

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte* EXXONMOBIL RESEARCH & ENGINEERING CO.  
and  
EADS AIRBUS SA

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Appeal 2008-5775  
Reexamination Control 90/007,158 and 90/007,712  
Patent 6,703,355 B2  
Technology Center 3900

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Decided: January 15, 2009

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Before CAROL A. SPIEGEL, ROMULO H. DELMENDO, and  
MICHAEL P. COLAIANNI, *Administrative Patent Judges*.

DELMENDO, *Administrative Patent Judge*.

DECISION ON APPEAL

Patent Owners ExxonMobil Research & Engineering Co. and EADS Airbus SA (hereinafter “Appellants”) appeal under 35 U.S.C. §§ 134(b) and 306 from a final rejection of claims 1-20 (Appeal Brief filed August 6, 2007, hereinafter “App. Br.” 1, 2, 8, and 9; Final Office Action mailed August 4, 2006). We have jurisdiction under 35 U.S.C. §§ 134(b) and 306.

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We AFFIRM. However, since our reasoning differs substantially from that of the Examiner, we designate our affirmance as a new ground of rejection pursuant to 37 C.F.R. § 41.50(b) in order to preserve Appellants' procedural safeguards under the rules of practice.

#### STATEMENT OF THE CASE

This merged reexamination proceeding arose from a consolidation of two separate requests for *ex parte* reexamination filed by Third Party Requestor Andrew S. Brenc of Brenc Law on August 8, 2004 (90/007,158) and September 10, 2005 (90/007,712) of United States Patent 6,703,355 B2 ('355 Patent) originally issued to Shlomo Antika, Marc-Andre Poirier, Jean-Michel Pascual, and Gerard Dallemande on March 9, 2004 (Decision Merging Reexamination Proceedings mailed on February 16, 2006). We have not been made aware of any pending court proceedings involving the '355 Patent.

The '355 Patent states that the invention relates to a method for lubricating high pressure aircraft hydraulic systems using a phosphate ester fluid as the hydraulic fluid (col. 1, ll. 10-13).

Claim 1, which is illustrative of the claimed subject matter, reads as follows:

1. A method for operating and lubricating aircraft hydraulic systems at pressure of about 4000 psi and exhibiting resistance to electro-chemical erosion in such aircraft hydraulic system by employing in the aircraft hydraulic systems operating at about 4000 psi as an aircraft hydraulic fluid a phosphate ester functional fluid comprising a major amount of fire resistant phosphate ester base stock and a minor effective amount of additives comprising one or more perfluoroalkyl sulfonic acid

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or perfluorocycloalkyl sulfonic acid, and salts of the same, anti erosion agent(s), one or more monoepoxide acid scavenger(s) and one or more viscosity index improver(s).

(App. Br. 40, Claims Appendix; bracketed text and underlining omitted.)

The Examiner relied upon the following as evidence of unpatentability:

Gamrath	2,707,176	Apr. 26, 1955
Deetman	5,464,551	Nov. 7, 1995

Wolfe, T.C., “Phosphate Ester Hydraulic Fluid Performance at Higher Pressure,” *Solutia* (October 14, 1998) (hereinafter Wolfe).

“JAWS OF LIFE Rescue Systems,” Instruction Manual: 5.5 HP Honda Gas Power Unit, Rev. A, Hurst Emergency Products (1997) (hereinafter “JAWS OF LIFE”).

The Examiner rejected claims 1-20 under 35 U.S.C. § 103(a) as unpatentable over: (i) Deetman alone; (ii) Deetman and Wolfe; (iii) Deetman, Wolfe, and “JAWS OF LIFE”; or (iv) Gamrath, Deetman, Wolfe, and “JAWS OF LIFE” (Examiner’s Answer mailed October 19, 2007, hereinafter “Ans.” 4-10).<sup>1</sup>

Deetman is a key prior art reference in all four of the Examiner’s rejections. Specifically, the Examiner found that “Deetman . . . teaches the hydraulic fluids of the claims” but does not disclose the “hydraulic pressures

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<sup>1</sup> According to the Examiner, a final rejection of claims 1-20 under the second paragraph of 35 U.S.C. § 112 has been withdrawn (Ans. 3; Final Office Action at 10).

for which the hydraulic fluids are suitable” (Ans. 5). Nevertheless, the Examiner concluded that “it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the hydraulic fluids of Deetman in a hydraulic system, including an aircraft hydraulic system operating at a pressure of about 4000 psi . . . because Deetman teaches that these fluids have improved thermal, hydraulic and oxidative stability. . . .” (Ans. 5-6). Appellants, on the other hand, contend that “Deetman does not teach, suggest or imply that those fluids, whose demonstrated utility are in hydraulic systems operating at elevated temperature at up to about 3000 psi can be necessarily expected to be successfully employable at pressures significantly in excess of 3000 psi” (App. Br. 11).

## ISSUE

Thus, the issue arising from the contentions of the Examiner and Appellants is:

Have Appellants shown reversible error in the Examiner’s conclusion that a person having ordinary skill in the art would have found it obvious to operate Deetman’s aircraft hydraulic fluid at about 4000 psi in view of the applied prior art?

## FINDINGS OF FACT

1. The ‘355 Patent states that “[c]ommercial transport aircraft typically utilize phosphate ester hydraulic fluids while military

aircraft utilize mineral oil or polyalphaolefin hydraulic fluids” (col. 1, ll. 24-26).

2. According to the ’355 Patent, phosphate esters have superior fire resistance properties, but tend to absorb atmospheric moisture readily and build up high concentrations of water (col. 1, ll. 43-52).
3. Further according to the ’355 Patent, phosphate esters react with water (hydrolyze) to form alcohols and acids (col. 1, ll. 52-53).
4. The extent of hydrolysis sets the life of the phosphate ester fluid (col. 1, ll. 53-56).
5. Damage to hydraulic system parts by acid erosion increases with increasing operating temperature and with increasing differential pressure to which a hydraulic pressure device is exposed (col. 1, ll. 57-63).
6. The ’355 Patent further states that “[t]he standard operating pressure for aircraft hydraulic systems is nominally 3000 psi” (col. 1, ll. 26-28).
7. The ’355 Patent acknowledges that it is known to operate some military aircraft hydraulic systems at pressures above 3000 psi (and up to 5000 psi) (col. 1, ll. 29-36).
8. The ’355 Patent further acknowledges that the Concorde supersonic civil transport aircraft hydraulic system operates at 4000 psi, although “it utilizes a silicate ester hydraulic fluid rather than a phosphate ester hydraulic fluid” (col. 1, ll. 36-39).

9. Deetman discloses a phosphate ester aircraft hydraulic fluid having improved thermal, hydrolytic, and oxidative stability (col. 1, ll. 9-12).
10. Specifically, Deetman describes an aircraft hydraulic fluid comprising: *a fire resistant phosphate ester base stock*, the base stock comprising between about 10% and about 100% by weight of a trialkyl phosphate, between about 0% and about 70% by weight of a dialkyl aryl phosphate, and from about 0% to about 25% by weight of an alkyl diaryl phosphate, with the proviso that the sum of the proportionate amount of each base stock component must equal 100%, each alkyl group having between 3 and 8 carbon atoms and bonded to the phosphate moiety via a primary carbon, the alkyl group preferably being an isoalkyl group; *an acid scavenger* in an amount effective to neutralize phosphoric acid partial esters formed in situ by hydrolysis of any of the phosphate esters of the base stock; *an anti-erosion additive* in an amount effective to inhibit flow-induced electrochemical or zeta corrosion of the flow metering edges of hydraulic servo valves in hydraulic systems; *a viscosity index improver* in an amount effective to cause the fluid composition to exhibit a viscosity of at least about 3.0 centistokes at about 210°F., at least about 9.0 centistokes at about 100°F., and less than about 4200 centistokes at -65°F.; an anti-oxidant in an amount effective to inhibit oxidation of fluid composition components in the presence of oxygen; and a

copper and iron corrosion inhibitors (col. 2, l. 43 to col. 3, l. 11; col. 3, ll. 37-41; col. 3, l. 57 to col. 4, l. 9; col. 4, ll. 22-35; col. 10, l. 16 to col. 11, l. 46).

11. In Table 1, Deetman teaches the use of triaryl phosphate ester (col. 12, ll. 33-47).
12. Deetman teaches 3,4-epoxycyclohexane carboxylate is a preferred acid scavenger (col. 7, l. 66 to col. 8, l. 1).
13. Deetman also teaches that a potassium salt of a perfluoroalkylsulfonic acid is a preferred anti-erosion agent (col. 9, ll. 1-3).
14. Deetman further teaches the use of a mixture of ammonium hexafluorophosphate and calcium di(perfluoromethanesulfonate) as the anti-erosion agent (col. 33, ll. 11-14).
15. The Examiner's determination that Deetman would have disclosed or suggested the components (in appropriate amounts) that make up the hydraulic fluid recited in the appealed claims is undisputed.
16. Deetman does not explicitly disclose the range of suitable aircraft hydraulic operating pressures for the disclosed hydraulic fluid.
17. Appellants relied on a Declaration of Shlomo Antika filed pursuant to 37 C.F.R. § 1.132 on August 25, 2005 (Evidence Appendix; hereinafter "Antika Declaration").

18. The Antika Declaration states that not all phosphate ester hydraulic fluids perform satisfactorily (Antika Declaration 2-3).
19. The Antika Declaration asserts (3-4):

[A]pplicants had surprisingly found that the HyJet IV-A Plus formulation (i.e., formulations containing mono epoxide acid scavenger and perfluoroalkyl sulfonate anti-erosion additive) can meet performance requirements when operated at over 5000 psi, as well as at 3000 psi as demonstrated for such fluid in Tables A and B of U.S. Patent 6,703,355 while indicating that the HyJet IV-A formulation listed in Table 11 (of Deetman reference) will not meet performance requirements at high pressure;  
....

#### PRINCIPLES OF LAW

On appeal to this Board, Appellants must show that the Examiner reversibly erred in finally rejecting the claims. *Cf. In re Kahn*, 441 F.3d 977, 985-986 (Fed. Cir. 2006); *see also* 37 C.F.R. § 41.37(c)(1)(vii).

“Section 103 forbids issuance of a patent when ‘the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.’” *KSR Int’l Co. v. Teleflex, Inc.*, 127 S. Ct. 1727, 1734 (2007).

*KSR* disapproved a rigid approach to obviousness (*i.e.*, an analysis *limited to* lack of teaching, suggestion, or motivation). *KSR*, 127 S. Ct. at 1741 (“The obviousness analysis cannot be confined by a formalistic conception of the words teaching, suggestion, and motivation, or by overemphasis on the importance of published articles and the explicit

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content of issued patents.”). *See also DyStar Textilfarben GmbH & Co. Deutschland KG v. C.H. Patrick Co.*, 464 F.3d 1356, 1367 (Fed. Cir. 2006) (“Our suggestion test is in actuality quite flexible and not only permits, but requires, consideration of common knowledge and common sense”); *Alza Corp. v. Mylan Labs., Inc.*, 464 F.3d 1286, 1291 (Fed. Cir. 2006) (“There is flexibility in our obviousness jurisprudence because a motivation may be found implicitly in the prior art. We do not have a rigid test that requires an actual teaching to combine. . . .”).

It has long been an axiom of patent law that it is not inventive to discover the optimum or workable ranges of result-effective variables by routine experimentation. *In re Peterson*, 315 F.3d 1325, 1330 (Fed. Cir. 2003) (“The normal desire of scientists or artisans to improve upon what is already generally known provides the motivation to determine where in a disclosed set of percentage ranges is the optimum combination of percentages.”); *In re Aller*, 220 F.2d 454, 456 (CCPA 1955) (“[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation.”).

When a product recited in a claim reasonably appears to be substantially the same as a product disclosed in the prior art, the burden of proof is on appellant to prove that the prior art product does not inherently or necessarily possess the characteristics attributed to the claimed product. Cf. *In re Spada*, 911 F.2d 705, 708 (Fed. Cir. 1990); *In re Best*, 562 F.2d 1252, 1255 (CCPA 1977). Whether the rejection is based on inherency under 35 U.S.C. § 102 or on obviousness under 35 U.S.C. § 103, jointly or alternatively, the burden of proof is the same, and its fairness is evidenced

by the PTO's inability to manufacture products or to obtain and compare prior art products. *Best*, 562 F.2d at 1255.

## ANALYSIS

While we agree with Appellants that Deetman's teachings concerning improved stability for the disclosed fluid at higher temperatures is insufficient to establish an expectation that the fluid would be suitable at a pressure of about 4000 psi (Facts 13 and 14), we are nevertheless unpersuaded that the Examiner committed reversible error.

In this case, Appellants do not dispute that Deetman would have at least suggested the same hydraulic fluid recited in the appealed claims (Facts 9-15). Rather, Appellants focus on the lack of an explicit disclosure in Deetman as to the suitable operating pressures for the disclosed fluid (Fact 16). But Appellants' focus on the lack of an explicit disclosure of suitable ranges is misplaced. *KSR*, 127 S. Ct. at 1741 ("The obviousness analysis cannot be confined by a formalistic conception of the words teaching, suggestion, and motivation, or by overemphasis on the importance of published articles and the explicit content of issued patents.").

It has long been an axiom of patent law that it is not inventive to discover the optimum or workable ranges of result-effective variables by routine experimentation. *Peterson*, 315 F.3d at 1330 ("The normal desire of scientists or artisans to improve upon what is already generally known provides the motivation to determine where in a disclosed set of percentage ranges is the optimum combination of percentages."); *Aller*, 220 F.2d at 456 ("[W]here the general conditions of a claim are disclosed in the prior art, it is

not inventive to discover the optimum or workable ranges by routine experimentation.”).

Applying this principle, we conclude that a person having ordinary skill in the art would have determined, through nothing more than routine experimentation, the range of suitable operating pressures for Deetman’s hydraulic fluid, including pressures of about 4000-5000 psi. In determining the entire range of suitable operating pressures, a person having ordinary skill in the art would have been led to test Deetman’s hydraulic fluid at pressures that have been used in the prior art, including 4000-5000 psi, and would have found from that experimentation that the fluid is in fact suitable for 4000-5000 psi (Facts 1-8). On this point, it would reasonably appear that Deetman’s hydraulic fluid would necessarily be suitable for operation at higher pressures including 4000-5000 psi in view of its substantial identity or similarity to the hydraulic fluid recited in the appealed claims. Indeed, just like the hydraulic fluids recited in the appealed claims, Deetman’s fluid also contains a mono epoxide acid scavenger and perfluoroalkyl sulfonate anti-erosion additive (Facts 10-14 and 19). Appellants have failed to demonstrate with persuasive evidence that Deetman’s fluid would not be capable of operation at the claimed pressures. *Spada*, 911 F.2d at 708; *Best*, 562 F.2d at 1255.

For these reasons, the claimed subject matter would have been obvious to a person having ordinary skill in the art in view of Deetman’s disclosure alone.

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## CONCLUSION

On this record, we determine that Appellants have failed to show reversible error in the Examiner's conclusion that a person having ordinary skill in the art would have found it obvious to operate Deetman's aircraft hydraulic fluid at about 4000 psi in view of the applied prior art. To safeguard Appellants' procedural due process, we designate our affirmance as a new ground of rejection.

## DECISION

The Examiner's decision to reject appealed claims 1-20 is affirmed.

This decision contains a new ground of rejection pursuant to 37 C.F.R. § 41.50(b). 37 C.F.R. § 41.50(b) provides that “[a] new ground of rejection pursuant to this paragraph shall not be considered final for judicial review.”

37 C.F.R. § 41.50(b) also provides that the Appellants, *WITHIN TWO MONTHS FROM THE DATE OF THE DECISION*, must exercise one of the following two options with respect to the new ground of rejection to avoid termination of the appeal as to the rejected claims:

(1) *Reopen prosecution.* Submit an appropriate amendment of the claims so rejected or new evidence relating to the claims so rejected, or both, and have the matter reconsidered by the Examiner, in which event the proceeding will be remanded to the Examiner . . . .

(2) *Request rehearing.* Request that the proceeding be reheard under § 41.52 by the Board upon the same record . . . .

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Should Appellants elect to prosecute further before the examiner pursuant to 37 C.F.R. § 41.50(b)(1), in order to preserve the right to seek review under 35 U.S.C. §§ 141 or 145 with respect to the affirmed rejections, the effective date of the affirmance is deferred until conclusion of the prosecution before the examiner unless, as a mere incident to the limited prosecution, the affirmed rejections are overcome.

If Appellants elect prosecution before the examiner and this does not result in termination of the reexamination or a second appeal, this case should be returned to the Board of Patent Appeals and Interferences for final action on the affirmed rejections, including any timely request for rehearing thereof.

AFFIRMED  
37 C.F.R. § 41.50(b)

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