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Datasheet for the decision of 11 May 2016

Case Number: T 0803/12 - 3.5.03

Application Number: 99203494.2

Publication Number: 0999485

IPC: G05D1/08

Language of the proceedings: EN

Title of invention:
Method of automated thrust-based roll guidance limiting

Patent Proprietor:
The Boeing Company

Opponent:
Airbus SAS

Headword:
Automated thrust-based roll guidance limiting/BOEING

Relevant legal provisions:
EPC Art. 83, 100(b), 111(1)
EPC R. 103(1)(a), 106
RPBA Art. 11

Keyword:

Sufficiency of disclosure (all requests) - (no)
Remittal to the department of first instance - (no)
Reimbursement of appeal fee - (no)
Objection under Rule 106 EPC - (dismissed)
Request for correction of minutes before opposition division - (rejected)

Decisions cited:

G 0001/97, R 0020/10, R 0008/11, T 0171/84, T 0557/94, T 1198/97, T 0508/08

Catchword:

see point 3

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Case Number: T 0803/12 - 3.5.03

D E C I S I O N
of Technical Board of Appeal 3.5.03
of 11 May 2016

Appellant: (Patent Proprietor)	The Boeing Company 100 North Riverside Plaza Chicago, IL 60606-1596 (US)
Representative:	Korenberg, Alexander Tal Kilburn & Strode LLP 20 Red Lion Street London WC1R 4PJ (GB)
Respondent: (Opponent)	Airbus SAS 1 Rond-Point Maurice Bellonte 31700 Blagnac (FR)
Representative:	Santarelli 49, avenue des Champs-Elysées 75008 Paris (FR)
Decision under appeal:	**Decision of the Opposition Division of the European Patent Office posted on 8 February 2012 revoking European patent No. 0999485 pursuant to Article 101(2) EPC.**

Composition of the Board:

Chairman	F. van der Voort
Members:	A. Madenach
	S. Fernández de Córdoba

Summary of Facts and Submissions

I. The present appeal arises from the decision of the opposition division posted on 8 February 2012 revoking European patent No. 0 999 485.

II. The opposition division came to the conclusion that the ground for opposition according to Article 100(b) EPC prejudiced the maintenance of the European patent, because none of a main request and seven auxiliary requests filed with a letter dated 16 December 2011 met the requirements of Article 83 EPC.

III. With the statement of grounds of appeal the appellant (patent proprietor) submitted claims of an eighth auxiliary request.

IV. With its reply to the statement of grounds of appeal, the respondent (opponent) introduced documents CG1 and CG2.

CG1 is a document titled "Aerodynamic Principles of Large-Airplane Upsets", copyright 1998, The Boeing Company.

CG2 is a document titled "Energy/Energy Rate Meter for Energy Management in Flight" by D.C. Sederstrom et al., prepared for the Office of Naval Research, February 1973, and distributed by the National Technical Information Service, U.S. Department of Commerce.

V. In a communication pursuant to Article 15(1) RPBA accompanying a summons to oral proceedings, the board gave its preliminary opinion.

VI. With a letter dated 11 April 2016, the appellant submitted further arguments in support of its requests, and withdrew the eighth auxiliary request.

VII. Oral proceedings were held on 11 May 2016.

The appellant-patent proprietor requested, as a main request, that the decision under appeal be set aside and that the opposition be rejected. The appellant further requested that, if Article 100(b) EPC did not prejudice the maintenance of the patent as granted, the case be remitted to the opposition division for further examination regarding inventive step with respect to the main request and, where applicable, first to seventh auxiliary requests as filed with the letter dated 16 December 2011. Further, the appellant requested that, if the main request were held not allowable, the case be remitted to the opposition division for further examination of the first to seventh auxiliary requests as regards the ground for opposition according to Article 100(b) EPC. The appellant further requested that the appeal fee be reimbursed. Further, the appellant requested that the board instruct the opposition division to apply the requested corrections to the minutes of the oral proceedings before the opposition division.

The appellant further submitted an objection pursuant to Rule 106 EPC, worded as follows:

"The Boeing Company (patentee) hereby raises an objection pursuant to Rule 106 EPC that a procedural defect has taken place. The procedural defect is a defect under Article 112a(2)(c) EPC, in that a fundamental violation of Article 113 EPC has occurred. The fundamental violation of Article 113 EPC is that

the patentee's right to be heard before the Opposition Division regarding Auxiliary Requests 1 to 7 has been violated. The patentee was not given an opportunity to present oral arguments regarding Auxiliary Requests 1 to 7 at the Oral Proceedings before the Opposition Division. This situation cannot be rectified purely by the patentee being given the right to be heard on these requests before the Board of Appeal. In such a situation, the patentee would only have been heard before one instance. Under Article 21 EPC, the role of the Boards of Appeal is that they "shall be responsible for the examination of appeals from decisions of the Receiving Section, the Examining Divisions and Opposition Divisions, and the Legal Division". It is not the responsibility of the Board of Appeal to conduct a single-instance examination of Auxiliary Requests that were on file before the Opposition Division but regarding which the patentee was not given an opportunity to present oral arguments. Such an action would deprive the patentee of its right to be heard before the Opposition Division, its right to be heard before two instances and its right to a substantive appeal on the merits of the first decision issued by the EPO. We refer to Article 125 EPC and note that it is a principle of procedural law generally recognised in the contracting States that a party in legal proceedings has the right to appeal to a decision that is the first such decision to consider the issue being decided. The decision of the Opposition Division regarding the Auxiliary Requests was made without the patentee having presented oral arguments, and therefore is not a valid decision regarding the Auxiliary Requests. We also note that the rules of procedure of the Boards of Appeal are binding only to the extent that they do not lead to a situation which would be

incompatible with the spirit and purpose of the Convention (Article 23 RPBoA).

Regarding the decision of the Opposition Division, we refer to our letter of 6 March 2012 noting errors in the minutes. We also refer to our other written submissions on this issue throughout the proceedings.

We request that this objection be recorded in the minutes of the Appeal Oral Proceedings being held today, with a copy of this document being included as part of the minutes.

It is our intention that, should the Board of Appeal dismiss the above objection regarding Article 113 EPC and decide not to remit the case to the Opposition Division for a consideration of Auxiliary Requests 1 to 7, the patentee will proceed to file a petition for review under Article 112a after receiving the written decision to this effect from the Board of Appeal."

The respondent-opponent requested that the appeal be dismissed.

VIII. Claim 1 of the patent (main request) reads as follows:

"A method of automatic flight using a flight management system having a lateral navigation control mode (LNAV) in which the flight management system calculates a roll angle and provides a bank angle command signal to effectuate lateral flight guidance using the calculated roll angle, characterised by:

(a) evaluating the energy state of the airplane during the LNAV control mode and calculating a thrust based

roll limit as a function of the energy state of the airplane;

(b) comparing the thrust based roll limit to the calculated roll angle; and

(c) using the lesser of the thrust based roll limit and the calculated roll angle as the bank angle command signal; whereby the thrust based roll limit avoids an uncommanded change in aircraft altitude and/or airspeed."

Claim 2 of the patent (main request) reads:

"A method of automatic flight according to Claim 1, wherein the thrust based roll limit is calculated as a function of the ratio of the current level flight coefficient of lift to the maximum available coefficient of lift."

Claim 4 of the patent (main request) reads:

"A method of automatic flight according to Claim 1, further comprising providing a flight crew alerting message during flight using the thrust based roll limit as the bank angle command signal."

Claim 5 of the patent (main request) reads:

"A method of automatic flight according to Claim 1, wherein the thrust based roll limit is applied to the bank angle command signal during at least one of the group of turn maneuvers commanded by the FMS including direct flight to a waypoint, intercept of a course inbound to a waypoint, intercept of a course outbound from a waypoint, capture an existing course, initiating

and capture of an offset parallel route, acquisition and capture of a flight plan leg segment, flight through a planned en route turn, entry into a holding pattern, and maintaining flight within a holding pattern."

Claim 7 of the patent (main request) reads:

"A method of automatic flight according to Claim 1, further comprising visually indicating an increased size of a holding pattern on an electronic map resulting from use of the thrust based roll angle up to a maximum size representing a predefined airspace boundary limit."

Claim 1 of the first auxiliary request combines the features of claims 1 and 4 of the patent.

Claim 1 of the second auxiliary request combines the features of claims 1 and 7 of the patent.

Claim 1 of the third auxiliary request combines the features of claims 1 and 5 of the patent.

Claim 1 of the fourth auxiliary request combines the features of claims 1 and 2 of the patent.

Claim 1 of the fifth auxiliary request combines the features of claims 1, 2 and 4 of the patent.

Claim 1 of the sixth auxiliary request combines the features of claims 1, 2 and 7 of the patent.

Claim 1 of the seventh auxiliary request combines the features of claims 1, 2 and 5 of the patent.

Reasons for the Decision

1. Ground for opposition according to Article 100(b) EPC

1.1 Relevant to the question of whether or not this ground for opposition prejudices the maintenance of the patent on the basis of any of the pending requests is the term "energy state of the airplane" as used, for example, in claim 1 of the patent. In order to be able to carry out the claimed invention, the skilled person would need to know how to determine the energy state, since it is necessary for calculating the thrust-based roll limit (TBRL), and how to calculate the TBRL on the basis of this quantity (see claim 1).

1.2 The meaning of the term "energy state" and how it is to be determined is, following the case law, to be established by considering the patent as a whole and common general knowledge.

1.3 In view of the statements in the appellant's letter dated 11 April 2016 and in the respondent's reply to the statement of grounds of appeal, it was common ground between the parties that the term "energy state of an airplane" had a well-known meaning in the art. Referring to CG1 (see the first three paragraphs of the section "Energy Management", starting at the bottom of the second page) and CG2 (section III, first paragraph), there are three sources of energy for an airplane, *i.e.* the kinetic energy, which increases with increasing airspeed, the potential energy, which is proportional to altitude, and the chemical energy, which is from the fuel in the airplane's tank. Further, "[t]he term "energy state" describes how much of each kind of energy the airplane has available at any given time". Hence, the "energy state" is the sum of the

airplane's kinetic, potential and chemical energy at any given time.

1.4 The board accepts this interpretation, which also complies with general physical principles. Consequently, the skilled person would have known, on the basis of claim 1 (of all requests) alone, how to determine this quantity which is necessary in order to calculate the TBRL and, thus, to carry out the claimed invention.

1.5 It remains to be established how the TBRL is to be calculated on the basis of the energy state of the airplane. In the board's judgement, this calculation is not a matter of common general knowledge. Nor did the appellant argue otherwise.

As concerns the information contained in the application as filed, the board notes the following (reference being made to the patent specification):

1.6 It follows from paragraph [0014] of the patent specification that according to the present invention the flight management computer (FMC) continuously evaluates the energy state of the airplane and, when necessary, limits the bank-angle command such that the aircraft does not experience an uncommanded altitude or airspeed change. An essentially similar statement is made in paragraph [0038]. There is, however, no information or teaching in the patent specification which directly links the energy state to the TBRL. The only other part of the patent specification which mentions the energy state of the airplane is paragraph [0019]. This paragraph, however, deals with energy states in which the TBRL may be relaxed and, hence,

presupposes that the calculation of the TBRL on the basis of the energy state is done.

1.7 As the patent gives no indication as to how to calculate the TBRL on the basis of the airplane's energy state and noting that this is not part of the common general knowledge of the skilled person, the patent does not disclose the invention in a manner sufficiently clear and complete for it to be carried out by a person skilled in the art.

1.8 The appellant referred to the embodiment of the invention which is described in detail in paragraphs [0015]-[0018] with reference to Figures 2-5. According to this embodiment, the FMC obtains systems inputs indicating various types of airplane state, engine and performance data. The inputs include airplane altitude, autothrottle thrust limit and current speed, which are used to calculate the TBRL (paragraph [0016]). This calculation is described in more detail in paragraph [0018]. An essential quantity for this calculation is the available thrust, which is determined from the values stored in the FMC database, which include the pressure altitude, Mach number and total air temperature. According to the appellant, pressure altitude is the altitude as obtained by measuring the ambient air pressure.

The appellant argued that the skilled reader, bearing in mind that the term "energy state" as used in claim 1 was known to include the kinetic, potential and chemical energy of the airplane, would understand that the claimed calculation of the TBRL corresponded to the calculation given in paragraph [0018], since it was based on the pressure altitude as a measure of the potential energy and the Mach number as a measure of

the kinetic energy. With respect to the chemical energy, the appellant argued that the skilled person would be aware that the flight situation of the airplane at a given moment would not depend much on the amount of fuel it was carrying but rather on its speed and altitude. Therefore, the skilled person would disregard the chemical energy when calculating the TBRL and would consider the calculation given in paragraph [0018] to be an embodiment which allowed the skilled person to carry out the claimed invention.

1.9 The board is not convinced by the appellant's arguments for the following reasons:

Assuming that it was part of the skilled person's common general knowledge that the energy state of an airplane is the sum of its kinetic, potential and chemical energy and that he would disregard the erroneous statements in paragraph [0019], which, as the appellant conceded, are at odds with that definition (following T 171/84 (OJ 1986, 95, point 13 of the reasons)), the skilled person would, in the absence of a direct link between the energy state of the airplane and the TBRL, expect a disclosure of the calculation of the TBRL involving the sum of the airplane's kinetic, potential and chemical energy, in order to be able to identify an implicit link. This is, however, not the case. Instead, the total available thrust is determined on the basis of the pressure altitude, Mach number and total air temperature. This calculation, which as such remains undefined, is therefore not based on the sum of the airplane's kinetic, potential and chemical energy, but on an unknown function of the airplane's pressure altitude, Mach number and total air temperature. Whereas the Mach number directly relates to the airplane's airspeed and, hence, to its kinetic energy

(see point 1.3 above), there is no direct relationship between pressure altitude and the airplane's potential energy. The altitude as measured by the ambient pressure is only indirectly related to the airplane's potential energy, since it comprises in addition to the airplane's absolute altitude (which is, in fact, proportional to its potential energy) a value which reflects local air pressure variations. Further, the chemical energy of the airplane does not enter into the calculation at all. Consequently, the skilled person would not be in a position to identify the calculation of the TBRL as given in paragraph [0018] as being the same as the calculation of the TBRL on the basis of the airplane's energy state as claimed in claim 1.

As to the argument that the skilled person would, for certain calculations, not consider the chemical energy of the airplane, in the absence of documentary evidence supporting this assertion the board considers that the skilled person would not disregard the chemical energy of the airplane as part of the airplane's energy state, since it makes in most instances by far the largest contribution to it.

1.10 The appellant further argued that the decision of the opposition division regarding the term "energy state" related to clarity (Article 84 EPC) rather than to sufficiency (Article 83 EPC).

The board disagrees. Even if the opposition division stated in paragraph 16 of the decision under appeal that the term "energy state" had no well-defined meaning and that its interpretation was not evident, in the ensuing paragraphs 16.1 to 16.6 it referred to the patent as a whole as a source for interpreting this term, as required by Article 100(b) EPC.

1.11 Finally, the board notes that the appellant based its arguments during the opposition and appeal proceedings on different interpretations of the terms "energy" and "energy state" in the context of the present invention, *viz.* "The energy is at its maximum at the highest possible altitude and/or the highest possible speed." and "The energy state clearly relates to the available energy relative to the above mentioned maximum energy." (reply to the notice of opposition dated 10 November 2005, page 3, third and fourth paragraphs), "*'energy state'* is to be understood as meaning *'available thrust'*" (during the oral proceedings before the opposition division and in the statement of grounds of appeal, page 3, third paragraph), and "Three sources of energy are available to generate aerodynamic forces and thus maneuver the airplane: kinetic, which increases with increasing airspeed; potential, which is proportional to altitude; and chemical, which is from the fuel in the airplane's tanks. The term "energy state" describes how much of each kind of energy the airplane has available at any given time." (submission dated 11 April 2016, page 1, last paragraph). These interpretations are to a great extent contradictory or at least mutually incompatible. The board understands this as a further indication that the skilled person's understanding of the term "energy state" was not sufficiently clear for him/her to be able to carry out the invention.

1.12 For the above reasons, the patent as granted does not disclose the invention in a manner sufficiently clear and complete for it to be carried out by a person skilled in the art (Article 100(b) EPC).

1.13 With respect to the auxiliary requests, the board notes that the term and the feature crucial to the question of whether or not the skilled person would be able to carry out the invention as claimed in claim 1 as granted, *i.e.* the airplane's "energy state" and the calculation of the TBRL on the basis thereof, also appear in claim 1 of each of the auxiliary requests (see point VIII above). The board does not see how the additional features in each of these claims would lead to a different conclusion from that reached on claim 1 as granted.

The appellant's only specific argument in respect of the auxiliary requests related to claim 1 of the fourth auxiliary request, which combines the features of claims 1 and 2 of the patent. The appellant argued that the calculation of the TBRL according to the additional feature (claim 2 of the patent, see point VIII above) would allow the skilled person to determine the TBRL without the need to refer to the calculation of the TBRL as a function of the airplane's energy state.

The board is not convinced by this argument, since according to claim 1 of the fourth auxiliary request the calculation of the TBRL according to the additional feature (claim 2 of the patent) is additional to the calculation of TBRL as a function of the airplane's energy state, and thus does not replace it. Hence, the skilled person would still be faced with the question as to how to perform this calculation, as was the case with claim 1 as granted.

1.14 For the above reasons, the ground for opposition according to Article 100(b) EPC prejudices the maintenance of the patent as granted or in amended form

on the basis of one of the first to seventh auxiliary requests.

2. Remittal (Article 111(1) EPC)

2.1 The appellant requested that, if the main request were held not allowable, the case be remitted to the opposition division for further examination of the first to seventh auxiliary requests as regards the ground for opposition according to Article 100(b) EPC. The appellant argued that the case had to be remitted, since a substantial procedural violation had occurred before the opposition division because this ground for opposition was, according to the appellant and contrary to the statement in point 3 of the minutes of the oral proceedings before the opposition division ("The chairman stated that the parties should present their arguments in detail and thoroughly since this objection applied equally to all pending requests"), only discussed in relation to the main request (see also the appellant's request for correction of the minutes dated 6 March 2012). The appellant argued that its right to be heard in respect of this ground in relation to the auxiliary requests had thereby been violated.

2.2 The board is not in a position to determine whether or not the statement in point 3 of the minutes was actually made. However, even assuming that a substantial procedural violation had occurred, according to Article 11 RPBA the board has no obligation to remit a case to the department of first instance if special reasons present themselves for doing otherwise.

2.3 There are indeed special reasons for not remitting the present case, in view of the following circumstances:

- The central issue concerning the ground for opposition according to Article 100(b) EPC as discussed in respect to the main request remained the same for each of the first to seventh auxiliary requests. The board noted that the additional features of claim 1 of each of the auxiliary requests did not replace the calculation of the TBRL as a function of the airplane's energy state and, therefore, did not enable the skilled person to carry out this calculation.

- The proceedings with a filing year of 1999 and a priority year of 1998 had already taken a long time and would be further delayed if a remittal were ordered by the board.

- According to the established case law, there is no absolute right to have an issue decided on by two instances (see also point 3 below).

- The respondent objected to a remittal.

2.4 The appellant further argued that during the appeal proceedings the respondent had filed documents CG1 and CG2, which represented significant evidence which the appellant was unable to have considered by two instances. The board notes, however, that the appellant agreed that CG1 and CG2 merely confirmed the common general knowledge of the skilled person and actually referred to these documents itself in support of its own arguments (*cf.* the letter dated 11 April 2016).

Further, the appellant referred to Article 32 of the Agreement on Trade-related Aspects of Intellectual Property Rights (TRIPS), which provides for judicial review of any decision to revoke a patent.

However, as stated in T 557/94 (point 1.3 of the reasons), the board considers that Article 32 TRIPs does not limit the board's discretion concerning remittal. The board is, in any case, empowered to decide on the merits of the case (Article 111(1) EPC, second sentence, first alternative) and is not restricted to the second alternative of Article 111(1) EPC, second sentence, *i.e.* to remit the case to the first instance even where it is considering revoking the patent for the first time (which is not the case here). This was confirmed in G 1/97 (OJ 2000, 322; see point 5 of the reasons). Therefore, the board does not accept this argument.

The further reference to Article 125 EPC also fails, since Article 111(1) EPC gives the board a discretionary power to not remit a case. Hence, there is no absence of a procedural provision in the EPC which would require the board to take into account, under Article 125 EPC, the principles of procedural law generally recognised in the Contracting States.

2.5 In view of the above, the board decided not to remit the case.

3. Objection under Rule 106 EPC

3.1 The appellant filed an objection under Rule 106 EPC (see point VII above). The appellant alleged that its right to be heard before the opposition division regarding the first to seventh auxiliary requests had been violated, and that this could not be rectified by giving it the right to be heard before the board of appeal. In this respect, the board notes that the appellant explicitly stated at the oral proceedings

before the board that its right to be heard before the board had been fully respected.

3.2 The board dismisses the objection under Rule 106 EPC for the following reasons:

Rule 106 EPC requires that an objection in respect of a "procedural defect" be raised during the appeal proceedings. The "procedural defect" referred to in this rule is one of the procedural defects cited in Article 112a(2)(a) to (d) EPC and Rule 104 EPC. These procedural defects are all concerned with proceedings before the board and are attributable to a board. Therefore, and according to the case law of the Enlarged Board of Appeal, decisions of departments of first instance cannot be reviewed under Article 112a EPC, even where the fundamental right to be heard has been infringed during the proceedings before the first instance (cf. R 8/11, point 1.2 of the reasons, and R 20/10, point 2.1 of the reasons). In the present case, the alleged procedural defect, *i.e.* the violation of the appellant's right to be heard on the auxiliary requests during the opposition proceedings, is exclusively concerned with these proceedings.

The appellant did not argue otherwise, and, as noted above, at the oral proceedings before the board it stated that its right to be heard before the board had been fully respected.

3.3 For these reasons, the objection under Rule 106 EPC is to be dismissed.

4. Reimbursement of the appeal fee (Rule 103(1)(a) EPC)

4.1 According to Rule 103(1)(a) EPC the appeal fee shall be reimbursed "where the Board of Appeal deems an appeal to be allowable". Since this is not the case, the request for reimbursement of the appeal fee is to be rejected.

4.2 Further, the board notes that such reimbursement would also not equitable by reason of a substantial procedural violation.

According to the appellant, the ground for opposition according to Article 100(b) EPC was not discussed in relation to the first to seventh auxiliary requests, contrary to the statement under point 3 of the minutes of oral proceedings before the opposition division. Rather, this ground was only discussed in relation to the main request (see the appellant's request for correction of the minutes dated 6 March 2012). Consequently, its right to be heard before the opposition division in respect of this ground in relation to the auxiliary requests had been violated.

4.3 The board notes that the alleged substantial procedural violation only concerns the auxiliary requests, whilst the appeal is also against the decision in respect of the main request. Hence, a reimbursement of the appeal fee based on the alleged substantial procedural violation would not be equitable (Rule 103(1)(a) EPC).

5. Request to instruct the opposition division to correct the minutes of the oral proceedings before the opposition division

5.1 The board is not aware of any legal basis which would empower it to instruct the opposition division to correct the minutes, and nor has the appellant provided

any. Further, as a matter of principle, since the board cannot have any knowledge of what was actually said during the oral proceedings before the opposition division, it is not in a position to give any instructions concerning the minutes. The minutes fall under the exclusive remit of the department before which the oral proceedings took place (see also Rule 124(3) EPC). The board agrees in this respect with the findings in T 508/08 (*cf.* points 1 and 2 of the reasons: "[I]f the first instance (in this case, the opposition division) sees fit to ignore its obligation, *[board's note: i.e. to respond to a request for corrections of the minutes of the oral proceedings]*, there is nothing the board can do in this respect. The board has no power to compel the opposition division to discharge its obligations.") and in T 1198/97 (*cf.* point 7 of the reasons).

5.2 For these reasons, the request to instruct the opposition division to correct the minutes of the oral proceedings before the opposition division is refused.

Order

For these reasons it is decided that:

- The appeal is dismissed.
- The request for reimbursement of the appeal fee is rejected.
- The objection under Rule 106 EPC is dismissed.

The Registrar: The Chairman:

G. Rauh F. van der Voort

Decision electronically authenticated