Gaz de France did, because we've used AMDEC for highly varied risks, to try to see what risks, and due to poor gluing -- poor application of gluing during construction -- so this has got nothing to do with it."

362. I see no reason not to accept that evidence, which is essentially an expansion of the response GTT gave to the disclosure request. Perhaps GTT could have been more expansive, but it seems to me impossible to characterise its response in relation to the request for the AMDEC study as dishonest or as giving rise to any legitimate complaint which can be pursued in this application. Quite apart from anything else, implicit in the answer: "there is no AMDEC study in the strict sense of the term" was that there was some such risk analysis or study, albeit not strictly speaking an AMDEC one and CAT could have pressed for its disclosure before the tribunal, although that is unlikely to have done any good, since it was confidential. Once again it is too late to raise a complaint about that before the court.

363. Mr Hirst also put to M Dhellemmes that he had lied to the tribunal when he said that he had only received a draft of the GDF Phase 1 report, pointing out that M Dhellemmes had attended a meeting with M Malvos and others from GDF on 31 May 2005, the specific purpose of which was for GDF to present the results of the study (i.e. the Phase 1 report, which was dated 27 May 2005). M Dhellemmes denied having lied about this, either to the tribunal or the court. Although as I have held in the context of the B0 tests, I formed the view that M Dhellemmes was not telling the court the truth about his involvement in the decision to conceal those tests from CAT, it does not follow that he was lying about everything.

364. I am not prepared to conclude that he was lying to the tribunal about the GDF report. Whilst it seems probable that M Dhellemmes did receive a copy of the final Phase 1 report at the meeting on 31 May 2005, it is important to bear in mind that he was giving evidence some months after he left GTT about a report produced nearly three years earlier, without access during his evidence to GTT's files. M Le Tallec's evidence about this was to the effect that M Dhellemmes had already left the company when a copy of the final report was found in GTT's files.

365. CAT's case about the GDF Phase 2 report is that its disclosure in the arbitration would have assisted CAT in relation to the point about the B0 tests, if the true position about those had been disclosed to the tribunal. CAT contends that that report concluded that the only tests capable of validating the CS1 system were the sandwich tests in test programme 2320, yet it is clear from the report that GDF was not told about the B0 tests or that the B1-B5 tests were conducted on Mark III rather than CS1 panels.

366. It seems to me there are a number of answers to any complaint about the non-disclosure in the arbitration of the Phase 2 report. First, CAT accepted, in its written opening submissions for this application, that the Phase 2 report was not strictly within request 29 in the recapitulation schedule. Once that concession was made, any case that GTT had dishonestly failed to disclose it in the arbitration becomes completely unsustainable. Second, even if CAT had specifically requested disclosure of the Phase 2 report, it would have been met with the same answer as in relation to the Phase 1 report, that it was confidential. It follows that it never would have been disclosed in the arbitration, so that it is futile for CAT to complain now about its non-disclosure.

367. Third and perhaps most significantly of all, it is clear that the Phase 2 study supported GTT's case. This was the evidence of M Malvos of GDF who was one of the authors of the Phase 2 report and who gave evidence before me. In his witness statement, he stated that:

> "At the end of these two studies, GDF concluded that GTT's technology was suitable for industrial application of bonding of the secondary barrier, and that this secondary barrier provided sufficient strength to withstand the stress on board with a comfortable safety margin.
>
> The three vessels were delivered by CAT between December 2006 and February 2007. They successfully passed the gas trials without leaks appearing in the secondary membrane. They have been in operation for three years. No incident has been noticed on the secondary barriers."

368. Whilst it is factually correct that GDF was not told about the B0 tests or that the B1-B5 tests had been conducted on Mark III panels, those are not matters which have any bearing on the question whether CAT has any legitimate basis for complaint about non-disclosure of the Phase 2 report. In my judgment, there is no basis for any suggestion that GTT is to be criticised for failing to disclose the Phase 2 report.

K. Conclusion

369. For all the reasons set out above, my conclusions are as follows:

(1) There was a deliberate decision within GTT in June 2005 not to disclose the B0 tests or their results to CAT and M Dhellemmes' letter of 29 June 2005 was deliberately misleading. However, that does not in itself demonstrate that the Award was obtained by fraud.

(2) There was no dishonesty in any of the responses given by GTT to the various disclosure requests in the arbitration.

(3) The only dishonesty by GTT in the arbitration was that M Chapot's evidence to the tribunal was deliberately misleading because he gave the impression the B1-B5 tests had been carried out on CS1 panels supplied by CAT and because he concealed the existence of the B0 tests.

(4) Even if the true position had been disclosed to the tribunal, that would, in all probability, not have affected the result of the arbitration. It follows that CAT cannot demonstrate either that the Award was obtained by fraud or that it has been caused substantial injustice and hence cannot surmount the relevant hurdles under section 68 of the Arbitration Act 1996.

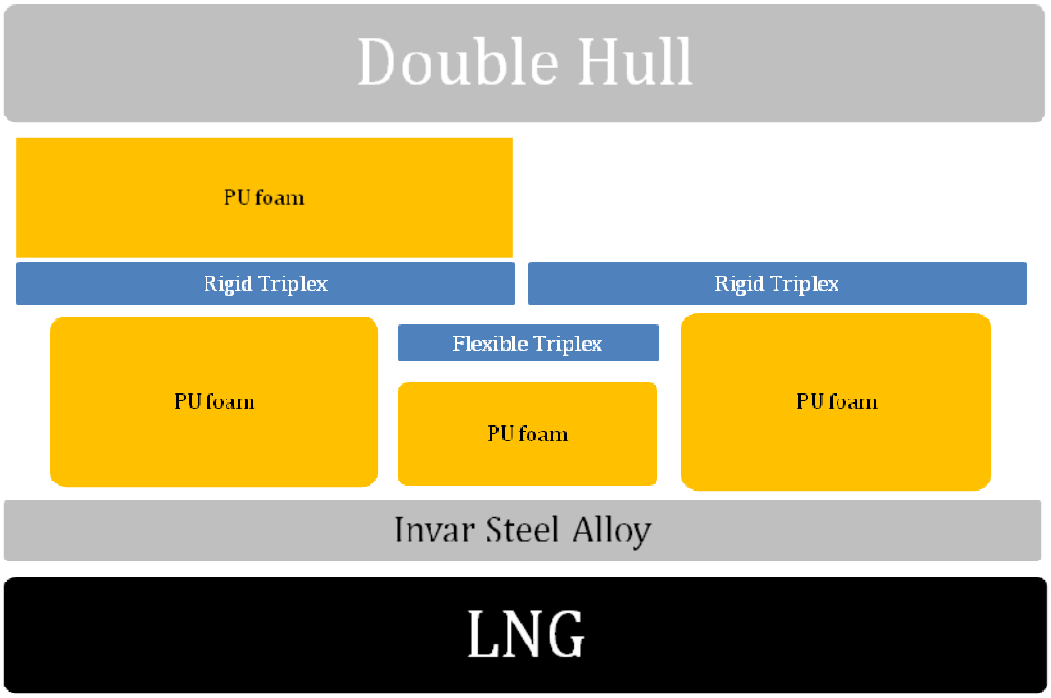
(5) CAT is precluded from raising any of its allegations about other documents in the arbitration, by virtue of issue estoppel.

(6) Even if CAT were not estopped, any complaint about non-disclosure of those documents could and should have been pursued before the tribunal and it is too late to raise them now before the court.

(7) In any event, even if CAT were not estopped, those allegations were without merit.

370. It follows that CAT's application under section 68(2)(g) of the Arbitration Act 1996 must be dismissed.

APPENDIX A


Double Hull
PU foam
Rigid Triplex
Rigid Triplex
PU foam
Flexible Triplex
PU foam
PU foam
Invar Steel Alloy
LNG