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**Datasheet for the decision
of 14 September 2006**

Case Number: T 1232/03 - 3.3.01

Application Number: 98911812.0

Publication Number: 1017768

IPC: C10M 163/00

Language of the proceedings: EN

Title of invention:

Method of improving anti-shudder durability of power
transmission fluids

Appellant/Opponent:

Ethyl Corporation

Respondent/Patentee:

Infineum USA L.P.

Headword:

Automatic transmission fluid/INFINEUM

Relevant legal provisions:

EPC Art. 54(1)(2), 56, 111(1), 113(1), 114(1)(2), 123(2)(3)

Keyword:

"Lack of novelty objection due to prior use submitted with the statement of grounds of appeal: late filed (yes) - not admitted into the appeal proceedings as not *prima facie* relevant."

"Technical report submitted after the statement of grounds of appeal by the Appellant: late filed (yes) - not admitted into the appeal proceedings as not *prima facie* relevant."

"Technical reports submitted by the Appellant one month before the oral proceedings: late filed (yes) - not admitted into the proceedings - no opportunity for the Respondent to take position."

"Main request, first and second auxiliary requests: inventive step (no) - no improvement within the whole claimed area - obvious alternative."

"Third auxiliary request: inventive step (no) - alleged effect not credibly achieved for all claimed alternatives - extent of the claimed monopoly not justified by the technical contribution to the art."

"Fourth auxiliary request: inventive step (yes) - non obvious alternative."

Decisions cited:

T 0782/92, T 0939/92, T 0024/81

Catchword:

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Case Number: T 1232/03 - 3.3.01

D E C I S I O N
of the Technical Board of Appeal 3.3.01
of 14 September 2006

Appellant: Ethyl Corporation
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Richmond, Virginia 23219 (US)

Representative: Schwabe-Sandmair-Marx
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Respondent: Infineum USA L.P.
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Decision under appeal: Interlocutory decision of the Opposition
Division of the European Patent Office posted
22 October 2003 concerning maintenance of the
European patent No. 1017768 in amended form.

Composition of the Board:

Chairman: J. Jonk
Members: P. Ranguis
H. Preglau

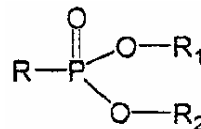
Summary of Facts and Submissions

I. The Appellant (Opponent) lodged an appeal on 11 December 2003 against the interlocutory decision of the Opposition Division posted on 22 October 2003 maintaining the European patent No. 1 017 768 with the eleven claims as granted and an amended description. Claim 1, the sole independent claim, read as follows:

"1. A method of improving the anti-shudder durability for a power transmission apparatus by using an effective amount of a power transmitting fluid comprising a mixture of:

(1) a major amount of a lubricating oil; and
(2) an anti-shudder improving effective amount of an additive combination comprising:

(a) an oil soluble alkyl phosphonate having the structure:



wherein: R is C₈ to C₃₀ alkyl, R₁ is C₁ to C₁₀ alkyl and R₂ is C₁ to C₂₀ alkyl;

(b) an ashless dispersant; and
(c) a metallic detergent."

II. Notice of opposition had been filed by the Appellant requesting revocation of the patent as granted in its entirety on the ground of lack of novelty and of inventive step in view of *inter alia* the following documents:

- (1) US-A-5 534 170
- (2) GB-A-1 247 541
- (3) US-A-4 776 969
- (4) SAE-paper 841214, Automatic Transmission Fluids - Properties and Performance, published October 1-4, 1984,
- (5) US-A-4 158 633
- (6) US-A-4 325 827
- (7) US-A-3 206 401
- (8) SAE-paper 940821, "Prediction of anti-shudder properties of automatic transmission fluids using a modified SAE No. 2 machine", International Congress and Exposition, Detroit, Michigan, 28 February - 3 March 1994,
- (10) US-A-5 569 644
- (11) US-A-4 005 159
- (12) 2001 TVT, Toyota, pages 55-60 and table 4, Woo-Sik Moon and Si-Won Yang, "Effects of base oils characteristics on ATF performance"

III. The Opposition Division held that the cited documents did not destroy the novelty of the subject-matter claimed.

With respect to inventive step, the Opposition Division held that starting from document (2) as the closest state of the art which disclosed the use of alkane phosphonates within the definition of Claim 1 of the patent in suit in automatic transmission fluids as friction modifier, the technical problem to be solved could be seen in the improvement of the friction properties of power transmission fluids. It was held in that respect that the examples of the patent in suit showed convincingly that the improved anti-shudder

durability technical effect was obtained with the alkyl phosphonates of Claim 1 in combination with any conventional ashless dispersants and metallic detergents. Document (3) disclosed a lubricating oil for automatic transmission fluids comprising a cyclic phosphate together with a metal detergent and an ashless dispersant. There was however no hint in document (3) to replace the disclosed phosphate by the alkane phosphonates of document (2). Nor was it obvious for the person skilled in the art seeking to improve the friction properties of the alkane phosphonates of document (2) to add a metallic detergent and an ashless dispersant as disclosed in document (3).

The Opposition Division also concluded that the person skilled in the art would not have combined in an obvious manner the teaching of document (11), related to the use of a hydroxyl containing phosphonate in automatic transmission fluids as a friction reducing additive possibly in the presence of additives such as detergents and dispersants of the ash-containing or ashless type, with that of document (2). The person skilled in the art would have found in document (11) no incentive to select the combination of an ashless dispersant with a metallic detergent since that document did not disclose any particular advantage resulting from such a selection in automatic transmission fluids. Furthermore, neither document (11) nor document (2) incited the person skilled in the art to replace a hydroxyl containing phosphonate by an alkane phosphonate, in particular in relation with the anti-shudder durability of the fluids.

In view of the amendment of the description, the other documents cited were not considered to be relevant.

IV. Oral proceedings before the Board were held on 14 September 2006.

V. The Respondent (Proprietor of the patent) defended the maintenance of the patent in suit on the basis of the claims as granted (see point I above) and subsidiary on the basis of:

a set of eight claims (set C) as first auxiliary request filed with letter dated 21 December 2005, Claim 1 as granted being restricted to specific amounts of the mandatory constituents, namely to 0.1 to 10.0 mass percent of an alkyl phosphonate a), 0.1 to 10.0 mass percent of an ashless dispersant b) and 0.01 to 2.0 mass percent of a metallic detergent;

a set of seven claims (set D) as second auxiliary request filed with letter dated 21 December 2005, Claim 1 being further restricted with respect to Claim 1 of the first auxiliary request by indicating that the metallic detergent was selected from the group consisting of calcium sulfonate, calcium phenate, magnesium sulfonate, and magnesium phenate;

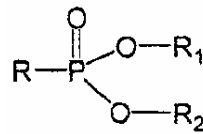
a set of ten claims (set A) as third auxiliary request filed with letter dated 16 September 2004, Claim 1 being the sole independent claim reading as follows:

"1. A method of improving the anti-shudder durability for an automatic transmission having a continuously slipping torque converter clutch by using an effective

amount of an automatic transmission fluid comprising a mixture of:

- (1) a major amount of a lubricating oil; and
- (2) an anti-shudder improving effective amount of an additive combination comprising:

(a) an oil soluble alkyl phosphonate having the structure:



wherein: R is C₈ to C₃₀ alkyl, R₁ is C₁ to C₁₀ alkyl and R₂ is C₁ to C₂₀ alkyl;

- (b) an ashless dispersant; and
- (c) a metallic detergent.";

a set of ten claims (set B) as fourth auxiliary request filed with letter dated 16 September 2004, Claim 1 being further restricted with respect to Claim 1 of the third auxiliary request by indicating that the metallic detergent was selected from neutral or overbased salts of calcium or magnesium; and

two further sets of claims as fifth and sixth auxiliary requests (sets E and F respectively) filed with letter dated 21 December 2005.

VI. Although the Appellant accepted during the oral proceedings that the claimed subject-matter was novel over the cited documents (1) and (10), he submitted for the first time with his statement of grounds of appeal that the claimed subject-matter was anticipated on the ground of public prior use, which was supported by:

- (14) Production request for NC-3308 dated 30 October 1992 and its translation in English;
- (15) Order sheet dated 7 January 1997 and its translation in English;
- (16) Statement of income dated 31 January 1997 and its translation in English;
- (17) Limited production notification of NC-3308 dated 6 November 1992 and its translation in English;
- (18) Material Safety Data Sheet of H059 dated 2 February 2004;
- (19) Material Safety Data Sheet of H638 dated 10 July 2002;
- (20) HiTEC 1518 technical brochure issued by CALTEX dated August 1996;
- (21) Technical brochure in the name of CALTEX concerning Caltex Easy Shift (not dated);
- (22) Affidavit of R. Sheets dated 19 February 2004 including two scientific publications as exhibits 1 and 2;
- (24) Listing of products including HiTEC 1518 dated 1 March 1993;
- (25) Letter from Nippon Cooper Co to Ethyl Japan Co including technical data of NC-3308 and its translation in English dated 1 April 1994; and

two further affidavits filed about one month before the oral proceedings, namely

- (28) Affidavit of R. Sheets dated 9 August 2006; and
- (29) Affidavit of K. Yatsunami dated 14 August 2006.

Concerning the question of inventive step the Appellant submitted with his statement of grounds of appeal a fresh document

(13) EP-A-0 747 464, and

a test report

(23) Low speed SAE#2 Durability Testing

Furthermore, in the course of the appeal proceedings, namely on 27 January 2005, another test report

(30) (modified) Falex tests performed under D 2714-94 (Reapproved 1998), Standard Test Method for Calibration and Operation of the Falex Block-on Ring Friction and Wear Testing machine,

and, finally, about one month before the oral proceeding two further test reports

(26) tests performed on a modified SAE number 2 test machine; and

(27) test report of Southwest Research Institute (SWRI).

The Appellant submitted in essence the following arguments:

The novelty objection based on the public prior use and the documents filed in support thereof should be admitted into the proceedings since the Board had the duty to examine the validity of the patent and to consider the new evidence if it were relevant.

Regarding inventive step of Claims 1 of the main request, first and second auxiliary requests, the Appellant argued that the claimed subject-matter lacked inventive step over document (2). If the technical problem were to be seen in the improving of friction properties of a well-known ATF such as one disclosed in document (2), comprising a phosphonate compound, the technical report (23) provided with the statement of grounds of appeal showed that such an improvement could only be obtained for the octadecyl dimethyl phosphonate identified as A-6 comprising in addition calcium sulfonate as metallic detergent and borated polyisobutylene succinic anhydride as ashless dispersant for the specific use disclosed. No technical effect could be acknowledged outside this restricted claimed area. If the technical problem could only be seen as an alternative over document (2), the solution was obvious since the three additives were well-known in the art to be used in automatic transmission fluids.

Document (2) remained the closest state of the art to define the technical problem to be solved with regard to the subject-matter Claims 1 of the third to sixth auxiliary requests. The properties of the fluids in relation with the modification of friction at low velocity which addressed the technical problem of anti-shudder durability were explicitly mentioned in that document.

If the Board nevertheless came to the conclusion that document (13) was the closest state of the art, it would have been obvious in view of document (2) to replace in the embodiment reflected by Claim 24 of document (13), a fatty phosphite by an alkyl

phosphonate and, therefore, arriving at an automatic transmission fluid for an automatic transmission having a continuously slipping torque converter clutch, according to the third to sixth auxiliary requests.

VII. The Respondent requested that the alleged public prior use and the evidence relied upon in support thereof be not admitted into the proceedings as late-filed and not relevant.

The test performed according to the modified D2714-94(1998) standard test method, i.e. document (30), should also not be admitted into the proceedings as late-filed and not relevant as evidenced by documents

- (31) Figures showing the SAE#2 test parts and ASTM D 2714-94 (Falex) test parts, respectively; and
- (32) ASTM D 2714 - 94 (Reapproved 1998).

The results of tests performed according to the anti-shudder durability tests of the patent in suit, i.e. documents (26) and (27), which were filed one month before the oral proceedings, should be disregarded on the ground that it gave no opportunity to file a counter-statement.

Regarding inventive step of Claims 1 of the subject-matter of the main request, and the first and second auxiliary request, the Respondent admitted that the anti-shudder durability was only a problem in relation to automatic transmissions involving a continuous slipping torque converter clutch (CSTCC) and that no improved effect could be acknowledged for e.g. hydraulic fluids or tractor fluids. Moreover, it was

true that ashless dispersants and metallic detergents were well-known in the art concerning automatic transmission fluids. However, the scope of the claims was in line with the technical contribution provided by the claimed invention. The test report submitted as document (23) by the Appellant in order to show the contrary, was not made according to the method disclosed in the patent in suit due to the significant difference in the durability cycles during which the system was "slipped".

In assessing inventive step of the subject-matter of Claim 1 of the other auxiliary requests document (13) was the closest state of the art. It would not be obvious to provide a less complex automatic transmission fluid for an automatic transmission having a continuously slipping torque converter clutch by replacing a fatty phosphite as friction modifier by an alkyl phosphonate as defined in Claim 1. In this context, document (2) would not have been considered by the person skilled in the art since it did not address the same technical problem.

VIII. The Appellant requested that the decision under appeal be set aside and that the European patent be revoked.

The Respondent requested that the appeal be dismissed (main request) or in the alternative to set aside the decision under appeal and to maintain the patent on the basis of the auxiliary requests 1 to 6, referring to set C, set D (both filed with letter dated 21 December 2005), set A, set B (both filed with letter dated 16 September 2004), set E, set F (both filed with letter dated 21 December 2005).

IX. At the end of the oral proceedings the decision of the Board was announced.

Reasons for the Decision

1. The appeal is admissible.
2. *Admissibility of late filed evidence (Article 114(2) EPC)*
 - 2.1 According to Article 114(2) EPC facts or evidence which are not submitted in due time may be disregarded. In the extensive jurisprudence relating to this issue the Boards of Appeal have developed the principles that the exercise of their discretion should be governed by the relevance of the late-filed material to the case at hand, the circumstances which led to the late filing, and general procedural economy (see the Case Law of the Boards of Appeal of the EPO, 4th edition 2001, Section VI. F. Late submission, points 1 to 3, pages 324-331).
 - 2.2 *Public prior use objection and the evidence in support thereof*
 - 2.2.1 The public prior use objection and the evidence submitted in support thereof were submitted by the Appellant for the first time with his grounds of appeal and in such a case the Boards of Appeal normally admit such material into the proceedings only if it is *prima facie* highly relevant in the sense that it is highly likely to prejudice the maintenance of the patent.

2.2.2 According to the established jurisprudence of the Boards of Appeal it is needed for a proper substantiation of a public prior use objection to establish:

- (a) the date on which the prior use occurred ("when" issue),
- (b) exactly what was in prior use ("what" issue), and
- (c) the circumstances surrounding the prior use (issue of confidentiality).

If one of these issues is not sufficiently proved, the Appellant's prior public use case must fail. In this context the term "sufficiently" normally means "beyond any reasonable doubt" (see T 782/92 of 22 June 1994, not published in the OJ EPO, point 2.2).

As has been admitted by the Appellant, documents (14) to (21), (24), (25) on their own do not identify beyond any reasonable doubt what were the compositions of NC 3308 and HiTEC[®] 1518 before the filing date of the patent in suit, in particular with respect to the nature of the alkyl phosphonate and the presence of a metallic detergent, and that the declarations of R. Sheets, i.e. (22) and (28), and K. Yatsunami, i.e. (29), are needed as further evidence to prove that said compositions indeed comprised an alkyl phosphonate as defined in the patent in suit and a metallic detergent in combination with an ashless dispersant.

2.2.3 In the first declaration filed on 5 March 2004 (document (22)) Mr. R. Sheets stated:

- that the formulation of HiTEC[®] 1518, a friction modifying additive was commercialised by Ethyl Corporation and its subsidiaries;
- that this formulation included a dimethyl octadecyl phosphonate (DMOP, added with H059 additive), an ashless dispersant (a polybutenyl succinimide added with H638 Additive) and a metallic detergent (a magnesium sulfonate added with H654 Additive);
- that this formulation was also commercialised as NC 3308 in Japan;
- that according to his information the product had been sold beginning in 1992 through 1996 and onwards;
- and
- that the components included in HiTEC[®] 1518 could have been identified in the finished fluid by routine analyses by a skilled worker in and before 1997, whereby some analysis examples were indicated a skilled worker could have conducted.

2.2.4 Concerning this declaration the Respondent observed in his response to the public prior use objection submitted in the Appellant's statement of the grounds of appeal that the alleged selling of the additive formulation was not based on his own knowledge, but instead from hear saying. Moreover, he disputed that a skilled person could have analysed the so-called finished fluid without knowing its composition and without knowing which components should be identified.

2.2.5 Apparently in view of this criticism, the Appellant filed two further declarations, namely from Mr. R. Sheets (document 28) and Mr. Kenji Yatsunami (document 29).

- 2.2.6 In his second declaration Mr. R. Sheets confirmed his statements made in his first one and additionally contended:
- that the additive formulation HiTEC[®] 1518 was presented to Caltex Inc. in 1996 and later sold;
 - that in Japan this formulation was sold under the designation NC 3308 to the customer Nippon Oil Co. (NOC) in 1992;
 - that the identification of the phosphonate component by the customers would have been possible with a common NMR-technique available to the killed person before 1997; and
 - that the other two mandatory components could have been identified by standard analytical techniques such as IR, mass spectrometry and NMR.

The declaration from Mr. Kenji Yatsunami represented substantially a confirmation of those put forward by Mr. R. Sheets.

- 2.2.7 In these circumstances, the Board concludes that the provided prove for the presence of the three mandatory components as defined in the patent in suit in the formulation of HiTEC[®] 1518 or NC 3308 predominantly rest on the contentions made by Mr. R. Sheets and Mr. Kenji Yatsunami as employees of the Appellant without any further support rendering them convincing to the Board beyond any reasonable doubt. Moreover, the question whether it would have been possible to identify said mandatory components in the formulation by customers is in dispute between the parties and cannot be answered by the Board on its own.

2.2.8 Therefore, already in view of the fact that it is not directly and unambiguously clear to the Board what has been made available to the public, the Board does not consider the public prior use objection *prima facie* sufficiently relevant and, consequently, does not admit it into the proceedings in compliance with Article 114(2) EPC.

2.3 *Document (13)*

2.3.1 Document (13) submitted with the statement of grounds of appeal has become highly relevant after the filing of an unforeseeable amendment of the claims, namely that the automatic transmission comprises a continuously slipping torque converter clutch (see third to sixth auxiliary requests, point IV above). That document might be considered as the document closest to the invention as defined in those requests. For this reason, the Board exercises its discretionary power under Article 114(1) EPC and admits it into the appeal proceedings.

2.4 *Test-report designated as document (23)*

2.4.1 This report has been submitted by the Appellant with his statement of grounds of appeal in response to the Opposition Division's finding that the technical problem to be solved could be seen in an improvement of the friction properties of power transmission fluids and is, therefore, filed in due time within the meaning of Article 114(2) EPC.

2.5 *Technical report (30)*

2.5.1 The technical report (30) filed on 27 January 2005 has been submitted by the Appellant as further evidence that the claimed invention is inoperable over the entire scope of Claim 1 as granted. The test has been carried out by using the traditional Falex test procedure, also known as ASTM D 2714-94, being modified by capping the steel test blocks with paper friction material. However, this modified Falex test clearly differs from the SAE#2 test method used according to the patent in suit and, having regard to the Respondent's credible submissions in this respect, does not appear to be suitable for measuring friction durability under torque converter conditions. For this reason, this report is not *prima facie* relevant and, consequently, the Board does not admit it into the proceedings.

2.6 *Test reports (26) and (27)*

2.6.1 These two test reports have been filed on 14 August 2006, i.e. only one month before the oral proceedings before the Board and well after the summons to the oral proceedings dated 20 April 2006 and the notification of cancellation/postponement dated 16 May 2006. In the Board's judgment, these test reports raise issues which the Board and the Respondent cannot reasonably be expected to deal with without adjournment of the oral proceedings. In these circumstances, the Board does not admit these reports into the proceedings either (see the Rules of procedure of the Boards of Appeal, OJ EPO 3/2003, Article 10b).

Main request

3. *Novelty*

The Board has come to the conclusion that the claimed subject-matter is novel. Novelty was no longer contested by the Appellant and the Board did not see a necessity for going into details for this finding.

4. *Inventive step*

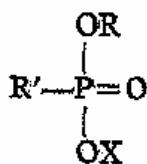
4.1 According to the established jurisprudence of the Boards of Appeal it is necessary, in order to assess inventive step, to establish the closest state of the art, to determine in the light thereof the technical problem which the invention addresses and successfully solves, and to examine the obviousness of the claimed solution to this problem in view of the state of the art. This "problem-solution approach" ensures assessing inventive step on an objective basis and avoids an ex post facto analysis.

According to the Boards of Appeal the "closest state of the art" is normally a prior art document disclosing subject-matter aiming at the same objectives as the claimed invention and having the most relevant technical features in common.

4.2 In view of the fact that the subject-matter of Claim 1 broadly relates to the use of power transmitting fluids, such as gear oils, hydraulic fluids, heavy duty hydraulic fluids, industrial oils, power steering fluids, pump oils, tractor fluids, universal tractor fluids, and the like (see page 3, paragraph [0010] of

the patent in suit), the Board considers in agreement with both parties to the proceedings that document (2) is the closest state of the art to start from in assessing inventive step.

That document discloses the use of automatic transmission fluids comprising alkane phosphonates of formula



wherein R is methyl, or ethyl, R' is a straight chain alkyl having 12 to 20 carbon atoms, and X is *inter alia* methyl,

as friction modifiers in concentrations ranging from 0.05% to 10% by weight (see page 1, lines 37 to 58; page 3, lines 4 to 13) falling within the definition of the alkyl phosphonate defined in Claim 1 of the patent in suit (see point I above).

4.3 According to the Respondent's opinion, the technical problem underlying the application in suit is the provision of a method of improving the anti-shudder durability of a power transmission fluid, in particular of an automatic transmission fluid (see also page 2, lines 5 to 6, and lines 31 to 40, of the application in suit).

4.4 In this context, the patent in suit discloses test-results obtained by using a SAE number 2 test machine modified to be representative of an automatic

transmission provided with a continuously slipping torque converter clutches (CCTCC) showing that commercial automatic transmission fluids comprising additive combinations including either decyl diethyl phosphonate or octadecyl diethyl phosphonate as alkyl phosphonate, calcium sulfonate as metallic detergent and a dispersant, provide an improved anti-shudder durability (see Tests number 1 and 4) in comparison to fluids which do not contain such a combination (see Tests number 2 and 3).

4.5 However, according to Claim 1 an improvement of the anti-shudder durability has been achieved for any power transmission apparatus, whereas in the patent in suit it has been explained that the anti-shudder durability of an automatic transmission fluid is only a problem in relation to applications involving an automatic transmission having CSTCC (see background of the invention indicated on page 2). It is, therefore, not credible that the alleged improvement is achieved by using the fluid as defined in Claim 1 in a conventional automatic transmission, i.e. without a CSTCC, let alone in applications making use of gear oils or tractor fluids.

4.6 It follows that the technical problem stated above under point 4.3 is not in conformity with the established jurisprudence of the Boards of Appeal concerning the determination of the technical problem, since a properly defined technical problem must be successfully solved by the invention as claimed (see e.g. T 24/81, OJ EPO 1983,133).

4.7 Since the alleged improvement cannot be acknowledged vis-à-vis the closest state of the art, i.e. document (2) relating (as indicated on page 1, lines 30 to 36, and under "Evaluation" on pages 3 and 4) to the use of automatic transmission fluids to provide good friction conditions in a conventional automatic transmission, i.e. a device without CSTCC, a less ambitious technical problem must be formulated.

4.8 Accordingly, the Board finds that the technical problem to be solved vis-à-vis that document may only be seen in the provision of further adequate friction conditions in a power transmission apparatus, such as an automatic transmission device.

4.9 According to present Claim 1 this technical problem is solved by using a power transmission fluid comprising a major amount of a lubricating oil, and an additive combination comprising an alkyl phosphonate as defined in Claim 1, an ashless dispersant and a metallic detergent.

Having regard to the technical information provided in the patent in suit, in particular in the examples, the Board considers it plausible that this technical problem has indeed been solved. In fact, the Appellant only disputed an improvement of the anti-shudder durability within the claimed scope of protection of present Claim 1.

4.10 It remains to be decided whether or not the proposed claimed solution was obvious in view of the prior art cited. In particular, the question arises whether or not a person skilled in the art would have been led to

incorporate an ashless dispersant and a metallic detergent in a power transmission fluid comprising an alkyl phosphonate as disclosed in document (2) (see point 4.3 above) to solve the technical problem stated above.

4.11 Looking for a solution to the above defined technical problem, the person skilled in the art would have considered further prior art dealing with power transmitting fluids and in particular automatic transmission fluids.

4.12 It is well known that transmission fluids are typically compounded from many different additives, such as viscosity index improvers, corrosion inhibitors, oxidation inhibitors, dispersants, pour point depressants, emulsifiers, anti-foaming agents, anti-wear agents, seal swellants, detergents and friction modifiers (see e.g. document (3) column 19, lines 15 to 30; document (1), column 49, lines 23 to 42; and document (13), page 2, lines 29 to 44).

Suitable dispersants are e.g. ashless dispersants (see document (3), column 18, lines 49 to 55; document (1), column 41, line 32 to column 48, line 34; and document (13), claims 20 and 21).

Suitable detergents include e.g. highly basic metal salts, such as calcium sulfonate (see e.g. document (1), lines 52 to 58; and document (13), claims 18 and 19).

Therefore, in view of the technical problem to be solved (see point 4.8 above), it would have been obvious to modify the power transmission fluid

disclosed in document (2) by incorporating therein an effective amount of an ashless dispersant and a metallic detergent, such as calcium sulfonate, as disclosed in documents (1), (3) and (13) and as a result to arrive at the claimed solution. For this reason the subject-matter of Claim 1 of the patent in suit does not involve an inventive step within Article 56 EPC.

- 4.13 Since the Board can only decide on a request as a whole, the main request is rejected for lack of inventive step.

First auxiliary request (set C)

5. *Amendments (Article 123(2) and (3) EPC)*

5.1 Claim 1 of this request differs from that of the main request in that the method has been restricted to the use of the mandatory additives (a), (b) and (c) in amounts of 0.1 to 10.0 mass percent, 0.1 to 10.0 mass percent and 0.01 to 2.0 mass percent, respectively.

5.2 These amendments are supported by Claims 5, 7 and 10 of the application as filed, respectively.

5.3 Therefore, the amendments comply with the requirements of Article 123(2) EPC and since they bring about a restriction of the scope of protection conferred by indicating in Claim 1 the amounts specified in Claims 5, 7 and 10 of the patent in suit, they are also in conformity with the requirements of Article 123(3) EPC.

6. *Inventive step*

6.1 The subject-matter of present Claim 1 only differs from that of Claim 1 of the main request by the restriction of the amounts of the mandatory additives (a), (b) and (c) indicated in Claims 5, 7 and 10 as granted, namely to 0.1 to 10.0 mass percent, 0.1 to 10.0 mass percent and 0.01 to 2.0 mass percent, respectively.

6.2 However, according to document (2) the concentration of the dialkyl phosphonate (additive (a)) may range from 0.05% to 10% by weight, whereas according to document (1) (see the Table in column 49) and document (3) (see the Table in column 19) the dispersant may be used in an amount of 0.1% to 10% by weight and 0.5% to 11% by weight, respectively, and according to document (1) (see also the Table in column 49) the detergent may be applied in an amount of 0.01% to 6% by weight.

6.3 Under these circumstances, the Board has come to the conclusion that the subject-matter of present Claim 1 lacks inventive step for the same reasons as set out above for the main request and because the skilled person faced with the technical problem as defined above under point 4.8 would have used amounts of said additives known from the cited prior art and falling within the scope of present Claim 1 with a reasonable expectation of success without involving any inventive ingenuity.

6.4 As a result, this auxiliary request is not allowable either.

Second auxiliary request (set D)

7. *Amendments (Article 123(2) and (3) EPC)*

7.1 Claim 1 of this request differs from that of the first auxiliary request in that the claimed subject-matter has been restricted to the use of particular detergents as additive (c) specified in Claim 8 as granted, namely calcium sulfonate, calcium phenate, magnesium sulfonate and magnesium phenate.

7.2 This amendment is supported by Claim 8 of the application as filed.

7.3 Therefore, the amendment complies with the requirements of Article 123(2) EPC and since it brings about a restriction of the scope of protection conferred thereby, it is also in conformity with the requirements of Article 123(3) EPC.

8. *Inventive step*

8.1 Claim 1 according to this request differs from that of the first auxiliary request exclusively in that Claim 1 was restricted to the specified detergents.

8.2 However, as indicated above under point 4.12, third paragraph, suitable detergents in the field of automatic transmission fluids include e.g. highly basic metal salts, such as calcium or magnesium sulfonate (see e.g. document (1), column 40, lines 52 to 58; and document (13), claims 18 and 19).

8.3 Therefore, the Board concludes that the subject-matter of present Claim 1 lacks inventive step for the same reasons as set out above for the main request and the first auxiliary request, and because the skilled person faced with the technical problem as defined above under point 4.8 would have had a clear incentive from the cited prior art to solve it by applying a detergent as claimed in present Claim 1.

8.4 Consequently, this second auxiliary request is not allowable either.

Third auxiliary request (set A)

9. *Amendments (Article 123(2) and (3) EPC)*

9.1 According to this request Claim 1 as granted has been amended in that "a power transmission apparatus" has been restricted to "an automatic transmission having a having a continuously slipping torque converter clutch" as discussed on page 2, lines 23 to 42, of the patent in suit, and further limited by indicating that "the power transmitting fluid" is an "automatic transmission fluid" as claimed in Claim 11 as granted.

9.2 These amendments find their support on page 2, line 3 to page 3, line 7, and in Claim 11 of the application as filed. Therefore, the Board is satisfied that the subject-matter of present Claim 1 complies with the requirement of Article 123(2) EPC.

9.3 Furthermore, since the amendments represent a restriction with respect to the subject-matter of

Claim 1 as granted, the requirement of Article 123(3) EPC has been met too.

10. *Inventive step*

10.1 In accordance with the "problem-solution" approach consistently applied by the Boards of Appeal, it is necessary, as a first step, to establish the closest state of the art which is normally a prior art document disclosing subject-matter aiming at the same objective as the claimed invention and having the most relevant technical features in common.

10.2 According to present Claim 1 the claimed invention relates to a method of improving the anti-shudder durability for an automatic transmission having a continuous slipping torque converter clutch.

10.3 The Appellant argued that document (2) should be considered as the closest state of the art on the ground that the fluids were tested in a low velocity friction apparatus reproducing working conditions which occur in an automatic transmission having a continuously slipping torque converter clutch (see page 3, line 80 to page 3, line 6)

10.4 However, the test conditions used in document (2) differ from those applied in the patent in suit to assess the friction performance of the transmission fluid in an automatic transmission having a continuously slipping torque converter clutch, since according to document (2) the sliding speed ranges from 0.025m/s to 0.2m/s (see in particular page 3, line 97), whereas according to the Example in the patent in suit

the sliding speed ranges from 0.35m/s to 1.2m/s (see page 10, lines 49 to 51).

Furthermore, as submitted by the Respondent, it follows from document (8) that the critical zone for assessing the suitability of a fluid in an automatic transmission having a continuously slipping torque converter clutch starts at about 0.6 m/s (see in particular page 6, right column, second paragraph to page 7, Fig. 4 and paragraphs 1 to 3 below this Figure).

Consequently, although it is true that document (2) aims at improving the friction conditions in an automatic transmission device (see point 4.2 above, second paragraph), the Board finds that there is no indication in this document that such an automatic transmission device would include an automatic transmission having a continuously slipping torque converter clutch.

10.5 Under these circumstances, the Board concludes that document (2) cannot be considered as the closest state of the art, since it does not address the technical problem underlying the patent in suit relating to the anti-shudder durability for an automatic transmission having a continuous slipping torque converter clutch.

10.6 On the other hand, document (13) submitted by the Appellant, discloses a composition for providing an improved anti-shudder friction durability performance for automatic transmissions having continuous slip torque converter clutches (CSTCC) (see page 2, lines 7 to 10 and 17 to 22, and page 2, line 55 to page 3, line 1).

Therefore, this document relates to the same technical problem as the claimed subject-matter and for this reason the Board considers it as the closest state of the art.

10.7 Document (13) discloses in Claim 24, a fluid composition comprising

(A) a major amount of oil of lubricating viscosity;

(B) at least three friction modifiers selected from:

- alkoxylated fatty amines
- borated fatty epoxides
- fatty phosphites
- fatty epoxides
- fatty amines
- borated alkoxylated fatty amines
- metal salts of fatty acids
- fatty acid amides
- glycerol esters
- borated glycerol esters
- fatty imidazolines

(C) at least one phosphorus acid, phosphorus acid salt, phosphorus acid ester or derivatives thereof or mixtures thereof;

(D) at least one overbased alkali or alkaline earth metal salt of an organic acid; and

(E) one or more reaction products of a carboxylic acylating agent and an amine.

Said components (D) and (E) correspond to the metallic detergents and ashless dispersants, respectively, as defined in present Claim 1 (see the patent in suit, page 8, lines 40 to 42 and page 6, lines 44 to page 7, line 17).

10.8 In the absence of evidence showing any improvement in view of this closest prior art, the technical problem in view thereof may be seen in the provision of an alternative process for realizing an adequate anti-shudder durability for an automatic transmission having a continuously slipping torque converter clutch.

10.9 According to present Claim 1 this technical problem has been solved by using an effective amount of an automatic transmission fluid comprising a mixture of (1) a major amount of a lubricating oil and (2) an anti-shudder improving effective amount of an additive combination comprising:

- (a) an oil soluble alkyl phosphonate having the structure as defined in Claim 1,
- (b) an ashless dispersant, and
- (c) a metallic detergent.

10.10 The next step is to verify whether or not the technical problem is solved within the whole claimed area.

The technical report (23) submitted by the Appellant with the statement of grounds of appeal shows that test 1 carried out without a metallic detergent (not according to the invention) shows a slope $d\mu/dV$ of -0.00337 after 9 hours, the acceptable limit for an adequate anti-shudder durability being -0.003 (see the

patent in suit page 10, lines 50-51). Furthermore, according to test 2 carried out in the presence of 0.1% by weight of zinc phenate (a metallic detergent as claimed in present Claim 1) the slope $d\mu/dV$ is even worse (-0.00503). Thus, it follows from these tests that zinc phenate does not solve the above technical problem, but rather worsens the friction properties of the composition.

It is true, that the Respondent contested the relevancy of those tests on the ground that they had not been run under the same test regime as indicated in the patent in suit. However, he did not provide any reason rendering it plausible that by using the different test conditions the measured effects of the additives were not reliable. For this reason, the Respondent's objection in this respect cannot be accepted.

10.11 Consequently, the technical problem underlying the patent in suit in view of the closest prior art, which - as indicated under point 9.2 above - may be seen in the provision of an alternative process for realizing an adequate anti-shudder durability for an automatic transmission having a continuously slipping torque converter clutch, has not been solved within the whole scope of present Claim 1. Moreover, this technical problem cannot be reformulated into a less ambiguous and indeed solved technical problem. Under these circumstances, wherein the alleged technical effect being the sole reason for inventiveness cannot be achieved by all claimed alternatives, and having regard to the general principle of law developed by the Boards of Appeal that the extent of the monopoly conferred by a patent should correspond to and be justified by the

technical contribution to the prior art (see Case Law of the Boards of Appeal of the EPO, 4th edition 2001, page 101, fourth paragraph, and T 939/92 (OJ EPO 1996, 309), in particular point 2.4.2), the Board concludes that the claimed process does not involve an inventive step.

10.12 Consequently, the third auxiliary request is also not allowable.

Fourth auxiliary request (set B)

11. *Amendments (Article 123(2) and (3) EPC)*

11.1 According to this request Claim 1 of the third auxiliary request has been amended by indicating that the metallic detergent (additive (c)) is selected from neutral or overbased salts of calcium or magnesium as specified on page 8, lines 48 and 49.

11.2 This amendment finds its support on page 20, lines 6 to 8, of the application as filed. Therefore, and in view of the considerations under points 9.1 and 9.2 above, the Board is satisfied that the subject-matter of present Claim 1 complies with the requirement of Article 123(2) EPC.

11.3 Furthermore, since the amendment represents a further restriction with respect to the subject-matter of Claim 1 as granted, the requirement of Article 123(3) EPC has been met too.

11.4 In this context, the Board notes that Claims 2 to 10 correspond to Claims 2 to 10 as granted.

12. *Inventive step*

12.1 For the same reasons as has been set out with respect to the third auxiliary request, the Board considers that document (13) represents the closest state of the art and that the technical problem in view thereof may be seen in the provision of a further method of realizing an adequate anti-shudder durability for an automatic transmission having a continuously slipping torque converter clutch.

12.2 According to present Claim 1 this technical problem has been solved by using an effective amount of an automatic transmission fluid comprising a mixture of (1) a major amount of a lubricating oil and (2) an anti-shudder improving effective amount of an additive combination comprising:

- (a) an oil soluble alkyl phosphonate having the structure as defined in Claim 1,
- (b) an ashless dispersant, and
- (c) a metallic detergent is selected from neutral or overbased salts of calcium or magnesium.

12.3 In view of the technical information provided in the patent in suit and because the use of zinc phenate does not fall under the scope of the claims anymore, the Board finds it plausible that the technical problem as defined above has been solved within the whole claimed area.

12.4 It remains to be decided whether or not, the claimed solution to the above defined technical problem is obvious in view of the cited prior art.

12.5 The question arises, in particular, whether the person skilled in the art would have modified the automatic transmission liquid in document (13), in particular in Claim 24 (see point 10.7 above), so that it would comprise a combination of additives (a), (b) and (c) as claimed, thus including an alkyl phosphonate within the definition of Claim 1, in order to solve the problem as defined above.

12.6 The Appellant argued that the fatty phosphites indicated in document (13) as having the formula $(RO)_2PHO$ (see page 8, lines 30 to 41) are actually alkyl phosphonates and as such suitable as one of the possibly applicable additives of component (B) of the composition specified in Claim 24.

However, even if said fatty phosphites were actually alkyl phosphonates, they would not fall under the scope of present Claim 1, since according to this claim the rest "R" in the formula $(OR_1)(OR_2)RPO$ cannot be hydrogen. Therefore, document (13) alone does not give the skilled person any incentive to the solution of the technical problem defined above by a automatic transmission fluid as defined in present Claim 1.

12.7 The Appellant also argued that, starting from document (13), the claimed process was obvious in the light of document (2), since this document disclosed, as indicated under point 4.2 above, the use of alkane phosphonates falling under the scope of present Claim 1 as friction modifiers in automatic transmission fluids.

However, although document (2) refers to alkane phosphonates as claimed according to the patent in suit, that document does not, as set out under points 10.3 to 10.5, address the technical problem underlying the patent in suit of providing an adequate anti-shudder durability for an automatic transmission having a continuously slipping torque converter clutch. Therefore, document (2) cannot give any hint on how to solve this specific technical problem and, consequently, a skilled person would not take the teaching of this document into consideration when looking for its solution. Moreover, even if he would have done so, the skilled person would not have any reason in view of the teaching of document (13) as a whole to replace the fatty phosphite (or phosphonate) additive by an alkyl phosphonate as defined in present Claim 1 or to add such a compound. In this context, the Board observes that it is well known in the art, that technology of automatic transmission fluids is complex and that the introduction of further additives may cause undesirable interaction effects with other additive components (see e.g. document (1), column 3, lines 36 to 47; and document (3), column 1, lines 42 to 50).

Therefore, document (2) does not render obvious the proposed solution of the technical problem underlying the patent in suit as well.

- 12.8 The Appellant not relying on further documents in order to object to the absence of an inventive step with respect to Claim 1 of this request, the Board is satisfied that none of the aforementioned documents in the proceedings, either individually or in combination, renders the proposed solution obvious.

For these reasons the Board concludes that the subject-matter of present Claim 1, and by the same token, that of the dependent Claims 2 to 10 involves an inventive step within the meaning of Articles 52(1) and 56 EPC.

13. *Remittal to the first instance (Article 111(1) EPC)*

Having so decided, the Board has not, however, taken a decision on the whole matter, since amendments to the description are required in order to bring it into conformity with the claims of the present fourth auxiliary request. Therefore, and having regard to the fact that the function of the Boards of Appeal is primarily to give a judicial decision upon the correctness of the earlier decision taken by the first instance, the Board exercises its discretion under Article 111(1) EPC to remit the case to the first instance for the sole purpose of properly adapting the description of the patent in suit to the present claims.

Fifth and sixth auxiliary requests

14. The preceding fourth auxiliary request being allowable for the reasons set out above, there is no need for the Board to decide on these requests.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The case is remitted to the first instance with the order to maintain the patent on the basis of the fourth auxiliary request filed with letter dated 16 September 2004 (Claims 1 to 10 set B) and a description to be adapted.

The Registrar

The Chairman

N. Maslin

J. Jonk