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Datasheet for the decision of 1 October 2008

Case Number: T 1019/06 - 3.4.01

Application Number: 00952537.9

Publication Number: 1198720

IPC: G01S 5/14

Language of the proceedings: EN

Title of invention:
Method and system for creating an approach to a position on the ground from a location above the ground

Applicant:
Bell Helicopter Textron Inc.

Opponent:
-

Headword:
-

Relevant legal provisions:
EPC Art. 56

Relevant legal provisions (EPC 1973):
EPC Art. 84

Keyword:
"Inventive step - (yes) after amendment"

Decisions cited:
-

Catchword:
-

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Case Number: T 1019/06 - 3.4.01

D E C I S I O N
of the Technical Board of Appeal 3.4.01
of 1 October 2008

Appellant: Bell Helicopter Textron Inc.
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Decision under appeal: **Decision of the Examining Division of the European Patent Office posted 27 January 2006 refusing European application No. 00952537.9 pursuant to Article 97(1) EPC 1973.**

Composition of the Board:

Chairman: B. Schachenmann
Members: F. Neumann
G. Assi

Summary of Facts and Submissions

I. The appeal, received on 24 March 2006, lies from the decision of the examining division, dispatched on 27 January 2006 refusing the European patent application number 00952537.9 on the ground of lack of inventive step. The fee for the appeal was paid on 24 March 2006. The statement setting out the grounds of appeal was filed on 28 May 2006.

II. During the appeal proceedings, the following citations were taken into account:

D1: US-A-4 839 656
D2: EP-A-0 399 670.

III. In the communication sent as an annex to the summons to oral proceedings, the Board drew attention to a number of objections under Article 123(2) EPC. Moreover, the Board discussed the disclosures of D2 and D1, arguing that employing the airborne computer generated image system of D2 in an automatic flight control system, as suggested by D2 itself, would inevitably result in the subject-matter defined in claim 1 of the main request.

IV. In an attempt to overcome the objections raised by the Board and in preparation for the oral proceedings, the appellant filed four sets of claims forming the basis of a main request and three auxiliary requests.

V. The arguments of the appellant, insofar as they are relevant to the present decision, can be summarised as follows:

With regard to the claims of the main request, the appellant explained that during proceedings before the examining division, claim 1 had been amended in order to clarify the manner in which the approach was created. In particular, it was specified that the processor created an approach for the aircraft by means of evaluating the "position on the ground, the in flight position and the digital terrain elevation and obstacle data". In view of the Board's objection that "evaluating the position on the ground" did not find any basis at this level of generality in the original disclosure, reference to the position on the ground had been removed from claim 1.

With regard to the teaching of D2, the appellant submitted that D2 did not disclose - and did not even suggest - an aircraft approach system for creating an approach for an aircraft to a landing position on the ground. It was submitted that D2 was merely a jumble of speculative, non-enabled features and could not be considered to guide the skilled person to the subject-matter of claim 1 of the main request.

VI. During the oral proceedings before the Board, the appellant requested that the decision under appeal be set aside and a patent be granted on the basis of claims 1-25 as set out in a main request as filed with letter of 29 August 2008, or alternatively with claims 1-22, description pages 1-6, 6a and 7-18 and Figures 1-7 as filed as a first auxiliary request during the oral proceedings of 01 October 2008.

VII. Independent claim 1 of the appellant's **main request** reads as follows:

"An aircraft approach system (30) for creating an approach for an aircraft (12) to a landing position (16) on the ground (14) from a location above the ground comprising:
a database, the database containing digital terrain elevation data and obstacle data;
characterised in that the database is onboard the aircraft and the system further comprises:
a global positioning receiver (42) onboard the aircraft for identifying an in flight position of the aircraft;
an input device onboard the aircraft for selecting the position on the ground displayed on a digital moving map;
a real-time mapping device onboard the aircraft for identifying obstacles; and
a processor onboard the aircraft communicably linked to an onboard display unit, the database, the real-time mapping device and the global positioning receiver;
the processor generating the digital moving map on the display unit from the digital terrain elevation data and obstacle data and creating an approach for the aircraft to the position on the ground by means of evaluating the in flight position and the digital terrain elevation data and obstacle data, the processor being configured to (a) compare obstacles in the approach, which are identified by the real-time mapping device, to the obstacle data in the database so as to verify the validity of the obstacle data in the database, and (b) if the identified obstacles are different from the obstacles in the database to modify the created approach if necessary."

The main request includes, in addition, further independent claims and dependent claims, the wording of which is not relevant to the present decision.

Independent claim 1 of the appellant's **first auxiliary request** reads as follows:

"*An aircraft approach system (30) for creating an approach for an aircraft (12) to a landing position (16) on the ground (14) from a location above the ground comprising:*
a database onboard the aircraft, the database containing digital terrain elevation data and obstacle data;
a global positioning receiver (42) onboard the aircraft for identifying an in flight position of the aircraft;
an input device onboard the aircraft for selecting the landing position on the ground as displayed on a digital moving map;
a real-time mapping device onboard the aircraft for identifying obstacles; and
a processor onboard the aircraft communicably linked to an onboard display unit, the database, the real-time mapping device and the global positioning receiver;
the processor being configured to generate the digital moving map on the display unit from the digital terrain elevation data and obstacle data and being configured to create an approach for the aircraft to the position on the ground by means of evaluating the in flight position and the digital terrain elevation data and obstacle data and by means of determining direction, elevation and distance from the location above the ground (14) to the landing position (16) on the ground, the processor being configured to (a) compare obstacles in the approach, which are identified by the real-time mapping device, to the obstacle data in the database so as to verify the validity of the obstacle data in the database, and (b) if the identified obstacles are different from the

obstacles in the database to modify the created approach if necessary."

Independent claims 10 and 18 of this request read respectively as follows:

"*A method for creating an approach for an aircraft (12) to a landing position (16) on the ground (14) from a location above the ground, the method comprising the steps of:*
generating a digital moving map (50) on a display unit (38) onboard the aircraft from digital terrain elevation data and obstacle data stored in a database (34) onboard the aircraft;
identifying an in flight position of the aircraft with a global positioning receiver (42);
inputting the landing position on the ground as displayed on the digital moving map;
creating an approach for the aircraft to the position on the ground by means of evaluating the in flight position and the digital terrain elevation data and obstacle data and by means of determining direction, elevation and distance from the location above the ground to the landing position on the ground, and receiving real time mapping data from a real-time mapping device onboard the aircraft, comparing obstacles identified by the real-time mapping device with the digital obstacle data and modifying the created approach if necessary if the identified obstacles are different from the obstacles stored in the database."

"*A computer program embodied on a computer readable medium for creating an approach for an aircraft (12) to*

a landing position (16) on the ground (14) from a location above the ground, comprising:
a code segment for generating a digital moving map (50) on a display unit (38) onboard the aircraft from digital terrain elevation data and obstacle data stored in a database (34) onboard the aircraft;
a code segment for identifying an in flight position of the aircraft with a global positioning receiver (34);
a code segment for inputting the landing position on the ground as displayed on the digital moving map;
a code segment for creating an approach for the aircraft to the position on the ground selected on the digital moving map from the location above the ground by means of evaluating the in flight position and the digital terrain elevation data and obstacle data and by means of determining direction, elevation and distance from the location above the ground to the position (16) on the ground (14); and
a code segment for comparing obstacles identified with a real-time mapping device with obstacle data in the database (34), a code segment for verifying the validity of the obstacle data in the database and a code segment for modifying the approach if necessary."

Claims 2 to 9, 11 to 17 and 19 to 22 are dependent claims.

Reasons for the Decision

1. In view of the recent entry into force of the EPC 2000, reference is made to Article 7(1), 2nd sentence of the Revision Act of 29 November 2000 ("Act revising the Convention on the Grant of European Patents (European

Patent Convention) of 5 October 1973, last revised on 17 December 1991"), and the transitional provisions for the amended and new provisions of the EPC (Decision of the Administrative Council of 28 June 2001), from which it may be derived which Articles of the EPC 1973 are still applicable and which Articles of the EPC 2000 shall apply.

Main Request:

2. **Article 84 EPC 1973:**

The present application presents the aim of the invention as being to provide a method and system for utilising GPS to create a precision approach procedure to a position on the ground using (only) onboard equipment (page 5, lines 14-18). This would enable the pilot to select any arbitrary location (i.e. not necessarily a known landing strip or airport) at which he wants to land. According to the description, this aim is achieved by providing an onboard processor to create a precision approach to that position by evaluating the digital terrain elevation data and obstacle data stored in the on-board database and by determining the direction, elevation and distance to the landing position (page 6, lines 15-21; page 17, lines 4-12).

Claim 1 defines only that the onboard processor creates an approach for the aircraft to the position on the ground by means of evaluating the in-flight position and the digital terrain elevation data and obstacle data. However, a precision approach cannot be created without taking the landing position into account. Thus, the aim of the invention as set out in the description cannot be

achieved by the features defined in claim 1: it is essential for the definition of the invention that claim 1 makes reference to the fact that the landing position is employed in the creation of the approach.

Hence, claim 1 is inconsistent with - and thus not supported by - the description (Article 84 EPC 1973) since it does not contain the features which are necessary to define the invention as it is presented in the description, i.e. those features which are required to solve the problem with which the invention is concerned.

First Auxiliary Request:

3. **Article 84 EPC 1973:**

Claim 1 of the first auxiliary request defines that the on-board processor is configured to create an approach for the aircraft to the position on the ground by means of evaluating the in-flight position and the digital terrain elevation data and obstacle data and by means of determining the direction, elevation and distance from the location above the ground to the landing position on the ground. This reference to the landing position reflects the wording used in the application as filed (page 17, lines 8-12). Corresponding wording has been introduced into the independent claims 10 and 18.

The features necessary for defining the invention are therefore now included in the independent claims.

4. **Articles 52(1), 56 EPC:**

4.1 In the contested decision, the examining division considered D2 to be the closest prior art for the independent claim 1 on file at that time.

4.2 The closest prior art for assessing inventive step is normally to be considered as that prior art document disclosing subject-matter conceived for the same purpose or aiming at the same objective as the claimed invention and is not necessarily that document showing the maximum number of technical features in common. The assessment process should start from a situation as close as possible in reality to that encountered by the inventor.

4.3 In the present case, D2 shows a large number of structural similarities to claim 1 of the main request. However, the Board is of the opinion that only a very academic reading of D2 with knowledge of the invention can enable the reader to arrive at an interpretation which would arguably make D2 the closest prior art for claim 1. It is emphasised that the prior art may not be interpreted in such a way that it is artificially found to disclose specific features recited in the claim under consideration, if this interpretation is based on hindsight knowledge of the invention.

The proper teaching of D2 is that of an enhanced computer generated display system for an aircraft and not a system for creating an approach to a landing position. The Board is aware that D2 indicates that the enhanced display system disclosed therein may be implemented in landing systems to provide improved visibility (column 3, lines 25-39) and that in a

separate passage of D2 it is noted that, in normal flight, the detection of any new obstacles in the flight path can trigger an alert such that the autopilot can perform evasive manoeuvres (column 10, lines 19-25). Nevertheless, the Board is of the opinion that only by reading the above two passages in D2 with knowledge of the invention could the skilled person arguably be led - albeit in a rather contrived manner - to the "creation" of an approach path. In particular, in order to arrive at the hindsight understanding of D2, the aircraft must first be located on an approach path (conventionally this is a path which has been computed at a ground station and relayed to the aircraft from the airport) and then an obstacle alert must occur which causes the autopilot processor to perform evasive action and deviate around the obstacle. This effectively results in a (new) approach being created by the onboard autopilot processor.

However, the Board is of the opinion that this way of interpreting D2 amounts to an inappropriate use of hindsight and that a fair reading of D2 without knowledge of the invention would not lead the skilled person to understand D2 to disclose a system for creating an approach to a landing position.

Moreover, claim 1 now defines that the onboard processor is configured to create the approach by means of determining direction, elevation and distance to the landing position. Even if D2 were to be considered to disclose that the autopilot processor creates an approach, D2 does not disclose that this approach is created in the manner now defined in claim 1. The evasion of an obstacle in D2 would appear to simply

involve the autopilot steering the aircraft around the obstacle and returning as soon as possible to the original course. This situation is to be distinguished from the situation now defined in claim 1 of the first auxiliary request in which the approach is created by the onboard processor by means of determining the various parameters. Thus, in view of the amendment made to claim 1, even reading D2 in the rather contrived manner referred to above, the way in which the approach is "created" in D2 is completely different to the way in which the approach is created in claim 1.

Thus, in the view of the Board, D2 cannot be considered to represent the closest prior art for the assessment of inventive step.

4.4 The Board is therefore of the opinion that, among the documents of file, D1 must be regarded as the closest prior art. In general terms, D1 is concerned with a system in which an approach path to a landing position is determined by a ground station. The landing position in D1 is a known landing location, typically a known airstrip. The ground station of D1 computes an approach path for the aircraft to the landing location and relays this approach path to the aircraft. The approach path is computed by means of evaluating the in flight position and the digital terrain elevation data and obstacle data and by determining the direction, elevation and distance from the calculated position of the aircraft to the known position of the airstrip (column 17, lines 5-15).

4.5 The main difference between the subject-matter of claim 1 and the disclosure of D1 is that a real-time mapping device is provided and the processor is

configured not only to create the approach but also to compare obstacles in the approach path identified by the real-time mapping device and to modify the created approach if necessary.

4.6 The technical effect of this difference is that up-to-the-minute information can be taken into account in the determination of the approach path: real-life data is used to complement the stored (possibly invalid) database information. The technical problem to be solved may therefore be seen to be the modification of the precision approach guidance device of D1 to enable the most up-to-date information to be employed in the generation of the approach path.

4.7 Although D2 is the only document cited in the search-report which discloses the real-time identification of uncharted obstacles, the Board is of the opinion that the skilled person would not look to D2 to solve this problem.

D2 primarily concerns a computer generated display system. The aim of D2 is to provide an accurate and realistic display so that the pilot can have full confidence in the computer-generated image with which he is presented. The idea in D2 is to update the image which is generated from the standard database with current up-to-date information so that the displayed image of the outside world is as accurate and as close to real-life as possible.

Thus D2, although being related in general terms to avionics, does not concern the computation of an approach to a landing position. As discussed above, the

particular problem of creating an approach path using up-to-the-minute information is not actually addressed in D2; only the emergency deviation from a calculated flight path is mentioned.

The skilled person, wishing to improve upon a known approach path computation device, would look to teachings which would prompt him to improve the flight path determination, and not to a document which teaches him how to provide a better display in low-visibility conditions. Thus, in the view of the Board, D2 would not be taken into consideration.

4.8 Nevertheless, even if the skilled person were to look to D2, it is noted that the most that D2 can be considered to suggest is that an alert is provided to enable the pilot (or autopilot) to take evasive action, i.e. to divert around the obstacle. The amendments made to claim 1 now clarify that the approach is created by actually determining certain parameters (i.e. the direction, elevation and distance) with respect to the landing position. There is no suggestion that the on-board processor of D2 is configured to generate an approach by means of determining the direction, elevation and distance to the landing position.

4.9 The Board is therefore of the opinion that D2 can neither be used as a starting point for the assessment of inventive step, nor would it be considered by the skilled person starting from D1 and looking to solve the problem of improving the approach path computation device in order to take uncharted obstacles into account.

Since no other document cited in the search report discloses a real-time mapping device and the use thereof to modify a created approach if uncharted obstacles hinder the created approach, the subject-matter of claim 1 cannot be seen to be obvious.

4.10 Independent claim 10 is the corresponding method claim and defines a method for creating an approach for an aircraft to a landing position. In analogy to claim 1, this method claim defines that real-time mapping data is received from a real-time mapping device, that obstacles identified by the real-time mapping device are compared with the digital obstacle data and that the created approach is modified if necessary.

Similarly, independent claim 18 defines a computer program embodied on a computer readable medium for creating an approach for an aircraft to a landing position. This claim defines code segments for carrying out the various method steps (which are of a technical nature), and in particular, a code segment for comparing obstacles identified with a real-time mapping device with obstacle data in the database and a code segment for modifying the approach if necessary.

Thus, for reasons corresponding to the reasons given above with respect to the apparatus claim 1, the subject-matter of claims 10 and 18 can also not be considered to be obvious.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The case is remitted to the Examining Division with the order to grant a patent in the following version:

   Claims 1 to 22, description pages 1 to 6, 6a, 7 to 18 and drawings, figs. 1 to 7, filed in the oral proceedings as first auxiliary request.

The Registrar: The Chairman:

R. Schumacher B. Schachenmann