

AO 120 (Rev. 08/10)

TO: <b>Mail Stop 8</b> <b>Director of the U.S. Patent and Trademark Office</b> P.O. Box 1450 Alexandria, VA 22313-1450	<b>REPORT ON THE                  FILING OR DETERMINATION OF AN                  ACTION REGARDING A PATENT OR                  TRADEMARK</b>
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In Compliance with 35 U.S.C. § 290 and/or 15 U.S.C. § 1116 you are hereby advised that a court action has been filed in the U.S. District Court Central District of California, Western Division on the following

Trademarks or  Patents. (  the patent action involves 35 U.S.C. § 292.):

DOCKET NO.	DATE FILED 9/3/2014	U.S. DISTRICT COURT Central District of California, Western Division
PLAINTIFF Seymour Levine		DEFENDANT The Boeing Company
PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1 RE39,618	5/8/2007	Seymour Levine
2		
3		
4		
5		

In the above—entitled case, the following patent(s)/ trademark(s) have been included:

DATE INCLUDED	INCLUDED BY <input type="checkbox"/> Amendment <input type="checkbox"/> Answer <input type="checkbox"/> Cross Bill <input type="checkbox"/> Other Pleading		
PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK	
1			
2			
3			
4			
5			

In the above—entitled case, the following decision has been rendered or judgement issued:

DECISION/JUDGEMENT
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CLERK	(BY) DEPUTY CLERK	DATE
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Copy 1—Upon initiation of action, mail this copy to Director    Copy 3—Upon termination of action, mail this copy to Director  
 Copy 2—Upon filing document adding patent(s), mail this copy to Director    Copy 4—Case file copy

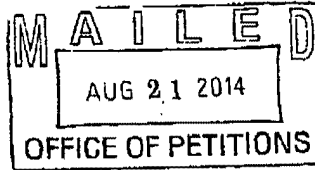


UNITED STATES PATENT AND TRADEMARK OFFICE

AUG 25 2014

Commissioner for Patents  
United States Patent and Trademark Office  
P.O. Box 1450  
Alexandria, VA 22313-1450  
www.uspto.gov

Mr. Seymour Levine  
4928 Maytime Lane  
Culver City CA 92030



In re Patent No. RE39,618  
Issue Date: May 8, 2007  
Application No. 10/004,429  
Filed: October 25, 2001

ON PETITION

This is a decision on the petition under 37 CFR 1.378(b), filed July 18, 2014, to accept the unintentionally delayed payment of a maintenance fee for the above-identified patent. This is also a decision on the petition under 37 CFR 1.182 to expedite the petition to accept the unintentionally delayed payment of a maintenance fee.

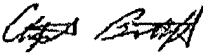
The petitions are granted.

The requirements of 37 CFR 1.182 to expedite the petition to accept the unintentionally delayed payment of a maintenance fee have been satisfied. Accordingly, the request to accept the unintentionally delayed payment of a maintenance fee has been processed promptly.

This patent expired on October 26, 2011 for failure to pay the 11½ year maintenance fee. The 11½ year maintenance fee is hereby accepted and the above-identified patent is reinstated as of the mail date of this decision.

Also, the file does not indicate a change of address has been submitted, although the address given with the petition differs from the address of record. If appropriate, a change of address should be filed in accordance with MPEP 601.03. A courtesy copy of this decision is being mailed to the address given on the petition; however, the Office will mail future correspondence to the address of record.

Telephone inquiries concerning this decision should be directed to the undersigned at (571) 272-6692.

  
Christopher Bottorff  
Petitions Examiner  
Office of Petitions

cc: Mr. Seymour Levine  
4928 Maytime Lane  
Culver City CA 90230

**RECEIVED**  
**CENTRAL FAX CENTER**  
**AUG 25 2014**

To:  
Fax: 15712738300  
Phone:

From: S. Levine  
Date: 8/25/2014

RE:

- Urgent
- For Review

- Please Comment
- Please Reply

Comments:

# fax cover

[Phone number - 310 559 2965]  
[Fax number - ]  
[e-mail - sylevine1@sbcglobal.net]  
[Website - ]

PLEASE CHANGE ZIP CODE TO 90230  
OR STAFF CORRECT ZIP CODE  
OR CORRESPONDENCE ADDRESS  
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CORRESPONDENCE TO 90230  
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Patent # 39618 E  
31004429

PTO/SB/123A (02-09)  
Approved for use through 11/30/2011. OMB 0651-0032  
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

RECEIVED  
CENTRAL FAX CENTER

<b>PATENT OWNER CHANGE OF CORRESPONDENCE ADDRESS</b> <b>Reexamination Proceeding</b>  Address to: Commissioner for Patents P.O. Box 1450 Alexandria, VA 22313-1450	Control Number(s)	
	Filing Date(s)	12-11-1948 AUG 25 2014
	First Named Inventor	SEYMOUR LEVINE
	Art Unit	
	Examiner Name	
	Attorney Docket Number(s)	

Please change the patent owner's correspondence address in the above-identified reexamination proceeding control no(s) (more than one may be changed only if they are merged proceedings) to the address designated below in A or B.

AND

Pursuant to 37 CFR 1.33(c), a PTO/SB/123 has been filed, or is concurrently being filed, in Patent No. \_\_\_\_\_ (the subject of the above-identified reexam proceeding control no(s).) to make the same address change in the patent. A correspondence address change will not be entered in a reexamination, unless the same change is made in the patent. To insure prompt action on the request, form PTO/SB/123 (if not already submitted) must be included together with this form.

NOTE: Address change can only be made by party of record; if not of record - see PTO/SB/81A and PTO/SB/81B.

A.  The address associated with Customer Number: \_\_\_\_\_

OR

B.  ~~Form~~ individual name SEYMOUR LEVINE

Address 4920 MAXTIME LANE

City CULVER CITY State CA Zip 90230

Country USA

Telephone (310)559-2965 Email sylevine1@bcyglobal.net

This form cannot be used to change the data associated with a Customer Number. To change the data associated with an existing Customer Number use "Request for Customer Number Data Change" (PTO/SB/124).

I am the:

1.  Attorney or agent of record for patent owner. Registration No. \_\_\_\_\_

OR

2.  Patent owner acting pro se (PTO/SB/86 is required for an entity which is not individual person(s))

Signature Seymour Levine

Typed or Printed Name SEYMOUR LEVINE

Date 8-25-2014 Telephone (310)559-2965

NOTE: Signatures of all the patent owners or their representatives are required. Submit multiple forms if more than one signature is required, see below \*.

2014  
FAXED  
9/20/14

\*Total of \_\_\_\_\_ forms are submitted.

This collection of information is required by 37 CFR 1.33. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 3 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.



Address correct on main  
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 or WAS IN CORRECT 90230

Patent # RE 39618 E  
 SPA# 10004429

PTO/SB/123A (02-09)  
 Approved for use through 11/30/2011. OMB 0651-0035  
 U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE  
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**PATENT OWNER CHANGE OF  
 CORRESPONDENCE ADDRESS**  
*Reexamination Proceeding*

Address to:  
 Commissioner for Patents  
 P.O. Box 1450  
 Alexandria, VA 22313-1450

Control Number(s)	
Filing Date(s)	12-4-1948
First Named Inventor	SEYMOUR LEVINE
Art Unit	
Examiner Name	
Attorney Docket Number(s)	

Please change the patent owner's correspondence address in the above-identified reexamination proceeding control no(s). (more than one may be changed only if they are merged proceedings) to the address designated below in A or B.

AND

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NOTE: Address change can only be made by party of record; if not of record - see PTO/SB/81A and PTO/SB/81B.

A.  The address associated with Customer Number:

OR

B.  Former individual name SEYMOUR LEVINE

Address 4928 MAYTIME LANE

City CULVER CITY State CA Zip 90230

Country USA

Telephone (310)559-2965 Email sylevine1@sbcglobal.net

This form cannot be used to change the data associated with a Customer Number. To change the data associated with an existing Customer Number use "Request for Customer Number Data Change" (PTO/SB/124).

I am the:

1.  Attorney or agent of record for patent owner, Registration No. \_\_\_\_\_

OR

2.  Patent owner acting pro se (PTO/SB/96 is required for an entity which is not individual person(s)).

Signature Seymour Levine

Typed or Printed Name SEYMOUR LEVINE

Date 8-25-2014 Telephone (310)559-2965

NOTE: Signatures of all the patent owners or their representatives are required. Submit multiple forms if more than one signature is required, see below.

Total of \_\_\_\_\_ forms are submitted.

This collection of information is required by 37 CFR 1.33. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 3 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

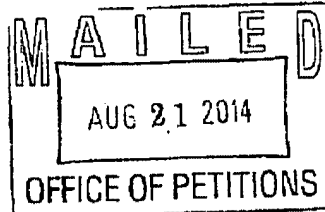
NOT RECORDED 9/20/30



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Mr. Seymour Levine  
4928 Maytime Lane  
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In re Patent No. RE39,618  
Issue Date: May 8, 2007  
Application No. 10/004,429  
Filed: October 25, 2001

ON PETITION

This is a decision on the petition under 37 CFR 1.378(b), filed July 18, 2014, to accept the unintentionally delayed payment of a maintenance fee for the above-identified patent. This is also a decision on the petition under 37 CFR 1.182 to expedite the petition to accept the unintentionally delayed payment of a maintenance fee.

The petitions are granted.

The requirements of 37 CFR 1.182 to expedite the petition to accept the unintentionally delayed payment of a maintenance fee have been satisfied. Accordingly, the request to accept the unintentionally delayed payment of a maintenance fee has been processed promptly.

This patent expired on October 26, 2011 for failure to pay the 11½ year maintenance fee. The 11½ year maintenance fee is hereby accepted and the above-identified patent is reinstated as of the mail date of this decision.

Also, the file does not indicate a change of address has been submitted, although the address given with the petition differs from the address of record. If appropriate, a change of address should be filed in accordance with MPEP 601.03. A courtesy copy of this decision is being mailed to the address given on the petition; however, the Office will mail future correspondence to the address of record.

Telephone inquiries concerning this decision should be directed to the undersigned at (571) 272-6692.

Christopher Bottorff  
Petitions Examiner  
Office of Petitions

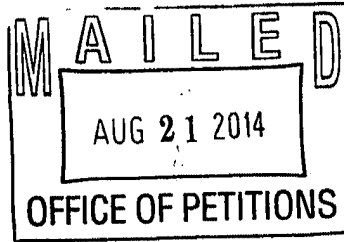
cc: Mr. Seymour Levine  
4928 Maytime Lane  
Culver City CA 90230



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P.O. Box 1450  
Alexandria, VA 22313-1450  
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Mr. Seymour Levine  
4928 Maytime Lane  
Culver City CA 92030



In re Patent No. RE39,618  
Issue Date: May 8, 2007  
Application No. 10/004,429  
Filed: October 25, 2001

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: ON PETITION  
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This is a decision on the petition under 37 CFR 1.378(b), filed July 18, 2014, to accept the unintentionally delayed payment of a maintenance fee for the above-identified patent. This is also a decision on the petition under 37 CFR 1.182 to expedite the petition to accept the unintentionally delayed payment of a maintenance fee.

The petitions are **granted**.

The requirements of 37 CFR 1.182 to expedite the petition to accept the unintentionally delayed payment of a maintenance fee have been satisfied. Accordingly, the request to accept the unintentionally delayed payment of a maintenance fee has been processed promptly.

This patent expired on October 26, 2011 for failure to pay the 11½ year maintenance fee. The 11½ year maintenance fee is hereby accepted and the above-identified patent is reinstated as of the mail date of this decision.

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Telephone inquiries concerning this decision should be directed to the undersigned at (571) 272-6692.

Christopher Bottorff  
Petitions Examiner  
Office of Petitions

cc: Mr. Seymour Levine  
4928 Maytime Lane  
Culver City CA 92030



PTO/SB/66 (04-13)

Approved for use through 05/31/2015. OMB 0651-0016  
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

<b>PETITION TO ACCEPT UNINTENTIONALLY DELAYED PAYMENT OF MAINTENANCE FEE IN AN EXPIRED PATENT (37 CFR 1.378(b))</b>		Docket Number (Optional)
Page 1 of 3		
Mail to: Mail Stop Petition Commissioner for Patents P.O. Box 1450 Alexandria, VA 22313-1450 Fax: (571) 273-8300	07/23/2014 DALLEN 00000030 RE39618 01 FC:1599	4590.00 OP
NOTE: If information or assistance is needed in completing this form, please contact the Office of Petitions at (571) 272-3282.		
Patent No. <u>RE39,618</u>	Application Number <u>10/004,429</u>	
Issue Date <u>May 8, 2007</u>	Filing Date <u>Oct. 25, 2001</u>	
CAUTION: Maintenance fee payment must correctly identify: (1) the patent number (or reissue patent number, if a reissue) and (2) the application number of the actual U.S. application (or reissue application) leading to issuance of that patent to ensure the fee(s) is/are associated with the correct patent. 37 CFR 1.366(c) and (d).		
Also complete the following information, if applicable.		
The above-identified patent		
<input checked="" type="checkbox"/>	is a reissue of original Patent No. <u>5,974,349</u> original issue date <u>Oct. 26, 1999</u>	
	original application number <u>09/205,331</u>	
	original filing date <u>Dec. 4, 1998</u>	
<input type="checkbox"/>	resulted from the entry into the U.S. under 35 U.S.C. 371 of international application _____	
	filed on _____	
CERTIFICATE OF MAILING (37 CFR 1.8(a))		
I hereby certify that this paper (* along with any paper referred to as being attached or enclosed) is being deposited with the United States Postal Service on the date shown below with sufficient postage as first class mail in an envelope addressed to Mail Stop Petition, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, or facsimile transmitted to the U.S. Patent and Trademark Office on the date shown below.		
<u>July 17, 2014</u>	<u>Abby Valenzuela</u>	
Date	Signature	
	<u>Abby Valenzuela</u>	
	Typed or Printed Name of Person Signing Certificate	

USPTO RECEIPTS ACCOUNTING DIVISION

2014 JUL 21 PM 3:30

[page 1 of 3]

This collection of information is required by 37 CFR 1.378(c). The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11, 1.14 and 41.6. This collection is estimated to take 1 hour to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Mail Stop Petition, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

**PETITION TO ACCEPT UNINTENTIONALLY DELAYED PAYMENT  
 OF MAINTENANCE FEE IN AN EXPIRED PATENT (37 CFR 1.378(b))**

Page 2 of 3

2014 JUL 21 PM 3:39  
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 DIVISION

1. SMALL ENTITY

Patentee asserts, or has previously asserted, small entity status. See 37 CFR 1.27.

2. LOSS OF ENTITLEMENT TO SMALL ENTITY STATUS

Patentee is no longer entitled to small entity status. See 37 CFR 1.27(g).

3. MICRO ENTITY

Patentee certifies, or has previously certified, micro entity status. See 37 CFR 1.29  
 Form PTO/SB/15A or B or equivalent must either be enclosed or have been submitted previously.

4. LOSS OF ENTITLEMENT TO MICRO ENTITY STATUS

Patentee is no longer entitled to micro entity status. See 37 CFR 1.29(i).

5. MAINTENANCE FEE (37 CFR 1.20(e)-(g))

The appropriate maintenance fee must be submitted with this petition, unless it was paid earlier.

Undiscounted			Small Entity			Micro Entity		
Amount	Fee	(Code)	Amount	Fee	(Code)	Amount	Fee	(Code)
<input type="checkbox"/> \$ _____	3½ yr fee	(1551)	<input type="checkbox"/> \$ _____	3½ yr fee	(2551)	<input type="checkbox"/> \$ _____	3½ yr fee	(3551)
<input type="checkbox"/> \$ _____	7½ yr fee	(1552)	<input type="checkbox"/> \$ _____	7½ yr fee	(2552)	<input type="checkbox"/> \$ _____	7½ yr fee	(3552)
<input type="checkbox"/> \$ _____	11½ yr fee	(1553)	<input checked="" type="checkbox"/> \$ 3,700	11½ yr fee	(2553)	<input type="checkbox"/> \$ _____	11½ yr fee	(3553)

MAINTENANCE FEE BEING SUBMITTED \$ 3,700

6. PETITION FEE

The surcharge required by 37 CFR 1.17(m) of:

\$ \_\_\_\_\_ Undiscounted (Fee Code 1558);

\$ 850 Small Entity (Fee Code 2558); or

must be paid as a condition of accepting an unintentionally delayed payment of a maintenance fee. (Note: There is currently no micro entity amount for the petition fee.)

PETITION FEE BEING SUBMITTED \$ 850

7. MANNER OF PAYMENT

Enclosed is a check for the sum of \$ \_\_\_\_\_

Please charge Deposit Account No. \_\_\_\_\_ the sum of \$ \_\_\_\_\_

Payment by credit card. Form PTO-2038 is attached.

Payment made via EFS-Web.

8. AUTHORIZATION TO CHARGE ANY FEE DEFICIENCY

The Director is hereby authorized to charge any maintenance fee, surcharge or petition deficiency to Deposit Account No. \_\_\_\_\_

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

**PETITION TO ACCEPT UNINTENTIONALLY DELAYED PAYMENT  
OF MAINTENANCE FEE IN AN EXPIRED PATENT (37 CFR 1.378(b))**

Page 3 of 3

9. OVERPAYMENT

As to any overpayment made, please

Credit to Deposit Account No. \_\_\_\_\_

OR

Send refund check

**WARNING:**

Petitioner/applicant is cautioned to avoid submitting personal information in documents filed in a patent application that may contribute to identity theft. Personal information, such as social security numbers, bank account numbers, or credit card numbers (other than a check or credit card authorization form (PTO-2038) submitted for payment purposes), is never required by the USPTO to support a petition or an application. If this type of personal information is included in documents submitted to the USPTO, petitioners/applicants should consider redacting such personal information from the documents before submitting them to the USPTO. Petitioner/applicant is advised that the record of a patent application is available to the public after publication of the application (unless a non-publication request in compliance with 37 CFR 1.213(a) is made in the application or issuance of a patent. Furthermore, the record from an abandoned application may also be available to the public if the application is referenced in a published application or an issued patent (see 37 CFR 1.14). Checks and credit card authorization forms (PTO-2038) submitted for payment purposes are not retained in the application file and therefore are not publicly available.

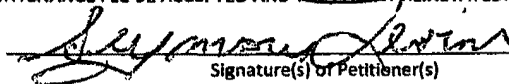
10. STATEMENT

The delay in payment of the maintenance fee for this patent was unintentional.

11. PETITIONER(S) REQUEST THAT THE DELAYED PAYMENT OF THE MAINTENANCE FEE BE ACCEPTED AND THE PATENT REINSTATED.

July 16, 2014

Date

  
Signature(s) of Petitioner(s)

Seymour Levine

Typed or Printed Name(s)

Registration Number, if applicable

310-559-2965

Telephone Number

4928 Maytime Lane

Address

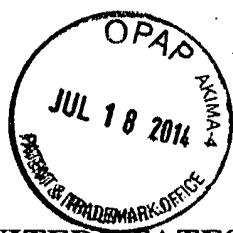
Culver City, CA 90230

Address

37 CFR 1.378(c) states: "Any petition under this section must be signed in compliance with § 1.33(b)."

12. ENCLOSURES

- Maintenance Fee Payment
- Petition fee under 37 CFR 1.17(m) (fee for filing the maintenance fee petition)
- Declaration of Seymour Levine



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
BEFORE THE OFFICE OF PETITIONS

Patent No.: RE39,618

Appl. No.: 10/004,429

Filed: Oct. 25, 2001

Issued: May 8, 2007

Title: REMOTE, AIRCRAFT, GLOBAL,  
PAPERLESS MAINTENANCE SYSTEM

**DECLARATION OF SEYMOUR LEVINE IN SUPPORT OF PETITION TO  
ACCEPT UNINTENTIONALLY DELAYED PAYMENT OF  
MAINTENANCE FEE IN AN EXPIRED PATENT (37 CFR 1.378(b))**

I, Seymour Levine, declare that:

1. I am the sole named inventor and owner of reissue patent RE39,618, which is a reissue of U.S. Patent 5,974,349. The '349 patent issued on October 26, 1999.
2. In 2001, I entered into an agreement with a third party that allowed that party to seek a broadening reissue of the '349 patent in exchange for a percentage of any income derived from the reissue patent if claims of a certain scope were obtained.
3. The third party, through counsel, prosecuted the reissue without my involvement beyond my signing of the initial declaration and power of attorney.
4. I never received a copy of RE39,618, which apparently issued on May 8, 2007. I was not aware of the RE39,618 reissue patent until June 2014.
5. Upon learning of the existence of the RE39,618 patent in June 2014, I checked the maintenance fee page on the USPTO website, which indicated that "there are no fees due." *See*, Exhibit A. Upon learning of the existence of the RE39,618 reissue patent last month, I believed that it would expire in the normal course on December 17, 2016.

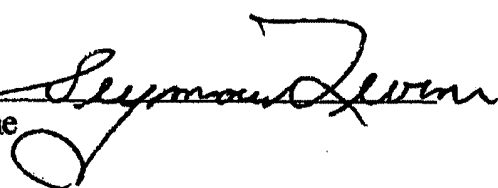
6. Although the bibliographic data on the USPTO fee page indicates that a maintenance fee reminder was sent to me on May 30, 2011; I never received any such reminder, which the PTO apparently sent to the wrong address since the PTO website contains the wrong zip code for my home address, i.e., the PTO website lists the zip code for my home address as 92030, which is in Escondido, California, but my zip code is 90230, which is approximately 100 miles away in Culver City, California. Thus it appears the PTO sent the reminder to the wrong address and it was never forwarded to me. I did not know that a maintenance fee was due and not paid until earlier this week.

7. I am the named inventor and owner of a number of other patents and, for each of those, including the parents to the subject reissue patent, I have consistently and diligently paid the required maintenance fees for the patents I was aware of. *See*, Maintenance fee records for U.S. Patent Nos. 5,891,079; 5,974,349 and 7,099,752, attached hereto as Exhibit B, but I was unaware of RE39,618 until June of 2014.

8. Had I been aware of reissue patent RE39,618 and that maintenance fees were due, I certainly would have paid those fees. Thus, the failure to pay those fees in a timely manner was completely unintentional.

I declare under penalty of perjury under the laws of the United States of America that the foregoing is true and correct.

Executed on July 15, 2014, at Culver City, California.

  
Seymour Levine





6/17/2014

USPTO - Patent Maintenance Fees (Patent Number: RE39618)

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<b>Patent Maintenance Fees</b>		<b>06/04/2014 07:54 PM EDT</b>	
<b>Patent Number:</b>	RE39618	<b>Application Number:</b>	10004429
<b>Issue Date:</b>	10/26/1999	<b>Filing Date:</b>	12/04/1998
<b>Window Opens:</b>	10/26/2010	<b>Surcharge Date:</b>	04/27/2011
<b>Window Closes:</b>	10/26/2011	<b>Payment Year:</b>	
<b>Entity Status:</b>	SMALL		
<b>Customer Number:</b>			
<b>Address:</b>	Mr. Seymour Levine 4928 Maytime Lane Culver City CA 92030		
<b>Phone Number:</b>	()-		
<b>Currently there are no fees due.</b>			

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37 C.F.R. 1.572

7/15/2014

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<b>Patent Bibliographic Data</b>				<b>07/15/2014 07:28 PM</b>	
<b>Patent Number:</b>	5890079	<b>Application Number:</b>	08768313		
<b>Issue Date:</b>	03/30/1999	<b>Filing Date:</b>	12/17/1996		
<b>Title:</b>	REMOTE AIRCRAFT FLIGHT RECORDER AND ADVISORY SYSTEM				
<b>Status:</b>	4th, 8th and 12th year fees paid			<b>Entity:</b>	SMALL
<b>Window Opens:</b>	N/A	<b>Surcharge Date:</b>	N/A	<b>Expiration:</b>	N/A
<b>Fee Amt Due:</b>	Window not open	<b>Surchg Amt Due:</b>	Window not open	<b>Total Amt Due:</b>	Window not open
<b>Fee Code:</b>					
<b>Surcharge Fee Code:</b>					
<b>Most recent events (up to 7):</b>	07/27/2010 Payment of Maintenance Fee, 12th Yr, Small Entity. 08/26/2006 Payment of Maintenance Fee, 8th Yr, Small Entity. 06/10/2002 Payor Number Assigned. 05/01/2002 Payment of Maintenance Fee, 4th Yr, Small Entity. — End of Maintenance History —				
<b>Address for fee purposes:</b>	SEYMOUR LEVINE 4928 MAYTIME LANE CULVER CITY CA 90230				
<input type="button" value="Run Another Query"/>					

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<b>Patent Bibliographic Data</b>		<b>07/15/2014 04:42 PM</b>	
<b>Patent Number:</b>	5974349	<b>Application Number:</b>	09205331
<b>Issue Date:</b>	10/26/1999	<b>Filing Date:</b>	12/04/1998
<b>Title:</b>	REMOTE, AIRCRAFT, GLOBAL, PAPERLESS MAINTENANCE SYSTEM		
<b>Status:</b>	Patent reissued as: RE39618/10004429	<b>Entity:</b>	SMALL
<b>Window Opens:</b>	N/A	<b>Surcharge Date:</b>	N/A
<b>Expiration:</b>	10/26/2011		
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<b>Fee Code:</b>			
<b>Surcharge Fee Code:</b>			
<b>Most recent events (up to 7):</b>	11/14/2006 Payment of Maintenance Fee, 8th Yr, Small Entity. 02/14/2003 Payment of Maintenance Fee, 4th Yr, Small Entity. — End of Maintenance History —		
<b>Address for fee purposes:</b>	SEYMOUR LEVINE 4928 MAYTIME LANE CULVER CITY CA 90230		
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<b>Patent Bibliographic Data</b>				<b>07/15/2014 07:28 PM</b>	
<b>Patent Number:</b>	7099752	<b>Application Number:</b>	10822271		
<b>Issue Date:</b>	08/29/2006	<b>Filing Date:</b>	04/10/2004		
<b>Title:</b>	SAFELANDER				
<b>Status:</b>	12th year fee window opens: 08/29/2017			<b>Entity:</b>	SMALL
<b>Window Opens:</b>	N/A	<b>Surcharge Date:</b>	N/A	<b>Expiration:</b>	N/A
<b>Fee Amt Due:</b>	Window not open	<b>Surchg Amt Due:</b>	Window not open	<b>Total Amt Due:</b>	Window not open
<b>Fee Code:</b>					
<b>Surcharge Fee Code:</b>					
<b>Most recent events (up to 7):</b>	03/25/2014 7.5 yr surcharge - late pmt w/in 6 mo, Small Entity. 03/25/2014 Payment of Maintenance Fee, 8th Yr, Small Entity. 07/27/2010 Surcharge for late Payment, Small Entity. 07/27/2010 Payment of Maintenance Fee, 4th Yr, Small Entity. 04/05/2010 Maintenance Fee Reminder Mailed. — End of Maintenance History —				
<b>Address for fee purposes:</b>	SEYMOUR LEVINE 4928 MAYTIME LANE CULVER CITY CA 90230				
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**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
BEFORE THE OFFICE OF PETITIONS**

Patent No.: RE39,618

Appl. No.: 10/004,429

Filed: Oct. 25, 2001

Issued: May 8, 2007

Title: REMOTE, AIRCRAFT, GLOBAL,  
PAPERLESS MAINTENANCE SYSTEM

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DIVISION  
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**PETITION TO EXPEDITE CONSIDERATION OF PETITION TO  
ACCEPT UNINTENTIONALLY DELAYED PAYMENT OF  
MAINTENANCE FEE IN AN EXPIRED PATENT (37 CFR 1.182)**

Mail Stop - OFFICE OF PETITIONS  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450  
Fax: (571) 273-8300

Dear Sir/Madam:

I respectfully request expedited consideration of the concurrently filed  
Petition To Accept Unintentionally Delayed Payment Of Maintenance Fee In An  
Expired Patent, with respect to reissue patent RE39,618, of which I am the sole  
inventor and owner. The petition is attached hereto as Exhibit 1.

07/23/2014 DALLEN 00000031 RE39618

The RE39,618 reissue patent, if revived, will expire on its own terms on 200.00 0P  
01 EC 1463

December 17, 2016, only two years and five months from now. I understand from  
discussions with this office that, if not expedited, the current backlog for petitions

is three to four months. Three to four months represents a significant part of the remaining natural life of the subject patent.

In addition, I am 79 years old and would therefore like to see this maintenance fee issue resolved as soon as possible.

As explained in my declaration attached to the Petition to Accept Delayed Payment Of Maintenance Fee, the delay in paying the maintenance fee was unintentional and based on the fact that I was neither aware of the existence of RE39,618 until last month nor aware of the fact that maintenance fees were due until last week.

I have endeavored to rectify the situation caused by the delayed payment of the maintenance fee as expeditiously as possible and respectfully request that the Office of Petitions consider the merits of the concurrently filed Petition To Accept Unintentionally Delayed Payment Of Maintenance Fee In An Expired Patent (37 CFR 1.378(b)) on an expedited basis.

///

///

The fee required by 37 CFR 1.182 and 37 CFR 117(f) for a small entity is submitted by way of the enclosed Form PTO-2038.

Respectfully submitted,

Dated: July 16, 2014

  
Seymour Levine

Inventor/Owner  
4928 Maytime Lane  
Culver City, CA 90230  
(310) 559-2965  
sylevine1@sbcglobal.net



PTO/SB/66 (04-13)  
Approved for use through 05/31/2015. OMB 0651-0016  
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

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**PETITION TO ACCEPT UNINTENTIONALLY DELAYED PAYMENT OF MAINTENANCE FEE IN AN EXPIRED PATENT (37 CFR 1.378(b))**

Docket Number (Optional)

Page 1 of 3

Mail to: Mail Stop Petition  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450  
Fax: (571) 273-8300

NOTE: If information or assistance is needed in completing this form, please contact the Office of Petitions at (571) 272-3282.

Patent No. RE39,618 Application Number 10/004,429

Issue Date May 8, 2007 Filing Date Oct. 25, 2001

CAUTION: Maintenance fee payment must correctly identify: (1) the patent number (or reissue patent number, if a reissue) and (2) the application number of the actual U.S. application (or reissue application) leading to issuance of that patent to ensure the fee(s) is/are associated with the correct patent. 37 CFR 1.366(c) and (d).

Also complete the following information, if applicable.

The above-identified patent  
 is a reissue of original Patent No. 5,974,349 original issue date Oct. 26, 1999

original application number 09/205,331

original filing date Dec. 4, 1998

resulted from the entry into the U.S. under 35 U.S.C. 371 of international application \_\_\_\_\_  
filed on \_\_\_\_\_

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CERTIFICATE OF MAILING (37 CFR 1.8(a))

I hereby certify that this paper (\* along with any paper referred to as being attached or enclosed) is being deposited with the United States Postal Service on the date shown below with sufficient postage as first class main in an envelope addressed to Mail Stop Petition, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, or facsimile transmitted to the U.S. Patent and Trademark Office on the date shown below.

July 17, 2014  
Date

\_\_\_\_\_  
Signature  
**Abby Valenzuela**  
Typed or Printed Name of Person Signing Certificate

[page 1 of 3]

This collection of information is required by 37 CFR 1.378(c). The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11, 1.14 and 41.6. This collection is estimated to take 1 hour to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Mail Stop Petition, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.



Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

**PETITION TO ACCEPT UNINTENTIONALLY DELAYED PAYMENT  
 OF MAINTENANCE FEE IN AN EXPIRED PATENT (37 CFR 1.378(b))**

Page 2 of 3

1. SMALL ENTITY

Patentee asserts, or has previously asserted, small entity status. See 37 CFR 1.27.

2. LOSS OF ENTITLEMENT TO SMALL ENTITY STATUS

Patentee is no longer entitled to small entity status. See 37 CFR 1.27(g).

3. MICRO ENTITY

Patentee certifies, or has previously certified, micro entity status. See 37 CFR 1.29  
 Form PTO/SB/15A or B or equivalent must either be enclosed or have been submitted previously.

4. LOSS OF ENTITLEMENT TO MICRO ENTITY STATUS

Patentee is no longer entitled to micro entity status. See 37 CFR 1.29(i).

5. MAINTENANCE FEE (37 CFR 1.20(e)-(g))

The appropriate maintenance fee must be submitted with this petition, unless it was paid earlier.

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Undiscounted			Small Entity			Micro Entity		
Amount	Fee	(Code)	Amount	Fee	(Code)	Amount	Fee	(Code)
<input type="checkbox"/> \$ _____	3½ yr fee	(1551)	<input type="checkbox"/> \$ _____	3½ yr fee	(2551)	<input type="checkbox"/> \$ _____	3½ yr fee	(3551)
<input type="checkbox"/> \$ _____	7½ yr fee	(1552)	<input type="checkbox"/> \$ _____	7½ yr fee	(2552)	<input type="checkbox"/> \$ _____	7½ yr fee	(3552)
<input type="checkbox"/> \$ _____	11½ yr fee	(1553)	<input checked="" type="checkbox"/> \$ 3,700	11½ yr fee	(2553)	<input type="checkbox"/> \$ _____	11½ yr fee	(3553)

MAINTENANCE FEE BEING SUBMITTED \$ 3,700

6. PETITION FEE

The surcharge required by 37 CFR 1.17(m) of:

\$ \_\_\_\_\_ Undiscounted (Fee Code 1558);

\$ 850 Small Entity (Fee Code 2558); or

must be paid as a condition of accepting an unintentionally delayed payment of a maintenance fee. (Note: There is currently no micro entity amount for the petition fee.)

PETITION FEE BEING SUBMITTED \$ 850

7. MANNER OF PAYMENT

- Enclosed is a check for the sum of \$ \_\_\_\_\_
- Please charge Deposit Account No. \_\_\_\_\_ the sum of \$ \_\_\_\_\_
- Payment by credit card. Form PTO-2038 is attached.
- Payment made via EFS-Web.

8. AUTHORIZATION TO CHARGE ANY FEE DEFICIENCY

The Director is hereby authorized to charge any maintenance fee, surcharge or petition deficiency to Deposit Account No. \_\_\_\_\_

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

### PETITION TO ACCEPT UNINTENTIONALLY DELAYED PAYMENT OF MAINTENANCE FEE IN AN EXPIRED PATENT (37 CFR 1.378(b))

Page 3 of 3

9. OVERPAYMENT

As to any overpayment made, please

Credit to Deposit Account No. \_\_\_\_\_

OR

Send refund check

**WARNING:**

Petitioner/applicant is cautioned to avoid submitting personal information in documents filed in a patent application that may contribute to identity theft. Personal information, such as social security numbers, bank account numbers, or credit card numbers (other than a check or credit card authorization form (PTO-2038) submitted for payment purposes), is never required by the USPTO to support a petition or an application. If this type of personal information is included in documents submitted to the USPTO, petitioners/applicants should consider redacting such personal information from the documents before submitting them to the USPTO. Petitioner/applicant is advised that the record of a patent application is available to the public after publication of the application (unless a non-publication request in compliance with 37 CFR 1.213(a) is made in the application or issuance of a patent. Furthermore, the record from an abandoned application may also be available to the public if the application is referenced in a published application or an issued patent (see 37 CFR 1.14). Checks and credit card authorization forms (PTO-2038) submitted for payment purposes are not retained in the application file and therefore are not publicly available.

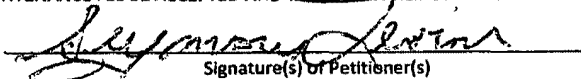
10. STATEMENT

The delay in payment of the maintenance fee for this patent was unintentional.

11. PETITIONER(S) REQUEST THAT THE DELAYED PAYMENT OF THE MAINTENANCE FEE BE ACCEPTED AND THE PATENT REINSTATED.

July 16, 2014

Date

  
Signature(s) of Petitioner(s)

Seymour Levine

Typed or Printed Name(s)

Registration Number, if applicable

310-559-2965

Telephone Number

4928 Maytime Lane

Address

Culver City, CA 90230

Address

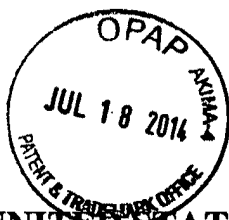
37 CFR 1.378(c) states: "Any petition under this section must be signed in compliance with § 1.33(b)."

12. ENCLOSURES

- Maintenance Fee Payment
- Petition fee under 37 CFR 1.17(m) (fee for filing the maintenance fee petition)
- Declaration of Seymour Levine

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DIVISION



**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
BEFORE THE OFFICE OF PETITIONS**

Patent No.: RE39,618

Appl. No.: 10/004,429

Filed: Oct. 25, 2001

Issued: May 8, 2007

Title: REMOTE, AIRCRAFT, GLOBAL,  
PAPERLESS MAINTENANCE SYSTEM

**DECLARATION OF SEYMOUR LEVINE IN SUPPORT OF PETITION TO  
ACCEPT UNINTENTIONALLY DELAYED PAYMENT OF  
MAINTENANCE FEE IN AN EXPIRED PATENT (37 CFR 1.378(b))**

I, Seymour Levine, declare that:

1. I am the sole named inventor and owner of reissue patent RE39,618, which is a reissue of U.S. Patent 5,974,349. The '349 patent issued on October 26, 1999.
2. In 2001, I entered into an agreement with a third party that allowed that party to seek a broadening reissue of the '349 patent in exchange for a percentage of any income derived from the reissue patent if claims of a certain scope were obtained.
3. The third party, through counsel, prosecuted the reissue without my involvement beyond my signing of the initial declaration and power of attorney.
4. I never received a copy of RE39,618, which apparently issued on May 8, 2007. I was not aware of the RE39,618 reissue patent until June 2014.
5. Upon learning of the existence of the RE39,618 patent in June 2014, I checked the maintenance fee page on the USPTO website, which indicated that "there are no fees due." *See*, Exhibit A. Upon learning of the existence of the RE39,618 reissue patent last month, I believed that it would expire in the normal course on December 17, 2016.

6. Although the bibliographic data on the USPTO fee page indicates that a maintenance fee reminder was sent to me on May 30, 2011, I never received any such reminder, which the PTO apparently sent to the wrong address since the PTO website contains the wrong zip code for my home address, i.e., the PTO website lists the zip code for my home address as 92030, which is in Escondido, California, but my zip code is 90230, which is approximately 100 miles away in Culver City, California. Thus it appears the PTO sent the reminder to the wrong address and it was never forwarded to me. I did not know that a maintenance fee was due and not paid until earlier this week.

7. I am the named inventor and owner of a number of other patents and, for each of those, including the parents to the subject reissue patent, I have consistently and diligently paid the required maintenance fees for the patents I was aware of. *See*, Maintenance fee records for U.S. Patent Nos. 5,891,079; 5,974,349 and 7,099,752, attached hereto as Exhibit B, but I was unaware of RE39,618 until June of 2014.

8. Had I been aware of reissue patent RE39,618 and that maintenance fees were due, I certainly would have paid those fees. Thus, the failure to pay those fees in a timely manner was completely unintentional.

I declare under penalty of perjury under the laws of the United States of America that the foregoing is true and correct.

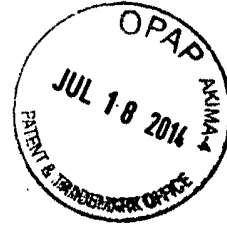
Executed on July 15, 2014, at Culver City, California.

  
Seymour Levine

6/4/2014

*Chick*

USPTO - Patent Maintenance Fees (Patent Number: RE39618)



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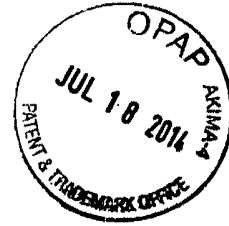
Patent Maintenance Fees		06/04/2014 07:54 PM EDT	
Patent Number:	RE39618	Application Number:	10004429
Issue Date:	10/26/1999	Filing Date:	12/04/1998
Window Opens:	10/26/2010	Surcharge Date:	04/27/2011
Window Closes:	10/26/2011	Payment Year:	
Entity Status:	SMALL		
Customer Number:			
Address:	Mr. Seymour Levine 4928 Maytime Lane Culver City CA 92030		
Phone Number:	()-		
<b>Currently there are no fees due.</b>			

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*37 C.F.R. 1.472*

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<b>Patent Bibliographic Data</b>				07/15/2014 07:28 PM	
<b>Patent Number:</b>	5890079	<b>Application Number:</b>	08768313		
<b>Issue Date:</b>	03/30/1999	<b>Filing Date:</b>	12/17/1996		
<b>Title:</b>	REMOTE AIRCRAFT FLIGHT RECORDER AND ADVISORY SYSTEM				
<b>Status:</b>	4th, 8th and 12th year fees paid		<b>Entity:</b>	SMALL	
<b>Window Opens:</b>	N/A	<b>Surcharge Date:</b>	N/A	<b>Expiration:</b>	N/A
<b>Fee Amt Due:</b>	Window not open	<b>Surchg Amt Due:</b>	Window not open	<b>Total Amt Due:</b>	Window not open
<b>Fee Code:</b>					
<b>Surcharge Fee Code:</b>					
<b>Most recent events (up to 7):</b>	07/27/2010 Payment of Maintenance Fee, 12th Yr, Small Entity. 08/26/2006 Payment of Maintenance Fee, 8th Yr, Small Entity. 06/10/2002 Payor Number Assigned. 05/01/2002 Payment of Maintenance Fee, 4th Yr, Small Entity. — End of Maintenance History —				
<b>Address for fee purposes:</b>	SEYMOUR LEVINE 4928 MAYTIME LANE CULVER CITY CA 90230				
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Patent Bibliographic Data		07/15/2014 04:42 PM	
<b>Patent Number:</b>	5974349	<b>Application Number:</b>	09205331
<b>Issue Date:</b>	10/26/1999	<b>Filing Date:</b>	12/04/1998
<b>Title:</b>	REMOTE, AIRCRAFT, GLOBAL, PAPERLESS MAINTENANCE SYSTEM		
<b>Status:</b>	Patent reissued as: RE39618/10004429	<b>Entity:</b>	SMALL
<b>Window Opens:</b>	N/A	<b>Surcharge Date:</b>	N/A
<b>Expiration:</b>	10/26/2011		
<b>Fee Amt Due:</b>	Window not open	<b>Surchg Amt Due:</b>	Window not open
<b>Total Amt Due:</b>	Window not open		
<b>Fee Code:</b>			
<b>Surcharge Fee Code:</b>			
<b>Most recent events (up to 7):</b>	11/14/2006 Payment of Maintenance Fee, 8th Yr, Small Entity. 02/14/2003 Payment of Maintenance Fee, 4th Yr, Small Entity. — End of Maintenance History —		
<b>Address for fee purposes:</b>	SEYMOUR LEVINE 4928 MAYTIME LANE CULVER CITY CA 90230		
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<b>Patent Bibliographic Data</b>				07/15/2014 07:28 PM	
<b>Patent Number:</b>	7099752	<b>Application Number:</b>	10822271		
<b>Issue Date:</b>	08/29/2006	<b>Filing Date:</b>	04/10/2004		
<b>Title:</b>	SAFELANDER				
<b>Status:</b>	12th year fee window opens: 08/29/2017			<b>Entity:</b>	SMALL
<b>Window Opens:</b>	N/A	<b>Surcharge Date:</b>	N/A	<b>Expiration:</b>	N/A
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<b>Surcharge Fee Code:</b>					
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<b>Address for fee purposes:</b>	SEYMOUR LEVINE 4928 MAYTIME LANE CULVER CITY CA 90230				
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I hereby certify that this PETITION TO EXPEDITE CONSIDERATION OF PETITION TO ACCEPT UNINTENTIONALLY DELAYED PAYMENT OF MAINTENANCE FEE IN AN EXPIRED PATENT (37 CFR 1.182) is being deposited with Federal Express with sufficient postage for next day delivery in an envelope addressed to:

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Alexandria, VA 22314

on July 17, 2014.  
(Date)

Typed or printed name of person signing this certificate

Abby Valenzuela

Signature 

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Document code: WFEE

United States Patent and Trademark Office  
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	02 FC : 2558		850.00 OP

Document code: WFEE

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Sales Receipt for Accounting Date: 08/21/2014

CKHLOK	ADJ #00000013	Mailroom Dt: 07/17/2014	
	Seq No: 30	Sales Acctg Dt: 07/23/2014	10004429
	01 FC : 1599	-4550.00	OP



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APPLICATION NUMBER	FILING OR 371 (c) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
10/004,429	10/25/2001	Seymour Levine	57127

Mr. Seymour Levine  
4928 Maytime Lane  
Culver City, CA 92030

CONFIRMATION NO. 8221



Date Mailed: 05/25/2007

**NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY**

This is in response to the Power of Attorney filed 12/15/2006.

The Power of Attorney in this application is accepted. Correspondence in this application will be mailed to the above address as provided by 37 CFR 1.33.

*tlc*

Office of Initial Patent Examination (571) 272-4000, or 1-800-PTO-9199  
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APPLICATION NUMBER	FILING OR 371 (c) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
10/004,429	10/25/2001	Seymour Levine	57127

22206  
 FELLERS SNIDER BLANKENSHIP  
 BAILEY & TIPPENS  
 THE KENNEDY BUILDING  
 321 SOUTH BOSTON SUITE 800  
 TULSA, OK 74103-3318

**CONFIRMATION NO. 8221**


\*OC000000024074031\*

Date Mailed: 05/25/2007

**NOTICE REGARDING CHANGE OF POWER OF ATTORNEY**

This is in response to the Power of Attorney filed 12/15/2006.

- The withdrawal as attorney in this application has been accepted. Future correspondence will be mailed to the new address of record. 37 CFR 1.33.

---

*ta*

Office of Initial Patent Examination (571) 272-4000, or 1-800-PTO-9199  
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APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/004,429	05/08/2007	RE39618	57127	8221

22206 7590 04/18/2007  
FELLERS SNIDER BLANKENSHIP  
BAILEY & TIPPENS  
THE KENNEDY BUILDING  
321 SOUTH BOSTON SUITE 800  
TULSA, OK 74103-3318

**ISSUE NOTIFICATION**

The projected patent number and issue date are specified above.

**Determination of Patent Term Extension or Adjustment under 35 U.S.C. 154 (b)**

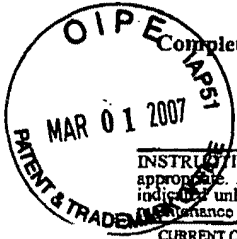
A reissue patent is for "the unexpired part of the term of the original patent." See 35 U.S.C. 251. Accordingly, the above-identified reissue application is not eligible for Patent Term Extension or Adjustment under 35 U.S.C. 154(b).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at (571)-272-4200.

APPLICANT(s) (Please see PAIR WEB site <http://pair.uspto.gov> for additional applicants):

Seymour Levine, Culver City, CA;

PART B - FEE(S) TRANSMITTAL



Complete and send this form, together with applicable fee(s), to: Mail Mail Stop ISSUE FEE Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 or Fax (571)-273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

FRED H. HOLMES RT 3 BOX 79 CLEVELAND, OK 74020

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

Form with fields for (Depositor's name), (Signature), and (Date)

Table with columns: APPLICATION NO., FILING DATE, FIRST NAMED INVENTOR, ATTORNEY DOCKET NO., CONFIRMATION NO.

TITLE OF INVENTION:

REMOTE, AIRCRAFT, GLOBAL, PAPERLESS MAINTENANCE SYSTEM

Table with columns: APPLN. TYPE, SMALL ENTITY, ISSUE FEE DUE, PUBLICATION FEE DUE, PREV. PAID ISSUE FEE, TOTAL FEE(S) DUE, DATE DUE

Table with columns: EXAMINER, ART UNIT, CLASS-SUBCLASS

Form with sections 1 and 2 regarding correspondence address and printing on patent front page.

Section 3: ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

Please check the appropriate assignee category or categories (will not be printed on the patent): Individual Corporation or other private group entity Government

Sections 4a and 4b: Fee(s) submitted and Payment of Fee(s)

Section 5: Change in Entity Status

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant, a registered attorney or agent, or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature and Typod or printed name Fred H. Holmes, Date, Registration No.

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO.

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BOEING Ex. 1004, p. 35



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**FRED HOLMES**  
918/269-6686

**To:** USPTO Attn: ISSUE FEE  
Fax number: 571-273-2885

**Date:** 3/1/2007

**Regarding:** APP: 10/004,429

**Comments:** THREE PAGES



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Date: December 15, 2006

NUMBER OF PAGES INCLUDING THIS COVER SHEET:

8

TO	COMPANY NAME	FAX NUMBER
	USPTO	571-273-8300

FROM: Scott R. Zingerman, Reg. No. 35422

**FELLERS, SNIDER, BLANKENSHIP,  
BAILEY & TIPPENS, P.C.**  
 The Kennedy Building  
 321 South Boston Ave., Suite 800  
 Tulsa, Oklahoma 74103-3318  
 TELEPHONE: (918) 599-0621  
 TELECOPIER: (918) 583-9659

AUTO QUOTE: 99900

IF YOU DO NOT RECEIVE ALL OF THE PAGES OR IF ANY ARE ILLEGIBLE, PLEASE CONTACT US AT (918) 599-0621 AS SOON AS POSSIBLE.

MESSAGE: Please see attachment(s).

\*\*\*\*\*  
**CONFIDENTIALITY NOTICE**  
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This facsimile is intended only for the use of the individual or entity to which it is addressed and may contain information that is privileged and confidential. If the reader of this facsimile is not the intended recipient, you are hereby notified that any disclosure, distribution, or copying of this information is strictly prohibited. If you have received this facsimile in error, please notify us immediately by telephone, and return it to us at the above address via the United States Postal Service.

#285047 v1

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**PATENT  
Attorney Dkt. No.: 57127**

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re application of: Seymour Levine  
Application Serial No.: 10/004,429  
Filed: 10/25/2001  
For: Remote, Aircraft, Global, Paperless Maintenance System

**Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450**

**REQUEST FOR WITHDRAWAL AS ATTORNEY (37 C.F.R. § 10.40(c))**

**REQUEST FOR PERMISSION TO WITHDRAW**

1. I, an attorney signing below, and all attorneys associated with Customer No. 22206 of the firm, Fellers, Snider, Blankenship, Bailey & Tippens, P.C., hereby respectfully request permission to withdraw from all further responsibility in this case, in accordance with 37 C.F.R. § 1.36

**LAST KNOWN ADDRESS OF CLIENT**

2. The last known mailing address of the inventor is:

Mr. Seymour Levine  
4928 Maytime Lane  
Culver City, CA 92030

**BASIS FOR WITHDRAWAL REQUEST**

3. The basis for the request for withdrawal is 37 C.F.R. 10.40(b)(4).

Explanation (including brief description of exhibits, if any):

Client has requested that his files be transferred to his attorney, Fred H. Holmes, who is no longer associated with Fellers, Snider, Blankenship, Bailey & Tippens, P.C. or Customer No. 22206.

---

**Certificate of Mailing/Transmission Under 37 CFR 1.8 or 1.10**

I hereby certify that, on the date shown below, this correspondence is being facsimile transmitted to the Patent and Trademark Office (571) 273 8300.

Date: 12-15-2006

  
Carol Welch

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ALLOWANCE OF TIME FOR CLIENT TO ACT

- 4. Status of this Application
  - A. Response due
    - (i) Issue Fee is due March 1, 2007

NOTIFICATION OF CLIENT

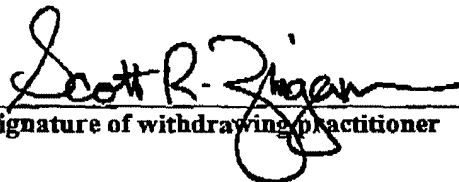
- 5. In accordance with 37 C.F.R. § 10.40(a), a copy of this request is being sent to the client.  
A copy of the letter to the client is attached.

NUMBER OF COPIES OF REQUEST

- 6. This request is enclosed in triplicate.

SIGNATURE OF WITHDRAWING PRACTITIONER

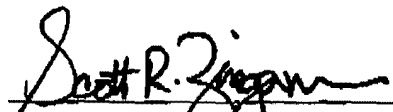
- 7. Signature(s) of the attorney(s) withdrawing (or signature of an authorized attorney on behalf of an attorney withdrawing).

  
 \_\_\_\_\_  
 Signature of withdrawing practitioner

Scott R. Zingerman  
Reg. No.: 35,422

Respectfully submitted,

Date: December 14, 2006

  
 \_\_\_\_\_  
 Scott R. Zingerman, Reg. No. 35,422  
 Fellers, Snider, Blankenship, Bailey & Tippens  
 321 South Boston, Suite 800  
 Telephone: (918) 599-0621  
 Facsimile: (918) 583-9659  
 CUSTOMER NUMBER: 22206

#384844 v1

#384844 v1

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**PATENT  
Attorney Dkt. No.: 57127**

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re application of: Seymour Levine  
Application Serial No.: 10/004,429  
Filed: 10/25/2001  
For: Remote, Aircraft, Global, Paperless Maintenance System

**Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450**

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4928 Maytime Lane  
Culver City, CA 92030

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Client has requested that his files be transferred to his attorney, Fred H. Holmes, who is no longer associated with Fellers, Snider, Blankenship, Bailey & Tippens, P.C. or Customer No. 22206.

---

**Certificate of Mailing/Transmission Under 37 CFR 1.8 or 1.10**

I hereby certify that, on the date shown below, this correspondence is being facsimile transmitted to the Patent and Trademark Office (571) 273 8300.

Date: 12-15-2006

  
Carol Welch

**ALLOWANCE OF TIME FOR CLIENT TO ACT**

4. Status of this Application

A. Response due

(i) Issue Fee is due March 1, 2007

**NOTIFICATION OF CLIENT**

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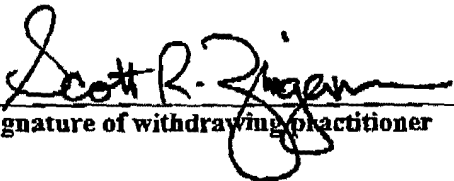
A copy of the letter to the client is attached.

**NUMBER OF COPIES OF REQUEST**

6. This request is enclosed in triplicate.

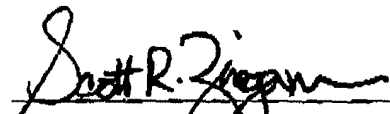
**SIGNATURE OF WITHDRAWING PRACTITIONER**

7. Signature(s) of the attorney(s) withdrawing (or signature of an authorized attorney on behalf of an attorney withdrawing).

  
Signature of withdrawing practitioner

Scott R. Zingerman  
Reg. No.: 35,422

Respectfully submitted,



Scott R. Zingerman, Reg. No. 35,422  
Fellers, Snider, Blankenship, Bailey & Tippens  
321 South Boston, Suite 800  
Telephone: (918) 599-0621  
Facsimile: (918) 583-9659  
CUSTOMER NUMBER: 22206

Date: December 14, 2006

#384844 v1

#384844 v1

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T-693 P.006/008 F-944

PATENT  
Attorney Dkt. No.: 57127

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re application of: Seymour Levine  
Application Serial No.: 10/004,429  
Filed: 10/25/2001  
For: Remote, Aircraft, Global, Paperless Maintenance System

**Commissioner for Patents**  
P.O. Box 1450  
Alexandria, VA 22313-1450

**REQUEST FOR WITHDRAWAL AS ATTORNEY (37 C.F.R. § 10.40(c))**

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4928 Maytime Lane  
Culver City, CA 92030

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Explanation (including brief description of exhibits, if any):

Client has requested that his files be transferred to his attorney, Fred H. Holmes, who is no longer associated with Fellers, Snider, Blankenship, Bailey & Tippens, P.C. or Customer No. 22206.

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Date: 12-15-2006

  
Carol Welch

#384844 v1

**ALLOWANCE OF TIME FOR CLIENT TO ACT**

4. Status of this Application

A. Response due

(i) Issue Fee is due March 1, 2007

**NOTIFICATION OF CLIENT**

5. In accordance with 37 C.F.R. § 10.40(a), a copy of this request is being sent to the client.

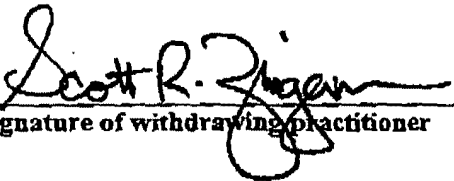
A copy of the letter to the client is attached.

**NUMBER OF COPIES OF REQUEST**

6. This request is enclosed in triplicate.

**SIGNATURE OF WITHDRAWING PRACTITIONER**

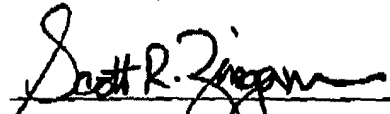
7. Signature(s) of the attorney(s) withdrawing (or signature of an authorized attorney on behalf of an attorney withdrawing).

  
Signature of withdrawing practitioner

Scott R. Zingerman  
Reg. No.: 35,422

Respectfully submitted,

Date: December 14, 2006



Scott R. Zingerman, Reg. No. 35,422  
Fellers, Snider, Blankenship, Bailey & Tippens  
321 South Boston, Suite 800  
Telephone: (918) 599-0621  
Facsimile: (918) 583-9659  
CUSTOMER NUMBER: 22206

#384844 v1

#384844 v1



**FELLERS SNIDER**  
ATTORNEYS AND COUNSELLORS AT LAW  
FELLERS SNIDER BLANKENSHIP BAILEY & TIPPENS, P.C.

OKLAHOMA CITY ■ TULSA

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**DEC 15 2006**

**SCOTT R. ZINGERMAN**  
SHAREHOLDER  
Registered Patent Attorney  
szingerman@fellerssnider.com

December 15, 2006

Seymour Levine  
4928 Maytime Lane  
Culver City, CA 90230

*Certified Mail No. 7160 3901 9849 2050 3874*  
*Return Receipt Requested*  
**Confidential & Subject to  
Attorney/Client Privilege**

**Re: Transmittal of Request for Withdrawal As Attorney**

Dear Mr. Levine:

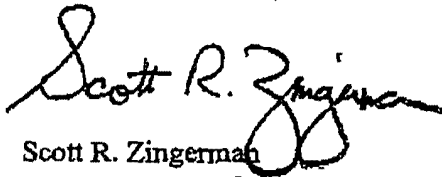
In accordance with your recent instructions, we have sent your patent files to Fred H. Holmes. Enclosed for your files are copies of the following:

1. Request for Withdrawal as Attorney and
2. Letter to Fred H. Holmes, including a reference that an issue fee is due on or before March 1, 2007 or the reissue application will abandon.

If you have any questions, do not hesitate to contact us.

Very truly yours,

FELLERS, SNIDER, BLANKENSHIP,  
BAILEY & TIPPENS, P.C.

  
Scott R. Zingerman

SRZ:caw  
Enclosures  
#384905 v1

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TULSA, OKLAHOMA 74103-3318  
www.fellerssnider.com





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United States Patent and Trademark Office
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www.uspto.gov

NOTICE OF ALLOWANCE AND FEE(S) DUE

22206 7590 12/01/2006

FELLERS SNIDER BLANKENSHIP
BAILEY & TIPPENS
THE KENNEDY BUILDING
321 SOUTH BOSTON SUITE 800
TULSA, OK 74103-3318

EXAMINER

CHIN, GARY

ART UNIT PAPER NUMBER

3661

DATE MAILED: 12/01/2006

Table with 5 columns: APPLICATION NO., FILING DATE, FIRST NAMED INVENTOR, ATTORNEY DOCKET NO., CONFIRMATION NO.

10/004,429 10/25/2001 Seymour Levine 57127 8221

TITLE OF INVENTION: REMOTE, AIRCRAFT, GLOBAL, PAPERLESS MAINTENANCE SYSTEM

Table with 7 columns: APPLN. TYPE, SMALL ENTITY, ISSUE FEE DUE, PUBLICATION FEE DUE, PREV. PAID ISSUE FEE, TOTAL FEE(S) DUE, DATE DUE

nonprovisional YES \$700 \$0 \$0 \$700 03/01/2007

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the SMALL ENTITY status shown above.

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

A. If the status is the same, pay the TOTAL FEE(S) DUE shown above.

B. If the status above is to be removed, check box 5b on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and twice the amount of the ISSUE FEE shown above, or

If the SMALL ENTITY is shown as NO:

A. Pay TOTAL FEE(S) DUE shown above, or

B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check box 5a on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and 1/2 the ISSUE FEE shown above.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

**PART B - FEE(S) TRANSMITTAL**

Complete and send this form, together with applicable fee(s), to: **Mail** **Mail Stop ISSUE FEE**  
**Commissioner for Patents**  
**P.O. Box 1450**  
**Alexandria, Virginia 22313-1450**  
**or Fax** **(571)-273-2885**

**INSTRUCTIONS:** This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

22206                      7590                      12/01/2006

**FELLERS SNIDER BLANKENSHIP  
 BAILEY & TIPPENS  
 THE KENNEDY BUILDING  
 321 SOUTH BOSTON SUITE 800  
 TULSA, OK 74103-3318**

**Certificate of Mailing or Transmission**

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/004,429	10/25/2001	Seymour Levine	57127	8221

TITLE OF INVENTION: REMOTE, AIRCRAFT, GLOBAL, PAPERLESS MAINTENANCE SYSTEM

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	YES	\$700	\$0	\$0	\$700	03/01/2007

EXAMINER	ART UNIT	CLASS-SUBCLASS
CHIN, GARY	3661	701-029000

<p>1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).</p> <p><input type="checkbox"/> Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.</p> <p><input type="checkbox"/> "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. Use of a Customer Number is required.</p>	<p>2. For printing on the patent front page, list</p> <p>(1) the names of up to 3 registered patent attorneys or agents OR, alternatively, _____ 1</p> <p>(2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed. _____ 2</p> <p>_____ 3</p>
--	---

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE \_\_\_\_\_ (B) RESIDENCE: (CITY and STATE OR COUNTRY) \_\_\_\_\_

Please check the appropriate assignee category or categories (will not be printed on the patent):  Individual  Corporation or other private group entity  Government

<p>4a. The following fee(s) are submitted:</p> <p><input type="checkbox"/> Issue Fee</p> <p><input type="checkbox"/> Publication Fee (No small entity discount permitted)</p> <p><input type="checkbox"/> Advance Order - # of Copies _____</p>	<p>4b. Payment of Fee(s): (Please first reapply any previously paid issue fee shown above)</p> <p><input type="checkbox"/> A check is enclosed.</p> <p><input type="checkbox"/> Payment by credit card. Form PTO-2038 is attached.</p> <p><input type="checkbox"/> The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).</p>
---	--

5. Change in Entity Status (from status indicated above)

a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27.  b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature \_\_\_\_\_ Date \_\_\_\_\_

Typed or printed name \_\_\_\_\_ Registration No. \_\_\_\_\_

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/004,429	10/25/2001	Seymour Levine	57127	8221

22206 7590 12/01/2006  
FELLERS SNIDER BLANKENSHIP  
BAILEY & TIPPENS  
THE KENNEDY BUILDING  
321 SOUTH BOSTON SUITE 800  
TULSA, OK 74103-3318

EXAMINER

CHIN, GARY

ART UNIT	PAPER NUMBER
3661	

DATE MAILED: 12/01/2006

**Determination of Patent Term Extension or Adjustment under 35 U.S.C. 154 (b)**

A reissue patent is for "the unexpired part of the term of the original patent." See 35 U.S.C. 251. Accordingly, the above-identified reissue application is not eligible for Patent Term Extension or Adjustment under 35 U.S.C. 154(b).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

**Notice of Allowability**

<b>Application No.</b>	<b>Applicant(s)</b>	
10/004,429	LEVINE, SEYMOUR	
<b>Examiner</b>	<b>Art Unit</b>	
Gary Chin	3661	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

- 1.  This communication is responsive to the amendments filed on 2/21/06, 4/6/06 and 6/29/06.
- 2.  The allowed claim(s) is/are 1-3,64 and 66-77.
- 3.  Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a)  All b)  Some\* c)  None of the:
    - 1.  Certified copies of the priority documents have been received.
    - 2.  Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    - 3.  Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

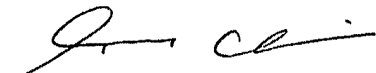
\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application. **THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

- 4.  A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
  - 5.  CORRECTED DRAWINGS ( as "replacement sheets") must be submitted.
    - (a)  including changes required by the Notice of Draftsperson's Patent Drawing Review ( PTO-948) attached
      - 1)  hereto or 2)  to Paper No./Mail Date \_\_\_\_\_.
    - (b)  including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
- 6.  DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

- 1.  Notice of References Cited (PTO-892)
- 2.  Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3.  Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date \_\_\_\_\_
- 4.  Examiner's Comment Regarding Requirement for Deposit of Biological Material
- 5.  Notice of Informal Patent Application (PTO-152)
- 6.  Interview Summary (PTO-413), Paper No./Mail Date \_\_\_\_\_
- 7.  Examiner's Amendment/Comment
- 8.  Examiner's Statement of Reasons for Allowance
- 9.  Other \_\_\_\_\_

  
**GARY CHIN**  
**PRIMARY EXAMINER**

**REASONS FOR ALLOWANCE**

1. The following is an examiner's statement of reasons for allowance:

The claimed aircraft maintenance system and method for generating maintenance advisory to the aircraft while the aircraft is in flight based upon the aircraft performance data includes an aircraft identifier and the aircraft configuration label, in combination with the other claimed subject matters, have neither been taught nor made obvious by the art of record.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gary Chin whose telephone number is (571) 272-6959. The examiner can normally be reached on Monday-Friday 8:00 AM to 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas G. Black can be reached on (571) 272-6956. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.


Art Unit: 3661

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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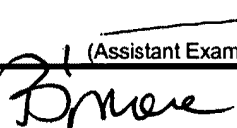
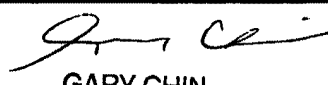
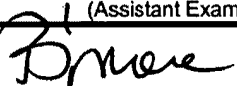


GARY CHIN  
PRIMARY EXAMINER

<b>Issue Classification</b> 	Application/Control No.	Applicant(s)/Patent under Reexamination	
	10/004,429	LEVINE, SEYMOUR	
	Examiner	Art Unit	
	Gary Chin	3661	

ISSUE CLASSIFICATION										
ORIGINAL					CROSS REFERENCE(S)					
CLASS	SUBCLASS				CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)				
701	29				701	14	35			
INTERNATIONAL CLASSIFICATION					340	945				
G	0	6	F	19/00						
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				/						
				/						

 (Assistant Examiner) (Date)		 <b>GARY CHIN</b> <b>PRIMARY EXAMINER</b> (Primary Examiner)		<b>Total Claims Allowed: 16</b>	
 (Legal Instruments Examiner) (Date)		7/18/2006 (Date)		O.G. Print Claim(s) 1	O.G. Print Fig. 4

<input type="checkbox"/> Claims renumbered in the same order as presented by applicant		<input type="checkbox"/> CPA		<input type="checkbox"/> T.D.		<input type="checkbox"/> R.1.47							
Final	Original	Final	Original	Final	Original	Final	Original						
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2	2		32		62		92		122		152		182
3	3		33		63		93		123		153		183
	4		34	4	64		94		124		154		184
	5		35		65		95		125		155		185
	6		36	5	66		96		126		156		186
	7		37	6	67		97		127		157		187
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	10		40	9	70		100		130		160		190
	11		41	10	71		101		131		161		191
	12		42	11	72		102		132		162		192
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	29		59		89		119		149		179		209
	30		60		90		120		150		180		210

**Search Notes**



Application/Control No.

10/004,429

Examiner

Gary Chin

Applicant(s)/Patent under Reexamination

LEVINE, SEYMOUR

Art Unit

3661

**SEARCHED**

Class	Subclass	Date	Examiner
701	14, 29	7/8/2003	GC
701	35, 120	7/8/2003	GC
701	301	7/8/2003	GC
340	945, 961	7/8/2003	GC
340	963, 971	7/8/2003	GC
342	29, 454	7/8/2003	GC
342	36-38	7/8/2003	GC
342	455, 456	7/8/2003	GC
UPDATED	ABOVE	4/13/04	GC
UPDATED	ABOVE	9/1/05	GC
UPDATED	ABOVE	7/18/05	GC

**SEARCH NOTES  
(INCLUDING SEARCH STRATEGY)**

	DATE	EXMR
EAST text search, history attached.	7/1/2003	GC

**INTERFERENCE SEARCHED**

Class	Subclass	Date	Examiner
PGPub text search, July 18, 2006, fee interference search printout.			GC



**Index of Claims**



Application/Control No.

10/004,429

Examiner

Gary Chin

Applicant(s)/Patent under Reexamination

LEVINE, SEYMOUR

Art Unit

3661

√	Rejected
=	Allowed

-	(Through numeral) Cancelled
+	Restricted

N	Non-Elected
I	Interference

A	Appeal
O	Objected

Claim		Date	
Final	Original	8/2/05	7/18/06
1	1	√	=
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Claim		Date	
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Bib Data Sheet

CONFIRMATION NO. 8221

<b>SERIAL NUMBER</b> 10/004,429	<b>FILING OR 371(c) DATE</b> 10/25/2001 <b>RULE</b>	<b>CLASS</b> 701	<b>GROUP ART UNIT</b> 3661	<b>ATTORNEY DOCKET NO.</b> 57127
------------------------------------	---	---------------------	-------------------------------	-------------------------------------

**APPLICANTS**  
 Seymour Levine, Culver City, CA;

**\*\* CONTINUING DATA \*\*\*\*\***  
 This application is a REI of 09/205,331 12/04/1998 PAT 5,974,349 which is a CON of 08/768,313 12/17/1996 PAT 5,890,079

**\*\* FOREIGN APPLICATIONS \*\*\*\*\***

**IF REQUIRED, FOREIGN FILING LICENSE GRANTED\*\* SMALL ENTITY \*\***  
 \*\* 02/12/2002



Foreign Priority claimed <input type="checkbox"/> yes <input checked="" type="checkbox"/> no	<b>STATE OR COUNTRY</b> CA	<b>SHEETS DRAWING</b> 4	<b>TOTAL CLAIMS</b> 63	<b>INDEPENDENT CLAIMS</b> 19
35 USC 119 (a-d) conditions met <input type="checkbox"/> yes <input checked="" type="checkbox"/> no <input type="checkbox"/> Met after Allowance				
Verified and Acknowledged	<i>[Signature]</i> Examiner's Signature	<i>[Initials]</i> Initials		

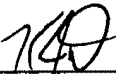
**ADDRESS**  
 22206

**TITLE**  
 Remote, aircraft, global, paperless maintenance system

<b>FILING FEE RECEIVED</b> 1429	FEES: Authority has been given in Paper No. _____ to charge/credit DEPOSIT ACCOUNT No. _____ for following:	<input type="checkbox"/> All Fees
		<input type="checkbox"/> 1.16 Fees ( Filing )
		<input type="checkbox"/> 1.17 Fees ( Processing Ext. of time )
		<input type="checkbox"/> 1.18 Fees ( Issue )
		<input type="checkbox"/> Other _____
		<input type="checkbox"/> Credit

BOEING

<b>Application Number</b>  	<b>Application No.</b> 10/004,429	<b>Applicant(s)</b> LEVINE, SEYMOUR
	<b>Notice of Reissue Published in OG on</b> 6/18/02	
<b>Original Patent Number of Patent To Be Reissued is</b> 5,974,349		<b>The Maintenance fee status is:</b> <input checked="" type="checkbox"/> up to date. <input type="checkbox"/> not required.
<b>This reissue patent is subject to A Terminal Disclaimer that:</b> <input type="checkbox"/> was filed during the prosecution of the reissue application. <input checked="" type="checkbox"/> was of record prior to the filing of the reissue application.		
<b>Physical surrender of the letters patent</b> <input type="checkbox"/> was made. <input type="checkbox"/> was not made, but a statement of loss/inaccessibility was provided. <input checked="" type="checkbox"/> is not required		

<b>Final SPRE Review</b>
 _____ (INITIALS)
11/21/06 _____ (DATE)

U.S. Patent and Trademark Office

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OCT 17 2006

TO	COMPANY NAME	FAX NUMBER
Examiner Gary Chin TC/AU: 3661	United States Patent and Trademark Office	571.273.8300

FROM: Fred H. Holmes

Attorney Docket No. L1470.57127/01-601

Re: In re application of: Levine  
Serial No.: 10/004,429  
Filing Date: 10/25/2001

Title: REMOTE, AIRCRAFT, GLOBAL PAPERLESS MAINTENANCE  
SYSTEM

**FELLERS, SNIDER, BLANKENSHIP,  
BAILEY & TIPPENS, P.C.**  
The Kennedy Building  
321 South Boston Ave., Suite 800  
Tulsa, Oklahoma 74103-3318  
TELEPHONE: (918) 599-0621  
TELECOPIER: (918) 583-9659

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Thank you.

377725 V1

\*\*\*\*\*  
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OCT 17 2006

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application No.: 10/004,429  
Applicant: Seymour LEVINE  
Filed: 10/25/2001  
TC/A.U.: 3661  
Examiner: Gary Chin

Confirmation No.: 8221

Docket No.: 57127  
Customer No: 22206

Commissioner for Patents  
P. O. Box 1450  
Alexandria, VA 22313-1450

SECOND SUPPLEMENTAL AMENDMENT

Dear Sir:

*Introductory Comments*

This paper is submitted to supplement the previously filed response of April 6, 2006, to the Office Action mailed September 15, 2005, and in response to a telephone call from the Examiner. No fee is believed to be due as a result of the filing of this supplemental amendment, however if any extension of time fee, or other fee is required by virtue of the filing of this paper, please consider this a general authorization to charge Deposit Account No. 06-0540 for the same.

---

CERTIFICATION UNDER 37 C.F.R. § 1.8

I hereby certify that, on the date shown below, this correspondence is being deposited with the United States Patent Office via Facsimile *ONLY* to 1-571-273-8300 on the date shown below:

Date: 10/17/2006

Fred H. Holmes  
Fred H. Holmes

Application No. 10/004,429  
Supplemental Amendment Dated 04/06/2006  
Page 2 of 13

*Amendments to the Claims*

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) A global, paperless, aircraft maintenance system comprising:
  - an aircraft performance means for detecting aircraft performance and control parameters;
  - a maintenance communications means, located on board an aircraft, for providing maintenance advice to maintenance personnel;
  - a sensor multiplexer receiver and transmitter means, located on board said aircraft, for:
    - accepting said aircraft performance and control parameters;
    - converting said aircraft performance and control parameters, when necessary, to digital form;
    - adding an aircraft identification and configuration label;
    - converting said aircraft performance and control parameters and said identification and configuration label to an outgoing rf signal and broadcasting said outgoing rf signal; and
    - receiving an incoming rf signal, converting it to a maintenance advisory, and feeding said maintenance advisory to said maintenance

Application No. 10/004,429  
Supplemental Amendment Dated 04/06/2006  
Page 3 of 13

communication means;

an aircraft manufacturer's database means for providing aircraft data and maintenance information;

a central station means, located on the ground, for receiving said outgoing rf signal and converting it to said aircraft performance and control parameters and said aircraft identification and configuration label, and broadcasting said incoming rf signal;

a processing means, connected to said central station means, for:

archiving said aircraft performance and control parameters thus creating an archived data database;

combining said aircraft performance and control parameters with said aircraft data and said maintenance information;

generating said maintenance advisory based upon said configuration label; and converting said maintenance advisory to said incoming rf signal;

a display and control means, connected to said processing means, for displaying operation of said processing means and for allowing operator control of said processing means; and

a global rf communications network means for conveying said outgoing signal from said aircraft to said central station means

Application No. 10/004,429  
Supplemental Amendment Dated 04/06/2006  
Page 4 of 13

and conveying said incoming rf signal from said central station  
means to said aircraft.

2. (Currently Amended) A global, paperless, aircraft maintenance system comprising:

aircraft sensors which detect aircraft performance and control parameters;  
means, located on board an aircraft, for providing maintenance advice to  
maintenance personnel;

a sensor multiplexer receiver and transmitter, located on board said aircraft,

which:

accepts said aircraft performance and control parameters;

converts said aircraft performance and control parameters, when  
necessary, to digital form;

adds an aircraft identification and configuration label;

converts said aircraft performance and control parameters and said  
aircraft identification and configuration label to an outgoing rf signal and  
broadcasts said outgoing rf signal; and

receives an incoming rf signal, converts it to a maintenance advisory,  
feeds said maintenance advisory to said [maintenance communication]

means for providing maintenance advice to maintenance personnel;

an aircraft manufacturer's database for providing aircraft data and maintenance



Application No. 10/004,429  
Supplemental Amendment Dated 04/06/2006  
Page 5 of 13

information;

a central station, located on the ground, which receives said outgoing rf signal and converts it to said aircraft performance and control parameters and said aircraft identification and configuration label, and broadcasts said incoming rf signal;

a processing means, connected to said central station, for:

archiving said aircraft performance and control parameters thus creating an archived data database;

combining said aircraft performance and control parameters with the archived data, and said aircraft data and maintenance information;

generating said maintenance advisory based upon said configuration label;

and

converting said maintenance advisory to said incoming rf signal;

a display and control subsystem, connected to said processing means, and

a global rf communications network which conveys said outgoing signal from said aircraft to said central station and conveys said incoming rf signal from said central station to said aircraft.

3. (Currently Amended) A method of providing global, paperless, aircraft maintenance

Application No. 10/004,429  
Supplemental Amendment Dated 04/06/2006  
Page 6 of 13

advisories comprising the steps of:

- mounting a performance sensor in an aircraft;
- mounting a control sensor in said aircraft;
- mounting a means in said aircraft, for providing maintenance advice to maintenance personnel;
- mounting a sensor multiplexer receiver and transmitter system, in said aircraft;
- providing communications access to an aircraft manufacturer's database;
- providing a central ground based station;
- providing a processing means within said central ground based station;
- providing a display and control subsystem, connected to said processing means;
- providing a global, rf communications network;
- accepting signals from said aircraft performance and control sensors into said sensor multiplexer receiver and transmitter;
- converting, in said sensor multiplexer receiver and transmitter, said signals from said aircraft performance and control sensors, when necessary, to digital form;
- adding an aircraft identification and configuration label;
- converting said signals from said aircraft performance and control sensors, and said aircraft identification and configuration label, in said sensor multiplexer receiver and transmitter, to an outgoing rf signal;
- transmitting said outgoing rf signal from said sensor multiplexer receiver and transmitter

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Supplemental Amendment Dated 04/06/2006  
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to said central ground base station via said global rf communications network;  
receiving said outgoing rf signal at said central ground based station;  
converting said outgoing rf signal at said ground based central station to said aircraft performance and control signals plus said aircraft identification and configuration label;  
performing within said processing means the steps of:

archiving said aircraft performance and control signals thus creating an archived data database;

combining said aircraft performance and control signals with the archived data, and information from said aircraft manufacturer's database;

generating maintenance advisories based upon said configuration label; and

converting said maintenance advisories to an incoming rf signal;

sending said incoming rf signal, via said global communications network, from said central ground based station to said sensor multiplexer receiver and transmitter;

converting said incoming rf signal, at said sensor multiplexer receiver and transmitter, to said maintenance advisories; and

feeding said maintenance advisor[[y]]ies from said sensor multiplexer receiver and transmitter to said [maintenance communication] means for providing maintenance advice to maintenance personnel.

4-63. (Canceled)

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Supplemental Amendment Dated 04/06/2006  
Page 8 of 13

64. (Currently Amended) An aircraft maintenance system for use on an aircraft having a flight data recorder, the maintenance system comprising:

a transmitter portable to be placed on an aircraft, said transmitter configured for transmission of digital aircraft performance data across a communication network while said aircraft is in flight; and  
a central station connected to said communication network configured to receive and analyze said digital aircraft performance data to generate maintenance advice for said aircraft while said aircraft is in flight,

wherein said digital aircraft performance data includes an identifier unique to a particular aircraft and a configuration label, and at least a portion of said digital aircraft performance data comprises data directed to the flight data recorder.

65. (Canceled)

66. (Currently Amended) The aircraft maintenance system of claim 64 further comprising:

a sensor multiplexer located on said aircraft, said sensor multiplexer having a plurality of inputs for receiving aircraft performance and control parameters from existing aircraft sensors, and an output in communication with said transmitter for providing said digital aircraft performance data to said transmitter.

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Supplemental Amendment Dated 04/06/2006  
Page 9 of 13

67. (Currently Amended) The aircraft maintenance system of claim 64 wherein said digital aircraft performance data further includes digitized audio information.

68. (Currently Amended) The aircraft maintenance system of claim 64 wherein said digital aircraft performance data further includes digitized video information.

69. (Currently Amended) The aircraft maintenance system of claim 64 wherein said digital aircraft performance data includes aircraft position data directed to said flight data recorder.

70. (Previously Presented) The aircraft maintenance system of claim 69 wherein information provided by a GPS receiver is used in the calculation of said aircraft position data.

71. (Previously Presented) The aircraft maintenance system of claim 70 wherein information provided by an inertial navigation system is used in the calculation of said aircraft position data.

72. (Currently Amended) The aircraft maintenance system of claim 64, wherein said central station is further configured to digitally transmit said maintenance advice to said communication network, the aircraft maintenance system further comprising:  
a receiver on said aircraft configured to receive digital data from said  
communication network; and

Application No. 10/004,429  
Supplemental Amendment Dated 04/06/2006  
Page 10 of 13

a maintenance communication means, located on said aircraft, for providing said maintenance advice to maintenance personnel, said maintenance communication means having an input for receiving said maintenance advice from said receiver.

73. (Previously Presented) The aircraft maintenance system of claim 72 wherein said maintenance advice is provided aurally to said maintenance personnel.

74. (Currently Amended) The aircraft maintenance system of claim 68 wherein said central station includes a storage system for storing said digital aircraft performance data.

75. (Previously Presented) An aircraft maintenance system comprising:  
a transmitter positionable to be located on an aircraft, said transmitter configured for transmission of data across a communication network while said aircraft is in flight;  
a ground based station connected to said communication network configured to receive and analyze said transmission of data, while said aircraft is in flight, to generate maintenance advice for said aircraft; and  
a sensor multiplexer located on said aircraft, said sensor multiplexer having a plurality of inputs for receiving aircraft performance and control parameters from aircraft sensors as said data and an output in communication with said transmitter for providing said data to said transmitter;

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Supplemental Amendment Dated 04/06/2006  
Page 11 of 13

wherein said data further includes an aircraft identifier unique to a particular aircraft and a configuration label.

76. (Currently Amended) The aircraft maintenance system of claim 75, wherein said ground based station is further configured to transmit said maintenance advice to said communication network further comprising:

a receiver located on said aircraft, said receiver configured to receive said maintenance advice from said communication network; and  
a maintenance communication means which receives said maintenance advice from said receiver and provides said maintenance advice to maintenance personnel.

77. (Previously Presented) The aircraft maintenance system of claim 75 wherein said ground based station includes a storage system for archiving said aircraft performance and control parameters.

78-95 (Cancelled)

Application No. 10/004,429  
 Supplemental Amendment Dated 04/06/2006  
 Page 12 of 13

### REMARKS

Claims 1-3 were originally filed in the application. Claims 4-63 were added by amendment in the Reissue Application. Claims 64-95 were added in a previous amendment. Claims 20-23, 40-48, and 50-63 were withdrawn from consideration by the Examiner. Claims 4-19, 24-39, 49, 65, and 78-95 were cancelled in a previous amendment. Claim 1-3, 64, and 66-77 are pending.

No claims are amended by this paper. Support for each claim and claim changes is provided hereinbelow, pursuant to 37 CFR 1.173(b)(2) and (c).

Claim No.	Reference in Specification Column:Lines
1.	4:62-66
2.	4:62-66
3.	4:62-66
64.	2:61-64; 4:51-53
66.	7:59-8:9
67.	8:50-53
68.	8:50-53
69.	7:64-8:4
70.	8:10-13
71.	8:2-4
72.	6:57-65
73.	4:20-22
74.	4:1-6
75.	2:61-67; 4:51-66
76.	5:8-14
77.	4:1-6

No additional fee is believed to be due. However, if any fee is made payable by the filing



Application No. 10/004,429  
Supplemental Amendment Dated 04/06/2006  
Page 13 of 13

of this paper, please consider this our authorization to charge the Deposit Account of the undersigned, No. 06-0540.

Respectfully submitted,

Date: 10/17/2006

By Fred H. Holmes  
Fred H. Holmes, Reg. No. 43,677  
321 South Boston, Suite 800  
Tulsa, Oklahoma 74103-3318  
(918) 599-0621

#377716 v1

## EAST Search History - INTERFERENCE SEARCH

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	0	((aircraft maintenance) and (transmitter) and (digital performance (parameter or data)) and (maintenance (advice or advisory)) and (configuration label) and (identifi\$6 near3 aircraft)).cm.	US-PGPUB	ADJ	ON	2006/07/18 15:43



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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/004,429

10/25/2001

Seymour Levine

57127

8221

22206

7590

06/13/2006

FELLERS SNIDER BLANKENSHIP  
BAILEY & TIPPENS  
THE KENNEDY BUILDING  
321 SOUTH BOSTON SUITE 800  
TULSA, OK 74103-3318

EXAMINER

CHIN, GARY

ART UNIT	PAPER NUMBER
----------	--------------

3661

DATE MAILED: 06/13/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b><i>Notice of Non-Compliant Amendment (37 CFR 1.121)</i></b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/004,429	LEVINE, SEYMOUR	
	<b>Examiner</b>	<b>Art Unit</b>	
	Gary Chin	3661	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

The amendment document filed on 06 April 2006 is considered non-compliant because it has failed to meet the requirements of 37 CFR 1.121 or 1.4. In order for the amendment document to be compliant, correction of the following item(s) is required.

THE FOLLOWING MARKED (X) ITEM(S) CAUSE THE AMENDMENT DOCUMENT TO BE NON-COMPLIANT:

1. Amendments to the specification:
- A. Amended paragraph(s) do not include markings.
  - B. New paragraph(s) should not be underlined.
  - C. Other \_\_\_\_\_.
2. Abstract:
- A. Not presented on a separate sheet. 37 CFR 1.72.
  - B. Other \_\_\_\_\_.
3. Amendments to the drawings:
- A. The drawings are not properly identified in the top margin as "Replacement Sheet," "New Sheet," or "Annotated Sheet" as required by 37 CFR 1.121(d).
  - B. The practice of submitting proposed drawing correction has been eliminated. Replacement drawings showing amended figures, without markings, in compliance with 37 CFR 1.84 are required.
  - C. Other \_\_\_\_\_.
4. Amendments to the claims:
- A. A complete listing of all of the claims is not present.
  - B. The listing of claims does not include the text of all pending claims (including withdrawn claims)
  - C. Each claim has not been provided with the proper status identifier, and as such, the individual status of each claim cannot be identified. Note: the status of every claim must be indicated after its claim number by using one of the following status identifiers: (Original), (Currently amended), (Canceled), (Previously presented), (New), (Not entered), (Withdrawn) and (Withdrawn-currently amended).
  - D. The claims of this amendment paper have not been presented in ascending numerical order.
  - E. Other: \_\_\_\_\_.
5. Other (e.g., the amendment is unsigned or not signed in accordance with 37 CFR 1.4):  
A catch-up supplemental oath is needed for the changes made in the amendment dated 4/6/06 (see 37 CFR 1.175 (b)(1)). Further, there is no explanation as to the support in the specification of the original patent for the changes made in the aforementioned amendment.

For further explanation of the amendment format required by 37 CFR 1.121, see MPEP § 714.

TIME PERIODS FOR FILING A REPLY TO THIS NOTICE:

1. Applicant is given **no new time period** if the non-compliant amendment is an after-final amendment or an amendment filed after allowance. If applicant wishes to resubmit the non-compliant after-final amendment with corrections, the **entire corrected amendment** must be resubmitted.
2. Applicant is given **one month**, or thirty (30) days, whichever is longer, from the mail date of this notice to supply the correction, if the non-compliant amendment is one of the following: a preliminary amendment, a non-final amendment (including a submission for a request for continued examination (RCE) under 37 CFR 1.114), a supplemental amendment filed within a suspension period under 37 CFR 1.103(a) or (c), and an amendment filed in response to a *Quayle* action. If any of above boxes 1. to 4. are checked, the correction required is only the **corrected section** of the non-compliant amendment in compliance with 37 CFR 1.121.

**Extensions of time** are available under 37 CFR 1.136(a) only if the non-compliant amendment is a non-final amendment or an amendment filed in response to a *Quayle* action.

**Failure to timely respond** to this notice will result in:

**Abandonment** of the application if the non-compliant amendment is a non-final amendment or an amendment filed in response to a *Quayle* action; or

**Non-entry** of the amendment if the non-compliant amendment is a preliminary amendment or supplemental amendment.

\_\_\_\_\_  
 Legal Instruments Examiner (LIE), if applicable

\_\_\_\_\_  
 Telephone No.

FACSIMILE COVER SHEET

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JUN 09 2006

Date: June 9, 2006

NUMBER OF PAGES INCLUDING THIS COVER SHEET: 16

TO	COMPANY NAME	FAX NUMBER
Examiner Gary Chin TC/AU: 3661	United States Patent and Trademark Office	571.273.8300

FROM: Fred H. Holmes *Attorney Docket No. L1470.57127/01-601*

Re: In re application of: Levine  
Serial No.: 10/004,429  
Filing Date: 10/25/2001  
Title: REMOTE, AIRCRAFT, GLOBAL PAPERLESS  
MAINTENANCE SYSTEM

**FELLERS, SNIDER, BLANKENSHIP,  
BAILEY & TIPPENS, P.C.**  
The Kennedy Building  
321 South Boston Ave., Suite 800  
Tulsa, Oklahoma 74103-3318  
TELEPHONE: (918) 599-0621  
TELECOPIER: (918) 583-9659

IF YOU DO NOT RECEIVE ALL OF THE PAGES OR IF ANY ARE ILLEGIBLE, PLEASE CONTACT US AT (918) 599-0621 AS SOON AS POSSIBLE.

**MESSAGE:** Attached please find a Supplemental Amendment with Appendix A for the above-identified application. If you have any questions, please do not hesitate to contact me.

Thank you.

\*\*\*\*\*  
**CONFIDENTIALITY NOTICE**

This facsimile is intended only for the use of the individual or entity to which it is addressed and may contain information that is privileged and confidential. If the reader of this facsimile is not the intended recipient, you are hereby notified that any disclosure, distribution, or copying of this information is strictly prohibited. If you have received this facsimile in error, please notify us immediately by telephone, and return it to us at the above address via the United States Postal Service.

JUN 09 2006

**PATENT**

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Application No.:	10/004,429	Confirmation No.:	8221
Applicant:	Seymour LEVINE		
Filed:	10/25/2001		
TC/A.U.:	3661		
Examiner:	Gary Chin		
Docket No.:	57127		
Customer No:	22206		

Commissioner for Patents  
P. O. Box 1450  
Alexandria, VA 22313-1450

**SUPPLEMENTAL AMENDMENT**

Dear Sir:

*Introductory Comments*


This paper is submitted to supplement the previously filed response of April 6, 2006, to the Office Action mailed September 15, 2005, and in response to a telephone call from the Examiner. No fee is believed to be due as a result of the filing of this supplemental amendment, however if any extension of time fee, or other fee is required by virtue of the filing of this paper, please consider this a general authorization to charge Deposit Account No. 06-0540 for the same.

---

CERTIFICATION UNDER 37 C.F.R. § 1.8

I hereby certify that, on the date shown below, this correspondence is being deposited with the United States Patent Office via Facsimile *ONLY* to 1-571-273-8300 on the date shown below:

Date: 6/9/2006

  
Amy C. Walker

Application No. 10/004,429  
Supplemental Amendment Dated 04/06/2006  
Page 2 of 13

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*Amendments to the Claims*

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) A global, paperless, aircraft maintenance system comprising:
  - an aircraft performance means for detecting aircraft performance and control parameters;
  - a maintenance communications means, located on board an aircraft, for providing maintenance advice to maintenance personnel;
  - a sensor multiplexer receiver and transmitter means, located on board said aircraft, for:
    - accepting said aircraft performance and control parameters;
    - converting said aircraft performance and control parameters, when necessary, to digital form;
    - adding an aircraft identification and configuration label;
    - converting said aircraft performance and control parameters and said identification and configuration label to an outgoing rf signal and broadcasting said outgoing rf signal; and
    - receiving an incoming rf signal, converting it to a maintenance advisory, and feeding said maintenance advisory to said maintenance



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Supplemental Amendment Dated 04/06/2006  
Page 3 of 13

communication means;

an aircraft manufacturer's database means for providing aircraft data and maintenance information;

a central station means, located on the ground, for receiving said outgoing rf signal and converting it to said aircraft performance and control parameters and said aircraft identification and configuration label, and broadcasting said incoming rf signal;

a processing means, connected to said central station means, for:

archiving said aircraft performance and control parameters thus creating an archived data database;

combining said aircraft performance and control parameters with said aircraft data and said maintenance information;

generating said maintenance advisory based upon said configuration label; and converting said maintenance advisory to said incoming rf signal;

a display and control means, connected to said processing means, for displaying operation of said processing means and for allowing operator control of said processing means; and

a global rf communications network means for conveying said outgoing signal from said aircraft to said central station means

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Supplemental Amendment Dated 04/06/2006  
Page 4 of 13

and conveying said incoming rf signal from said central station  
means to said aircraft.

2. (Currently Amended) A global, paperless, aircraft maintenance system comprising:  
aircraft sensors which detect aircraft performance and control parameters;  
means, located on board an aircraft, for providing maintenance advice to  
maintenance personnel;  
a sensor multiplexer receiver and transmitter, located on board said aircraft,  
which:

accepts said aircraft performance and control parameters;  
converts said aircraft performance and control parameters, when  
necessary, to digital form;  
adds an aircraft identification and configuration label;  
converts said aircraft performance and control parameters and said  
aircraft identification and configuration label to an outgoing rf signal and  
broadcasts said outgoing rf signal; and  
receives an incoming rf signal, converts it to a maintenance advisory,  
feeds said maintenance advisory to said [maintenance communication]  
means for providing maintenance advice to maintenance personnel;  
an aircraft manufacturer's database for providing aircraft data and maintenance

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information;

a central station, located on the ground, which receives said outgoing rf signal and converts it to said aircraft performance and control parameters and said aircraft identification and configuration label, and broadcasts said incoming rf signal;

a processing means, connected to said central station, for:

archiving said aircraft performance and control parameters thus creating an archived data database;

combining said aircraft performance and control parameters with the archived data, and said aircraft data and maintenance information;

generating said maintenance advisory based upon said configuration label;

and

converting said maintenance advisory to said incoming rf signal;

a display and control subsystem, connected to said processing means, and

a global rf communications network which conveys said outgoing signal from said aircraft to said central station and conveys said incoming rf signal from said central station to said aircraft.

3. (Currently Amended) A method of providing global, paperless, aircraft maintenance

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Supplemental Amendment Dated 04/06/2006  
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advisories comprising the steps of:

- mounting a performance sensor in an aircraft;
- mounting a control sensor in said aircraft;
- mounting a means in said aircraft, for providing maintenance advice to maintenance personnel;
- mounting a sensor multiplexer receiver and transmitter system, in said aircraft;
- providing communications access to an aircraft manufacturer's database;
- providing a central ground based station;
- providing a processing means within said central ground based station;
- providing a display and control subsystem, connected to said processing means;
- providing a global, rf communications network;
- accepting signals from said aircraft performance and control sensors into said sensor multiplexer receiver and transmitter;
- converting, in said sensor multiplexer receiver and transmitter, said signals from said aircraft performance and control sensors, when necessary, to digital form;
- adding an aircraft identification and configuration label;
- converting said signals from said aircraft performance and control sensors, and said aircraft identification and configuration label, in said sensor multiplexer receiver and transmitter, to an outgoing rf signal;
- transmitting said outgoing rf signal from said sensor multiplexer receiver and transmitter

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to said central ground base station via said global rf communications network;  
receiving said outgoing rf signal at said central ground based station;  
converting said outgoing rf signal at said ground based central station to said aircraft performance and control signals plus said aircraft identification and configuration label;  
performing within said processing means the steps of:

archiving said aircraft performance and control signals thus creating an archived data database;

combining said aircraft performance and control signals with the archived data, and information from said aircraft manufacturer's database;

generating maintenance advisories based upon said configuration label; and

converting said maintenance advisories to an incoming rf signal;

sending said incoming rf signal, via said global communications network, from said central ground based station to said sensor multiplexer receiver and transmitter;

converting said incoming rf signal, at said sensor multiplexer receiver and transmitter, to said maintenance advisories; and

feeding said maintenance advisor[ies] from said sensor multiplexer receiver and transmitter to said [maintenance communication] means for providing maintenance advice to maintenance personnel.

4-63. (Canceled)

Application No. 10/004,429  
Supplemental Amendment Dated 04/06/2006  
Page 8 of 13

64. (Currently Amended) An aircraft maintenance system for use on an aircraft having a flight data recorder, the maintenance system comprising:

a transmitter portable to be placed on an aircraft, said transmitter configured for transmission of digital aircraft performance data across a communication network while said aircraft is in flight; and

a central station connected to said communication network configured to receive and analyze said digital aircraft performance data to generate maintenance advice for said aircraft while said aircraft is in flight,

wherein said digital aircraft performance data includes an identifier unique to a particular aircraft and a configuration label, and at least a portion of said digital aircraft performance data comprises data directed to the flight data recorder.

65. (Canceled)

66. (Currently Amended) The aircraft maintenance system of claim 64 further comprising:

a sensor multiplexer located on said aircraft, said sensor multiplexer having a plurality of inputs for receiving aircraft performance and control parameters from existing aircraft sensors, and an output in communication with said transmitter for providing said digital aircraft performance data to said transmitter.

Application No. 10/004,429  
Supplemental Amendment Dated 04/06/2006  
Page 9 of 13

67. (Curently Amended) The aircraft maintenance system of claim 64 wherein said digital aircraft performance data further includes digitized audio information.

68. (Currently Amended) The aircraft maintenance system of claim 64 wherein said digital aircraft performance data further includes digitized video information.

69. (Currently Amended) The aircraft maintenance system of claim 64 wherein said digital aircraft performance data includes aircraft position data directed to said flight data recorder.

70. (Previously Presented) The aircraft maintenance system of claim 69 wherein information provided by a GPS receiver is used in the calculation of said aircraft position data.

71. (Previously Presented) The aircraft maintenance system of claim 70 wherein information provided by an inertial navigation system is used in the calculation of said aircraft position data.

72. (Currently Amended) The aircraft maintenance system of claim 64, wherein said central station is further configured to digitally transmit said maintenance advice to said communication network, the aircraft maintenance system further comprising:

a receiver on said aircraft configured to receive digital data from said communication network; and

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a maintenance communication means, located on said aircraft, for providing said maintenance advice to maintenance personnel, said maintenance communication means having an input for receiving said maintenance advice from said receiver.

73. (Previously Presented) The aircraft maintenance system of claim 72 wherein said maintenance advice is provided aurally to said maintenance personnel.

74. (Currently Amended) The aircraft maintenance system of claim 68 wherein said central station includes a storage system for storing said digital aircraft performance data.

75. (Previously Presented) An aircraft maintenance system comprising:  
a transmitter positionable to be located on an aircraft, said transmitter configured for transmission of data across a communication network while said aircraft is in flight;  
a ground based station connected to said communication network configured to receive and analyze said transmission of data, while said aircraft is in flight, to generate maintenance advice for said aircraft; and  
a sensor multiplexer located on said aircraft, said sensor multiplexer having a plurality of inputs for receiving aircraft performance and control parameters from aircraft sensors as said data and an output in communication with said transmitter for providing said data to said transmitter.



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Page 11 of 13

wherein said data further includes an aircraft identifier unique to a particular aircraft and a configuration label.

76. (Currently Amended) The aircraft maintenance system of claim 75, wherein said ground based station is further configured to transmit said maintenance advice to said communication network further comprising:

a receiver located on said aircraft, said receiver configured to receive said maintenance advice from said communication network; and  
a maintenance communication means which receives said maintenance advice from said receiver and provides said maintenance advice to maintenance personnel.

77. (Previously Presented) The aircraft maintenance system of claim 75 wherein said ground based station includes a storage system for archiving said aircraft performance and control parameters.

78-95 (Cancelled)

Application No. 10/004,429  
 Supplemental Amendment Dated 04/06/2006  
 Page 12 of 13

**REMARKS**

Claims 1-3 were originally filed in the application. Claims 4-63 were added by amendment in the Reissue Application. Claims 64-95 were added in a previous amendment. Claims 20-23, 40-48, and 50-63 were withdrawn from consideration by the Examiner. Claims 4-19, 24-39, 49, 65, 80-91, and 94 were cancelled in a previous amendment. Claims 78, 79, 92, 93, and 95 are cancelled in this amendment. Claim 1-3, 64, and 66-77 are pending.

A supplemental oath/declaration is appended hereto as Appendix A.

The claims have been amended pursuant to a telephone conversation with the Examiner of March 24, 2006. Support for each claim is provided hereinbelow, pursuant to 37 CFR 1.173(b)(2) and (c).

Claim No.	Reference in Specification Column:Lines
64.	2:61-64; 4:51-53
66.	7:59-8:9
67.	8:50-53
68.	8:50-53
69.	7:64-8:4
70.	8:10-13
71.	8:2-4
72.	6:57-65
73.	4:20-22
74.	4:1-6
75.	2:61-67; 4:51-66
76.	5:8-14
77.	4:1-6

Application No. 10/004,429  
Supplemental Amendment Dated 04/06/2006  
Page 13 of 13

No additional fee is believed to be due. However, if any fee is made payable by the filing of this paper, please consider this our authorization to charge the Deposit Account of the undersigned, No. 06-0540.

Respectfully submitted,

Date: 6-9-2006

By Fred H. Holmes  
Fred H. Holmes, Reg. No. 43,677  
FELLERS, SNIDER, BLANKENSHIP,  
BAILEY & TIPPENS, P.C.  
321 South Boston, Suite 800  
Tulsa, Oklahoma 74103-3318  
(918) 599-0621

362160v1

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JUN 09 2006

Practitioner's Docket No. 57127 PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

REISSUE APPLICATION SUPPLEMENTAL DECLARATION  
(BY INVENTOR)

DECLARATION BY THE INVENTOR

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name. I believe I am the original, first and sole inventor of the subject matter that is described and claimed in letters patent number 5,974,349, granted on October 26, 1999, and in the subject matter in the amendment filed on April 6, 2006, and for which invention I solicit a reissue patent.

ACKNOWLEDGMENT OF REVIEW OF PAPERS AND DUTY OF CANDOR  
(37 C.F.R. § 1.175)

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims. I acknowledge the duty to disclose information that is material to the examination of this application, namely, information where there is a substantial likelihood that a reasonable examiner would consider it important in deciding whether to allow the application to issue as a patent. In compliance with this duty, an information disclosure statement was filed in accordance with 37 C.F.R. § 1.98 on October 25, 2002.

STATEMENT OF INOPERATIVENESS OR INVALIDITY  
OF ORIGINAL PATENT (37 C.F.R. § 1.175)

I verily believe the original patent to be partly inoperative or invalid by reason of (37 C.F.R. § 1.175(a)(1)) the patentee claiming more or less than the patentee had a right to claim in the patent.

That the aforementioned error(s) which are being corrected, up to the time of the filing of this reissue supplemental declaration, arose without any deceptive intention on the part of the applicant. (37 C.F.R. § 1.175(a)(2)).

STATEMENT OF INOPERATIVENESS OR  
INVALIDITY OF ORIGINAL PATENT  
(continued)

At least one error upon which reissue is based is described below. If the reissue is a broadening reissue, such must be stated with an explanation as to the nature of the broadening:

Claims 1-3 are partly inoperative because each claim contains unnecessary limitations. Applicant seeks to broaden the claims by eliminating unnecessary limitations. In claims 1 and 2, "an aircraft manufacturer's database means for providing aircraft data and maintenance information" is an unnecessary limitation. In claim 3, "providing communication access to an aircraft manufacturer's database" is an unnecessary limitation.

All errors which are being corrected in the present reissue application up to the time of filing this declaration arose without any deceptive intention on the part of the applicant. (37 C.F.R. § 1.175(b)(1)).

DECLARATION

Reissue Application Supplemental Declaration - page 1 of 2

PAGE 02/03

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06/09/2006 11:36 31055839659

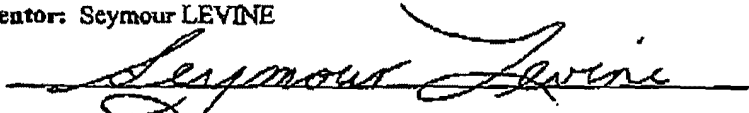
I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

**SIGNATURE**

**BY THE INVENTOR**

**Full name of sole inventor:** Seymour LEVINE

**Inventor's signature:**



**Date:** 6-8-06 **Country of Citizenship:** USA

**Residence:** Culver City, CA 90230

**Post Office Address:** 4928 Maytime Lane, Culver City, CA 90230

Supp Decl1.wpd

Reissue Application Supplemental Declaration - page 2 of 2

PAGE 03/03

THE UPS STORE

31055839659

06/08/2006 11:36

PAGE 16/16 \* RCVD AT 6/9/2006 4:56:18 PM [Eastern Daylight Time] \* SVR:USPTO-EFXXF-3/5 \* DNIS:2738300 \* CSID:9185839659 \* DURATION (mm-ss):03-36

**PATENT APPLICATION FEE DETERMINATION RECORD**  
Effective December 8, 2004

Application or Docket Number

10/004,429

**CLAIMS AS FILED - PART I**

	(Column 1)	(Column 2)
TOTAL CLAIMS		
FOR	NUMBER FILED	NUMBER EXTRA
TOTAL CHARGEABLE CLAIMS	minus 20= *	
INDEPENDENT CLAIMS	minus 3 = *	
MULTIPLE DEPENDENT CLAIM PRESENT <input type="checkbox"/>		

SMALL ENTITY TYPE <input type="checkbox"/>		OR	OTHER THAN SMALL ENTITY	
RATE	FEE		RATE	FEE
BASIC FEE	150.00	OR	BASIC FEE	300.00
X\$ 25=		OR	X\$50=	
X100=		OR	X200=	
+180=		OR	+360=	
TOTAL		OR	TOTAL	

\* If the difference in column 1 is less than zero, enter "0" in column 2

*Small 6/9/16*

**CLAIMS AS AMENDED - PART II**

	(Column 1)	(Column 2)	(Column 3)
AMENDMENT A	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA
Total	* 16	Minus ** 103	= 1
Independent	* 5	Minus *** 19	= 1
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM <input type="checkbox"/>			

SMALL ENTITY		OR	OTHER THAN SMALL ENTITY	
RATE	ADDITIONAL FEE		RATE	ADDITIONAL FEE
X\$ 25=		OR	X\$50=	
X100=		OR	X200=	
+180=		OR	+360=	
TOTAL ADDIT. FEE		OR	TOTAL ADDIT. FEE	

	(Column 1)	(Column 2)	(Column 3)
AMENDMENT B	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA
Total	*	Minus **	=
Independent	*	Minus ***	=
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM <input type="checkbox"/>			

SMALL ENTITY		OR	OTHER THAN SMALL ENTITY	
RATE	ADDITIONAL FEE		RATE	ADDITIONAL FEE
X\$ 25=		OR	X\$50=	
X100=		OR	X200=	
+180=		OR	+360=	
TOTAL ADDIT. FEE		OR	TOTAL ADDIT. FEE	

	(Column 1)	(Column 2)	(Column 3)
AMENDMENT C	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA
Total	*	Minus **	=
Independent	*	Minus ***	=
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM <input type="checkbox"/>			

SMALL ENTITY		OR	OTHER THAN SMALL ENTITY	
RATE	ADDITIONAL FEE		RATE	ADDITIONAL FEE
X\$ 25=		OR	X\$50=	
X100=		OR	X200=	
+180=		OR	+360=	
TOTAL ADDIT. FEE		OR	TOTAL ADDIT. FEE	

- \* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
- \*\* If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20."
- \*\*\* If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3."
- The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/004,429	10/25/2001	Seymour Levine	57127	8221

22206 7590 04/07/2006  
FELLERS SNIDER BLANKENSHIP  
BAILEY & TIPPENS  
THE KENNEDY BUILDING  
321 SOUTH BOSTON SUITE 800  
TULSA, OK 74103-3318

EXAMINER

CHIN, GARY

ART UNIT PAPER NUMBER

3661

DATE MAILED: 04/07/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Examiner-Initiated Interview Summary</b>	<b>Application No.</b> 10/004,429	<b>Applicant(s)</b> LEVINE, SEYMOUR	
	<b>Examiner</b> Gary Chin	<b>Art Unit</b> 3661	

**All Participants:**

- (1) Gary Chin.
- (2) Fred Holmes.

**Status of Application:** \_\_\_\_\_

- (3) \_\_\_\_\_
- (4) \_\_\_\_\_

**Date of Interview:** 24 March 2006

**Time:** \_\_\_\_\_

**Type of Interview:**

- Telephonic
- Video Conference
- Personal (Copy given to:  Applicant     Applicant's representative)

Exhibit Shown or Demonstrated:  Yes     No  
If Yes, provide a brief description:

**Part I.**

Rejection(s) discussed:

Claims discussed:  
1-3, 64, 75, 78-79, 92-93 and 95

Prior art documents discussed:

**Part II.**

SUBSTANCE OF INTERVIEW DESCRIBING THE GENERAL NATURE OF WHAT WAS DISCUSSED:  
*See Continuation Sheet*

**Part III.**

- It is not necessary for applicant to provide a separate record of the substance of the interview, since the interview directly resulted in the allowance of the application. The examiner will provide a written summary of the substance of the interview in the Notice of Allowability.
- It is not necessary for applicant to provide a separate record of the substance of the interview, since the interview did not result in resolution of all issues. A brief summary by the examiner appears in Part II above.

  
\_\_\_\_\_  
(Examiner/SPE Signature)

\_\_\_\_\_  
(Applicant/Applicant's Representative Signature – if appropriate)



Continuation of Substance of Interview including description of the general nature of what was discussed: Applicant agreed to file a supplemental amendment to cancel claims 78-79, 92-93 and 95 without prejudice and amend claims 1-3 by reciting that the maintenance advisory is based upon the configuration lable and include the configuration label data in claims 64 and 75 in order to place the case in condition for allowance..

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FACSIMILE COVER SHEET

APR 06 2006

Date: April 6, 2006

NUMBER OF PAGES INCLUDING THIS COVER SHEET: 13

TO	COMPANY NAME	FAX NUMBER
Examiner Gary Chin TC/AU: 3661	United States Patent and Trademark Office	571.273.8300

FROM: Fred H. Holmes, Esq.

Attorney Docket No. 57127/01-601

Re: In re application of: Seymour LEVINE  
 Serial No.: 10/004,429  
 Filing Date: 10/25/2001  
 Title: Remote, Aircraft, Global Paperless Maintenance System

**FELLERS, SNIDER, BLANKENSHIP,  
 BAILEY & TIPPENS, P.C.**  
 The Kennedy Building  
 321 South Boston Ave., Suite 800  
 Tulsa, Oklahoma 74103-3318  
 TELEPHONE: (918) 599-0621  
 TELECOPIER: (918) 583-9659

AUTO QUOTE: 57127

IF YOU DO NOT RECEIVE ALL OF THE PAGES OR IF ANY ARE ILLEGIBLE, PLEASE CONTACT US AT (918) 599-0621 AS SOON AS POSSIBLE.

**MESSAGE:** Attached please find a Supplemental Amendment for the above-identified application. If you have any questions, please do not hesitate to contact me.

Thank you.

\*\*\*\*\*

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APR 06 2006

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application No.:	10/004,429	Confirmation No.:	8221
Applicant:	Seymour LEVINE		
Filed:	10/25/2001		
TC/A.U.:	3661		
Examiner:	Gary Chin		
Docket No.:	57127		
Customer No.:	22206		

Commissioner for Patents  
P. O. Box 1450  
Alexandria, VA 22313-1450

SUPPLEMENTAL AMENDMENT

Dear Sir:

*Introductory Comments*

This paper is submitted to supplement the previously filed response of February 15, 2006, to the Office Action mailed September 15, 2005, and in response to a telephone call from the Examiner of March 24, 2006. No fee is believed to be due as a result of the filing of this supplemental amendment, however if any extension of time fee, or other fee is required by virtue of the filing of this paper, please consider this a general authorization to charge Deposit Account No. 06-0540 for the same.

---

CERTIFICATION UNDER 37 C.F.R. § 1.8

I hereby certify that, on the date shown below, this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to the Commissioner for Patents, P. O. Box 1450, Alexandria, VA 22313-1450, or facsimile transmitted on the date shown below:

Date: 4/6/06

Nancy J. Moore  
Nancy J. Moore

Application No. 10/004,429  
Supplemental Amendment Dated 04/06/2006  
Page 2 of 12

*Amendments to the Claims*

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) A global, paperless, aircraft maintenance system comprising:
  - an aircraft performance means for detecting aircraft performance and control parameters;
  - a maintenance communications means, located on board an aircraft, for providing maintenance advice to maintenance personnel;
  - a sensor multiplexer receiver and transmitter means, located on board said aircraft, for:
    - accepting said aircraft performance and control parameters;
    - converting said aircraft performance and control parameters, when necessary, to digital form;
    - adding an aircraft identification and configuration label;
    - converting said aircraft performance and control parameters and said identification and configuration label to an outgoing rf signal and broadcasting said outgoing rf signal; and
    - receiving an incoming rf signal, converting it to a maintenance advisory,

Application No. 10/004,429  
Supplemental Amendment Dated 04/06/2006  
Page 3 of 12

and feeding said maintenance advisory to said maintenance communication means;

an aircraft manufacturer's database means for providing aircraft data and maintenance information;

a central station means, located on the ground, for receiving said outgoing rf signal and converting it to said aircraft performance and control parameters and said aircraft identification and configuration label, and broadcasting said incoming rf signal;

a processing means, connected to said central station means, for:

archiving said aircraft performance and control parameters thus creating an archived data database;

combining said aircraft performance and control parameters with said aircraft data and said maintenance information;

generating said maintenance advisory based upon said configuration label; and converting said maintenance advisory to said incoming rf signal;

a display and control means, connected to said processing means, for displaying operation of said processing means and for allowing operator control of said processing means; and

a global rf communications network means for conveying said

Application No. 10/004,429  
Supplemental Amendment Dated 04/06/2006  
Page 4 of 12

outgoing signal from said aircraft to said central station means  
and conveying said incoming rf signal from said central station  
means to said aircraft.

- 2. (Currently Amended) A global, paperless, aircraft maintenance system comprising:
  - aircraft sensors which detect aircraft performance and control parameters;
  - means, located on board an aircraft, for providing maintenance advice to maintenance personnel;
  - a sensor multiplexer receiver and transmitter, located on board said aircraft,

which:

- accepts said aircraft performance and control parameters;
- converts said aircraft performance and control parameters, when necessary, to digital form;
- adds an aircraft identification and configuration label;
- converts said aircraft performance and control parameters and said aircraft identification and configuration label to an outgoing rf signal and broadcasts said outgoing rf signal; and
- receives an incoming rf signal, converts it to a maintenance advisory, feeds said maintenance advisory to said [maintenance communication] means for providing maintenance advice to maintenance personnel;

Application No. 10/004,429  
Supplemental Amendment Dated 04/06/2006  
Page 5 of 12

an aircraft manufacturer's database for providing aircraft data and maintenance information;

a central station, located on the ground, which receives said outgoing rf signal and converts it to said aircraft performance and control parameters and said aircraft identification and configuration label, and broadcasts said incoming rf signal;

a processing means, connected to said central station, for:

archiving said aircraft performance and control parameters thus creating an archived data database;

combining said aircraft performance and control parameters with the archived data, and said aircraft data and maintenance information;

generating said maintenance advisory based upon said configuration label;

and

converting said maintenance advisory to said incoming rf signal;

a display and control subsystem, connected to said processing means, and

a global rf communications network which conveys said outgoing signal from said aircraft to said central station and conveys said incoming rf signal from said central station to said aircraft.

Application No. 10/004,429  
Supplemental Amendment Dated 04/06/2006  
Page 6 of 12

3. (Currently Amended) A method of providing global, paperless, aircraft maintenance advisories comprising the steps of:

- mounting a performance sensor in an aircraft;
- mounting a control sensor in said aircraft;
- mounting a means in said aircraft, for providing maintenance advice to maintenance personnel;
- mounting a sensor multiplexer receiver and transmitter system, in said aircraft;
- providing communications access to an aircraft manufacturer's database;
- providing a central ground based station;
- providing a processing means within said central ground based station;
- providing a display and control subsystem, connected to said processing means;
- providing a global, rf communications network;
- accepting signals from said aircraft performance and control sensors into said sensor multiplexer receiver and transmitter;
- converting, in said sensor multiplexer receiver and transmitter, said signals from said aircraft performance and control sensors, when necessary, to digital form;
- adding an aircraft identification and configuration label;
- converting said signals from said aircraft performance and control sensors, and said aircraft identification and configuration label, in said sensor multiplexer receiver and transmitter, to an outgoing rf signal;



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Supplemental Amendment Dated 04/06/2006  
Page 7 of 12

transmitting said outgoing rf signal from said sensor multiplexer receiver and transmitter to said central ground base station via said global rf communications network;  
receiving said outgoing rf signal at said central ground based station;  
converting said outgoing rf signal at said ground based central station to said aircraft performance and control signals plus said aircraft identification and configuration label;  
performing within said processing means the steps of:

archiving said aircraft performance and control signals thus creating an archived data database;

combining said aircraft performance and control signals with the archived data, and information from said aircraft manufacturer's database;

generating maintenance advisories based upon said configuration label; and

converting said maintenance advisories to an incoming rf signal;

sending said incoming rf signal, via said global communications network, from said central ground based station to said sensor multiplexer receiver and transmitter;

converting said incoming rf signal, at said sensor multiplexer receiver and transmitter, to said maintenance advisories; and

feeding said maintenance advisor[[y]]ies from said sensor multiplexer receiver and transmitter to said [maintenance communication] means for providing maintenance advice to maintenance personnel.

Application No. 10/004,429  
Supplemental Amendment Dated 04/06/2006  
Page 8 of 12

4-63. (Canceled)

64. (Currently Amended) An aircraft maintenance system for use on an aircraft having a flight data recorder, the maintenance system comprising:

a transmitter portable to be placed on an aircraft, said transmitter configured for transmission of digital aircraft performance data across a communication network while said aircraft is in flight; and

a central station connected to said communication network configured to receive and analyze said digital aircraft performance data to generate maintenance advice for said aircraft while said aircraft is in flight,

wherein said digital aircraft performance data includes an identifier unique to a particular aircraft and a configuration label, and at least a portion of said digital aircraft performance data comprises data directed to the flight data recorder.

65. (Canceled)

66. (Currently Amended) The aircraft maintenance system of claim 64 further comprising:  
a sensor multiplexer located on said aircraft, said sensor multiplexer having a plurality of inputs for receiving aircraft performance and control parameters from existing aircraft sensors, and an output in communication with said transmitter for providing said digital aircraft performance data to said transmitter.

Application No. 10/004,429  
Supplemental Amendment Dated 04/06/2006  
Page 9 of 12

67. (Currently Amended) The aircraft maintenance system of claim 64 wherein said digital aircraft performance data further includes digitized audio information.

68. (Currently Amended) The aircraft maintenance system of claim 64 wherein said digital aircraft performance data further includes digitized video information.

69. (Currently Amended) The aircraft maintenance system of claim 64 wherein said digital aircraft performance data includes aircraft position data directed to said flight data recorder.

70. (Previously Presented) The aircraft maintenance system of claim 69 wherein information provided by a GPS receiver is used in the calculation of said aircraft position data.

71. (Previously Presented) The aircraft maintenance system of claim 70 wherein information provided by an inertial navigation system is used in the calculation of said aircraft position data.

72. (Currently Amended) The aircraft maintenance system of claim 64, wherein said central station is further configured to digitally transmit said maintenance advice to said communication network, the aircraft maintenance system further comprising:  
a receiver on said aircraft configured to receive digital data from said  
communication network; and

Application No. 10/004,429  
Supplemental Amendment Dated 04/06/2006  
Page 10 of 12

a maintenance communication means, located on said aircraft, for providing said maintenance advice to maintenance personnel, said maintenance communication means having an input for receiving said maintenance advice from said receiver.

73. (Previously Presented) The aircraft maintenance system of claim 72 wherein said maintenance advice is provided aurally to said maintenance personnel.

74. (Currently Amended) The aircraft maintenance system of claim 68 wherein said central station includes a storage system for storing said digital aircraft performance data.

75. (Previously Presented) An aircraft maintenance system comprising:  
a transmitter positionable to be located on an aircraft, said transmitter configured for transmission of data across a communication network while said aircraft is in flight;  
a ground based station connected to said communication network configured to receive and analyze said transmission of data, while said aircraft is in flight, to generate maintenance advice for said aircraft; and  
a sensor multiplexer located on said aircraft, said sensor multiplexer having a plurality of inputs for receiving aircraft performance and control parameters from aircraft sensors as said data and an output in communication with said transmitter for providing said data to said transmitter;

Application No. 10/004,429  
Supplemental Amendment Dated 04/06/2006  
Page 11 of 12

wherein said data further includes an aircraft identifier unique to a particular aircraft and a configuration label.

76. (Currently Amended) The aircraft maintenance system of claim 75, wherein said ground based station is further configured to transmit said maintenance advice to said communication network further comprising:

a receiver located on said aircraft, said receiver configured to receive said maintenance advice from said communication network; and  
a maintenance communication means which receives said maintenance advice from said receiver and provides said maintenance advice to maintenance personnel.

77. (Previously Presented) The aircraft maintenance system of claim 75 wherein said ground based station includes a storage system for archiving said aircraft performance and control parameters.

78-95 (Cancelled)

Application No. 10/004,429  
Supplemental Amendment Dated 04/06/2006  
Page 12 of 12

**REMARKS**

Claims 1-3 were originally filed in the application. Claims 4-63 were added by amendment in the Reissue Application. Claims 64-95 were added in a previous amendment. Claims 20-23, 40-48, and 50-63 were withdrawn from consideration by the Examiner. Claims 4-19, 24-39, 49, 65, 80-91, and 94 were cancelled in a previous amendment. Claims 78, 79, 92, 93, and 95 are cancelled in this amendment. Claim 1-3, 64, and 66-77 are pending.

The claims have been amended pursuant to a telephone conversation with the Examiner of March 24, 2006.

No additional fee is believed to be due. However, if any fee is made payable by the filing of this paper, please consider this our authorization to charge the Deposit Account of the undersigned, No. 06-0540.

Respectfully submitted,

Date: 4-6-2006

By Fred H. Holmes  
Fred H. Holmes, Reg. No. 43,677  
FELLERS, SNIDER, BLANKENSHIP,  
BAILEY & TIPPENS, P.C.  
321 South Boston, Suite 800  
Tulsa, Oklahoma 74103-3318  
(918) 599-0621

354243v1

**PATENT APPLICATION FEE DETERMINATION RECORD**

Effective December 8, 2004

10 / 004429

**CLAIMS AS FILED - PART I**

(Column 1) (Column 2)

TOTAL CLAIMS		
FOR	NUMBER FILED	NUMBER EXTRA
TOTAL CHARGEABLE CLAIMS	minus 20=	*
INDEPENDENT CLAIMS	minus 3 =	*
MULTIPLE DEPENDENT CLAIM PRESENT <input type="checkbox"/>		

SMALL ENTITY TYPE

OR OTHER THAN SMALL ENTITY

RATE	FEE
BASIC FEE	150.00
X\$ 25=	
X100=	
+180=	
TOTAL	

RATE	FEE
BASIC FEE	300.00
X\$50=	
X200=	
+360=	
TOTAL	

\* If the difference in column 1 is less than zero, enter "0" in column 2

**CLAIMS AS AMENDED - PART II**

(Column 1) (Column 2) (Column 3)

AMENDMENT A	02/15/07	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA
	Total	* 21	Minus	** 63	= -
	Independent	* 7	Minus	*** 19	= -
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM <input type="checkbox"/>				

SMALL ENTITY OR

OTHER THAN SMALL ENTITY

RATE	ADDITIONAL FEE
X\$ 25=	
X100=	
+180=	
TOTAL ADDIT. FEE	-

RATE	ADDITIONAL FEE
X\$50=	
X200=	
+360=	
TOTAL ADDIT. FEE	-

(Column 1) (Column 2) (Column 3)

AMENDMENT B	02/12/06	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA
	Total	* 21	Minus	** 63	= -
	Independent	* 7	Minus	*** 19	= -
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM <input type="checkbox"/>				

RATE	ADDITIONAL FEE
X\$ 25=	
X100=	
+180=	
TOTAL ADDIT. FEE	-

RATE	ADDITIONAL FEE
X\$50=	
X200=	
+360=	
TOTAL ADDIT. FEE	-

(Column 1) (Column 2) (Column 3)

AMENDMENT C	4/6/6	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA
	Total	* 16	Minus	** 21	= -
	Independent	* 5	Minus	*** 7	= -
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM <input type="checkbox"/>				

RATE	ADDITIONAL FEE
X\$ 25=	
X100=	
+180=	

RATE	ADDITIONAL FEE
X\$50=	
X200=	
+360=	

IFW

3661/1/06

PATENT



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application No.: 10/004,429  
Applicant: Seymour LEVINE  
Filed: 10/25/2001  
TC/A.U.: 3661  
Examiner: Gary Chin

Confirmation No.: 8221

Docket No.: 57127  
Customer No: 22206

Commissioner for Patents  
P. O. Box 1450  
Alexandria, VA 22313-1450

AMENDMENT

Dear Sir:

*Introductory Comments*

This paper is submitted in response to the Office Action mailed September 15, 2005. A Petition and Fee for Extension of Time for two (2) months is filed herewith. If any additional extension of time fee, or other fee is required by virtue of the filing of this paper, please consider this a general authorization to charge Deposit Account No. 06-0540 for the same.

CERTIFICATION UNDER 37 C.F.R. § 1.8

I hereby certify that, on the date shown below, this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to the Commissioner for Patents, P. O. Box 1450, Alexandria, VA 22313-1450, on the date shown below:

Date: 2/15/06

Nancy J. Moore  
Nancy J. Moore



*Amendments to the Claims*

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Original) A global, paperless, aircraft maintenance system comprising:
  - an aircraft performance means for detecting aircraft performance and control parameters;
  - a maintenance communications means, located on board an aircraft, for providing maintenance advice to maintenance personnel;
  - a sensor multiplexer receiver and transmitter means, located on board said aircraft, for:
    - accepting said aircraft performance and control parameters;
    - converting said aircraft performance and control parameters, when necessary, to digital form;
    - adding an aircraft identification and configuration label;
    - converting said aircraft performance and control parameters and said identification and configuration label to an outgoing rf signal and broadcasting said outgoing rf signal; and
    - receiving an incoming rf signal, converting it to a maintenance advisory,

and feeding said maintenance advisory to said maintenance communication means;

an aircraft manufacturer's database means for providing aircraft data and maintenance information;

a central station means, located on the ground, for receiving said outgoing rf signal and converting it to said aircraft performance and control parameters and said aircraft identification and configuration label, and broadcasting said incoming rf signal;

a processing means, connected to said central station means, for:

archiving said aircraft performance and control parameters thus creating an archived data database;

combining said aircraft performance and control parameters with said aircraft data and said maintenance information;

generating said maintenance advisory; and converting said maintenance advisory to said incoming rf signal;

a display and control means, connected to said processing means, for displaying operation of said processing means and for allowing operator control of said processing means; and

a global rf communications network means for conveying said

outgoing signal from said aircraft to said central station means  
and conveying said incoming rf signal from said central station  
means to said aircraft.

2. (Currently Amended) A global, paperless, aircraft maintenance system comprising:
- aircraft sensors which detect aircraft performance and control parameters;
  - means, located on board an aircraft, for providing maintenance advice to maintenance personnel;
  - a sensor multiplexer receiver and transmitter, located on board said aircraft,
- which:
- accepts said aircraft performance and control parameters;
  - converts said aircraft performance and control parameters, when necessary, to digital form;
  - adds an aircraft identification and configuration label;
  - converts said aircraft performance and control parameters and said aircraft identification and configuration label to an outgoing rf signal and broadcasts said outgoing rf signal; and
  - receives an incoming rf signal, converts it to a maintenance advisory, feeds said maintenance advisory to said [maintenance communication]

means [for providing maintenance advice to maintenance personnel];

an aircraft manufacturer's database for providing aircraft data and maintenance information;

a central station, located on the ground, which receives said outgoing rf signal and converts it to said aircraft performance and control parameters and said aircraft identification and configuration label, and broadcasts said incoming rf signal;

a processing means, connected to said central station, for:

- archiving said aircraft performance and control parameters thus creating an archived data database;
- combining said aircraft performance and control parameters with the archived data, and said aircraft data and maintenance information;
- generating said maintenance advisory; and
- converting said maintenance advisory to said incoming rf signal;

a display and control subsystem, connected to said processing means, and

a global rf communications network which conveys said outgoing signal from said aircraft to said central station and conveys said incoming rf signal from said central station to said aircraft.

3. (Currently Amended) A method of providing global, paperless, aircraft maintenance advisories comprising the steps of:

- mounting a performance sensor in an aircraft;
- mounting a control sensor in said aircraft;
- mounting a means in said aircraft, for providing maintenance advice to maintenance personnel;
- mounting a sensor multiplexer receiver and transmitter system, in said aircraft;
- providing communications access to an aircraft manufacturer's database;
- providing a central ground based station;
- providing a processing means within said central ground based station;
- providing a display and control subsystem, connected to said processing means;
- providing a global, rf communications network;
- accepting signals from said aircraft performance and control sensors into said sensor multiplexer receiver and transmitter;
- converting, in said sensor multiplexer receiver and transmitter, said signals from said aircraft performance and control sensors, when necessary, to digital form;
- adding an aircraft identification and configuration label;
- converting said signals from said aircraft performance and control sensors, and said aircraft identification and configuration label, in said sensor multiplexer receiver and

transmitter, to an outgoing rf signal;

transmitting said outgoing rf signal from said sensor multiplexer receiver and transmitter to said central ground base station via said global rf communications network;

receiving said outgoing rf signal at said central ground based station;

converting said outgoing rf signal at said ground based central station to said aircraft performance and control signals plus said aircraft identification and configuration label;

performing within said processing means the steps of:

- archiving said aircraft performance and control signals thus creating an archived data database;
- combining said aircraft performance and control signals with the archived data, and information from said aircraft manufacturer's database;
- generating maintenance advisories; and
- converting said maintenance advisories to an incoming rf signal;

sending said incoming rf signal, via said global communications network, from said central ground based station to said sensor multiplexer receiver and transmitter;

converting said incoming rf signal, at said sensor multiplexer receiver and transmitter, to said maintenance advisories; and

feeding said maintenance advisor[ies] from said sensor multiplexer receiver and transmitter to said [maintenance communication] means for providing maintenance

advice to maintenance personnel.

4-63. (Canceled)

64. (Currently Amended) An aircraft maintenance system for use on an aircraft having a flight data recorder, the maintenance system comprising:

a transmitter portable to be placed on an aircraft, said transmitter configured for transmission of digital performance data across a communication network while said aircraft is in flight; and

a central station connected to said communication network configured to receive and analyze ~~transmission of~~ said digital performance data to generate maintenance advice for said aircraft while said aircraft is in flight,

wherein said digital performance data includes an identifier unique to a particular aircraft and at least a portion of said digital performance data comprises data directed to the flight data recorder.

65. (Canceled)

66. (Previously Presented) The aircraft maintenance system of claim 64 further comprising:

a sensor multiplexer located on said aircraft, said sensor multiplexer having a plurality of inputs for receiving aircraft performance and control parameters from existing aircraft sensors, and an output in communication with said transmitter for providing said digital performance data to said transmitter.

67. (Previously Presented) The aircraft maintenance system of claim 64 wherein said digital performance data further includes digitized audio information.

68. (Previously Presented) The aircraft maintenance system of claim 64 wherein said digital performance data further includes digitized video information.

69. (Currently Amended) The aircraft maintenance system of claim 64 wherein said digital performance data includes aircraft position data directed to said flight data recorder.

70. (Previously Presented) The aircraft maintenance system of claim 69 wherein information provided by a GPS receiver is used in the calculation of said aircraft position data.

71. (Previously Presented) The aircraft maintenance system of claim 70 wherein information provided by an inertial navigation system is used in the calculation of said aircraft position data.

72. (Currently Amended) The aircraft maintenance system of claim 64, wherein said central station is further configured to digitally transmit said maintenance advice ~~digital data on to said communication network and said maintenance advice is transmitted from said central station to said receiver,~~ the aircraft maintenance system further comprising:



a receiver on said aircraft configured to receive digital data from said communication network; and  
a maintenance communication means, located on said aircraft, for providing said maintenance advice to maintenance personnel, said maintenance communication means having an input for receiving said maintenance advice from said receiver.

73. (Previously Presented) The aircraft maintenance system of claim 72 wherein said maintenance advice is provided aurally to said maintenance personnel.

74. (Currently Amended) The aircraft maintenance system of claim 68 wherein said central station includes a storage system for storing said digital performance data ~~aircraft performance~~ and control parameters.

75. (Previously Presented) An aircraft maintenance system comprising:  
a transmitter positionable to be located on an aircraft, said transmitter configured for transmission of data across a communication network while said aircraft is in flight;  
a ground based station connected to said communication network configured to receive and analyze said transmission of data, while said aircraft is in flight, to generate maintenance advice for said aircraft; and

a sensor multiplexer located on said aircraft, said sensor multiplexer having a plurality of inputs for receiving aircraft performance and control parameters from aircraft sensors and an output in communication with said transmitter for providing said data to said transmitter;  
wherein said data further includes an aircraft identifier unique to a particular aircraft.

76. (Currently Amended) The aircraft maintenance system of claim 75, wherein said ground based station is further configured to transmit said maintenance advice data on to said communication network and said maintenance advice is transmitted from said ground based station to said aircraft, further comprising:

a receiver located on said aircraft, said receiver configured to receive said maintenance advice data from said communication network; and  
a maintenance communication means which receives said maintenance advisory advice data from said receiver and provides said maintenance advice to maintenance personnel.

77. (Previously Presented) The aircraft maintenance system of claim 75 wherein said ground based station includes a storage system for archiving said aircraft performance and control parameters.

78. (Previously Presented) A method for real-time monitoring and archiving of aircraft performance data including the steps of:

providing a performance sensor in an aircraft, said performance sensor having an output indicative of an aircraft performance parameter while said aircraft is in operation;

while said aircraft is in operation, electronically transmitting at least said aircraft performance parameter to a global communication network;

receiving said aircraft performance parameter from said global communication network at a ground based station;

analyzing said aircraft performance parameter at said ground based station;

while said aircraft is in operation, generating an aircraft maintenance advisory when the analysis of said aircraft performance parameter indicates an aircraft problem; and

archiving said aircraft performance parameter at said ground based station.

79. (Previously Presented) The method for real-time monitoring and archiving of aircraft performance data according to the method of claim 78 further including the steps of:

transmitting said aircraft maintenance advisory;

receiving said aircraft maintenance advisory on said aircraft; and

displaying said aircraft maintenance advisory on said aircraft while said aircraft is in operation.

80-91 (Canceled)

92. (Currently Amended) A telemetric crash data recorder comprising:  
a sensor multiplexer receiver and transmitter mounted in an aircraft; and  
a central ground based station having a data storage device,  
wherein said sensor multiplexer receiver and transmitter receives aircraft  
performance and control parameters from existing sensors on an said  
aircraft and, while said aircraft is in flight, transmits said performance  
and control parameters to said central ground based station over a  
world wide communication system for storage archival in said data  
storage device.

93. (Previously Presented) The telemetric crash data recorder of claim 92 further  
comprising:  
a GPS receiver in communication with said sensor multiplexer receiver and  
transmitter such that a position of said aircraft is transmitted to said  
central ground based station.

94. (Canceled)

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95. (Previously Presented) The telemetric crash data recorder of claim 93 wherein said performance and control parameters comprise information recorded by an on board flight data recorder.

**REMARKS**

Claims 1-3 were originally filed in the application. Claims 4-63 were added by amendment in the Reissue Application. Claims 64-95 were added in a previous amendment. Claims 20-23, 40-48, and 50-63 were withdrawn from consideration by the Examiner. Claims 4-19, 24-39, 49, 65, 80-91, and 94 were cancelled in a previous amendment. Claim 1-3, 64-79, 92-93, and 95 are pending.

In the Office Action, claims 2-3, 69-74, and 76 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Applicant respectfully submits that appropriate correction has been made in this amendment. Specifically, claims 2 and 3 have been amended to correct “said communication means” to –means for providing maintenance advice to maintenance personnel— which has proper antecedent basis. Further, claim 3 has been corrected as suggest in the Office Action to change “maintenance advisory” to –maintenance advisories--.

Claim 69 has been amended to properly depend from claim 64, as opposed to the nonexistent claim 645. Claim 72 has been amended to make clear the data transmitted from the ground station is “maintenance advice” and transmitted to the communication network. Further, reference to “the receiver” is removed since a receiver is not introduced until later in the claim. Claim 74 has been corrected such that the term “aircraft performance and control parameters” is now --digital performance data—which has a proper antecedent basis. Finally, claim 76 has been

amended to clarify that maintenance advice is transmitted to the communication network, as suggested in the Office Action.

In the Office Action, claims 1-3, 64, 69-74, and 78-79 are rejected as being unpatentable over Smith, et al. (U.S. Patent No. 5,931,877) in view of Kuroda, et al. (U.S. Patent No. 5,381,140).

Per claims 1, 2, and 3, Applicant respectfully submits, as stated in the previous Office Action, that the combined teachings of Smith, et al. and Kuroda, et al. do not disclose all of the limitations of claims 1, 2, and 3. In all previous Office Actions (which were incorporated by reference into the present Office Action) and the present Office Action, the requirement of a “configuration label” continues to be overlooked. Neither Smith, et al. nor Kuroda, et al. disclose the transmission of a configuration label along with aircraft performance and control parameters. Aircraft configuration is used in generating advisories transmitted back to the aircraft (Col. 8, lines 39-40).

In the present Office Action, it is stated that the aircraft id transmitted in Kuroda is sufficient to determine the aircraft configuration. As is well known in the art, even identical models of aircraft are likely configured differently. Navigational equipment, radios, avionics, instrumentation, and the like are available from many different manufacturers with little or no standardization. Further, many aircraft manufacturers customize systems, i.e., hydraulic systems, electrical systems, flight controls, etc., for a particular purchaser. Further field modifications

may take years to be completely implemented across a fleet of aircraft. The present invention circumvents this issue by transmitting the aircraft configuration along with the aircraft ID. The Office Action states that the aircraft configuration is implicit in the aircraft ID. While records are most likely kept which would make this true, none of the cited references discuss how this data could be stored and accessed when needed. If the configuration information is sent by the aircraft, there is no need to locate this information from other sources.

Further, the Office Action states that "one of ordinary skill in the art would have recognized that the maintenance advisory generated in the Smith, et al. system must include the aircraft configuration in conjunction with other transmitted data in order to provide accurate maintenance advisories to a correct aircraft." First, since none of the prior art even discusses aircraft configuration, the Examiner must be relying on common knowledge. This is not a situation where it is appropriate for the Examiner to do so:

It would not be appropriate for the examiner to take official notice of facts without citing a prior art reference where the facts asserted to be well known are not capable of instant and unquestionable demonstration as being well-known. For example, assertions of technical facts in the areas of esoteric technology or specific knowledge of the prior art must always be supported by citation to some reference work recognized as standard in the pertinent art. In re Ahlert, 424 F.2d at 1091, 165 USPQ at 420-21. See also In re Grose, 592 F.2d 1161, 1167-68, 201 USPQ 57, 63 (CCPA 1979) ("[W]hen the PTO seeks to rely upon a chemical theory, in establishing a prima facie case of obviousness, it must provide evidentiary support for the existence and meaning of that theory."); In re Eynde, 480 F.2d 1364, 1370, 178 USPQ 470, 474 (CCPA 1973) ("[W]e reject the notion that judicial or administrative notice may be taken of the state of the art. The facts constituting the state of the art are normally subject to the possibility of rational



disagreement among reasonable men and are not amenable to the taking of such notice.").

MPEP § 2144.03 (emphasis in original). The MPEP goes on to set the standard which must be met by the Examiner to provide the reasoning behind the assertion that an element is "common knowledge". Applicant traverses the assertion of common knowledge and maintains that not only would the transmission of aircraft configuration not be common knowledge but that, contrary to the statement in the Office Action, aircraft configuration does not have to be known to practice the Smith, et al. invention. Thus Smith's failure to mention aircraft configuration is not because the need to know "aircraft configuration" is so obvious that it's not worth mentioning but that Smith, et al. do not need aircraft configuration.

This can be illustrated by contrasting the two inventions. Smith, et al. provides a maintenance aid for use on the flight line, not in the air as with the present invention. If an aircraft system fails its built-in-test ("BIT") the system helps the technician fault isolate to the black box which needs replacing. If, for example, an autopilot fails, the Smith, et al. device can simply prompt the technician to open the avionics bay and observe the autopilot and select from a list of possibilities. There is no need to look elsewhere for the information. In contrast, the present invention operates in-flight. The flight crew cannot poke around in avionics bays to find information about the particular autopilot. While Smith, et al. discloses saving a maintenance history of an aircraft (Col. 6, lines 65-67), it does not disclose the need to know, or even any usefulness in knowing, a particular aircraft's configuration at any give point in time. Smith, et al.

is only concerned with maintaining a record of the particular repairs performed.

The Examiner has simply not explained how, based on the disclosure of the cited references one would know to look up aircraft configuration or how to do it. Further, the Examiner has not provided any reasoning on how looking up configuration from some collection of records would be structurally equivalent to having the aircraft transmit its own configuration.

Accordingly, claims 1-3 are in condition for allowance. Reconsideration and allowance of claims 1-3 are respectfully requested.

Per claim 64, in the previous Office Action it was asserted that the data recorder of claim 64 with taught in Col. 4, lines 37-40 of the Smith, et al. reference. Smith, et al. actually discloses retrieving data from a removable cartridge or module, off-line during the pilot debrief. This is inconsistent with claim 64 which requires the transmission of the performance and control data while in-flight. There is no disclosure in Kuroda, et al. for transmitting any information beyond navigational information. In fact, Kuroda, et al. is only concerned with the monitoring of aircraft position as a substitute for air traffic control radar. One reading Kuroda, et al. would certainly not be motivated to send information which would be worthless to determining a position. This Office Action incorporates the previous rejection without addressing how one makes the step from reviewing flight data on the ground to transmitting the flight data to the ground to get the earliest possible warning of a failure or failing device. Kuroda, et al. simply does not fill the gap.

Finally, the previous Office Action cites Col. 10, lines 52-54 (claim 6 of Smith, et al.) as teaching analysis at the central data warehouse and generating a maintenance advisory in real time. While claim 6 is clearly drawn to the “guided probe” disclosure of Col. 6, lines 2-5, neither claim 6 nor its support in the specification indicate that the guided probe test is conducted in real time and certainly not while in flight. In fact this requires a trained technician to operate the probe under the guidance of the system. This is inconsistent with the present invention wherein a flight crew is provided in-flight maintenance information. Again, Smith, et al. is inconsistent with in-flight advisories and Kuroda, et al. does not fill the gap.

Accordingly, Applicant respectfully submits that claim 64 is now in condition for allowance. Claims 66-68 and 70-74 depend from claim 64 and, at least for the reasons stated with regard to claim 64, are likewise in condition for allowance. Reexamination and allowance of claims 64 and 66-74 are respectfully requested.

In the Office Action, claim 75 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Smith, et al. and Kuroda, et al. in further view of Monroe (U.S. Patent No. 5,798,458). It should be noted that claim 75 has been amended to require in flight communication of performance data. This requirement is inconsistent with Smith, et al., which provides maintenance information after a failure has been detected by a built-in-test, which is consistent with operation on the ground, rather than in flight. Smith, et al. describes the satellite communication as utilizing “low-cost commercial **ground** stations incorporating Very Small

Aperture Terminals (VSAT) with 1 to 2 meter antennas” (emphasis added) (col. 4, lines 59-64). Further, Smith suggests that high speed land lines could also be used exclusively, or in combination with, the satellite (Col. 5, lines 39-43). Smith, et al. clearly describes a system intended for use while the aircraft is in maintenance, on the ground<sup>1</sup> and makes no disclosure of data collection while the aircraft is operational, as required by claim 75. Smith, et al. is teaches away from the collection of data while an aircraft is airborne and both Kuroda, et al. and Monroe do not fill the gaps.

Applicant respectfully submits that claim 75 is in condition for allowance. Claims 76-77 depend from claim 75 and, at least for the reasons stated with regard to claim 75, are likewise in condition for allowance. Reexamination and allowance of claims 75-77 are respectfully requested.

As per claims 78 and 79, the same reasoning applies as with regard to claim 64. Namely that Smith, et al is inconsistent with in-flight operation and that even if Smith, et al. could somehow be converted to in-flight operation that Kuroda, et al. simply does not fill the gaps between Smith, et al. and the present invention.

Accordingly, Applicant submits that claims 78 and 79 are now in condition for allowance. Reexamination and allowance of claims 78 and 79 are respectfully requested.

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<sup>1</sup> A previously mentioned factor of Smith, et al. which indicates ground based operation is off-line retrieval of

In the Office Action, claims 92, 93, and 95 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Kuroda, et al. in view of Monroe (incorporating the analysis of a previous Office Action by reference as per claim 36). As per claim 92, it is asserted that Kuroda, et al. discloses the transmission and reception of aircraft performance and control parameters and the storage thereof. Further, “that it would have been readily apparent for one skilled in the art that in the event of a crash, the data stored in the storage device in Kuroda et al would have become a ‘crash data recorded’ as claimed.” Applicant respectfully submits that: 1) the storage disclosed in Kuroda, et al. is only used to calculate a predicted or theoretical track and there is no disclosure of long term storage; and 2) to extrapolate archival of data as in a crash data recorded requires impermissible hindsight.

In Kuroda, et al. the storage shown in FIG. 3, the monitor file (a/k/a “track file”) provides storage for data necessary to predict a theoretical path of the aircraft, not long term storage of performance and control parameters as asserted in the Office Action. The theoretical path is simply used to qualify incoming data at the ground station (*see*, for example, Col. 3, lines 11-18, Col. 4, lines 30-40). There simply is no disclosure of archival of performance and control data as would be necessary for a crash data recorder, or for that matter, Kuroda, et al. does not disclose the storage of any data for any purpose, except that used to predict a track and certainly, under the disclosure of Kuroda, et al., there is no need to store any of that data after the aircraft

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data from DTM or DTC (col. 4, lines 37-41).

completes its course. Again, despite the lack of disclosure of archival, the Examiner seems to be asserting that it would be common knowledge to simply not erase the data (despite the fact that the track file would eventually become astronomical in size) so that we would still have the data in the event there was a crash, despite the fact that such reasoning appears nowhere in any of the cited references.

A critical step in analyzing the patentability of claims pursuant to section 103(a) is casting the mind back to the time of invention to consider the thinking of one of ordinary skill in the art, guided only by the prior art references and the then-accepted wisdom in the field. Close adherence to this methodology is especially important in cases where the very ease with which the invention can be understood may prompt one “to fall victim to the insidious effect of hindsight syndrome wherein that which only the invention taught is used against its teacher.”<sup>2</sup>

Since Kuroda, et al. does not teach archival or use of the incoming data for any purpose other than tracking, the Office Action clearly relies on the present invention itself to supply the missing pieces. Only the present invention teaches the archival of aircraft performance and control information to remotely provide the functions of a crash data recorder. If the Examiner wishes to maintain that the missing steps are somehow “common knowledge” he must meet the standards set forth in the MPEP § 2144.03, which he has not.

Applicant respectfully submits that claim 92 is now in condition for allowance. Claims 93 and 95 depend from claim 92 and, at least for the reasons stated with regard to claim 92, are

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<sup>2</sup> *In re Kotzah*, 208 F.3d 1352, 54 USPQ2d 1308 (Fed. Cir. 2000)(quoting *W. L. Gore & Assocs., Inc. v. Garlock, Inc.*, 721 F.2d 1540, 1553, 220 USPQ 303, 313 (Fed. Cir. 1983))(citations omitted).

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Amendment Dated 02/15/2006  
Reply to Office Action of Sept. 15, 2005  
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likewise in condition for allowance. Reexamination and allowance of claims 92-93 and 95 are respectfully requested.

No additional fee is believed to be due. However, if any fee is made payable by the filing of this paper, please consider this our authorization to charge the Deposit Account of the undersigned, No. 06-0540.

Respectfully submitted,

Date: 2/15/2006

By Fred H. Holmes  
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<b>PETITION FOR EXTENSION OF TIME UNDER 37 CFR 1.136(a)</b>		Docket Number (Optional)	
FY 2005 <i>(Fees pursuant to the Consolidated Appropriations Act, 2005 (H.R. 4818).)</i>		57127/01-601	
Application Number <b>10/004,429</b>		Filed <b>10/25/2001</b>	
For <b>REMOTE, AIRCRAFT, GLOBAL, PAPERLESS MAINTENANCE SYSTEM</b>			
Art Unit <b>3661</b>		Examiner <b>Gary Chin</b>	
This is a request under the provisions of 37 CFR 1.136(a) to extend the period for filing a reply in the above identified application.			
The requested extension and fee are as follows (check time period desired and enter the appropriate fee below):			
	<u>Fee</u>	<u>Small Entity Fee</u>	
<input type="checkbox"/> One month (37 CFR 1.17(a)(1))	\$ 120	\$ 60	\$ _____
<input checked="" type="checkbox"/> Two months (37 CFR 1.17(a)(2))	\$ 450	\$ 225	\$ <u>225.00</u>
<input type="checkbox"/> Three months (37 CFR 1.17(a)(3))	\$ 1,020	\$ 510	\$ _____
<input type="checkbox"/> Four months (37 CFR 1.17(a)(4))	\$ 1,590	\$ 795	\$ _____
<input type="checkbox"/> Five months (37 CFR 1.17(a)(5))	\$ 2,160	\$ 1,080	\$ _____
<input checked="" type="checkbox"/> Applicant claims small entity status. See 37 CFR 1.27.			
<input type="checkbox"/> A check in the amount of the fee is enclosed.			
<input checked="" type="checkbox"/> Payment by credit card. Form PTO-2038 is attached.			
<input type="checkbox"/> The Director has already been authorized to charge fees in this application to a Deposit Account.			
<input checked="" type="checkbox"/> The Director is hereby authorized to charge any underpayment of fees which may be required, or credit any overpayment, to Deposit Account Number <u>06-0540</u> .			
<b>WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.</b>			
I am the <input type="checkbox"/> applicant/inventor.			
<input type="checkbox"/> assignee of record of the entire interest. See 37 CFR 3.71. Statement under 37 CFR 3.73(b) is enclosed. (Form PTO/SB/96).			
<input checked="" type="checkbox"/> attorney or agent of record. Registration Number <u>43,677</u>			
<input type="checkbox"/> attorney or agent under 37 CFR 1.34. Registration number if acting under 37 CFR 1.34 _____			
<u>Fred H. Holmes</u> Signature		<u>2/15/2006</u> Date	
<u>Fred H. Holmes</u> Typed or printed name		<u>918/599-0621</u> Telephone Number	
NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below.			
<input type="checkbox"/> Total of _____ forms are submitted.			

This collection of information is required by 37 CFR 1.136(a). The information is required to obtain or retain a benefit by the public which is to file (and to the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 6 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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02/22/2006 HD  
FC:2252



# PATENT APPLICATION FEE DETERMINATION RECORD

Effective December 8, 2004

10 / 004429

## CLAIMS AS FILED - PART I

	(Column 1)	(Column 2)
TOTAL CLAIMS		
FOR	NUMBER FILED	NUMBER EXTRA
TOTAL CHARGEABLE CLAIMS	minus 20=	*
INDEPENDENT CLAIMS	minus 3 =	*
MULTIPLE DEPENDENT CLAIM PRESENT <input type="checkbox"/>		

SMALL ENTITY TYPE  OR

OTHER THAN SMALL ENTITY

RATE	FEE
BASIC FEE	150.00
X\$ 25=	
X100=	
+180=	
TOTAL	

RATE	FEE
BASIC FEE	300.00
X\$50=	
X200=	
+360=	
TOTAL	

\* If the difference in column 1 is less than zero, enter "0" in column 2

## CLAIMS AS AMENDED - PART II

		(Column 1)		(Column 2)	(Column 3)
AMENDMENT A	06/21/07	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA
	Total	* 21	Minus	** 63	= -
	Independent	* 7	Minus	*** 19	= -
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM <input type="checkbox"/>					

SMALL ENTITY OR

OTHER THAN SMALL ENTITY

RATE	ADDITIONAL FEE
X\$ 25=	/
X100=	/
+180=	/
TOTAL ADDIT. FEE	-

RATE	ADDITIONAL FEE
X\$50=	/
X200=	/
+360=	/
TOTAL ADDIT. FEE	-

		(Column 1)		(Column 2)	(Column 3)
AMENDMENT B	07/21/06	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA
	Total	* 21	Minus	** 63	= -
	Independent	* 7	Minus	*** 19	= -
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM <input type="checkbox"/>					

RATE	ADDITIONAL FEE
X\$ 25=	/
X100=	/
+180=	/
TOTAL ADDIT. FEE	-

RATE	ADDITIONAL FEE
X\$50=	/
X200=	/
+360=	/
TOTAL ADDIT. FEE	-

		(Column 1)		(Column 2)	(Column 3)
AMENDMENT C		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA
	Total	*	Minus	**	=
	Independent	*	Minus	***	=
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM <input type="checkbox"/>					

RATE	ADDITIONAL FEE
X\$ 25=	
X100=	
+180=	

RATE	ADDITIONAL FEE
X\$50=	
X200=	
+360=	



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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/004,429	10/25/2001	Seymour Levine	57127	8221

22206                      7590                      09/15/2005

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EXAMINER

CHIN, GARY

ART UNIT	PAPER NUMBER
----------	--------------

3661

DATE MAILED: 09/15/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/004,429	LEVINE, SEYMOUR	
	<b>Examiner</b>	<b>Art Unit</b>	
	Gary Chin	3661	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1)  Responsive to communication(s) filed on 15 June 2005.
- 2a)  This action is **FINAL**.
- 2b)  This action is non-final.
- 3)  Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4)  Claim(s) 1-3,64,66-79,92,93 and 95 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5)  Claim(s) \_\_\_\_\_ is/are allowed.
- 6)  Claim(s) 1-3,64,66-79,92,93 and 95 is/are rejected.
- 7)  Claim(s) \_\_\_\_\_ is/are objected to.
- 8)  Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9)  The specification is objected to by the Examiner.
- 10)  The drawing(s) filed on 25 October 2001 is/are: a)  accepted or b)  objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11)  The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12)  Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a)  All b)  Some \* c)  None of:  
1.  Certified copies of the priority documents have been received.  
2.  Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3.  Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1)  Notice of References Cited (PTO-892)
- 2)  Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3)  Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4)  Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5)  Notice of Informal Patent Application (PTO-152)
- 6)  Other: \_\_\_\_\_.

**DETAILED ACTION**

***Claim Rejections - 35 USC § 112***

1. Claims 2-3, 69-74 and 76 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

As per claim 2, lines 15-16 and claim 3, line 38, the antecedent basis for “said maintenance communication means” recited therein has not been set forth in these claims. Further, on line 37 of claim 3, the antecedent basis for “said maintenance advisory” also has not been set forth and should be changed to “said maintenance advisories” to rectify the problem.

As per claim 69, line 1, the dependency is unclear since there is no claim 645.

As per claim 72, line 2, the phrase “configured to transmit digital data on said communication network” is technically unclear. Is it meant “configured to transmit digital data to said communication network”? Further, is the “digital data” to be transmitted on line 2 directed to the “digital performance data” recited in the parent claim 64? If so, “said digital performance data” should be recited. Similarly, “digital data” on line 5 also should be changed to “said digital performance data”. Finally, on line 3, the antecedent basis for “said receiver” has not been set forth in the claim.

As per claim 74, line 2, the antecedent basis for “said aircraft performance and control parameters” also has not been established.

As per claim 76, line 2, the phrase “configured to transmit data on said communication network” should be “configured to transmit said data to said communication network” for the same reason as set forth above with regard to claim 72. Further, “data” on line 5 and

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“maintenance advice” on line 8 should be “said data” and “said maintenance advice” respectively in order to avoid the antecedent basis problem.

Claims that have not been specifically indicated are rejected for incorporating the above errors from their respective parent claims by dependency.

***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if 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. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-3, 64, 69-74 and 78-79 are again rejected under 35 U.S.C. 103(a) as being unpatentable over Smith et al (patent no. 5931877) in view of Kuroda et al (patent no. 5381140).

As per claims 1-3, 64, 69-74 and 78-79, the reason for the rejection based upon the combined teachings of Smith et al and Kuroda et al as set forth in the last office action dated 4/16/04 is maintained and incorporated herein by reference.

4. Claims 66-68 and 75-77 are again rejected under 35 U.S.C. 103(a) as being unpatentable over Smith et al and Kuroda et al and further in view of Monroe (patent no. 5798458).

As per claims 66-68 and 75-77, the reason for the rejection based upon the combined teachings of Smith et al, Kuroda et al and Monroe as set forth in the last office action dated 4/16/04 is also maintained and incorporated herein by reference.

5. Claims 92, 93 and 95 are again rejected under 35 U.S.C. 103(a) as being unpatentable over Kuroda et al in view of Monroe.

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As per claims 92-93 and 95, the reason for the rejection based upon the combined teachings of Kuroda et al and Monroe as set forth in the last office action dated 4/16/04 is also maintained and incorporated herein by reference.

6. In the "remarks" section of the amendment filed on 3/2/05, applicant essentially alleged that (1) the transmission of a configuration label along with the aircraft performance and control parameters as required in claims 1-3 has not been disclosed in neither the Smith et al reference nor the Kuroda et al reference, (2) the transmission or communication of the performance and control data while in-flight as required in claims 64 and 66-79 has not been disclosed in the Smith et al reference and (3) the storage as disclosed in Kuroda et al only provides storage for data necessary to predict a theoretical path of the aircraft and there is no disclosure therein of archival (long term storage) of performance and control data as required in claims 92-93 and 95.

7. In response, the examiner strongly disagrees with such allegations. As to allegation (1), although the aircraft configuration label has not been explicitly disclosed in the Smith et al or Kuroda et al reference, however, it would have been readily apparent for one skilled in the art that the transmitted aircraft ID data to the ground station in Kuroda et al is implicitly included the configuration label as claimed since the aircraft configuration label can be directly determined based upon the aircraft ID. Further, one skilled in the art would have recognized that the maintenance advisory generated in the Smith et al system must include the aircraft configuration in conjunction with other transmitted data in order to provide accurate maintenance advisories to a correct aircraft. As to allegation (2), although the feature of transmitting the performance and control data to the central ground station while the aircraft is in-flight has not been explicitly disclosed in the Smith et al reference, however, such feature of transmitting

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aircraft data to the ground station while in-flight is notoriously well known and clearly taught in figure 1 (also see column 3, lines 65 to column 4, lines 1-3) of the Kuroda et al reference. Hence, it is the examiner's contention that it would have been obvious for one skilled in the art that the real-time advisory as taught in Smith et al either already been using the in-flight data or would have been obvious to do so based upon the direct teaching found in the Kuroda et al reference. As to allegation (3) that there is no disclosure in Kuroda et al of long term storage or archival of performance and control data necessary for a crash data recorder, the examiner also disagrees with such allegation. As disclosed in figure 1 and columns 3-4 of the Kuroda et al reference, performance and control data from navigation device and the ADS airborne device (see column 1, lines 53-60) are being recorded in the storage device within the monitoring device while the aircraft is in-flight. Since there is no disclosure in the Kuroda et al reference as to the deletion of such data stored in the storage device, it would have been readily apparent to one skilled in the art that in the event of a crash, the stored crashed data such as aircraft position, velocity, course, wind and temperature (see col. 1, lines 53-60) can be readily retrieved and as such meets the limitations of a crash data recorder as claimed.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gary Chin whose telephone number is (571) 272-6959. The examiner can normally be reached on Monday-Friday 8:00 AM to 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas G. Black can be reached on (571) 272-6956. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

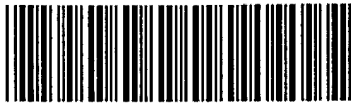
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**GARY CHIN**  
**PRIMARY EXAMINER**



**Search Notes**



**Application/Control No.**

10/004,429

**Examiner**

Gary Chin

**Applicant(s)/Patent under Reexamination**

LEVINE, SEYMOUR

**Art Unit**

3661

**SEARCHED**

Class	Subclass	Date	Examiner
701	14, 29	7/8/2003	GC
701	35, 120	7/8/2003	GC
701	301	7/8/2003	GC
340	945, 961	7/8/2003	GC
340	963, 971	7/8/2003	GC
342	29, 454	7/8/2003	GC
342	36-38	7/8/2003	GC
342	455, 456	7/8/2003	GC
UPDATED	ABOVE	4/13/04	GC
UPDATED	ABOVE	9/1/05	GC

**INTERFERENCE SEARCHED**

Class	Subclass	Date	Examiner

**SEARCH NOTES  
(INCLUDING SEARCH STRATEGY)**

	DATE	EXMR
EAST text search, history attached.	7/1/2003	GC

**Index of Claims**



Application/Control No.

10/004,429

Examiner

Gary Chin

Applicant(s)/Patent under Reexamination

LEVINE, SEYMOUR

Art Unit

3661

✓	Rejected
=	Allowed

-	(Through numeral) Cancelled
+	Restricted

N	Non-Elected
I	Interference

A	Appeal
O	Objected

Claim		Date			
Final	Original	9/2/05			
	1	✓			
	2	✓			
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3661 <sup>en</sup>

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Reissue

Application No.: 10/004,429  
Applicant: Seymour LEVINE  
Filed: 10/25/2001  
TC/A.U.: 3661  
Examiner: Gary Chin  
Docket No.: 57127/01-601  
Customer No: 22206

Confirmation No.: 8221

Commissioner for Patents  
P. O. Box 1450  
Alexandria, VA 22313-1450

SECOND SUPPLEMENTAL AMENDMENT

Dear Sir:

*Introductory Comments*

This paper is submitted responsive to the Notice of Non-Compliant Amendment dated May 11, 2005. The Examiner indicated that claims 64, 75, 76, 78, 79 and 92 filed on March 2, 2005 were improper and do not comply with 37 C.F.R. § 1.173. In response, Applicant submits herewith a corrected section of the alleged non-compliant amendment in compliance with 37 C.F.R. § 1.121, including a revised version of the claims and remarks designed to remedy certain omissions for which the Examiner deemed improper.

---

CERTIFICATION UNDER 37 C.F.R. § 1.8

I hereby certify that, on the date shown below, this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to the Commissioner for Patents, P. O. Box 1450, Alexandria, VA 22313-1450, on the date shown below:

Date: 6/13/05

Nancy J. Moore  
Nancy J. Moore

*Amendments to the Claims*

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Original) A global, paperless, aircraft maintenance system comprising:
  - an aircraft performance means for detecting aircraft performance and control parameters;
  - a maintenance communications means, located on board an aircraft, for providing maintenance advice to maintenance personnel;
  - a sensor multiplexer receiver and transmitter means, located on board said aircraft, for:
    - accepting said aircraft performance and control parameters;
    - converting said aircraft performance and control parameters, when necessary, to digital form;
    - adding an aircraft identification and configuration label;
    - converting said aircraft performance and control parameters and said identification and configuration label to an outgoing rf signal and broadcasting said outgoing rf signal; and
    - receiving an incoming rf signal, converting it to a maintenance advisory,

and feeding said maintenance advisory to said maintenance communication means;

an aircraft manufacturer's database means for providing aircraft data and maintenance information;

a central station means, located on the ground, for receiving said outgoing rf signal and converting it to said aircraft performance and control parameters and said aircraft identification and configuration label, and broadcasting said incoming rf signal;

a processing means, connected to said central station means, for:

archiving said aircraft performance and control parameters thus creating an archived data database;

combining said aircraft performance and control parameters with said aircraft data and said maintenance information;

generating said maintenance advisory; and converting said maintenance advisory to said incoming rf signal;

a display and control means, connected to said processing means, for displaying operation of said processing means and for allowing operator control of said processing means; and

a global rf communications network means for conveying said

outgoing signal from said aircraft to said central station means  
and conveying said incoming rf signal from said central station  
means to said aircraft.

2. (Original) A global, paperless, aircraft maintenance system comprising:
- aircraft sensors which detect aircraft performance and control parameters;
  - means, located on board an aircraft, for providing maintenance advice to maintenance personnel;
  - a sensor multiplexer receiver and transmitter, located on board said aircraft,
- which:
- accepts said aircraft performance and control parameters;
  - converts said aircraft performance and control parameters, when necessary, to digital form;
  - adds an aircraft identification and configuration label;
  - converts said aircraft performance and control parameters and said aircraft identification and configuration label to an outgoing rf signal and broadcasts said outgoing rf signal; and
  - receives an incoming rf signal, converts it to a maintenance advisory, feeds said maintenance advisory to said maintenance communication

means;

an aircraft manufacturer's database for providing aircraft data and maintenance information;

a central station, located on the ground, which receives said outgoing rf signal and converts it to said aircraft performance and control parameters and said aircraft identification and configuration label, and broadcasts said incoming rf signal;

a processing means, connected to said central station, for:

archiving said aircraft performance and control parameters thus creating an archived data database;

combining said aircraft performance and control parameters with the archived data, and said aircraft data and maintenance information;

generating said maintenance advisory; and

converting said maintenance advisory to said incoming rf signal;

a display and control subsystem, connected to said processing means, and

a global rf communications network which conveys said outgoing signal from said aircraft to said central station and conveys said incoming rf signal from said central station to said aircraft.

3. (Original) A method of providing global, paperless, aircraft maintenance advisories comprising the steps of:

- mounting a performance sensor in an aircraft;
- mounting a control sensor in said aircraft;
- mounting a means in said aircraft, for providing maintenance advice to maintenance personnel;
- mounting a sensor multiplexer receiver and transmitter system, in said aircraft;
- providing communications access to an aircraft manufacturer's database;
- providing a central ground based station;
- providing a processing means within said central ground based station;
- providing a display and control subsystem, connected to said processing means;
- providing a global, rf communications network;
- accepting signals from said aircraft performance and control sensors into said sensor multiplexer receiver and transmitter;
- converting, in said sensor multiplexer receiver and transmitter, said signals from said aircraft performance and control sensors, when necessary, to digital form;
- adding an aircraft identification and configuration label;
- converting said signals from said aircraft performance and control sensors, and said aircraft identification and configuration label, in said sensor multiplexer receiver and



transmitter, to an outgoing rf signal;  
transmitting said outgoing rf signal from said sensor multiplexer receiver and transmitter  
to said central ground base station via said global rf communications network;  
receiving said outgoing rf signal at said central ground based station;  
converting said outgoing rf signal at said ground based central station to said aircraft  
performance and control signals plus said aircraft identification and configuration label;  
performing within said processing means the steps of:  
    archiving said aircraft performance and control signals thus creating an archived  
    data database;  
    combining said aircraft performance and control signals with the archived data,  
and information from said aircraft manufacturer's database;  
    generating maintenance advisories; and  
    converting said maintenance advisories to an incoming rf signal;  
sending said incoming rf signal, via said global communications network, from said  
central ground based station to said sensor multiplexer receiver and transmitter;  
converting said incoming rf signal, at said sensor multiplexer receiver and transmitter, to  
said maintenance advisories; and  
feeding said maintenance advisory from said sensor multiplexer receiver and transmitter  
to said maintenance communication means.

4-63. (Canceled)

64. (Currently Amended) An aircraft maintenance system for use on an aircraft having a flight data recorder, the maintenance system comprising:

a transmitter portable to be placed on an aircraft, said transmitter configured for transmission of digital performance data across a communication network while said aircraft is in flight; and  
a central station connected to said communication network configured to receive and analyze said transmission of digital performance data to generate maintenance advice for said aircraft while said aircraft is in flight,  
wherein said digital performance data includes an identifier unique to a particular aircraft and at least a portion of said digital performance data comprises data directed to the flight data recorder.

65. (Canceled)

66. (Previously Presented) The aircraft maintenance system of claim 64 further comprising:  
a sensor multiplexer located on said aircraft, said sensor multiplexer having a plurality of inputs for receiving aircraft performance and control parameters from existing aircraft sensors, and an output in communication with said transmitter for providing said digital performance data to said transmitter.

67. (Previously Presented) The aircraft maintenance system of claim 64 wherein said digital performance data further includes digitized audio information.

68. (Previously Presented) The aircraft maintenance system of claim 64 wherein said digital performance data further includes digitized video information.

69. (Previously Presented) The aircraft maintenance system of claim 64 wherein said digital performance data includes aircraft position data directed to said flight data recorder.

70. (Previously Presented) The aircraft maintenance system of claim 69 wherein information provided by a GPS receiver is used in the calculation of said aircraft position data.

71. (Previously Presented) The aircraft maintenance system of claim 70 wherein information provided by an inertial navigation system is used in the calculation of said aircraft position data.

72. (Previously Presented) The aircraft maintenance system of claim 64, wherein said central station is further configured to transmit digital data on said communication network and said maintenance advice is transmitted from said central station to said receiver, the aircraft maintenance system further comprising:

a receiver on said aircraft configured to receive digital data from said communication network; and  
a maintenance communication means, located on said aircraft, for providing said maintenance advice to maintenance personnel, said maintenance communication means having an input for receiving said maintenance advice from said receiver.

73. (Previously Presented) The aircraft maintenance system of claim 72 wherein said maintenance advice is provided aurally to said maintenance personnel.

74. (Previously Presented) The aircraft maintenance system of claim 68 wherein said central station includes a storage system for storing said aircraft performance and control parameters.

75. (Currently Amended) An aircraft maintenance system comprising:  
a transmitter positionable to be located on an aircraft, said transmitter configured for transmission of data across a communication network while said aircraft is in flight;  
a ground based station connected to said communication network configured to receive and analyze said transmission of data, while said aircraft is in flight, to generate maintenance advice for said aircraft; and  
a sensor multiplexer located on said aircraft, said sensor multiplexer having a plurality of inputs for receiving aircraft performance and control

parameters from aircraft sensors and an output in communication with said transmitter for providing said data to said transmitter;  
wherein said data further includes an aircraft identifier unique to a particular aircraft.

76. (Currently Amended) The aircraft maintenance system of claim 75, wherein said ground based station is further configured to transmit data on said communication network and said maintenance advice is transmitted from said ground based station to said aircraft, further comprising:

a receiver located on said aircraft, said receiver configured to receive data from said communication network; and  
a maintenance communication means which receives maintenance advisory data from said receiver and provides maintenance advice to maintenance personnel.

77. (Previously Presented) The aircraft maintenance system of claim 75 wherein said ground based station includes a storage system for archiving said aircraft performance and control parameters.

78. (Currently Amended) A method for real-time monitoring and archiving of aircraft performance data including the steps of:

providing a performance sensor in an aircraft, said performance sensor having an output indicative of an aircraft performance parameter while said aircraft is in operation;  
while said aircraft is in operation, electronically transmitting at least said aircraft performance parameter to a global communication network;  
receiving said aircraft performance parameter from said global communication network at a ground based station;  
analyzing said aircraft performance parameter at said ground based station;  
while said aircraft is in operation, generating an aircraft maintenance advisory when the analysis of said aircraft performance parameter indicates an aircraft problem; and  
archiving said aircraft performance parameter at said ground based station.

79. (Currently Amended) The method for real-time monitoring and archiving of aircraft performance data according to the method of claim 78 further including the steps of:  
transmitting said aircraft maintenance advisory;  
receiving said aircraft maintenance advisory on said aircraft; and  
displaying said aircraft maintenance advisory on said aircraft while said aircraft is in operation.

80.-91. (Canceled)

92. (Currently Amended) A telemetric crash data recorder comprising:  
a sensor multiplexer receiver and transmitter mounted in an aircraft; and  
a central ground based station having a data storage device,  
wherein said sensor multiplexer receiver and transmitter receives aircraft  
performance and control parameters from existing sensors on said  
aircraft and, while said aircraft is in flight, transmits said performance  
and control parameters to said central ground based station over a  
world wide communication system for archival in said data storage  
device.
93. (Previously Presented) The telemetric crash data recorder of claim 92 further  
comprising:  
a GPS receiver in communication with said sensor multiplexer receiver and  
transmitter such that a position of said aircraft is transmitted to said  
central ground based station.
94. (Canceled)
95. (Previously Presented) The telemetric crash data recorder of claim 93 wherein said  
performance and control parameters comprise information recorded by an on board flight data  
recorder.

Application No. 10/004,429  
Amendment Dated 06/13/05  
Reply to Office Action of May 11, 2005  
Page 14 of 14

**REMARKS**

No additional fee is believed to be due. However, if any fee is made payable by the filing of this paper, please consider this our authorization to charge the Deposit Account of the undersigned, No. 06-0540.

Respectfully submitted,

Date: June 13, 2005

By Scott R. Zingeman  
Scott R. Zingeman, Reg. No. 35,422  
Fred H. Holmes, Reg. No. 43,677  
FELLERS, SNIDER, BLANKENSHIP,  
BAILEY & TIPPENS, P.C.  
321 South Boston, Suite 800  
Tulsa, Oklahoma 74103-3318  
(918) 599-0621

W301127.1





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United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/004,429	10/25/2001	Seymour Levine	57127	8221

22206 7590 05/11/2005  
FELLERS SNIDER BLANKENSHIP  
BAILEY & TIPPENS  
THE KENNEDY BUILDING  
321 SOUTH BOSTON SUITE 800  
TULSA, OK 74103-3318

EXAMINER

CHIN, GARY

ART UNIT PAPER NUMBER

3661

DATE MAILED: 05/11/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Notice of Non-Compliant Amendment (37 CFR 1.121)</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/004,429	LEVINE, SEYMOUR	
	<b>Examiner</b>	<b>Art Unit</b>	
	Gary Chin	3661	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

The amendment document filed on 02 March 2005 is considered non-compliant because it has failed to meet the requirements of 37 CFR 1.121. In order for the amendment document to be compliant, correction of the following item(s) is required.

THE FOLLOWING MARKED (X) ITEM(S) CAUSE THE AMENDMENT DOCUMENT TO BE NON-COMPLIANT:

1. Amendments to the specification:
- A. Amended paragraph(s) do not include markings.
  - B. New paragraph(s) should not be underlined.
  - C. Other \_\_\_\_\_.
2. Abstract:
- A. Not presented on a separate sheet. 37 CFR 1.72.
  - B. Other \_\_\_\_\_.
3. Amendments to the drawings:
- A. The drawings are not properly identified in the top margin as "Replacement Sheet," "New Sheet," or "Annotated Sheet" as required by 37 CFR 1.121(d).
  - B. The practice of submitting proposed drawing correction has been eliminated. Replacement drawings showing amended figures, without markings, in compliance with 37 CFR 1.84 are required.
  - C. Other \_\_\_\_\_.
4. Amendments to the claims:
- A. A complete listing of all of the claims is not present.
  - B. The listing of claims does not include the text of all pending claims (including withdrawn claims)
  - C. Each claim has not been provided with the proper status identifier, and as such, the individual status of each claim cannot be identified. Note: the status of every claim must be indicated after its claim number by using one of the following status identifiers: (Original), (Currently amended), (Canceled), (Previously presented), (New), (Not entered), (Withdrawn) and (Withdrawn-currently amended).
  - D. The claims of this amendment paper have not been presented in ascending numerical order.
  - E. Other: Claims 64, 75, 76, 78, 79 and 92 filed on 3/2/05 are improper and do not comply with 37 CFR 1.173. The changes made in these claims must be made relative to the original patent claims and not made relative to a previous amendment as shown. Therefore, the bracketed limitation presented in the above-mentioned claims must be removed and that the double underlines must be replaced with a single line as required.

For further explanation of the amendment format required by 37 CFR 1.121, see MPEP § 714 and the USPTO website at <http://www.uspto.gov/web/offices/pac/dapp/opla/preognotice/officeflyer.pdf>.

**TIME PERIODS FOR FILING A REPLY TO THIS NOTICE:**

1. Applicant is given **no new time period** if the non-compliant amendment is an after-final amendment or an amendment filed after allowance. If applicant wishes to resubmit the non-compliant after-final amendment with corrections, the **entire corrected amendment** must be resubmitted within the time period set forth in the final Office action.
2. Applicant is given **one month**, or thirty (30) days, whichever is longer, from the mail date of this notice to supply the **corrected section** of the non-compliant amendment in compliance with 37 CFR 1.121, if the non-compliant amendment is one of the following: a preliminary amendment, a non-final amendment (including a submission for a request for continued examination (RCE) under 37 CFR 1.114), a supplemental amendment filed within a suspension period under 37 CFR 1.103(a) or (c), and an amendment filed in response to a *Quayle* action.

**Extensions of time** are available under 37 CFR 1.136(a) only if the non-compliant amendment is a non-final amendment or an amendment filed in response to a *Quayle* action.

**Failure to timely respond** to this notice will result in:

**Abandonment** of the application if the non-compliant amendment is a non-final amendment or an amendment filed in response to a *Quayle* action; or

**Non-entry** of the amendment if the non-compliant amendment is a preliminary amendment or supplemental amendment.



EFW  
3661

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Reissue

Application No.: 10/004,429  
Applicant: Seymour LEVINE  
Filed: 10/25/2001  
TC/A.U.: 3661  
Examiner: Gary Chin

Confirmation No.: 8221

Docket No.: 57127/01-601  
Customer No: 22206

Commissioner for Patents  
P. O. Box 1450  
Alexandria, VA 22313-1450

**SUPPLEMENTAL AMENDMENT**

Dear Sir:

*Introductory Comments*

This paper is submitted responsive to the Office Action issued by the Examiner and mailed January 24, 2005. The Examiner indicated that the action was issued for improper format of the claims under 37 C.F.R. § 1.173 in the Amendment filed along with the RCE application filed October 18, 2004. In response, Applicant submits herewith a revised version of the claims and remarks designed to remedy certain omissions for which the Examiner deemed improper.

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CERTIFICATION UNDER 37 C.F.R. § 1.8

I hereby certify that, on the date shown below, this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to the Commissioner for Patents, P. O. Box 1450, Alexandria, VA 22313-1450, on the date shown below:

Date: 2/24/05

Nancy J. Moore  
Nancy J. Moore

*Amendments to the Claims*

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Original) A global, paperless, aircraft maintenance system comprising:
  - an aircraft performance means for detecting aircraft performance and control parameters;
  - a maintenance communications means, located on board an aircraft, for providing maintenance advice to maintenance personnel;
  - a sensor multiplexer receiver and transmitter means, located on board said aircraft, for:
    - accepting said aircraft performance and control parameters;
    - converting said aircraft performance and control parameters, when necessary, to digital form;
    - adding an aircraft identification and configuration label;
    - converting said aircraft performance and control parameters and said identification and configuration label to an outgoing rf signal and broadcasting said outgoing rf signal; and
    - receiving an incoming rf signal, converting it to a maintenance advisory,

and feeding said maintenance advisory to said maintenance communication means;

an aircraft manufacturer's database means for providing aircraft data and maintenance information;

a central station means, located on the ground, for receiving said outgoing rf signal and converting it to said aircraft performance and control parameters and said aircraft identification and configuration label, and broadcasting said incoming rf signal;

a processing means, connected to said central station means, for:

archiving said aircraft performance and control parameters thus creating an archived data database;

combining said aircraft performance and control parameters with said aircraft data and said maintenance information;

generating said maintenance advisory; and converting said maintenance advisory to said incoming rf signal;

a display and control means, connected to said processing means, for displaying operation of said processing means and for allowing operator control of said processing means; and

a global rf communications network means for conveying said

outgoing signal from said aircraft to said central station means  
and conveying said incoming rf signal from said central station  
means to said aircraft.

2. (Original) A global, paperless, aircraft maintenance system comprising:  
aircraft sensors which detect aircraft performance and control parameters;  
means, located on board an aircraft, for providing maintenance advice to  
maintenance personnel;  
a sensor multiplexer receiver and transmitter, located on board said aircraft,  
which:

accepts said aircraft performance and control parameters;  
converts said aircraft performance and control parameters, when  
necessary, to digital form;  
adds an aircraft identification and configuration label;  
converts said aircraft performance and control parameters and said  
aircraft identification and configuration label to an outgoing rf signal and  
broadcasts said outgoing rf signal; and  
receives an incoming rf signal, converts it to a maintenance advisory,  
feeds said maintenance advisory to said maintenance communication

means;

an aircraft manufacturer's database for providing aircraft data and maintenance information;

a central station, located on the ground, which receives said outgoing rf signal and converts it to said aircraft performance and control parameters and said aircraft identification and configuration label, and broadcasts said incoming rf signal;

a processing means, connected to said central station, for:

archiving said aircraft performance and control parameters thus creating an archived data database;

combining said aircraft performance and control parameters with the archived data, and said aircraft data and maintenance information;

generating said maintenance advisory; and

converting said maintenance advisory to said incoming rf signal;

a display and control subsystem, connected to said processing means, and

a global rf communications network which conveys said outgoing signal from said aircraft to said central station and conveys said incoming rf signal from said central station to said aircraft.



3. (Original) A method of providing global, paperless, aircraft maintenance advisories comprising the steps of:

- mounting a performance sensor in an aircraft;
- mounting a control sensor in said aircraft;
- mounting a means in said aircraft, for providing maintenance advice to maintenance personnel;
- mounting a sensor multiplexer receiver and transmitter system, in said aircraft;
- providing communications access to an aircraft manufacturer's database;
- providing a central ground based station;
- providing a processing means within said central ground based station;
- providing a display and control subsystem, connected to said processing means;
- providing a global, rf communications network;
- accepting signals from said aircraft performance and control sensors into said sensor multiplexer receiver and transmitter;
- converting, in said sensor multiplexer receiver and transmitter, said signals from said aircraft performance and control sensors, when necessary, to digital form;
- adding an aircraft identification and configuration label;
- converting said signals from said aircraft performance and control sensors, and said aircraft identification and configuration label, in said sensor multiplexer receiver and

transmitter, to an outgoing rf signal;

transmitting said outgoing rf signal from said sensor multiplexer receiver and transmitter to said central ground base station via said global rf communications network;

receiving said outgoing rf signal at said central ground based station;

converting said outgoing rf signal at said ground based central station to said aircraft performance and control signals plus said aircraft identification and configuration label;

performing within said processing means the steps of:

- archiving said aircraft performance and control signals thus creating an archived data database;
- combining said aircraft performance and control signals with the archived data, and information from said aircraft manufacturer's database;
- generating maintenance advisories; and
- converting said maintenance advisories to an incoming rf signal;

sending said incoming rf signal, via said global communications network, from said central ground based station to said sensor multiplexer receiver and transmitter;

converting said incoming rf signal, at said sensor multiplexer receiver and transmitter, to said maintenance advisories; and

feeding said maintenance advisory from said sensor multiplexer receiver and transmitter to said maintenance communication means.

4-63. (Canceled)

64. (Currently Amended) An aircraft maintenance system for use on an aircraft having a flight data recorder, the maintenance system comprising:

a transmitter portable to be placed on an aircraft, said transmitter configured for transmission of digital performance data across a communication network while said aircraft is in flight; and

a central station connected to said communication network configured to receive and analyze said transmission of digital performance data to generate maintenance advice for said aircraft [in real-time] while said aircraft is in flight,

wherein said digital performance data includes an identifier unique to a particular aircraft and at least a portion of said digital performance data comprises data directed to the flight data recorder.

65. (Canceled)

66. (Previously Presented) The aircraft maintenance system of claim 64 further comprising:

a sensor multiplexer located on said aircraft, said sensor multiplexer having a plurality of inputs for receiving aircraft performance and control parameters from existing aircraft sensors, and an output in communication with said transmitter for providing said digital performance data to said transmitter.

67. (Previously Presented) The aircraft maintenance system of claim 64 wherein said digital performance data further includes digitized audio information.

68. (Previously Presented) The aircraft maintenance system of claim 64 wherein said digital performance data further includes digitized video information.

69. (Previously Presented) The aircraft maintenance system of claim 64 wherein said digital performance data includes aircraft position data directed to said flight data recorder.

70. (Previously Presented) The aircraft maintenance system of claim 69 wherein information provided by a GPS receiver is used in the calculation of said aircraft position data.

71. (Previously Presented) The aircraft maintenance system of claim 70 wherein information provided by an inertial navigation system is used in the calculation of said aircraft position data.

72. (Previously Presented) The aircraft maintenance system of claim 64, wherein said central station is further configured to transmit digital data on said communication network and said maintenance advice is transmitted from said central station to said receiver, the aircraft maintenance system further comprising:

a receiver on said aircraft configured to receive digital data from said communication network; and  
a maintenance communication means, located on said aircraft, for providing said maintenance advice to maintenance personnel, said maintenance communication means having an input for receiving said maintenance advice from said receiver.

73. (Previously Presented) The aircraft maintenance system of claim 72 wherein said maintenance advice is provided aurally to said maintenance personnel.

74. (Previously Presented) The aircraft maintenance system of claim 68 wherein said central station includes a storage system for storing said aircraft performance and control parameters.

75. (Currently Amended) An aircraft maintenance system comprising:

a transmitter positionable to be located on an aircraft, said transmitter configured for transmission of data across a communication network while said aircraft is in flight, [said transmitter positionable to be located on an aircraft];  
a ground based station connected to said communication network configured to receive and analyze said transmission of data, while said aircraft is in flight, to generate maintenance advice for said aircraft; and

a sensor multiplexer located on said aircraft, said sensor multiplexer having a plurality of inputs for receiving aircraft performance and control parameters from aircraft sensors and an output in communication with said transmitter for providing said data to said transmitter;  
wherein said data further includes an aircraft identifier unique to a particular aircraft.

76. (Currently Amended) The aircraft maintenance system of claim 75, wherein said ground based station is further configured to transmit data on said communication network and said maintenance advice is transmitted from said ground based station to said aircraft, further comprising:

a receiver located on said aircraft, said receiver configured to receive data from said communication network; and  
a maintenance communication means which receives maintenance advisory data from said receiver and provides maintenance advice to maintenance personnel[[.]],

77. (Previously Presented) The aircraft maintenance system of claim 75 wherein said ground based station includes a storage system for archiving said aircraft performance and control parameters.

78. (Currently Amended) A method for real-time monitoring and archiving of aircraft performance data including the steps of:

providing a performance sensor in an aircraft, said performance sensor having an output indicative of an aircraft performance parameter while said aircraft is in operation;  
while said aircraft is in operation, electronically transmitting at least said aircraft performance parameter to a global communication network;  
receiving said aircraft performance parameter from said global communication network at a ground based station;  
analyzing said aircraft performance parameter at said ground based station;  
while said aircraft is in operation, generating an aircraft maintenance advisory when the analysis of said aircraft performance parameter indicates an aircraft problem; and  
archiving said aircraft performance parameter at said ground based station.

79. (Currently Amended) The method for real-time monitoring and archiving of aircraft performance data according to the method of claim 78 further including the steps of:

transmitting said aircraft maintenance advisory;  
receiving said aircraft maintenance advisory on said aircraft; and  
displaying said aircraft maintenance advisory on said aircraft while said aircraft is in operation.

80.-91. (Canceled)

92. (Currently Amended) A telemetric crash data recorder comprising:

a sensor multiplexer receiver and transmitter mounted in an aircraft; and  
a central ground based station having a data storage device,  
wherein said sensor multiplexer receiver and transmitter receives aircraft  
performance and control parameters from existing sensors on [an] said  
aircraft and, while said aircraft is in flight, transmits said performance  
and control parameters to said central ground based station over a  
world wide communication system for [storage] archival in said data  
storage device.

93. (Previously Presented) The telemetric crash data recorder of claim 92 further  
comprising:

a GPS receiver in communication with said sensor multiplexer receiver and  
transmitter such that a position of said aircraft is transmitted to said  
central ground based station.

94. (Canceled)



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95. (Previously Presented) The telemetric crash data recorder of claim 93 wherein said performance and control parameters comprise information recorded by an on board flight data recorder.

**REMARKS**

The status of the claims as a result of this amendment is: claims 1-3 were originally filed in the application; claims 4-63 were added by amendment in the Reissue Application; claims 20-23, 40-48, and 50-63 were withdrawn from consideration by the Examiner; claims 4-19, 24-39, and 49 were cancelled in a previous amendment; claims 64-95 were added in a previous amendment; claims 65, 80-91 and 94 are cancelled without prejudice in this amendment; and claims 1-3, 64-79, 92-93, and 95 are pending.

The support in the disclosure of the patent for the changes made in the claims and for the claims added is as follows:

Claim No.	Reference in Specification Column:Lines
64.	2:61-64; 4:51-53
65.	7:64 – 8:14
66.	7:59-8:9
67.	8:50-53
68.	8:50-53
69.	7:64-8:4
70.	8:10-13
71.	8:2-4
72.	6:57-65
73.	4:20-22
74.	4:1-6
75.	2:61-67; 4:51-66
76.	5:8-14
77.	4:1-6
78.	7:59-8:30
79.	3:2-27; 8:46-50

Claim No.	Reference in Specification Column:Lines
80.	2:61-64; 4:51-53
81.	4:51-5:2
82.	8:12
83.	8:12-13
84.	5:12; FIG. 1/72
85.	5:46; 8:29
86.	2:54-67; 7:59-8:9
87.	6:19-26; 48-67
88.	6:64
89.	5:23-30
90.	6:35-36
91.	6:48-67
92.	6:15-18; 7:59-8:9; 29
93.	8:10-12
94.	4:1-6
95.	7:64-67

Pursuant to 37 CFR § 1.173 claims 64-79, 92-93, and 95 are marked relative to the patent. For the sake of clarity, matter to be added by this amendment relative to the previous amendment is marked with double underline and matter to be omitted relative to the previous amendment is enclosed in double brackets.

In the Office Action, claim 94 is rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the enablement requirement. While Applicant respectfully submits that programming a processor to perform trajectory calculations to estimate a crash site, when aircraft velocity, position, and attitude are known, in light of the disclosure in the specification coupled with what was well known in the art at the time of the invention, is well within the skill level of

one of ordinary skill in the art, claim 94 has, nonetheless, been cancelled without prejudice.

In the Office Action, claims 1-3, 64-65, 69-74, 78-80, and 84-91 are rejected as being unpatentable over Smith, et al. (U.S. Patent No. 5,931,877) in view of Kuroda, et al. (U.S. Patent No. 5,381,140).

Per claims 1, 2, and 3, Applicant respectfully submits that the combined teachings of Smith, et al. and Kuroda, et al. do not disclose all of the limitations of claims 1, 2, and 3. In both the previous Office Action (which was incorporated by reference into the present Office Action) and the present Office Action, the requirement of a "configuration label" was overlooked. Neither Smith, et al. nor Kuroda, et al. disclose the transmission of a configuration label along with aircraft performance and control parameters. Aircraft configuration is used in generating advisories transmitted back to the aircraft (Col. 8, lines 39-40).

Accordingly, claims 1-3 are in condition for allowance. Reconsideration and allowance of claims 1-3 are respectfully requested.

Per claim 64, in the previous Office Action it was asserted that the data recorder of claim 5 (now independent claim 64 with the limitations of claim 5 and the intervening claim from which claim 5 depended) is taught in Col. 4, lines 37-40 of the Smith, et al. reference. Smith, et al. actually discloses retrieving data from a removable cartridge or module, off-line during the pilot debrief. This is inconsistent with claim 64 which requires the transmission of the performance and control data while in-flight.

The Merriam-Webster Online Dictionary<sup>1</sup> describes real time as: “the actual time during which something takes place.” In response to the previous Office Action, Applicant argued that the present invention analyzes the performance data and generates advisories in *real-time* (a limitation of claim 64) as opposed to the Smith, et al. system which only performs fault isolation and maintenance information after a built-in-test has failed. In the present Office Action, the Examiner “strongly disagrees with such allegations” and in reply cites numerous locations where the term “real time” is used. Addressing each of these cites individually, at Col. 3, lines 60-64, the term “real time” refers to “communication and transmittal of technical information and data, plus initialization and population of repair/work orders” to a terminal or PMA. There is no disclosure of analysis of in-flight performance data or the generation of a maintenance advisory in real time. Thus, Smith, et al. uses the term “real time” to refer to the communication, transmittal, initialization, and population relative to operation of the PMA or desktop computer, as contrasted to the present invention where “real time” indicates relation to in-flight performance or as a failure occurs.

At Col. 4, lines 21-27 the term “real time” is used in connection with the downloading of maintenance procedures, illustrations, and parts lists relative to the operation of the PMA, not relative to the occurrence of the failure which actually caused the built-in-test to fail. Certainly real time does not relate to in flight. At Col. 4, lines 63-65, Smith, et al. use the term “real time”

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<sup>1</sup> www.m-w.com

to describe the system's satellite communication ability. There is no mention of performing analysis of performance data in real time or even a hint that real time could refer to operation of the aircraft, i.e. in-flight.

At Col. 5, lines 45-50, Smith, et al. does not use the term "real time" to but does disclose providing instruction directly to technicians performing test on the aircraft or weapon. Assuming, for the sake of argument, that the discussion describes real time communication, such communication is relative to troubleshooting by the technicians, not relative to operation of the aircraft. At Col. 5, lines 61-65, the description would suggest that information is sent in real time relative to a request for information. Again, certainly not relative to operation in-flight and which can be contrasted to the present system wherein advisories are provided in a spontaneous manner, not upon a request from a technician.

At Col. 6, lines 49-54 the term "real time" describes population of the database relative to initiation and completion of repair actions. Further, the Smith, et al. system provides "real time analysis of **reliability and maintainability factors**" (emphasis added). This is not real-time analysis of performance data to generate a maintenance advisory while the aircraft is operational. Instead it describes calculation of reliability and maintainability factors based on performed repairs.

Finally, the Office Action cites Col. 10, lines 52-54 (claim 6 of Smith, et al.) as teaching analysis at the central data warehouse and generating a maintenance advisory in real time. While

claim 6 is clearly drawn to the “guided probe” disclosure of Col. 6, lines 2-5, neither claim 6 nor its support in the specification indicate that the guided probe test is conducted in real time and certainly not while in flight.

None of the “real time” cites provided in the Office Action indicate that any portion of the Smith, et al. disclosure refer to in flight analysis or that any “real time” reference is made relative to operation of the aircraft as required by claim 64.

While Applicant disagrees with the Examiner that the Smith, et al. system provides analysis and maintenance advice in real time, as used in claim 64, out of an abundance of caution, claim 64 has been amended to remove any ambiguity that the term “real time” is used relative to operation of the aircraft.

Accordingly, Applicant respectfully submits that claim 64 is now in condition for allowance. Claims 66-68 and 70-74 depend from claim 64 and, at least for the reasons stated with regard to claim 64, are likewise in condition for allowance. Reexamination and allowance of claims 64 and 66-74 are respectfully requested.

In the Office Action, claim 75 is rejected under 35 U.S.C. § 103 (a) as being unpatentable over Smith, et al. and Kuroda, et al. in further view of Monroe (U.S. Patent No. 5,798,458). It should be noted that claim 75 has been amended to require in flight communication of performance data. This requirement is inconsistent with Smith, et al., which provides maintenance information after a failure has been detected by a built-in-test, which is consistent

with operation on the ground, rather than in flight. Smith, et al. describes the satellite communication as utilizing “low-cost commercial **ground** stations incorporating Very Small Aperture Terminals (VSAT) with 1 to 2 meter antennas” (emphasis added) (col. 4, lines 59-64). Further, Smith suggests that high speed land lines could also be used exclusively, or in combination with, the satellite (Col. 5, lines 39-43). Smith, et al. clearly describes a system intended for use while the aircraft is in maintenance, on the ground<sup>2</sup> and makes no disclosure of data collection while the aircraft is operational, as required by claim 75.

Applicant respectfully submits that claim 75 is in condition for allowance. Claims 76-77 depend from claim 75 and, at least for the reasons stated with regard to claim 75, are likewise in condition for allowance. Reexamination and allowance of claims 75-77 are respectfully requested.

As per claims 78 and 79, the claims have been amended to: 1) clarify that the nature of “real time,” as used in the preamble of the subject claims, is relative to operation of the aircraft; and 2) to restrict various steps of the inventive method such that the steps must be performed while the aircraft is operating. As discussed hereinabove, Smith, et al. does not disclose off-aircraft monitoring of performance parameters while the aircraft is in operation.

Accordingly, Applicant submits that claims 78 and 79 are now in condition for allowance. Reexamination and allowance of claims 78 and 79 are respectfully requested.

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<sup>2</sup> A previously mentioned factor of Smith, et al. which indicates ground based operation is off-line retrieval of



In the Office Action, claims 92 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Kuroda, et al. in view of Monroe (incorporating the analysis of the previous Office Action by reference as per claim 36). As per claim 92, it is asserted that Kuroda, et al. discloses the transmission and reception of aircraft performance and control parameters and the storage thereof. Further, “that it would have been readily apparent for one skilled in the art that in the event of a crash, the data stored in the storage device in Kuroda et al would have become a ‘crash data recorded’ as claimed.” Applicant respectfully submits that: 1) the storage disclosed in Kuroda, et al. is only used to calculate a predicted or theoretical track and there is no disclosure of long term storage; and 2) to extrapolate archival of data as in a crash data recorded requires impermissible hindsight.

In Kuroda, et al. the storage shown in FIG. 3, the monitor file (a/k/a “track file”) provides storage for data necessary to predict a theoretical path of the aircraft, not long term storage of performance and control parameters as asserted in the Office Action. The theoretical path is simply used to qualify incoming data at the ground station (*see*, for example, Col. 3, lines 11-18, Col. 4, lines 30-40). There simply is no disclosure of archival of performance and control data as would be necessary for a crash data recorder, or for that matter, Kuroda, et al. does not disclose the storage of any data for any purpose, except that used to predict a track and certainly, under the disclosure of Kuroda, et al. there is no need to store any of that data after the aircraft

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data from DTM or DTC (col. 4, lines37-41).

completes its course.

A critical step in analyzing the patentability of claims pursuant to section 103(a) is casting the mind back to the time of invention to consider the thinking of one of ordinary skill in the art, guided only by the prior art references and the then-accepted wisdom in the field. Close adherence to this methodology is especially important in cases where the very ease with which the invention can be understood may prompt one "to fall victim to the insidious effect of hindsight syndrome wherein that which only the invention taught is used against its teacher."<sup>3</sup>

Since Kuroda, et al. does not teach archival or use of the incoming data for any purpose other than tracking, the Office Action clearly relies on the present invention itself to supply the missing pieces. Only the present invention teaches the archival of aircraft performance and control information to remotely provide the functions of a crash data recorder.

Applicant respectfully submits that claim 92 is now in condition for allowance. Claims 93 and 95 depend from claim 92 and, at least for the reasons stated with regard to claim 92, are likewise in condition for allowance. Reexamination and allowance of claims 92-93 and 95 are respectfully requested.

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<sup>3</sup> *In re Kotzab*, 208 F.3d 1352, 54 USPQ2d 1308 (Fed. Cir. 2000)(quoting *W. L. Gore & Assocs., Inc. v. Garlock, Inc.*, 721 F.2d 1540, 1553, 220 USPQ 303, 313 (Fed. Cir. 1983))(citations omitted).

Application No. 10/004,429  
Amendment Dated 02/24/05  
Reply to Office Action of January 24, 2005  
Page 24 of 24

No additional fee is believed to be due. However, if any fee is made payable by the filing of this paper, please consider this our authorization to charge the Deposit Account of the undersigned, No. 06-0540.

Respectfully submitted,

Date: 2/24/2005

By Fred H. Holmes  
Fred H. Holmes, Reg. No. 43,677  
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W301127.1

**PATENT APPLICATION FEE DETERMINATION RECORD**  
Effective October 1, 2001

Application or Docket Number

10/004429

**CLAIMS AS FILED - PART I**

(Column 1) (Column 2)

TOTAL CLAIMS	NUMBER FILED	NUMBER EXTRA
FOR		
TOTAL CHARGEABLE CLAIMS	63 minus 20 =	43
INDEPENDENT CLAIMS	3 minus 3 =	0
MULTIPLE DEPENDENT CLAIM PRESENT <input type="checkbox"/>		

SMALL ENTITY TYPE  OR

OTHER THAN SMALL ENTITY

RATE	FEE
BASIC FEE	370.00
X\$ 9=	387
X42=	672
+140=	
TOTAL	1429

RATE	FEE
BASIC FEE	740.00
X\$18=	
X84=	
+280=	
TOTAL	

\* If the difference in column 1 is less than zero, enter "0" in column 2

**CLAIMS AS AMENDED - PART II**

(Column 1) (Column 2) (Column 3)

*Amend*

AMENDMENT A	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA
Total	35 Minus	63	
Independent	9 Minus	19	
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM <input type="checkbox"/>			

SMALL ENTITY OR

RATE	ADDITIONAL FEE
X\$ 9=	
X42=	
+140=	
TOTAL ADDIT. FEE	

OTHER THAN SMALL ENTITY

RATE	ADDITIONAL FEE
X\$18=	
X84=	
+280=	
TOTAL ADDIT. FEE	

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*Amend 10/21/04*

AMENDMENT B	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA
Total	21 Minus	35	
Independent	8 Minus	9	
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM <input type="checkbox"/>			

SMALL ENTITY OR

RATE	ADDITIONAL FEE
X\$ 9=	
X42=	
+140=	
TOTAL ADDIT. FEE	

OTHER THAN SMALL ENTITY

RATE	ADDITIONAL FEE
X\$18=	
X84=	
+280=	
TOTAL ADDIT. FEE	

*Amend 3-2-05*

AMENDMENT C	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA
Total	21 Minus	35	
Independent	9 Minus	9	
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM <input type="checkbox"/>			

SMALL ENTITY OR

RATE	ADDITIONAL FEE
X\$ 9=	
X42=	
+140=	
TOTAL ADDIT. FEE	

OTHER THAN SMALL ENTITY

RATE	ADDITIONAL FEE
X\$18=	
X84=	
+280=	
TOTAL ADDIT. FEE	

\* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.  
 \* If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20."  
 \* If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3."  
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/004,429	10/25/2001	Seymour Levine	57127	8221

22206 7590 01/24/2005

FELLERS SNIDER BLANKENSHIP  
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THE KENNEDY BUILDING  
321 SOUTH BOSTON SUITE 800  
TULSA, OK 74103-3318

EXAMINER

ART UNIT PAPER NUMBER

DATE MAILED: 01/24/2005

Please find below and/or attached an Office communication concerning this application or proceeding.



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Patent and Trademark Office**

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Washington, D.C. 20231

17

APPLICATION	FILING DATE	FIRST NAMED APPLICANT	ATTORNEY DOCKET NO.
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10 004 429

EXAMINER	
ART UNIT	PAPER NUMBER

DATE MAILED:

This is a communication from the examiner in charge of your application

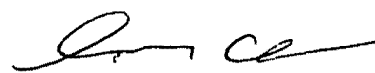
**COMMISSIONER OF PATENTS AND TRADEMARKS**

1.  The communication filed 10/21/04 is informal/non-responsive for the reason(s) checked below and must be corrected.

APPLICANT IS GIVEN A ONE MONTH TIME PERIOD FROM THE DATE OF THIS LETTER WITHIN WHICH TO CORRECT THE INFORMALITY. EXTENSIONS OF TIME MAY BE OBTAINED UNDER THE PROVISIONS 37 CFR 1.136(a).

- a.  The amendment to claim(s) \_\_\_\_\_, filed \_\_\_\_\_, fails to comply with the provisions of 37 CFR 1.121 and is accordingly held to be non-responsive. A supplemental paper correcting the informal portions and complying with 37 CFR 1.121 is required.
- b.  The paper is unsigned. A duplicate paper or ratification, properly signed, is required.
- c.  The paper is signed by \_\_\_\_\_, who is not of record. A ratification or a new power of attorney with a ratification, or duplicate paper signed by a person of record, is required.
- d.  The communication is presented on paper which will not provide a permanent copy. A permanent copy, or a request that a permanent copy be made by the Office at applicant's expense, is required, see M.P.E.P. 714.07.
2.  In accordance with applicant's request, **THE PERIOD FOR REPLY FROM THE OFFICE ACTION DATED \_\_\_\_\_ IS EXTENDED TO RUN \_\_\_\_\_ MONTH(S).**  
No further extension will be granted unless approved by the Commissioner. 37 CFR 1.136(b).
3.  Receipt is acknowledged of papers submitted under 35 U.S.C. 119 which papers have been made of record in the file.
4.  Other: *claims 64, 66-79, 92-93 and 95 filed on 10/21/04 are improper and do not comply with 37 CFR 1.173. The changes in these claims must be made relative to the original patent claims and not relative to a previous amendment as shown. Further, an explanation of the support in the disclosure of the patent for the changes to the claims made by the amendment is required.*

NOTICE TO APPLICANT

  
**GARY CHIN**  
 PRIMARY EXAMINER  
 BOEING  
 Ex. 1004, p. 186



PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application No.: 10/004,429  
Applicant: Seymour LEVINE  
Filed: 10/25/2001  
TC/A.U.: 3661  
Examiner: Gary Chin

Confirmation No.: 8221

Docket No.: 57127/01-601  
Customer No: 22206

MAIL STOP AF  
Commissioner for Patents  
P. O. Box 1450  
Alexandria, VA 22313-1450

RECEIVED  
OCT 25 2004  
GROUP 3600

AMENDMENT

Dear Sir:

*Introductory Comments*

This paper is submitted in response to the final Office Action mailed April 16, 2004. A Petition and Fee for Extension of Time for three (3) months is filed herewith. If any additional extension of time fee, or other fee is required by virtue of the filing of this paper, please consider this a general authorization to charge Deposit Account No. 06-0540 for the same.

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CERTIFICATION UNDER 37 C.F.R. § 1.8

I hereby certify that, on the date shown below, this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to the Commissioner for Patents, P. O. Box 1450, Alexandria, VA 22313-1450, on the date shown below:

Date: 10/18/04

Nancy J. Moore  
Nancy J. Moore

*Amendments to the Claims*

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Original) A global, paperless, aircraft maintenance system comprising:
  - an aircraft performance means for detecting aircraft performance and control parameters;
  - a maintenance communications means, located on board an aircraft, for providing maintenance advice to maintenance personnel;
  - a sensor multiplexer receiver and transmitter means, located on board said aircraft, for:
    - accepting said aircraft performance and control parameters;
    - converting said aircraft performance and control parameters, when necessary, to digital form;
    - adding an aircraft identification and configuration label;
    - converting said aircraft performance and control parameters and said identification and configuration label to an outgoing rf signal and broadcasting said outgoing rf signal; and
    - receiving an incoming rf signal, converting it to a maintenance advisory,



and feeding said maintenance advisory to said maintenance communication means;

an aircraft manufacturer's database means for providing aircraft data and maintenance information;

a central station means, located on the ground, for receiving said outgoing rf signal and converting it to said aircraft performance and control parameters and said aircraft identification and configuration label, and broadcasting said incoming rf signal;

a processing means, connected to said central station means, for:

archiving said aircraft performance and control parameters thus creating an archived data database;

combining said aircraft performance and control parameters with said aircraft data and said maintenance information;

generating said maintenance advisory; and converting said maintenance advisory to said incoming rf signal;

a display and control means, connected to said processing means, for displaying operation of said processing means and for allowing operator control of said processing means; and

a global rf communications network means for conveying said

outgoing signal from said aircraft to said central station means  
and conveying said incoming rf signal from said central station  
means to said aircraft.

2. (Original) A global, paperless, aircraft maintenance system comprising:
- aircraft sensors which detect aircraft performance and control parameters;
  - means, located on board an aircraft, for providing maintenance advice to maintenance personnel;
  - a sensor multiplexer receiver and transmitter, located on board said aircraft,
- which:
- accepts said aircraft performance and control parameters;
  - converts said aircraft performance and control parameters, when necessary, to digital form;
  - adds an aircraft identification and configuration label;
  - converts said aircraft performance and control parameters and said aircraft identification and configuration label to an outgoing rf signal and broadcasts said outgoing rf signal; and
  - receives an incoming rf signal, converts it to a maintenance advisory, feeds said maintenance advisory to said maintenance communication

means;

an aircraft manufacturer's database for providing aircraft data and maintenance information;

a central station, located on the ground, which receives said outgoing rf signal and converts it to said aircraft performance and control parameters and said aircraft identification and configuration label, and broadcasts said incoming rf signal;

a processing means, connected to said central station, for:

archiving said aircraft performance and control parameters thus creating an archived data database;

combining said aircraft performance and control parameters with the archived data, and said aircraft data and maintenance information;

generating said maintenance advisory; and

converting said maintenance advisory to said incoming rf signal;

a display and control subsystem, connected to said processing means, and

a global rf communications network which conveys said outgoing signal from said aircraft to said central station and conveys said incoming rf signal from said central station to said aircraft.

3. (Original) A method of providing global, paperless, aircraft maintenance advisories comprising the steps of:

- mounting a performance sensor in an aircraft;
- mounting a control sensor in said aircraft;
- mounting a means in said aircraft, for providing maintenance advice to maintenance personnel;
- mounting a sensor multiplexer receiver and transmitter system, in said aircraft;
- providing communications access to an aircraft manufacturer's database;
- providing a central ground based station;
- providing a processing means within said central ground based station;
- providing a display and control subsystem, connected to said processing means;
- providing a global, rf communications network;
- accepting signals from said aircraft performance and control sensors into said sensor multiplexer receiver and transmitter;
- converting, in said sensor multiplexer receiver and transmitter, said signals from said aircraft performance and control sensors, when necessary, to digital form;
- adding an aircraft identification and configuration label;
- converting said signals from said aircraft performance and control sensors, and said aircraft identification and configuration label, in said sensor multiplexer receiver and

transmitter, to an outgoing rf signal;

transmitting said outgoing rf signal from said sensor multiplexer receiver and transmitter to said central ground base station via said global rf communications network;

receiving said outgoing rf signal at said central ground based station;

converting said outgoing rf signal at said ground based central station to said aircraft performance and control signals plus said aircraft identification and configuration label;

performing within said processing means the steps of:

- archiving said aircraft performance and control signals thus creating an archived data database;
- combining said aircraft performance and control signals with the archived data, and information from said aircraft manufacturer's database;
- generating maintenance advisories; and
- converting said maintenance advisories to an incoming rf signal;

sending said incoming rf signal, via said global communications network, from said central ground based station to said sensor multiplexer receiver and transmitter;

converting said incoming rf signal, at said sensor multiplexer receiver and transmitter, to said maintenance advisories; and

feeding said maintenance advisory from said sensor multiplexer receiver and transmitter to said maintenance communication means.

4-63. (Canceled)

64. (Currently Amended) An aircraft maintenance system for use on an aircraft having a flight data recorder, the maintenance system comprising:

a transmitter portable to be placed on an aircraft, said transmitter configured for transmission of digital performance data across a communication network while said aircraft is in flight; and  
a central station connected to said communication network configured to receive and analyze said transmission of digital performance data to generate maintenance advice for said aircraft ~~in real time~~ while said aircraft is in flight,  
wherein said digital performance data includes an identifier unique to a particular aircraft and at least a portion of said digital performance data comprises data directed to the flight data recorder.

65. (Canceled)

66. (Previously Presented) The aircraft maintenance system of claim 64 further comprising:  
a sensor multiplexer located on said aircraft, said sensor multiplexer having a plurality of inputs for receiving aircraft performance and control parameters from existing aircraft sensors, and an output in communication with said transmitter for providing said digital performance data to said transmitter.

67. (Previously Presented) The aircraft maintenance system of claim 64 wherein said digital performance data further includes digitized audio information.

68. (Previously Presented) The aircraft maintenance system of claim 64 wherein said digital performance data further includes digitized video information.

69. (Previously Presented) The aircraft maintenance system of claim 64 wherein said digital performance data includes aircraft position data directed to said flight data recorder.

70. (Previously Presented) The aircraft maintenance system of claim 69 wherein information provided by a GPS receiver is used in the calculation of said aircraft position data.

71. (Previously Presented) The aircraft maintenance system of claim 70 wherein information provided by an inertial navigation system is used in the calculation of said aircraft position data.

72. (Previously Presented) The aircraft maintenance system of claim 64, wherein said central station is further configured to transmit digital data on said communication network and said maintenance advice is transmitted from said central station to said receiver, the aircraft maintenance system further comprising:

a receiver on said aircraft configured to receive digital data from said communication network; and

a maintenance communication means, located on said aircraft, for providing said maintenance advice to maintenance personnel, said maintenance communication means having an input for receiving said maintenance advice from said receiver.

73. (Previously Presented) The aircraft maintenance system of claim 72 wherein said maintenance advice is provided aurally to said maintenance personnel.

74. (Previously Presented) The aircraft maintenance system of claim 68 wherein said central station includes a storage system for storing said aircraft performance and control parameters.

75. (Currently Amended) An aircraft maintenance system comprising:

a transmitter positionable to be located on an aircraft, said transmitter configured for transmission of data across a communication network while said aircraft is in flight, ~~said transmitter positionable to be located on an aircraft~~;

a ground based station connected to said communication network configured to receive and analyze said transmission of data, while said aircraft is in flight, to generate maintenance advice for said aircraft; and



a sensor multiplexer located on said aircraft, said sensor multiplexer having a plurality of inputs for receiving aircraft performance and control parameters from aircraft sensors and an output in communication with said transmitter for providing said data to said transmitter;  
wherein said data further includes an aircraft identifier unique to a particular aircraft.

76. (Currently Amended) The aircraft maintenance system of claim 75, wherein said ground based station is further configured to transmit data on said communication network and said maintenance advice is transmitted from said ground based station to said aircraft, further comprising:

a receiver located on said aircraft, said receiver configured to receive data from said communication network; and  
a maintenance communication means which receives maintenance advisory data from said receiver and provides maintenance advice to maintenance personnel[[,]].

77. (Previously Presented) The aircraft maintenance system of claim 75 wherein said ground based station includes a storage system for archiving said aircraft performance and control parameters.

78. (Currently Amended) A method for real-time monitoring and archiving of aircraft performance data including the steps of:

providing a performance sensor in an aircraft, said performance sensor having an output indicative of an aircraft performance parameter while said aircraft is in operation;

while said aircraft is in operation, electronically transmitting at least said aircraft performance parameter to a global communication network;

receiving said aircraft performance parameter from said global communication network at a ground based station;

analyzing said aircraft performance parameter at said ground based station;

while said aircraft is in operation, generating an aircraft maintenance advisory when the analysis of said aircraft performance parameter indicates an aircraft problem; and

archiving said aircraft performance parameter at said ground based station.

79. (Currently Amended) The method for real-time monitoring and archiving of aircraft performance data according to the method of claim 78 further including the steps of:

transmitting said aircraft maintenance advisory;

receiving said aircraft maintenance advisory on said aircraft; and

displaying said aircraft maintenance advisory on said aircraft while said aircraft is in operation.

80-91 (Canceled)

92. (Currently Amended) A telemetric crash data recorder comprising:  
a sensor multiplexer receiver and transmitter mounted in an aircraft; and  
a central ground based station having a data storage device,  
wherein said sensor multiplexer receiver and transmitter receives aircraft  
performance and control parameters from existing sensors on ~~an~~ said  
aircraft and, while said aircraft is in flight, transmits said performance  
and control parameters to said central ground based station over a  
world wide communication system for ~~storage~~ archival in said data  
storage device.

93. (Previously Presented) The telemetric crash data recorder of claim 92 further  
comprising:  
a GPS receiver in communication with said sensor multiplexer receiver and  
transmitter such that a position of said aircraft is transmitted to said  
central ground based station.

94. (Canceled)

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95. (Previously Presented) The telemetric crash data recorder of claim 93 wherein said performance and control parameters comprise information recorded by an on board flight data recorder.

**REMARKS**

Claims 1-3 were originally filed in the application. Claims 4-63 were added by amendment in the Reissue Application. Claims 20-23, 40-48, and 50-63 were withdrawn from consideration by the Examiner. Claims 4-19, 24-39, and 49 were cancelled in a previous amendment. Claims 64-95 were added in a previous amendment. Claims 65, 80-91 and 94 are cancelled without prejudice in this amendment. Claim 1-3, 64-79, 92-93, and 95 are pending.

In the Office Action, claim 94 is rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the enablement requirement. While Applicant respectfully submits that programming a processor to perform trajectory calculations to estimate a crash site, when aircraft velocity, position, and attitude are known, in light of the disclosure in the specification coupled with what was well known in the art at the time of the invention, is well within the skill level of one of ordinary skill in the art, claim 94 has, nonetheless, been cancelled without prejudice.

In the Office Action, claims 1-3, 64-65, 69-74, 78-80, and 84-91 are rejected as being unpatentable over Smith, et al. (U.S. Patent No. 5,931,877) in view of Kuroda, et al. (U.S. Patent No. 5,381,140).

Per claims 1, 2, and 3, Applicant respectfully submits that the combined teachings of Smith, et al. and Kuroda, et al. do not disclose all of the limitations of claims 1, 2, and 3. In both the previous Office Action (which was incorporated by reference into the present Office Action) and the present Office Action, the requirement of a "configuration label" was overlooked.

Neither Smith, et al. nor Kuroda, et al. disclose the transmission of a configuration label along with aircraft performance and control parameters. Aircraft configuration is used in generating advisories transmitted back to the aircraft (Col. 8, lines 39-40).

Accordingly, claims 1-3 are in condition for allowance. Reconsideration and allowance of claims 1-3 are respectfully requested.

Per claim 64, in the previous Office Action it was asserted that the data recorder of claim 5 (now independent claim 64 with the limitations of claim 5 and the intervening claim from which claim 5 depended) is taught in Col. 4, lines 37-40 of the Smith, et al. reference. Smith, et al. actually discloses retrieving data from a removable cartridge or module, off-line during the pilot debrief. This is inconsistent with claim 64 which requires the transmission of the performance and control data while in-flight.

The Merriam-Webster Online Dictionary<sup>1</sup> describes real time as: “the actual time during which something takes place.” In response to the previous Office Action, Applicant argued that the present invention analyzes the performance data and generates advisories in *real-time* (a limitation of claim 64) as opposed to the Smith, et al. system which only performs fault isolation and maintenance information after a built-in-test has failed. In the present Office Action, the Examiner “strongly disagrees with such allegations” and in reply cites numerous locations where the term “real time” is used. Addressing each of these cites individually, at Col. 3, lines 60-64,

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<sup>1</sup> www.m-w.com

the term "real time" refers to "communication and transmittal of technical information and data, plus initialization and population of repair/work orders" to a terminal or PMA. There is no disclosure of analysis of in-flight performance data or the generation of a maintenance advisory in real time. Thus, Smith, et al. uses the term "real time" to refer to the communication, transmittal, initialization, and population relative to operation of the PMA or desktop computer, as contrasted to the present invention where "real time" indicates relation to in-flight performance or as a failure occurs.

At Col. 4, lines 21-27 the term "real time" is used in connection with the downloading of maintenance procedures, illustrations, and parts lists relative to the operation of the PMA, not relative to the occurrence of the failure which actually caused the built-in-test to fail. Certainly real time does not relate to in flight. At Col. 4, lines 63-65, Smith, et al. use the term "real time" to describe the system's satellite communication ability. There is no mention of performing analysis of performance data in real time or even a hint that real time could refer to operation of the aircraft, i.e. in-flight.

At Col. 5, lines 45-50, Smith, et al. does not use the term "real time" to but does disclose providing instruction directly to technicians performing test on the aircraft or weapon. Assuming, for the sake of argument, that the discussion describes real time communication, such communication is relative to troubleshooting by the technicians, not relative to operation of the aircraft. At Col. 5, lines 61-65, the description would suggest that information is sent in real

time relative to a request for information. Again, certainly not relative to operation in-flight and can be contrasted to the present system wherein advisories are provided in a spontaneous manner, not upon a request from a technician.

At Col. 6, lines 49-54 the term “real time” describes population of the database relative to initiation and completion of repair actions. Further, the Smith, et al. system provides “real time analysis of **reliability and maintainability factors**” (emphasis added). This is not real-time analysis of performance data to generate a maintenance advisory while the aircraft is operational. Instead it describes calculation of reliability and maintainability factors based on performed repairs.

Finally, the Office Action cites Col. 10, lines 52-54 (claim 6 of Smith, et al.) as teaching analysis at the central data warehouse and generating a maintenance advisory in real time. While claim 6 is clearly drawn to the “guided probe” disclosure of Col. 6, lines 2-5, neither claim 6 nor its support in the specification indicate that the guided probe test is conducted in real time and certainly not while in flight.

None of the “real time” cites provided in the Office Action indicate that any portion of the Smith, et al. disclosure refer to in flight analysis or that any “real time” reference is made relative to operation of the aircraft as required by claim 64.

While Applicant disagrees with the Examiner that the Smith, et al. system provides analysis and maintenance advice in real time, as used in claim 64, out of an abundance of



caution, claim 64 has been amended to remove any ambiguity that the term "real time" is used relative to operation of the aircraft.

Accordingly, Applicant respectfully submits that claim 64 is now in condition for allowance. Claims 66-68 and 70-74 depend from claim 64 and, at least for the reasons stated with regard to claim 64, are likewise in condition for allowance. Reexamination and allowance of claims 64 and 66-74 are respectfully requested.

In the Office Action, claim 75 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Smith, et al. and Kuroda, et al. in further view of Monroe (U.S. Patent No. 5,798,458). It should be noted that claim 75 has been amended to require in flight communication of performance data. This requirement is inconsistent with Smith, et al., which provides maintenance information after a failure has been detected by a built-in-test, which is consistent with operation on the ground, rather than in flight. Smith, et al. describes the satellite communication as utilizing "low-cost commercial **ground** stations incorporating Very Small Aperture Terminals (VSAT) with 1 to 2 meter antennas" (emphasis added) (col. 4, lines 59-64). Further, Smith suggests that high speed land lines could also be used exclusively, or in combination with, the satellite (Col. 5, lines 39-43). Smith, et al. clearly describes a system intended for use while the aircraft is in maintenance, on the ground<sup>2</sup> and makes no disclosure of data collection while the aircraft is operational, as required by claim 75.

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<sup>2</sup> A previously mentioned factor of Smith, et al. which indicates ground based operation is off-line retrieval of

Applicant respectfully submits that claim 75 is in condition for allowance. Claims 76-77 depend from claim 75 and, at least for the reasons stated with regard to claim 75, are likewise in condition for allowance. Reexamination and allowance of claims 75-77 are respectfully requested.

As per claims 78 and 79, the claims have been amended to: 1) clarify that the nature of "real time," as used in the preamble of the subject claims, is relative to operation of the aircraft; and 2) to restrict various steps of the inventive method such that the steps must be performed while the aircraft is operating. As discussed hereinabove, Smith, et al. does not disclose off-aircraft monitoring of performance parameters while the aircraft is in operation.

Accordingly, Applicant submits that claims 78 and 79 are now in condition for allowance. Reexamination and allowance of claims 78 and 79 are respectfully requested.

In the Office Action, claims 92 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Kuroda, et al. in view of Monroe (incorporating the analysis of the previous Office Action by reference as per claim 36). As per claim 92, it is asserted that Kuroda, et al. discloses the transmission and reception of aircraft performance and control parameters and the storage thereof. Further, "that it would have been readily apparent for one skilled in the art that in the event of a crash, the data stored in the storage device in Kuroda et al would have become a 'crash data recorded' as claimed." Applicant respectfully submits that: 1) the storage disclosed in

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data from DTM or DTC (col. 4, lines37-41).

Kuroda, et al. is only used to calculate a predicted or theoretical track and there is no disclosure of long term storage; and 2) to extrapolate archival of data as in a crash data recorder requires impermissible hindsight.

In Kuroda, et al. the storage shown in FIG. 3, the monitor file (a/k/a “track file”) provides storage for data necessary to predict a theoretical path of the aircraft, not long term storage of performance and control parameters as asserted in the Office Action. The theoretical path is simply used to qualify incoming data at the ground station (*see*, for example, Col. 3, lines 11-18, Col. 4, lines 30-40). There simply is no disclosure of archival of performance and control data as would be necessary for a crash data recorder, or for that matter, Kuroda, et al. does not disclose the storage of any data for any purpose, except that used to predict a track and certainly, under the disclosure of Kuroda, et al. there is no need to store any of that data after the aircraft completes its course.

A critical step in analyzing the patentability of claims pursuant to section 103(a) is casting the mind back to the time of invention to consider the thinking of one of ordinary skill in the art, guided only by the prior art references and the then-accepted wisdom in the field. Close adherence to this methodology is especially important in cases where the very ease with which the invention can be understood may prompt one “to fall victim to the insidious effect of hindsight syndrome wherein that which only the invention taught is used against its teacher.”<sup>3</sup>

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<sup>3</sup> *In re Kotzab*, 208 F.3d 1352, 54 USPQ2d 1308 (Fed. Cir. 2000)(quoting *W. L. Gore & Assocs., Inc. v. Garlock, Inc.*, 721 F.2d 1540, 1553, 220 USPQ 303, 313 (Fed. Cir. 1983))(citations omitted).

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Since Kuroda, et al. does not teach archival or use of the incoming data for any purpose other than tracking, the Office Action clearly relies on the present invention itself to supply the missing pieces. Only the present invention teaches the archival of aircraft performance and control information to remotely provide the functions of a crash data recorder.

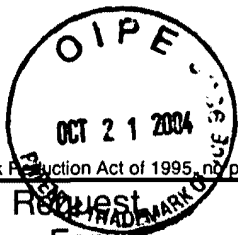
Applicant respectfully submits that claim 92 is now in condition for allowance. Claims 93 and 95 depend from claim 92 and, at least for the reasons stated with regard to claim 92, are likewise in condition for allowance. Reexamination and allowance of claims 92-93 and 95 are respectfully requested.

No additional fee is believed to be due. However, if any fee is made payable by the filing of this paper, please consider this our authorization to charge the Deposit Account of the undersigned, No. 06-0540.

Respectfully submitted,

Date: 10/16/2004

By Fred H. Holmes  
Fred H. Holmes, Reg. No. 43,677  
FELLERS, SNIDER, BLANKENSHIP,  
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RCE 61

PTO/SB/30 (08-03)

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Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

<p style="text-align: center;"><b>Request For Continued Examination (RCE) Transmittal</b></p> <p>Address to: Mail Stop RCE Commissioner for Patents P.O. Box 1450 Alexandria, VA 22313-1450</p>	Application Number	10/004,429
	Filing Date	10/25/2001
	First Named Inventor	Levine
	Art Unit	3661
	Examiner Name	Gary Chin
	Attorney Docket Number	57127/01-601

**This is a Request for Continued Examination (RCE) under 37 CFR 1.114 of the above-identified application.**  
Request for Continued Examination (RCE) practice under 37 CFR 1.114 does not apply to any utility or plant application filed prior to June 8, 1995, or to any design application. See Instruction Sheet for RCEs (not to be submitted to the USPTO) on page 2.

1. **Submission required under 37 CFR 1.114** Note: If the RCE is proper, any previously filed unentered amendments and amendments enclosed with the RCE will be entered in the order in which they were filed unless applicant instructs otherwise. If applicant does not wish to have any previously filed unentered amendment(s) entered, applicant must request non-entry of such amendment(s).

a.  Previously submitted. If a final Office action is outstanding, any amendments filed after the final Office action may be considered as a submission even if this box is not checked.

    i.  Consider the arguments in the Appeal Brief or Reply Brief previously filed on \_\_\_\_\_

    ii.  Other \_\_\_\_\_

b.  Enclosed

    i.  Amendment/Reply

    ii.  Affidavit(s)/Declaration(s)

    iii.  Information Disclosure Statement (IDS)

    iv.  Other \_\_\_\_\_

2. **Miscellaneous**

a.  Suspension of action on the above-identified application is requested under 37 CFR 1.103(c) for a period of \_\_\_\_\_ months. (Period of suspension shall not exceed 3 months; Fee under 37 CFR 1.17(i) required)

b.  Other \_\_\_\_\_

3. **Fees** The RCE fee under 37 CFR 1.17(e) is required by 37 CFR 1.114 when the RCE is filed.

a.  The Director is hereby authorized to charge the following fees, or credit any overpayments, to Deposit Account No. 06-0540

    i.  RCE fee required under 37 CFR 1.17(e) - \$395.00

    ii.  Extension of time fee (37 CFR 1.136 and 1.17) for three (3) months - \$490.00

    iii.  Other any additional fee required by virtue of the filing of this paper

b.  Check in the amount of \$ \_\_\_\_\_ enclosed

c.  Payment by credit card (Form PTO-2038 enclosed)

**WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.**

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SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT REQUIRED			
Name (Print/Type)	Fred H. Holmes	Registration No. (Attorney/Agent)	43677
Signature	<i>Fred H. Holmes</i>	Date	10/16/2004

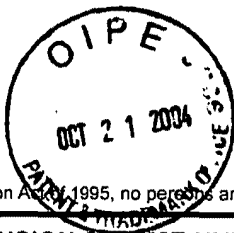
CERTIFICATE OF MAILING OR TRANSMISSION		
I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Mail Stop RCE, Commissioner For Patents, P.O. Box 1450, Alexandria, VA 22313-1450 or facsimile transmitted to the U.S. Patent and Trademark Office on the date shown below.		
Name (Print/Type)	Nancy J. Moore	Date
Signature	<i>Nancy J. Moore</i>	10/18/04

This collection of information is required by 37 CFR 1.114. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Mail Stop RCE, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.  
If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

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Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

<b>PETITION FOR EXTENSION OF TIME UNDER 37 CFR 1.136(a)</b>		Docket Number (Optional) 57127/01-601	
Application Number <b>10/004,429</b>		Filed <b>10/25/2001</b>	
For <b>REMOTE, AIRCRAFT, GLOBAL, PAPERLESS MAINTENANCE SYSTEM</b>			
Art Unit <b>3661</b>		Examiner <b>Gary Chin</b>	
This is a request under the provisions of 37 CFR 1.136(a) to extend the period for filing a reply in the above identified application.			
The requested extension and fee are as follows (check time period desired and enter the appropriate fee below):			
<input type="checkbox"/>	One month (37 CFR 1.17(a)(1))	Fee \$ 110.00	Small Entity Fee \$ 55.00
<input type="checkbox"/>	Two months (37 CFR 1.17(a)(2))	\$ 430.00	\$ 215.00
<input checked="" type="checkbox"/>	Three months (37 CFR 1.17(a)(3))	\$ 980.00	\$ 490.00
<input type="checkbox"/>	Four months (37 CFR 1.17(a)(4))	\$ 1,530.00	\$ 765.00
<input type="checkbox"/>	Five months (37 CFR 1.17(a)(5))	\$ 2,080.00	\$ 1,040.00
<input checked="" type="checkbox"/>	Applicant claims small entity status. See 37 CFR 1.27.		
<input type="checkbox"/>	A check in the amount of the fee is enclosed.		
<input type="checkbox"/>	Payment by credit card. Form PTO-2038 is attached.		
<input type="checkbox"/>	The Director has already been authorized to charge fees in this application to a Deposit Account.		
<input checked="" type="checkbox"/>	The Director is hereby authorized to charge any fees which may be required, or credit any overpayment, to Deposit Account Number <u>06-0540</u> . I have enclosed a duplicate copy of this sheet.		
<b>WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.</b>			
I am the	<input type="checkbox"/>	applicant/inventor.	
	<input type="checkbox"/>	assignee of record of the entire interest. See 37 CFR 3.71. Statement under 37 CFR 3.73(b) is enclosed. (Form PTO/SB/96).	
	<input checked="" type="checkbox"/>	attorney or agent of record. Registration Number <u>43,677</u>	
	<input type="checkbox"/>	attorney or agent under 37 CFR 1.34. Registration number if acting under 37 CFR 1.34 _____	
			<u>10/18/04</u>
	Signature		Date
	Scott R. Zingerman		(918) 599-0621
	Typed or printed name		Telephone Number
NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below.			
<input checked="" type="checkbox"/>	Total of <u>1</u> forms are submitted.		

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OCT 25 2004  
GROUP 3600

This collection of information is required by 37 CFR 1.136(a). The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 6 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

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10/22/2004 NMEKONEN 00000070 060540 10004429

02 FC:2253 490.00 DA

**PATENT APPLICATION FEE DETERMINATION RECORD**  
Effective October 1, 2001

Application or Docket Number

10/004429

**CLAIMS AS FILED - PART I**

(Column 1) (Column 2)

TOTAL CLAIMS	NUMBER FILED	NUMBER EXTRA
FOR		
TOTAL CHARGEABLE CLAIMS	63 minus 20 =	43
INDEPENDENT CLAIMS	19 minus 3 =	16
MULTIPLE DEPENDENT CLAIM PRESENT <input type="checkbox"/>		

\* If the difference in column 1 is less than zero, enter "0" in column 2

**CLAIMS AS AMENDED - PART II**

(Column 1) (Column 2) (Column 3)

*Q*

AMENDMENT A	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA
Total	* 35 Minus	** 63	=
Independent	* 9 Minus	*** 19	=
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM <input type="checkbox"/>			

*Small 10/21/04*

(Column 1) (Column 2) (Column 3)

AMENDMENT B	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA
Total	* 21 Minus	** 35	=
Independent	* 8 Minus	*** 9	=
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM <input type="checkbox"/>			

(Column 1) (Column 2) (Column 3)

AMENDMENT C	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA
Total	* Minus	**	=
Independent	* Minus	***	=
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM <input type="checkbox"/>			

\* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.  
 \*\* If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20."  
 \*\*\* If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3."  
 The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

SMALL ENTITY TYPE

OR OTHER THAN SMALL ENTITY

RATE	FEE
BASIC FEE	370.00
X\$ 9=	307
X42=	672
+140=	
TOTAL	1429

RATE	FEE
BASIC FEE	740.00
X\$18=	
X84=	
+280=	
TOTAL	

SMALL ENTITY OR

OTHER THAN SMALL ENTITY

RATE	ADDITIONAL FEE
X\$ 9=	
X42=	
+140=	
TOTAL	
ADDITIONAL FEE	

RATE	ADDITIONAL FEE
X\$18=	
X84=	
+280=	
TOTAL	
ADDITIONAL FEE	

RATE	ADDITIONAL FEE
X\$ 9=	
X42=	
+140=	
TOTAL	
ADDITIONAL FEE	

RATE	ADDITIONAL FEE
X\$18=	
X84=	
+280=	
TOTAL	
ADDITIONAL FEE	

RATE	ADDITIONAL FEE
X\$ 9=	
X42=	
+140=	
TOTAL	
ADDITIONAL FEE	

RATE	ADDITIONAL FEE
X\$18=	
X84=	
+280=	
TOTAL	
ADDITIONAL FEE	

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10/004,429

ISSUE SLIP STAPLE AREA (for additional cross references)

POSITION	INITIALS	ID NO.	DATE
	SF		12-10-01
FEE DETERMINATION			
O.L.P.E. CLASSIFIER			
FORMALITY REVIEW	CPW	02477	02/12/02
RESPONSE FORMALITY REVIEW			

INDEX OF CLAIMS

..... Rejected N ..... Non-elected  
 ..... Allowed I ..... Interference  
 (Through numeral) ..... Canceled A ..... Appeal  
 ..... Restricted O ..... Objected

Claim	Date
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Claim	Date
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If more than 150 claims or 10 actions  
staple additional sheet here



PATENT  
ATTY. DKT. NO.: 57127/01-601

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the application of: Levine

Application No.: 10/004,429

Filed: 10/25/2001

ATTN: REFUND  
U.S. Patent and Trademark Office  
Alexandria, VA

REQUEST FOR REFUND OF FILING FEE

1. REFUND REQUEST

On October 16, 2004, applicant mailed a Request for Continuing Examination application to the Patent Office. A copy of the Request for Continued Examination (RCE) Transmittal is attached. Applicant indicated on the Fee Transmittal that the filing fee was for a small entity in the amount of \$395.00.

Applicant's Deposit Account No. 06-0540 was charged \$790.00 on October 22, 2004 for the large entity filing fee of \$790.00, an excess charge of \$395.00 (copy of deposit account statement for 06-0540 for October 2004 attached).

---

CERTIFICATE OF MAILING/TRANSMISSION (37 C.F.R. § 1.8(a))

I hereby certify that this correspondence is, on the date shown below, being faxed to Refund, U.S. Patent and Trademark Office, facsimile telephone No. 703/308-6778 this 17<sup>th</sup> day of December, 2004.

Nancy J. Moore  
Nancy J. Moore

12/17/04 FRI 11:50 [TX/RX NO 7899] 002

**2. FEES CHARGED FOR WHICH REFUND REQUESTED**

X Fee Code #1801 - Request for continued exam (Large Entity) \$790.00

**3. FEES WHICH SHOULD HAVE BEEN CHARGED**

X Fee Code #2801 - Request for Continued Exam (Small Entity) \$395.00

TOTAL REFUND REQUESTED \$395.00

**4. EXPLANATION OF WHY CHARGES SHOULD BE REFUNDED.**

Applicant correctly indicated the small entity filing fee of \$395.00 was to be charged to Deposit Account 06-0540; however, the Patent Office overcharged the Deposit Account by \$395.00.

**5. MANNER OF REFUND**

Please make refund by crediting Account No. 06-0540.

Fred H. Holmes 12/17/04  
Fred Holmes (Date)  
Registration No. 43677  
FELLERS, SNIDER, BLANKENSHIP,  
BAILEY & TIPPENS  
The Kennedy Building  
321 South Boston, Suite 800  
Tulsa, OK 74103-3318  
918/599-0621 (phone)  
918/583-9659 (fax)

283977.1

FACSIMILE COVER SHEET

Date: December 17, 2004

NUMBER OF PAGES INCLUDING THIS COVER SHEET: 3

TO	COMPANY NAME	FAX NUMBER
ATTN: REFUND	United States Patent and Trademark Office	703.308.6778

FROM: Fred H. Holmes, Esq. Attorney Docket No. 57127/01-601

Re: In re application of: Seymour LEVINE  
Serial No.: 10/004,429  
Filing Date: 10/25/2001

FELLERS, SNIDER, BLANKENSHIP,  
BAILEY & TIPPENS, P.C.  
The Kennedy Building  
321 South Boston Ave., Suite 800  
Tulsa, Oklahoma 74103-3318  
TELEPHONE: (918) 599-0621  
TELECOPIER: (918) 583-9659

AUTO QUOTE: 57127

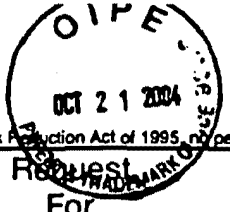
IF YOU DO NOT RECEIVE ALL OF THE PAGES OR IF ANY ARE ILLEGIBLE, PLEASE CONTACT US AT (918) 599-0621 AS SOON AS POSSIBLE.

MESSAGE: Attached please find a Request for Refund of Filing Fee against the Deposit Account of the undersigned, No. 06-0540. Please do not hesitate to contact us should you have any questions.

Thank you.

\*\*\*\*\*  
**CONFIDENTIALITY NOTICE**

This facsimile is intended only for the use of the individual or entity to which it is addressed and may contain information that is privileged and confidential. If the reader of this facsimile is not the intended recipient, you are hereby notified that any disclosure, distribution, or copying of this information is strictly prohibited. If you have received this facsimile in error, please notify us immediately by telephone, and return it to us at the above address via the United States Postal Service.



RCE 61

Approved for use through 07/31/2006. OMB 0651-0031  
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

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<b>Request For Continued Examination (RCE) Transmittal</b>  Address to: Mail Stop RCE Commissioner for Patents P.O. Box 1450 Alexandria, VA 22313-1450	Application Number	10/004,429
	Filing Date	10/25/2001
	First Named Inventor	Levine
	Art Unit	3661
	Examiner Name	Gary Chin
	Attorney Docket Number	57127/01-601

**This is a Request for Continued Examination (RCE) under 37 CFR 1.114 of the above-identified application.**  
 Request for Continued Examination (RCE) practice under 37 CFR 1.114 does not apply to any utility or plant application filed prior to June 8, 1995, or to any design application. See Instruction Sheet for RCEs (not to be submitted to the USPTO) on page 2.

1. **Submission required under 37 CFR 1.114** Note: If the RCE is proper, any previously filed unentered amendments and amendments enclosed with the RCE will be entered in the order in which they were filed unless applicant instructs otherwise. If applicant does not wish to have any previously filed unentered amendment(s) entered, applicant must request non-entry of such amendment(s).

a.  Previously submitted. If a final Office action is outstanding, any amendments filed after the final Office action may be considered as a submission even if this box is not checked.

i.  Consider the arguments in the Appeal Brief or Reply Brief previously filed on \_\_\_\_\_

ii.  Other \_\_\_\_\_

b.  Enclosed

i.  Amendment/Reply

ii.  Affidavit(s)/Declaration(s)

iii.  Information Disclosure Statement (IDS)

iv.  Other \_\_\_\_\_

2. **Miscellaneous**

a.  Suspension of action on the above-identified application is requested under 37 CFR 1.103(c) for a period of \_\_\_\_\_ months. (Period of suspension shall not exceed 3 months; Fee under 37 CFR 1.17(i) required)

b.  Other \_\_\_\_\_

3. **Fees** The RCE fee under 37 CFR 1.17(e) is required by 37 CFR 1.114 when the RCE is filed.

a.  The Director is hereby authorized to charge the following fees, or credit any overpayments, to Deposit Account No. 06-0540

i.  RCE fee required under 37 CFR 1.17(e) - \$395.00

ii.  Extension of time fee (37 CFR 1.136 and 1.17) for three (3) months - \$490.00

iii.  Other any additional fee required by virtue of the filing of this paper.

b.  Check in the amount of \$ \_\_\_\_\_ enclosed

c.  Payment by credit card (Form PTO-2038 enclosed)

**WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.**

UOI 2 5 2004  
GROUP 3600

**SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT REQUIRED**

Name (Print/Type)	Fred H. Holmes	Registration No. (Attorney/Agent)	43677
Signature	<i>Fred H. Holmes</i>	Date	10/16/2004

**CERTIFICATE OF MAILING OR TRANSMISSION**

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Mail Stop RCE, Commissioner For Patents, P.O. Box 1450, Alexandria, VA 22313-1450 or facsimile transmitted to the U.S. Patent and Trademark Office on the date shown below.

Name (Print/Type)	Nancy J. Moore	Date	10/18/04
Signature	<i>Nancy J. Moore</i>		

This collection of information is required by 37 CFR 1.114. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Mail Stop RCE, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

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Adjustment date: 01/24/2005 SDIRETA1  
10/22/2004 HNEKONEN 00000070 060540 10004429  
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10004429  
060540  
01/24/2005 SDIRETA1 00000008  
395.00 DA  
01 FC:2801



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/004,429	10/25/2001	Seymour Levine	57127	8221

22206 7590 04/16/2004  
FELLERS SNIDER BLANKENSHIP  
BAILEY & TIPPENS  
THE KENNEDY BUILDING  
321 SOUTH BOSTON SUITE 800  
TULSA, OK 74103-3318

EXAMINER

CHIN, GARY

ART UNIT PAPER NUMBER

3661

DATE MAILED: 04/16/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/004,429

Applicant(s)

LEVINE, SEYMOUR

Examiner

Gary Chin

Art Unit

3661

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1)  Responsive to communication(s) filed on 14 January 2004.
- 2a)  This action is **FINAL**.                      2b)  This action is non-final.
- 3)  Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4)  Claim(s) 1-3 and 64-95 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5)  Claim(s) \_\_\_\_\_ is/are allowed.
- 6)  Claim(s) 1-3 and 64-95 is/are rejected.
- 7)  Claim(s) \_\_\_\_\_ is/are objected to.
- 8)  Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9)  The specification is objected to by the Examiner.
- 10)  The drawing(s) filed on 25 October 2001 is/are: a)  accepted or b)  objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11)  The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12)  Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a)  All    b)  Some \*    c)  None of:  
1.  Certified copies of the priority documents have been received.  
2.  Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3.  Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1)  Notice of References Cited (PTO-892)
- 2)  Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3)  Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4)  Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5)  Notice of Informal Patent Application (PTO-152)
- 6)  Other: \_\_\_\_\_

***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claim 94 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

As per claim 94, the specification as originally filed is completely silent as to how the crash site is being estimated by the processor. In the absence of the aforementioned information, one of ordinary skill in the art cannot make and use the same without undue experimentation.

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if 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. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-3, 64-65, 69-74, 78-80 and 84-91 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smith et al (patent no. 5931877) in view of Kuroda et al (patent no. 5381140).

As per claims 1-3, 64-65, 69-74, 80 and 84-91, these newly presented claims are corresponding to the original claims 1-4, 12-13, 24, 28 and 30-35 respectively. The reason for the rejection for the abovementioned original claims based upon the combined teachings of

Art Unit: 3661

Smith et al and Kuroda et al as set forth in the last office action is also applied to the abovementioned newly presented claims and incorporated herein by reference.

As per claim 78, figure 1 and column 10, lines 5-17 of the Smith et al reference disclose the claimed method for real time monitoring and archiving of aircraft performance data and subsequently generating maintenance advisory when the analysis of the aircraft parameter indicative an aircraft problem including a global communication network (28, 30) and a ground based station (16, 20) for performing the steps of analyzing the performance data and generating an aircraft maintenance advisory. It is noted that the claimed step of transmitting the aircraft performance parameter to the ground based station has not been explicitly disclosed in the Smith et al reference. However, the Smith et al reference on column 2, lines 62-64 and column 5, lines 61-65 does disclose the transmitting of symptoms and data from the aircraft to the central data warehouse (or ground based station) in order to generate maintenance advisory or repair instructions. Further, it would have been readily apparent for one skilled in the art that the aforementioned symptoms and aircraft data have to be associated with the aircraft performance parameters in order to be useful in generating any maintenance advisory and repair instructions at the central data warehouse. Moreover, such feature of transmitting aircraft performance parameter to a ground based station is notoriously well known in the art at the time the invention was made and clearly taught in figure 1 and column 1, lines 53-60 of the Kuroda et al teaching. Hence, it would have been obvious for a person having ordinary skill in the art, based on the implied teaching in Smith et al, such aircraft performance parameter as taught in Kuroda et al either already has been used in the Smith et al system or would have been obvious to do so in



Art Unit: 3661

order for the central data warehouse or ground based station to provide any maintenance advisory and repair instructions.

As per claim 79, the claimed steps of transmitting, receiving and displaying maintenance advisory are taught in figure 1 (items 15, 22, 28 and 30) and column 1-2 of the Smith et al teaching.

5. Claims 66-68, 75-77 and 81-83 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smith et al and Kuroda et al in further in view of Monroe (patent no. 5798458) submitted by applicant.

As per claims 66-68, 75-77 and 81-83, these newly presented claims are corresponding to the original claims 6-8, 15-17 and 25-27. The reason for the rejection for the abovementioned original claims based upon the combined teachings of Smith et al, Kuroda et al and Monroe as set forth in the last office action is also applied to the abovementioned newly presented claims and incorporated herein by reference.

6. Claims 92-95 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kuroda et al in view of Monroe.

As per claims 92-95, these newly presented claims are corresponding to the original claims 36-39 respectively. The reason for the rejection for the abovementioned original claims based upon the combined teachings of Kuroda et al and Monroe as set forth in the last office action is also applied to the abovementioned newly presented claims and incorporated herein by reference.

7. Applicant's arguments with respect to claims 78-79 have been considered but are moot in view of the new ground(s) of rejection.

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8. In the amendment, applicant essentially alleged that (1) the Smith et al system performs the failure analysis on the aircraft and does not generate maintenance advisory in real time at the ground based station as required, (2) the Kuroda et al reference fails to disclose a global communication network, (3) the Monroe reference also fails to disclose a worldwide communication system and (4) the cited references fail to disclose the claimed display and control means connected to the processing means and the feature of converting the aircraft performance and control parameters, when necessary, to digital format as required in the original claims 1-3.

9. The examiner strongly disagrees with such allegations. As to allegation (1), the Smith et al reference in column 3, lines 60-64, column 4, lines 21-27 and 63-65, column 5, lines 45-50 and 61-65, column 6, lines 49-54 and column 10, lines 52-54 clearly teaches the claimed feature of performing failure analysis at the central data warehouse (or ground based station) and generating maintenance advisory in real time as claimed. It is further noted that although the Smith et al system using a PMA as an interface between the aircraft and the central data warehouse to perform aircraft repair (emphasis added), however, the repair is based upon the diagnosis and instructions sent from the central data warehouse and as such meets the limitations as claimed. As to allegation (2), the Kuroda et al reference in column 4, lines 4-5 clearly discloses that satellite 3 in figure 1 is a GPS (global positioning system) satellite and it is well recognized by one skilled in the art that such GPS constitutes a global communication network as claimed. Further, the Kuroda et al reference is cited to show the feature of transmitting aircraft performance data or parameter in real time is well known in the art. It is the examiner's

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contention that based upon the implied teaching in Smith et al, it would have been obvious for one skilled in the art that such well known real time transmission of aircraft parameter as taught in Kuroda et al either already has been employed in the smith et al system or would have been obvious to do so in order to provide any real time maintenance advisory at the central data warehouse. As to allegation (3), applicant's attack on the Monroe reference is inappropriate. The Monroe reference is merely used as a secondary 103 reference to show that the claimed "multiplexer" is notoriously well known in the art and is not intended as a 102 reference to include all the claimed limitations. Again, it is the examiner's contention that it would have been readily apparent for a skilled artisan to incorporate such well known device into the Kuroda et al system so that additional input circuits or hardware elements can be eliminated. In response to allegation (4), the central data warehouse shown in item 16, figure 1 of the Smith et al reference is a data processing system and it would have been well recognized by one skilled in the art that such data processing system must include some sort of display and control means in order for the technician to perform any meaningful on-line diagnosis. As to the means for converting the data into digital format when necessary, such A/D converter is routinely used in any data processing device to convert the analog signals into digital format if needed. It would have been obvious for one skilled in the art that such well known A/D converter either already has been included in the Smith et al and Kuroda et al systems or would have been obvious to do so, so that processing of the parameters will be in a proper format.

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

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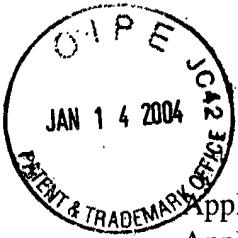
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gary Chin whose telephone number is (703) 305-9751. The examiner can normally be reached on Monday-Friday 8:00 AM to 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William A Cuchlinski can be reached on (703) 308-3873. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
GARY CHIN  
PRIMARY EXAMINER



PATENT

7  
Bates  
2/4

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application No.: 10/004,429  
Applicant: Seymour Levine  
Filed: 10/25/2001  
TC/A.U.: 3661  
Examiner: Gary Chin

Confirmation No.: 8221

Docket No.: 57127/01-601  
Customer No: 22206

Commissioner for Patents  
P. O. Box 1450  
Alexandria, VA 22313-1450

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GROUP 3600

AMENDMENT

Dear Sir:

*Introductory Comments*

This paper is submitted in response to the Office Action mailed July 14, 2003. A Petition and Fee for Extension of Time for three (3) months is filed herewith. If any additional extension of time fee, or other fee is required by virtue of the filing of this paper, please consider this a general authorization to charge Deposit Account No. 06-0540 for the same.

CERTIFICATION UNDER 37 C.F.R. § 1.10

I hereby certify that, on the date shown below, this correspondence is being deposited with the United States Postal Service in an envelope addressed to the Commissioner for Patents, P. O. Box 1450, Alexandria, VA 22313-1450, as "Express Mail Post Office to Addressee", Mailing Label No. EL795732206US.

Date: January 14, 2004

*Nancy J. Moore*  
Nancy J. Moore

*Amendments to the Claims*

This listing of claims will replace all prior versions, and listings, of claims in the application:

---

- 1 1. (Original) A global, paperless, aircraft maintenance system comprising:  
2 an aircraft performance means for detecting aircraft performance and control  
3 parameters;  
4 a maintenance communications means, located on board an aircraft, for providing  
5 maintenance advice to maintenance personnel;  
6 a sensor multiplexer receiver and transmitter means, located on board said  
7 aircraft, for:  
8 accepting said aircraft performance and control parameters;  
9 converting said aircraft performance and control parameters, when  
10 necessary, to digital form;  
11 adding an aircraft identification and configuration label;  
12 converting said aircraft performance and control parameters and said  
13 identification and configuration label to an outgoing rf signal and  
14 broadcasting said outgoing rf signal; and  
15 receiving an incoming rf signal, converting it to a maintenance advisory,

16 and feeding said maintenance advisory to said maintenance  
17 communication means;

18 an aircraft manufacturer's database means for providing aircraft data and  
19 maintenance information;

20 a central station means, located on the ground, for receiving said outgoing  
21 rf signal and converting it to said aircraft performance and control  
22 parameters and said aircraft identification and configuration label, and  
23 broadcasting said incoming rf signal;

24 a processing means, connected to said central station means, for:

25 archiving said aircraft performance and control parameters thus  
26 creating an archived data database;

27 combining said aircraft performance and control parameters with  
28 said aircraft data and said maintenance information;

29 generating said maintenance advisory; and converting said  
30 maintenance advisory to said incoming rf signal;

31 a display and control means, connected to said processing means,  
32 for displaying operation of said processing means and for  
33 allowing operator control of said processing means; and

34 a global rf communications network means for conveying said

35 outgoing signal from said aircraft to said central station means  
36 and conveying said incoming rf signal from said central station  
37 means to said aircraft.

1 2. (Original) A global, paperless, aircraft maintenance system comprising:  
2 aircraft sensors which detect aircraft performance and control parameters;  
3 means, located on board an aircraft, for providing maintenance advice to  
4 maintenance personnel;  
5 a sensor multiplexer receiver and transmitter, located on board said aircraft,  
6 which:  
7 accepts said aircraft performance and control parameters;  
8 converts said aircraft performance and control parameters, when  
9 necessary, to digital form;  
10 adds an aircraft identification and configuration label;  
11 converts said aircraft performance and control parameters and said  
12 aircraft identification and configuration label to an outgoing rf signal and  
13 broadcasts said outgoing rf signal; and  
14 receives an incoming rf signal, converts it to a maintenance advisory,  
15 feeds said maintenance advisory to said maintenance communication



16 means;

17 an aircraft manufacturer's database for providing aircraft data and maintenance

18 information;

19 a central station, located on the ground, which receives said outgoing rf signal

20 and converts it to said aircraft performance and control parameters and said

21 aircraft identification and configuration label, and broadcasts said incoming rf

22 signal;

23 a processing means, connected to said central station, for:

24 archiving said aircraft performance and control parameters thus creating

25 an archived data database;

26 combining said aircraft performance and control parameters with the

27 archived data, and said aircraft data and maintenance information;

28 generating said maintenance advisory; and

29 converting said maintenance advisory to said incoming rf signal;

30 a display and control subsystem, connected to said processing means, and

31 a global rf communications network which conveys said outgoing signal from

32 said aircraft to said central station and conveys said incoming rf signal from said

33 central station to said aircraft.

1 3. (Original) A method of providing global, paperless, aircraft maintenance advisories  
2 comprising the steps of:

3 mounting a performance sensor in an aircraft;

4 mounting a control sensor in said aircraft;

5 mounting a means in said aircraft, for providing maintenance advice to maintenance  
6 personnel;

7 mounting a sensor multiplexer receiver and transmitter system, in said aircraft;

8 providing communications access to an aircraft manufacturer's database;

9 providing a central ground based station;

10 providing a processing means within said central ground based station;

11 providing a display and control subsystem, connected to said processing means;

12 providing a global, rf communications network;

13 accepting signals from said aircraft performance and control sensors into said sensor  
14 multiplexer receiver and transmitter;

15 converting, in said sensor multiplexer receiver and transmitter, said signals from said  
16 aircraft performance and control sensors, when necessary, to digital form;

17 adding an aircraft identification and configuration label;

18 converting said signals from said aircraft performance and control sensors, and said  
19 aircraft identification and configuration label, in said sensor multiplexer receiver and

20 transmitter, to an outgoing rf signal;  
21 transmitting said outgoing rf signal from said sensor multiplexer receiver and transmitter  
22 to said central ground base station via said global rf communications network;  
23 receiving said outgoing rf signal at said central ground based station;  
24 converting said outgoing rf signal at said ground based central station to said aircraft  
25 performance and control signals plus said aircraft identification and configuration label;  
26 performing within said processing means the steps of:  
27 archiving said aircraft performance and control signals thus creating an archived  
28 data database;  
29 combining said aircraft performance and control signals with the archived data,  
30 and information from said aircraft manufacturer's database;  
31 generating maintenance advisories; and  
32 converting said maintenance advisories to an incoming rf signal;  
33 sending said incoming rf signal, via said global communications network, from said  
34 central ground based station to said sensor multiplexer receiver and transmitter;  
35 converting said incoming rf signal, at said sensor multiplexer receiver and transmitter, to  
36 said maintenance advisories; and  
37 feeding said maintenance advisory from said sensor multiplexer receiver and transmitter  
38 to said maintenance communication means.

4-63. (Canceled)

1 <sup>4</sup> 64. (New) An aircraft maintenance system comprising:  
2 a transmitter portable to be placed on an aircraft, said transmitter configured for  
3 transmission of digital performance data across a communication network  
4 while said aircraft is in flight; and  
5 a central station connected to said communication network configured to receive and  
6 analyze said transmission of digital performance data to generate maintenance  
7 advice for said aircraft in real-time,  
8 wherein said digital performance data includes an identifier unique to a particular  
9 aircraft.

1 65. (New) The aircraft maintenance system of claim 64 wherein said aircraft includes a  
2 flight data recorder and at least a portion of said digital performance data comprises data  
3 directed to said flight data recorder.

1 66. (New) The aircraft maintenance system of claim 64 further comprising:  
2 a sensor multiplexer located on said aircraft, said sensor multiplexer having a  
3 plurality of inputs for receiving aircraft performance and control parameters from  
4 existing aircraft sensors, and an output in communication with said transmitter for  
5 providing said digital performance data to said transmitter.

1 67. (New) The aircraft maintenance system of claim 64 wherein said digital performance  
2 data further includes digitized audio information.

1 68. (New) The aircraft maintenance system of claim 64 wherein said digital performance  
2 data further includes digitized video information.

1 69. (New) The aircraft maintenance system of claim 65 wherein said digital performance  
2 data includes aircraft position data directed to said flight data recorder.

1 <sup>10</sup>  
1 70. (New) The aircraft maintenance system of claim 69 wherein information provided by a  
2 GPS receiver is used in the calculation of said aircraft position data.

1 <sup>11</sup>  
1 71. (New) The aircraft maintenance system of claim 70 wherein information provided by an  
2 inertial navigation system is used in the calculation of said aircraft position data.

1 <sup>12</sup>  
1 72. (New) The aircraft maintenance system of claim 64, wherein said central station is  
2 further configured to transmit digital data on said communication network and said  
3 maintenance advice is transmitted from said central station to said receiver, the aircraft  
4 maintenance system further comprising:

5 a receiver on said aircraft configured to receive digital data from said  
6 communication network; and

7                   a maintenance communication means, located on said aircraft, for providing  
8                   said maintenance advice to maintenance personnel, said maintenance  
9                   communication means having an input for receiving said maintenance  
10                   advice from said receiver.

1                   <sup>13</sup>  
1   73. (New) The aircraft maintenance system of claim 72 wherein said maintenance advice is  
2   provided aurally to said maintenance personnel.

1                   <sup>14</sup>  
1   74. (New) The aircraft maintenance system of claim 68 wherein said central station includes a  
2   storage system for storing said aircraft performance and control parameters.

1                   <sup>15</sup>  
1   75. (New) An aircraft maintenance system comprising:  
2                   a transmitter configured for transmission of data across a communication  
3                   network, said transmitter positionable to be located on an aircraft;  
4                   a ground based station connected to said communication network configured  
5                   to receive and analyze said transmission of data to generate  
6                   maintenance advice for said aircraft; and  
7                   a sensor multiplexer located on said aircraft, said sensor multiplexer having a  
8                   plurality of inputs for receiving aircraft performance and control  
9                   parameters from aircraft sensors and an output in communication with  
10                   said transmitter for providing said data to said transmitter;

11                    wherein said data further includes an aircraft identifier unique to a particular  
12                    aircraft.

<sup>16</sup>

1   76. (New) The aircraft maintenance system of claim 75, wherein said ground based station is  
2   further configured to transmit data on said communication network and said maintenance advice  
3   is transmitted from said ground based station to said aircraft, further comprising:

4                    a receiver located on said aircraft, said receiver configured to receive data

5                    from said communication network; and

6                    a maintenance communication means which receives maintenance advisory

7                    data from said receiver and provides maintenance advice to

8                    maintenance personnel,

<sup>17</sup>

1   77. (New) The aircraft maintenance system of claim 75 wherein said ground based station  
2   includes a storage system for archiving said aircraft performance and control parameters.

<sup>18</sup>

1   78. (New) A method for real-time monitoring and archiving of aircraft performance data  
2   including the steps of:

3                    providing a performance sensor in an aircraft, said performance sensor having an

4                    output indicative of an aircraft performance parameter;

5                    electronically transmitting at least said aircraft performance parameter to a global

6                    communication network;

7           receiving said aircraft performance parameter from said global communication  
8                   network at a ground based station;  
9           analyzing said aircraft performance parameter at said ground based station;  
10           generating an aircraft maintenance advisory when the analysis of said aircraft  
11                   performance parameter indicates an aircraft problem; and  
12           archiving said aircraft performance parameter at said ground based station.

Q1  
1           <sup>19</sup>79. (New) The method for real-time monitoring and archiving of aircraft performance data  
2           according to the method of claim 78 further including the steps of:  
3                   transmitting said aircraft maintenance advisory;  
4                   receiving said aircraft maintenance advisory on said aircraft; and  
5                   displaying said aircraft maintenance advisory on said aircraft.

1           <sup>29</sup>80. (New) A digital data communication system for an aircraft comprising:  
2                   a transceiver located on the aircraft, said transceiver configured to transmit  
3                           and receive digital data to and from a global communication network  
4                           while said aircraft is in-flight; and  
5                   a central station configured to transmit and receive digital data to and from  
6                           said global communication network,  
7                   wherein a transmission by an aircraft on said global communication network  
8                           includes an identifier, said identifier being unique to a particular  
9                           aircraft.



<sup>25</sup>  
1 81. (New) The digital data communication system of claim 80 further comprising:  
2 a sensor multiplexer having a plurality of inputs for receiving information  
3 from a plurality of aircraft sensors and an output for digitally  
4 communicating said information to said transceiver for transmission  
5 via said global communication network.

<sup>26</sup>  
1 82. (New) The digital data communication system of claim 81 wherein said plurality of  
2 aircraft sensors includes a GPS receiver.

<sup>27</sup>  
1 83. (New) The digital data communication system of claim 81 wherein said plurality of  
2 aircraft sensors includes an acoustic sensor for receiving audible information.

<sup>28</sup>  
1 84. (New) The digital data communication system of claim 80 further comprising a display  
2 means on said aircraft, said display means configured to display information encoded in said  
3 digital data received by said transceiver.

<sup>29</sup>  
1 85. (New) The digital data communication system of claim 80 wherein said central station  
2 includes data storage and at least a portion of said digital data transmitted from said aircraft is  
3 stored in said data storage.

<sup>30</sup>  
1 86. (New) The digital data communication system of claim 85 wherein said portion of said  
2 digital data includes data selected from the group consisting of:

- 3                   (a)    airspeed of the aircraft;  
4                   (b)    aircraft attitude;  
5                   (c)    fuel status of the aircraft;  
6                   (d)    engine status of the aircraft;  
7                   (e)    flight control positions;  
8                   (f)    landing gear status; and  
9                   (g)    control surface positions.

21  
1   87.    (New) The digital data communication system of claim 86 wherein said portion of said  
2   digital data is analyzed at said central station to determine if a flight safety advisory or a  
3   maintenance advisory is warranted.

32  
1   88.    (New) The digital data communication system of claim 87 further comprising a display  
2   means on said aircraft, wherein said central station transmits said flight safety advisory or said  
3   maintenance advisory to said transceiver and said display means is configured to display said  
4   flight safety advisory or said maintenance advisory.

33  
1   89.    (New) A digital data communication system for an aircraft comprising a receiver  
2   configured to receive a transmission from a central station while the aircraft is airborne, said  
3   transmission being relayed to said receiver by way of a satellite and said transmission comprising  
4   digitally encoded information, wherein said digitally encoded information includes an identifier  
5   unique to a particular aircraft.

1 <sup>34</sup>  
2 90. (New) The digital data communication system of claim 89 wherein said digitally  
3 encoded information includes weather information.

1 <sup>35</sup>  
2 91. (New) The digital data communication system of claim 89 wherein said digitally  
3 encoded information includes maintenance advisory information.

1 <sup>36</sup>  
2 92. (New) A telemetric crash data recorder comprising:  
3 a sensor multiplexer receiver and transmitter; and  
4 a central ground based station having a data storage device,  
5 wherein said sensor multiplexer receiver and transmitter receives aircraft  
6 performance and control parameters from existing sensors on an  
7 aircraft and transmits said performance and control parameters to said  
8 central ground based station over a world wide communication system  
9 for storage in said data storage device.

1 <sup>37</sup>  
2 93. (New) The telemetric crash data recorder of claim 92 further comprising:  
3 a GPS receiver in communication with said sensor multiplexer receiver and  
4 transmitter such that a position of said aircraft is transmitted to said  
5 central ground based station.

*AI  
conced*

<sup>38</sup>  
1 94. (New) The telemetric crash data recorder of claim 93 wherein said central ground station  
2 includes a processor for analyzing performance and control parameters and said aircraft position  
3 such that, in the event of a crash, said processor will estimate a crash site.

<sup>39</sup>  
1 95. (New) The telemetric crash data recorder of claim 93 wherein said performance and  
2 control parameters comprise information recorded by an on board flight data recorder.

Application No. 10/004,429  
Amendment Dated 1/14/04  
Reply to Office Action of July 14, 2003  
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**REMARKS**

Claims 1-3 were originally filed in the application and allowed. Claims 4-63 were added by amendment in the reissue application. Claims 20-23, 40-48, and 50-63 were withdrawn from consideration by the Examiner. Claims 4-19, 24-39, and 49 are cancelled in this amendment. Claims 1-19, 24-39, and 49 stand rejected. Claims 64-95 are added by this amendment in substitution of claims 4-19, and 24-39. Claims 1-3 and 64-95 are pending.

In the Office Action, claims 1-63 are rejected as being based upon a defective reissue oath/declaration under 35 U.S.C. § 251. A substitute oath/declaration is appended hereto as Appendix A.

In the Office Action, it is stated that the original patent, or a statement as to loss or inaccessibility of the original patent, must be received before this reissue application can be allowed. The original patent is attached hereto as Appendix B.

In the Office Action, claims 4-63 are further objected to under 37 CFR 1.173(b)2 and (c) since the newly added claims have not been underlined and there is no statement mentioned in the Preliminary Amendment as to the support in the original specification for each of the newly added claims. Claims 4-63 are cancelled in this amendment and replaced by claims 64-95, non-inclusive of the claims withdrawn by the Examiner. The newly added claims have been underlined and support for each claim is provided hereinbelow, pursuant to 37 CFR 1.173(b)(2) and (c).

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Claim No.	Reference in Specification Column:Lines
64.	2:61-64; 4:51-53
65.	7:64 – 8:14
66.	7:59-8:9
67.	8:50-53
68.	8:50-53
69.	7:64-8:4
70.	8:10-13
71.	8:2-4
72.	6:57-65
73.	4:20-22
74.	4:1-6
75.	2:61-67; 4:51-66
76.	5:8-14
77.	4:1-6
78.	7:59-8:30
79.	3:2-27; 8:46-50
80.	2:61-64; 4:51-53
81.	4:51-5:2
82.	8:12
83.	8:12-13
84.	5:12; FIG. 1/72
85.	5:46; 8:29
86.	2:54-67; 7:59-8:9
87.	6:19-26; 48-67
88.	6:64
89.	5:23-30
90.	6:35-36
91.	6:48-67
92.	6:15-18; 7:59-8:9; 29
93.	8:10-12
94.	4:1-6
95.	7:64-66

Claims 30 and 38 (now claims 86 and 94) are rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement. In this amendment, Applicant submitted support for each newly added claim above. Specifically, with regard to claim 86, support for digital data consisting of airspeed of the aircraft, aircraft attitude, flight control positions, landing gear status, and control surface positions can be found at Col. 7, line 59 – Col. 8, line 9. Support for engine status is found at Col.2, lines 54-67.

With regard to claim 94, support for estimating a crash site at the central ground based station is found at Col. 4, lines 1-6. Out of an abundance of caution, claim 94 has been amended to reflect that the crash site provided is an estimate.

In the Office Action, claims 4-17 and 19 (now claims 64-77 and 79) are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention. Claims 64 and 75 now call for the generation of maintenance advice. Claim 15, line 11, is amended to remove – digital— to eliminate the problem with antecedent basis. In claim 65, line 2, “an aircraft” has been changed to “said aircraft” as suggested by the Examiner.

Per the Examiner’s suggestions, in claim 73, in line 2, “provides” has been changed to “provided” and the preamble of claim 79 has been rewritten to reflect its proper relation to claim 78. Applicant notes with appreciation the Examiner’s suggestions.

In the Office Action, claim 18 (now claim 78) is rejected under 35 U.S.C. § 102(b) as being anticipated by Kuroda, et al., U.S. Patent No. 5,381,140. Kuroda, et al., makes no mention of a global communication network. While items 3, 11c, and 211, as indicated in the Office Action, depict a satellite communication system having a single satellite and a single ground station, Kuroda, et al., makes no indication that the communication network is anything other than regional in nature. Kuroda, et al., does not even indicate the nature of the satellite, whether low earth orbit, geosynchronous, or otherwise.

While Applicant submits that claim 78 is not anticipated by Kuroda, et al., out of an abundance of caution, claim 78 has been amended to include the step of generating a maintenance advisory when the analysis indicates an advisory is in order. Kudora, et al., provides no disclosure of generating a maintenance advisory.

Claim 19 (now claim 79) is rejected under 35 U.S.C. § 103(a) as being unpatentable over Smith, U.S. Patent No. 5,931,877, in view of Kuroda, et al. Smith discloses a maintenance system that provides remote trouble-shooting and technical data access to technicians through a handheld point-of-maintenance transceiver. The combination of Smith and Kuroda, et al., does not render the invention of claim 79 obvious.

Claim 79 depends from claim 78 which includes, among others things, the steps of: a) receiving an aircraft performance parameter via a global communication network at a ground based station; analyzing the aircraft performance parameter at the ground based station;

\*  
col 4, line 4  
Kuroda cites  
a GPS satellite  
sys. a global  
communication  
system.



generating an aircraft maintenance advisory when the analysis of the performance parameter indicates an aircraft problem; and archiving the aircraft performance parameter at the ground based station. Neither reference teaches analyzing the performance data at the ground based station to generate a maintenance advisory. As discussed below, this distinction is not trivial.

Smith discloses a maintenance system which conducts further analysis after the failure of a built-in-test (BIT) to reduce the occurrence of unit replacement when afterward there is no problem found or to identify the correct replaceable unit when there is ambiguity. To accomplish this, Smith discloses a handheld computer which uses information stored in a system of the aircraft to identify patterns which likely caused the BIT failure. The actual failure analysis takes place on the aircraft.

not relevant to claim

See Cl 6  
& cl 6 of '877

BIT is in addition to ground analysis, has no relevance to the claim limitation

PMA is (only to repair in aircraft) diagnostic is done on-ground

Smith's system includes access, via a worldwide communication network, to a maintenance database to obtain the latest test and troubleshooting protocols, as well as instructions for the technicians. Smith's system is dependent on the analysis taking place as part of the built in test which, by its very nature, is on the aircraft.

In contrast, the present invention takes aircraft performance information, generally information directed to a flight data recorder, and transmits it to a ground station to both archive the data and to analyze the data to identify failures at the earliest possible stages. The present invention does not require the aircraft systems to perform a built in test, as the processing required for analysis is more appropriately ground-based. This eliminates the replication of

not in claim

testing hardware across every single aircraft, as would be required by the Smith system, as well as the need to match the BIT software on the aircraft to that aircraft's particular configuration.

The purposes of the present invention are to identify failures at the earliest possible stage so that repairs can take place before failures cascade into a catastrophic problem. Further, so that when failures do occur, ground-based technicians and engineers can, virtually in real-time, review the data and formulate emergency procedures and, if the unthinkable happens, have access to black box data without the need to recover the black box. None of these are possible with the Smith system because, in the Smith system, there must first be a failure captured by the on-aircraft analysis of data.

2025  
1877

Kuroda does not fill this gap. While Kuroda sends positional data to a ground based station for analysis, there is no mention of identifying failures or generating maintenance advisories. Combining Kuroda, et al., and Smith does not provide a system which monitors aircraft performance parameters in real-time to generate maintenance advice. Combining Kuroda and Smith does not even fully disclose the present invention, much less render it obvious.

Applicant submits that claim 78 is therefore in condition for allowance. Claim 79 depends from claim 78 and, at least for the reasons stated with regard to claim 78, is likewise in condition for allowance. Reexamination and allowance of claims 78 and 79 are respectfully requested.

In the Office Action, claims 1-5, 9-14, 24, and 28-35 (now claims 1-3, 64-65, 69-74, 80, and 84-91) are rejected under 35 U.S.C. § 103(a) as being unpatentable over Smith in view of

Kuroda, et al. As with claims 78 and 79, the combination of Smith and Kuroda do not render the inventions of claim 1-3, 64-65, 69-74, 80, and 84-91 obvious.

First, with regard to claims 1, 2, and 3, the Office Action does not explain why one of ordinary skill in the art would select specific features from each of the references while rejecting other features, to arrive at the present invention.

The Office Action uses the present invention to pick and choose pieces from the prior art references, as well as filling gaps with the Examiner's own knowledge, to create the present invention when there simply is no motivation in these references to do so.

It is impermissible to use the claimed invention as an instruction manual or "template" to piece together the teachings of the prior art so that the claimed invention is rendered obvious. This court has previously stated that "[o]ne cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention." (Quoting *In re Fine*, 837 F.2d 1071, 1075, 5 USPQ 2d 1596, 1600 (Fed. Cir. 1988)).

*In re Fritch*, 23 USPQ 2d 1780, 1784 (Fed. Cir. 1992). The Federal Circuit has mandated that a rejection under § 103(a) is only appropriate if there is a "teaching, suggestion, or incentive supporting the combination" relied upon. *In re Geiger*, 815 F.2d 868, 2 USPQ 2d 1276, 1278 (Fed. Cir. 1987). The Federal Circuit went further to state in *Akzo N.V. v. United States International Trade Commission*, 1 USPQ 2d 1241, 1246 (Fed. Cir. 1986), *cert denied*, 482 U.S. 909 (1987), that:

[P]rior art references before the tribunal must be read as a whole and consideration must be given where the references diverge and teach away from the claimed invention... Moreover, appellants cannot pick and choose among

individual parts of associated prior art references "as a mosaic to recreate a facsimile of the claimed invention."

Reviewing claim 1 relative to the cited references demonstrates the degree to which the rejection of claims 1, 2, and 3 relies on hindsight. First, some elements are absent from both references, such as: the display and control means connected to the processing means (as mentioned in the Office Action); and converting the aircraft performance and control parameters, when necessary, to digital form.

Further, some claim elements are disclosed only by gathering pieces of the element from both references. Neither reference fully discloses the element. For example: adding an aircraft identification is found only in Kuroda while the configuration label is found only in Smith.

These differences are significant in light of the differences in use between the cited references and the present invention. The present invention collects data in real-time while the aircraft is in flight while Smith collects prerecorded data on the ground after the built-in-test of an aircraft system has detected a failure. Kuroda, et al., is concerned only with transmitting precision position information to the ground to improve traffic control. Kuroda, et al., does not mention detecting failures.

Applicant submits claims 1-3 are in condition for allowance. Reconsideration and allowance of claims 1-3 is respectfully requested.

With regard to claim 4 (now claim 64), the claim has been amended to require transmission of performance data while in-flight and to require analysis of the data in real-time.

As discussed above, this is contrary to the teaching of Smith. Smith performs his transmission of data only while the plane is on the ground. <sup>not true</sup> Neither Smith nor Kuroda disclose generating maintenance advice in real-time.

col 6,  
line 50  
1877

Applicant respectfully submits that claim 64 is thus in condition for allowance. Claims 72-73 (formerly claims 12-13) depend from claim 64 and, at least for the reasons stated with regard to claim 64, are likewise in condition for allowance. Reexamination and allowance of claims 64 and 72-73 are respectfully requested.

With regard to claim 24 (now claim 80), the claim has been amended to require both the transmission and receipt of data while in-flight. This feature is undisclosed in either Smith or Kuroda, et al. Kuroda only discusses transmission from the aircraft to ground, which is consistent with the ADS standard. Further, Kuroda, et al., does not discuss global communication. Smith does not disclose airborne transmission, which would be inconsistent with the type of maintenance with which Smith is concerned. Thus, an airborne transceiver for digital communication between a ground station and an aircraft via a global communication network is simply not found in the suggested combination.

1877  
See when request  
data and receive  
col 5, line 66

Applicant submits that claim 80 is thus in condition for allowance. Claims 84 (formerly claim 28), and 86-88 (formerly claims 30-32) depend from claim 80 and, at least for the reasons stated with regard to claim 80, are likewise in condition for allowance.

With regard to claim 33 (now claim 89), the claim has been amended to clarify that the

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Amendment Dated 1/14/04  
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receipt of digital information takes place while the aircraft is airborne. As mentioned with regard to claim 80, Kuroda, et al., only discusses transmission from the aircraft to a ground station, not the reverse. Air-to-ground only transmission is consistent with the ADS as discussed by Kuroda, et al. Again, airborne communication is not discussed by Smith.

Applicant submits that claim 89 is thus in condition for allowance. Claims 90-91 (formerly claims 34-35) depend from claim 89 and, at least for the reasons stated with regard to claim 89, are likewise in condition for allowance. Reexamination and allowance of claims 89-91 are respectfully requested.

While claims 65 and 69 (formerly claims 5 and 9) depend from claim 64 and, at least for the reasons stated with regard claim 64, are likewise in condition for allowance, there is another distinction between the present invention and the cited references. While Smith does in fact disclose a data recorder, it should be noted that Smith suggests retrieving data previously stored in a data recorder after the aircraft fails a built-in-test. This is totally inconsistent with real-time reporting as is performed by the present invention. The present invention receives data directed to a flight recorder and transmits the data to a ground based station in real-time.

Applicant respectfully submits that claims 65 and 69 are thus in condition for allowance. Reconsideration and allowance of claims 65 and 69 are respectfully requested.

With regard to claims 10 and 11 (now claims 70 and 71), claims 70 and 71 depend from claim 64 and, at least for the reasons stated with regard to claim 64, likewise in condition for

allowance. Reexamination and allowance of claims 70 and 71 are respectfully requested.

In the Office Action, claims 6-8 (now claims 66-68), 15-17 (now claims 75-77), and 25-27 (now claims 81-83) are rejected under 35 U.S.C. § 103(a) as being unpatentable over Smith, et al. and Kuroda, et al., and further in view of Monroe, U.S. Patent No. 5,798,458. Monroe discloses the use of an array of acoustic sensors to detect failures or terrorist events.

Claims 66-68 and 75-77 depend from claim 64 and, at least for the reasons stated with regard to claim 64, are likewise in condition for allowance. Claim 81-83 depend from claim 80 and, at least for the reasons stated with regard to claim 80, are likewise in condition for allowance. Reexamination and allowance of claims 66-68, 75-77, and 81-83 are respectfully requested.

In the Office Action, claims 36-39 (now claims 92-95) and 49 (no substitute claim) are rejected under 35 U.S.C. § 103(a) as being unpatentable over Kuroda, et al., in view of Monroe. With regard to claims 36-39, neither Kuroda, et al., nor Monroe discloses worldwide communication. In fact, with regard to Kuroda, et al., such communication is inconsistent with ADS, which addresses traffic control.

Monroe relies on communication with ground-based stations. As is well known in the art, without the aid of satellites, a land based station has a limited view of the sky, particularly radio frequencies which are practical for data transmission. Monroe simply provides no discussion of how to communicate with the aircraft beyond the ground stations view.

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Reply to Office Action of July 14, 2003  
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Accordingly, the invention of claims 92-95 is simply not taught by the cited references.

Applicant submits that claims 92-95 are in condition for allowance. Reconsideration and allowance of claims 92-95 are respectfully requested.

No additional fee is believed to be due. However, if any fee is made payable by the filing of this paper, please consider this our authorization to charge the Deposit Account of the undersigned, No. 06-0540.

Respectfully submitted,

Date: January 14, 2004

By Fred H. Holmes  
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Tulsa, Oklahoma 74103-3318  
(918) 599-0621

234333.1



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

REISSUE APPLICATION SUPPLEMENTAL DECLARATION  
(BY INVENTOR)

DECLARATION BY THE INVENTOR

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name. I believe I am the original, first and sole inventor of the subject matter that is described and claimed in letters patent number 5,974,349, granted on October 26, 1999, and in the subject matter in the amendment filed on October 25, 2002, and for which invention I solicit a reissue patent.

ACKNOWLEDGMENT OF REVIEW OF PAPERS AND DUTY OF CANDOR  
(37 C.F.R. § 1.175)

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims. I acknowledge the duty to disclose information that is material to the examination of this application, namely, information where there is a substantial likelihood that a reasonable examiner would consider it important in deciding whether to allow the application to issue as a patent. In compliance with this duty, an information disclosure statement was filed in accordance with 37 C.F.R. § 1.98 on October 25, 2002.

STATEMENT OF INOPERATIVENESS OR INVALIDITY  
OF ORIGINAL PATENT (37 C.F.R. § 1.175)

I verily believe the original patent to be partly inoperative or invalid by reason of (37 C.F.R. § 1.175(a)(1)) the patentee claiming more or less than the patentee had a right to claim in the patent.

That the aforementioned error(s) which are being corrected, up to the time of the filing of this reissue supplemental declaration, arose without any deceptive intention on the part of the applicant. (37 C.F.R. § 1.175(a)(2)).

STATEMENT OF INOPERATIVENESS OR  
INVALIDITY OF ORIGINAL PATENT  
(continued)

At least one error upon which reissue is based is described below. If the reissue is a broadening reissue, such must be stated with an explanation as to the nature of the broadening:

Claims 1-3 are partly inoperative because each claim contains unnecessary limitations. Applicant seeks to broaden the claims by eliminating unnecessary limitations. In claims 1 and 2, "an aircraft manufacturer's database means for providing aircraft data and maintenance information" is an unnecessary limitation. In claim 3, "providing communication access to an aircraft manufacturer's database" is an unnecessary limitation.

All errors which are being corrected in the present reissue application up to the time of filing this declaration arose without any deceptive intention on the part of the applicant. (37 C.F.R. §1.175(b)(1)).

**DECLARATION**

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

**SIGNATURE**

**BY THE INVENTOR**

**Full name of sole inventor:** Seymour LEVINE

**Inventor's signature:** 

**Date:** 01-10-04 **Country of Citizenship:** USA

**Residence:** Culver City, CA 90230

**Post Office Address:** 4928 Maytime Lane, Culver City, CA 90230

241786.1

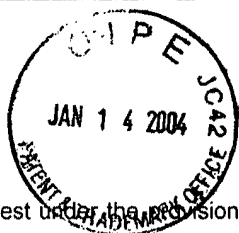
01-15-04

\$3661

Under the paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

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2/4

<b>PETITION FOR EXTENSION OF TIME UNDER 37 CFR 1.136(a)</b>	Docket Number (Optional)	57127/01-601
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In re Application of Seymour LEVINE	
Application Number	10/004,429
Filed	October 25, 2002
For Remote, Aircraft, Global, Paperless Maintenance System	
Art Unit	3661
Examiner	Gary Chin

This is a request under the provisions of 37 CFR 1.136(a) to extend the period for filing a reply in the above identified application.

The requested extension and appropriate non-small-entity fee are as follows (check time period desired):

- One month (37 CFR 1.17(a)(1)) \$ \_\_\_\_\_
- Two months (37 CFR 1.17(a)(2)) \$ \_\_\_\_\_
- Three months (37 CFR 1.17(a)(3)) \$ 930.00
- Four months (37 CFR 1.17(a)(4)) \$ \_\_\_\_\_
- Five months (37 CFR 1.17(a)(5)) \$ \_\_\_\_\_

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JAN 22 2004  
GROUP 3600

- Applicant claims small entity status. See 37 CFR 1.27. Therefore, the fee amount shown above is reduced by one-half, and the resulting fee is: \$ 465.00
- A check in the amount of the fee is enclosed.
- Payment by credit card. Form PTO-2038 is attached.
- The Director has already been authorized to change fees in this application to a Deposit Account.

The Director is hereby authorized to charge any fees which may be required, or credit any overpayment, to Deposit Account Number 06-0540

I have enclosed a duplicate copy of this sheet. 01/16/2004 SSESHE1 00000052 060540 10004429

- I am the  applicant/inventor. 01 FC:2253 475.00 DA
- assignee of record of the entire interest. See 37 CFR 3.71.  
Statement under 37 CFR 3.73(b) is enclosed (Form PTO/SB/96).
  - attorney or agent of record. Registration Number 43,677
  - attorney or agent under 37 CFR 1.34(a).  
Registration number if acting under 37 CFR 1.34(a) \_\_\_\_\_

**WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.**

1/19/2004  
Date

Fred H. Holmes  
Signature

(918) 599-0621  
Telephone Number

Fred H. Holmes  
Typed or printed name

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below.

Total of 2 forms are submitted.

This collection of information is required by 37 CFR 1.136(a). The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 6 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.



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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/004,429	10/25/2001	Seymour Levine	57127	8221

22206            7590            07/14/2003

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EXAMINER

CHIN, GARY

ART UNIT            PAPER NUMBER

3661

DATE MAILED: 07/14/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/004,429

Applicant(s)

LEVINE, SEYMOUR

Examiner

Gary Chin

Art Unit

3661

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1)  Responsive to communication(s) filed on \_\_\_\_\_.
- 2a)  This action is FINAL.
- 2b)  This action is non-final.
- 3)  Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4)  Claim(s) 1-63 is/are pending in the application.  
4a) Of the above claim(s) 20-23,40-48 and 50-63 is/are withdrawn from consideration.
- 5)  Claim(s) \_\_\_\_\_ is/are allowed.
- 6)  Claim(s) 1-19,24-39 and 49 is/are rejected.
- 7)  Claim(s) \_\_\_\_\_ is/are objected to.
- 8)  Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9)  The specification is objected to by the Examiner.
- 10)  The drawing(s) filed on 25 October 2001 is/are: a)  accepted or b)  objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11)  The proposed drawing correction filed on \_\_\_\_\_ is: a)  approved b)  disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12)  The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13)  Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a)  All b)  Some \* c)  None of:  
1.  Certified copies of the priority documents have been received.  
2.  Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3.  Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14)  Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a)  The translation of the foreign language provisional application has been received.
- 15)  Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1)  Notice of References Cited (PTO-892)
- 2)  Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3)  Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4.
- 4)  Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_.
- 5)  Notice of Informal Patent Application (PTO-152)
- 6)  Other:

*Reissue Applications*

1. The reissue oath/declaration filed with this application is defective (see 37 CFR 1.175 and MPEP § 1414) because of the following:

The oath/declaration as filed has failed to specifically indicate as to which claim or claims have the alleged defect.

2. Claims 1-63 are rejected as being based upon a defective reissue oath/declaration under 35 U.S.C. 251 as set forth above. See 37 CFR 1.175.

The nature of the defect(s) in the oath/declaration is set forth in the discussion above in this Office action.

3. The original patent, or a statement as to loss or inaccessibility of the original patent, must be received before this reissue application can be allowed. See 37 CFR 1.178.
4. Claims 4-63 are further objected under 37 CFR 1.173 since these newly added claims have not been underlined as required in 37 CFR 1.173 (b) 2. Further, there is no statement mentioned in the preliminary amendment as to the supports in the original specification for each of the newly added claims 4-63 as required under 37 CFR 1.173(c).

*Election/Restrictions*

5. Restriction to one of the following inventions is required under 35 U.S.C. 121:
  - I. Claims 1-19, 24-39 and 49 are, drawn to an aircraft maintenance system or a system for transmitting, receiving and storing the aircraft performance and control parameters, classified in class 701, subclass 29.

Art Unit: 3661

- II. Claims 20-23, 50-52 and 62-63 are, drawn to an in-flight advisory system, classified in class 940, subclass 945.
- III. Claims 40-43 are, drawn to an air traffic control system, classified in class 701, subclass 120.
- VI. Claims 44-48 and 53-61 are, drawn to a ground collision avoidance system or an in-flight collision avoidance method, classified in class 701, subclass 301.

The inventions are distinct, each from the other because of the following reasons:

- 6. Inventions I to IV are related as subcombinations disclosed as usable together in a single combination. The subcombinations are distinct from each other if they are shown to be separately usable. In the instant case, inventions I to IV are separate usable in their differing modes and not requiring the combinations of other claimed invention. See MPEP § 806.05(d).
- 7. Newly submitted claims 20-23, 40-48 and 50-63 are directed to the inventions that are independent or distinct from the invention originally claimed for the reason set forth above.

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 20-23, 40-48 and 50-63 are withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

- 8. The following office action is directed to claims 1-19, 24-39 and 49 as constructively elected by applicant by original presentation.

***Claim Rejections - 35 USC § 112***

- 9. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it

Art Unit: 3661

pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

10. Claims 30 and 38 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The claimed digital data consisting of airspeed of the aircraft, aircraft attitude, engine status of the aircraft, flight control positions, landing gear status and control surface positions as recited in claim 30 and the claimed feature of using a processor to calculate a crash site based upon the performance and control parameters as well as the aircraft position as recited in claim 38 find no support in the original specification as filed.

11. Claims 4-17 and 19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

As per claims 4 and 15, the preamble of these claims is directed to an aircraft maintenance system. However, there is no recitation in the body of these claims as to how the maintenance of the aircraft is being implemented by the recited structural elements. Further, in claim 15, line 11, the antecedent basis for "said digital data" has not been set forth in the claim. As per claim 5, line 2, "an aircraft" should be "said aircraft" in order to avoid the antecedent basis problem.

As per claim 13, line 2, "provides" should be "provided".



Art Unit: 3661

As per claim 19, the preamble recited therein is misdescriptive since the parent claim 18 is not directed to a method for determining whether to issue an aircraft maintenance advisory as recited.

Claim(s) that have not been specifically indicated is/are rejected for incorporating the above error(s) from its/their parent claim(s) by dependency.

***Claim Rejections - 35 USC § 102***

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

12. Claim 18 is rejected under 35 U.S.C. 102(b) as being anticipated by Kuroda et al (patent no. 5381140).

As per claim 18, figure 1 and columns 3-5 and 8 of the Kuroda et al reference clearly disclose the claimed method for real-time monitoring and archiving of aircraft performance data including the steps of providing a performance sensor in an aircraft (see "ADS" data in col. 1, lines 53-60), electronically transmitting the aircraft performance parameter to a global communication network (items 3, 11c and 211) and receiving and archiving the aircraft performance parameter at a ground station (item 22, col. 5, lines 47-49 and col. 8, lines 10112).

***Claim Rejections - 35 USC § 103***

13. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if 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. Patentability shall not be negated by the manner in which the invention was made.

14. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kuroda et al (patent no. 5381140) in view of Smith et al (patent no. 5931877).

As per claim 19, it is noted that the claimed steps of analyzing the performance parameter and subsequently transmitting the maintenance advisory based on the analysis to an aircraft has not been disclosed in the Kuroda et al reference. However, such features are well known in the art and clearly taught in figure 1 and column 2 of the Smith et al reference. It would have been obvious for one having ordinary skill in the art to incorporate such well known features as taught in Smith et al into the Kuroda et al method to facilitate the aircraft maintenance and eliminate/reduce the removal of fully functional system components as directly suggested on column 2, lines 42-43 of the Smith et al teaching.

15. Claims 1-5, 9-14, 24 and 28-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smith et al (patent no. 5931877) in view of Kuroda et al (patent no. 5381140).

As per claims 1-4, 12-13, 24, 28 and 30-35, figure 1 and columns 3-7 of the Smith et al reference clearly disclose an aircraft maintenance system and method as well as a digital data communication system including a maintenance communication means (item 22), a sensor multiplexer receiver and transmitter means (item 12), an aircraft manufacturer's database means (item 20), a central station means (item 16) and a global rf communication network means (items 28 and 30). Further, it would have been readily apparent for one skilled in the art that there must be some sort of processing and display devices included in the central station (item 16) of the Smith et al system in order to provide any data retrieval and analysis functions. The difference between the claimed invention and that disclosed in Smith et al is that the latter does not disclose the features of providing an identifier unique to a particular aircraft and/or a storage for archiving the performance and control parameters transmitted from an aircraft (claims 1-3, 14 and 29). However, such missing features in Smith et al are well known in the art and clearly taught in

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figure 1 (item 22) and col. 4, line 7 of the Kuroda et al teaching. It would have been obvious for one skilled in the art to incorporate such well known features as taught in Kuroda et al into the Smith et al system so that the identity of a particular aircraft can be ascertained and that the transmitted performance and control data can be further analyzed to provide maintenance advisory as directly suggested in the Kuroda et al reference.

As per claims 5 and 9, the additionally claimed flight data recorder is taught in col. 4, lines 37-40 of the Smith et al reference.

As per claims 10 and 11, the claimed gps receiver and inertial navigation system are taught in col. 3, line 60 to col. 4, line 6 of the Kuroda et al reference.

16. Claims 6-8, 15-17 and 25-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smith et al and Kuroda et al and further in view of Monroe (patent no. 5798458) submitted by applicant.

As per claims 6, 15-17 and 25-26, the claimed limitations have been met by the combined teachings of Smith et al and Kuroda et al for the reasons set forth above with the exception of the "sensor multiplexer" as claimed. However, it is notoriously well known in the art to routinely use a "multiplexer" to sample a plurality of sensor signals in order to reduce the circuit or hardware elements needed. Further, such "multiplexer" is clearly taught in figure 4, item 96 of the Monroe teaching. Hence, it would have been readily apparent for one skilled in the art that such well known "multiplexer" as taught in Monroe either already have been included in the Smith et al and Kuroda et al teachings or would have been obvious to do so in order to eliminate the circuit or hardware elements needed.

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As per claims 7-8 and 27, the additionally claimed audio and video information are clearly taught in figure 12 of the Monroe reference. It would have been readily apparent for one skilled in the art to include those information in the Smith et al system in the event that sound and image of the aircraft are required to provide a more detail analysis.

17. Claims 36-39 and 49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kuroda et al in view of Monroe.

As per claims 36, 39 and 49, figure 1 of the Kuroda et al reference clearly discloses a telemetric data recorder for storing the performance and control parameters (see "ADS" data on columns 1 and 3) transmitted from an aircraft to a central ground based station (item 22, col. 5, lines 47-49 and col. 8, lines 10-12) as well as the method for transmitting and receiving aircraft performance and control parameters. Further, it would have been readily apparent for one skilled in the art that in the event of a crash, the data stored in the storage device in Kuroda et al would have become a "crash data recorder" as claimed. The difference between the claimed invention and that disclosed in Kuroda et al is that the latter does not explicitly disclose the "sensor multiplexer" or "sensor multiplexer receiver" as claimed. However, it is notoriously well known in the art to routinely use a "multiplexer" to sample a plurality of sensor signals to reduce the circuit or hardware elements needed. Further, such "multiplexer" is clearly taught in figure 4, item 96 of the Monroe teaching. Hence, it would have been readily apparent for one skilled in the art that such well known "multiplexer" as taught in Monroe either already have been included in the Kuroda system or would have been obvious to do so in order to eliminate the circuit or hardware elements.

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As per claim 37, the claimed gps receiver is disclosed in col. 3, line 64 of the Kuroda et al reference.

As per claim 38, it would have been obvious for one skilled in the art that the position data obtained in Kuroda et al has to be used to calculate a crash site in an event of a crash.

18. The additional reference(s) is/are cited to show the related system(s). Applicant(s) should consider them carefully when responding to the current office action. References H-M on page 1 of form 892 and A-F on page 2 of form 892 have not been sent along with the current office action since those references should be in applicant's possession as the result of the prosecution in the parent case.

19. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gary Chin whose telephone number is (703) 305-9751. The examiner can normally be reached on Monday-Friday 8:00 AM to 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William A Cuchlinski can be reached on (703) 308-3873. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-7687 for regular communications and (703) 305-7687 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1113.

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July 10, 2003

  
GARY CHIN  
PRIMARY EXAMINER

<b>Notice of References Cited</b>	Application/Control No. 10/004,429	Applicant(s)/Patent Under Reexamination LEVINE, SEYMOUR	
	Examiner Gary Chin	Art Unit 3661	Page 1 of 2

**U.S. PATENT DOCUMENTS**

*	Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification	
	A	US-5,931,877	08-1999	Smith et al.	701/29
	B	US-6,092,008	07-2000	Bateman, Wesley H.	701/14
	C	US-6,308,045	10-2001	Wright et al.	455/431
	D	US-6,047,165	04-2000	Wright et al.	455/66.1
	E	US-6,108,523	08-2000	Wright et al.	455/66.1
	F	US-5,587,904	12-1996	Ben-Yair et al.	701/213
	G	US-4,816,828	03-1989	Feher, Kornel J.	340/945
*	H	US-5,890,079	03-1999	Levine, Seymour	701/14
*	I	US-5,740,047	04-1998	Pilley et al.	701/120
*	J	US-5,714,948	02-1998	Farmakis et al.	340/961
*	K	US-5,677,841	10-1997	Shiomi et al.	701/120
*	L	US-5,657,009	08-1997	Gordon, Andrew A.	340/968
*	M	US-5,493,309	02-1996	Bjornholt, John E.	342/455

**FOREIGN PATENT DOCUMENTS**

*	Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N				
	O				
	P				
	Q				
	R				
	S				
	T				

**NON-PATENT DOCUMENTS**

*	Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
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	V
	W
	X

\*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)  
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

<b>Notice of References Cited</b>	Application/Control No. 10/004,429	Applicant(s)/Patent Under Reexamination LEVINE, SEYMOUR	
	Examiner Gary Chin	Art Unit 3661	Page 2 of 2

**U.S. PATENT DOCUMENTS**

*	Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A US-5,467,274	11-1995	Vax, Hanan	701/14
*	B US-5,463,656	10-1995	Polivka et al.	375/130
*	C US-5,383,133	01-1995	Staple, Alan E.	700/280
*	D US-5,325,302	06-1994	Izidon et al.	701/301
*	E US-5,153,836	10-1992	Fraughton et al.	701/301
*	F US-4,729,102	03-1988	Miller et al.	701/14
	G US-			
	H US-			
	I US-			
	J US-			
	K US-			
	L US-			
	M US-			

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	N				
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	P				
	Q				
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	S				
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**NON-PATENT DOCUMENTS**

*	Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
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	V
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\*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)  
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

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Substitute for form 1449A/PTO  <b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b>  (use several sheets if necessary)				<b>Complete if Known</b>		
				Patent Number	5,974,349	#4 6-8-02 DRS 10/00/99 PTO 10/00/99
				Date of Patent	10/26/1999	
				First Named Inventor	Seymour Levine	
				Group Art Unit	3661	
				Examiner Name	Gary Chin	
Attorney Docket Number	57127					
Sheet	1	of	2			



U.S. PATENT DOCUMENTS						
Examiner Initials	Cite No. <sup>1</sup>	U.S. Patent Document Number/Kind Code		Name of Patentee or Applicant of Cited Document	Date of Publication of Cite Document MM-DD-YYYY	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear
RL	A	4,104,638	B1	Raymond R. Middleton	08/01/1978	
RL	B	4,706,198	B1	Daniel M. Thurman	11/10/1987	
RL	C	5,067,674	B1	Heyche et al.	11/26/1991	
RL	D	5,111,400	B1	Evan W. Yoder	05/05/1992	
RL	E	5,200,902	B1	Harold R. Pilley	04/06/1993	
RL	F	5,265,024	B1	Crabill et al.	11/23/1993	
RL	G	5,278,891	B1	Bhagat et al.	01/11/1994	
RL	H	5,351,194	B1	Ross et al.	09/27/1994	
RL	I	5,381,140	B1	Kuroda et al.	01/10/1995	
RL	J	5,392,052	B1	Mark A. Eberwine	02/21/1995	
RL	K	5,408,515	B1	Bhagat et al.	04/18/1995	
RL	L	5,440,544	B1	Richard L. Zinser, Jr.	08/08/1995	
RL	M	5,459,469	B1	Schuchman et al.	10/17/1995	
RL	N	5,506,587	B1	Hakan Lans	04/09/1996	
RL	O	5,548,515	B1	Pilley et al.	08/20/1996	
RL	P	5,570,095	B1	Drouilhet, Jr. et al.	10/29/1996	
RL	Q	5,574,468	B1	Harold R. Pilley	11/12/1996	
RL	R	5,627,546	B1	Robert P. Crow	05/06/1997	
RL	S	5,651,050	B1	Bhagat et al.	07/22/1997	
RL	T	5,670,961	B1	Tomita et al.	09/23/1997	
RL	U	5,703,591	B1	Bruce Tognazzini	12/30/1997	
RL	V	5,712,628	B1	Phillips et al.	10/27/1998	
RL	W	5,798,458	B1	David A. Monroe	08/25/1998	
RL	X	5,798,726	B1	Schuchman et al.	08/25/1998	
RL	Y	5,831,575	B1	Xiaogang Gu	11/03/1998	



Substitute for form 1449A/PTO				<b>Complete if Known</b>	
<b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b>  <i>(use several sheets if necessary)</i>				Patent Number	5,974,349
				Date of Patent	10/26/1999
				First Named Inventor	Seymour Levine
				Group Art Unit	3661
				Examiner Name	Gary Chin
Sheet	2	of	2	Attorney Docket Number	57127

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U.S. PATENT DOCUMENTS						
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<i>GC</i>	Z	5,872,526	B1	Bruce Tognazzini	02/16/1999	
<i>GC</i>	AA	5,883,586	B1	Tran et al.	03/16/1999	
<i>GC</i>	AB	5,950,129	B1	Schmid et al.	09/07/1999	
<i>GC</i>	AC	6,009,356	B1	David A. Monroe	12/28/1999	
<i>GC</i>	AD	6,122,570	B1	Muller et al.	09/19/2000	

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		Office <sup>3</sup>	Number <sup>4</sup>	Kind Code <sup>5</sup>				

Examiner Signature	<i>G. CHIN</i>	Date Considered	<i>7-8-03</i>
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			Date of Patent	10/26/1999
			First Named Inventor	Seymour Levine
			Group Art Unit	3661
Examiner Name	Gary Chin			
Sheet 1 of 2	Attorney Docket Number	57127		

Handwritten notes: *6-8-02*, *DPS*, *J0927 U.S. PTO*, *10/26/99*



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				Group Art Unit	3661	
				Examiner Name	Gary Chin	
Sheet	2	of	2	Attorney Docket Number	57127	

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		Office <sup>3</sup>	Number <sup>4</sup>	Kind Code <sup>5</sup>				

Examiner Signature	G. CHIN	Date Considered	7-8-03
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<sup>2</sup> Unique citation designation number. <sup>3</sup> See attached Kinds of U.S. Patents Documents. <sup>4</sup> Enter Office that issued the document, by the two-letter code (WIPO Standard ST.2). <sup>5</sup> For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. <sup>6</sup> Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. <sup>7</sup> Applicant is to place a check mark here if English language Translation is attached.  
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L Number	Hits	Search Text	DB	Time stamp
1	179620	aircraft or airplane	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/07/01 17:25
2	15677	(aircraft or airplane) and (maintenance or diagnosis or diagnostic)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/07/01 17:26
3	200	((aircraft or airplane) and (maintenance or diagnosis or diagnostic)) and (identifier or ID or identity)with (aircraft or airplane)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/07/01 17:29
4	99	((aircraft or airplane) and (maintenance or diagnosis or diagnostic)) and (identifier or ID or identity)with (aircraft or airplane) and (central adj3 station or remote adj3 station or ground adj3 station or base adj3 station)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/07/01 17:33
6	6	((aircraft or airplane) and (maintenance or diagnosis or diagnostic)) and (identifier or ID or identity)with (aircraft or airplane) and (central adj3 station or remote adj3 station or ground adj3 station or base adj3 station) and transmitter ) and flight adj2 recorder	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/07/01 17:36
5	84	((aircraft or airplane) and (maintenance or diagnosis or diagnostic)) and (identifier or ID or identity)with (aircraft or airplane) and (central adj3 station or remote adj3 station or ground adj3 station or base adj3 station) and transmitter	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/07/01 17:54
7	2117	701/14,29-35.ccls.	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/07/01 17:57
8	481	340/945.ccls.	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/07/01 17:57
9	2508	701/14,29-35.ccls. or 340/945.ccls.	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/07/01 17:58
10	507	701/14,29-35.ccls. and (aircraft or airplane)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/07/01 17:58
12	12	((701/14,29-35.ccls. and (aircraft or airplane)) and ((aircraft or airplane) and (maintenance or diagnosis or diagnostic))) and ((aircraft or airplane) and (maintenance or diagnosis or diagnostic)) and (identifier or ID or identity)with (aircraft or airplane)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/07/01 17:59
11	248	(701/14,29-35.ccls. and (aircraft or airplane)) and ((aircraft or airplane) and (maintenance or diagnosis or diagnostic))	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/07/01 18:11

13	308	((701/14,29-35.ccls. or 340/945.ccls.) and ((aircraft or airplane) and (maintenance or diagnosis or diagnostic)))	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/07/01 18:11
14	19	((701/14,29-35.ccls. or 340/945.ccls.) and ((aircraft or airplane) and (maintenance or diagnosis or diagnostic))) and (((aircraft or airplane) and (maintenance or diagnosis or diagnostic)) and (identifier or ID or identity)with (aircraft or airplane))	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/07/01 18:15
15	88	((701/14,29-35.ccls. or 340/945.ccls.) and ((aircraft or airplane) and (maintenance or diagnosis or diagnostic))) and (central adj3 station or remote adj3 station or ground adj3 station or base adj3 station)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/07/01 18:17

# SEARCH REQUEST FORM

Scientific and Technical Information Center

Requester's Full Name: GARY CHIN Examiner #: 59484 Date: 6-11-03  
Art Unit: 3661 Phone Number 305-9751 Serial Number: 10/004429  
Mail Box and Bldg/Room Location: PKS-3A07 Results Format Preferred (circle): PAPER DISK E-MAIL

If more than one search is submitted, please prioritize searches in order of need.

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Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: \_\_\_\_\_

Inventors (please provide full names): \_\_\_\_\_

Earliest Priority Filing Date: \_\_\_\_\_

*\*For Sequence Searches Only\* Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.*

PATENT NO. 5974349

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CAFC	2	Patent cases from Fed. Cir.	DESIGN	4	Full Text Patents from 1843
PTO	2	PATAPP & COMMR	PLANT	4	Full Text Patents from 1931
-----SECONDARY SOURCES-----			USPGP	4	Pre-Grant Pubs. from 3/2001
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*Newsjournals*

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LEVEL 1 OF 1 PATENT

UNITED STATES PATENT AND TRADEMARK OFFICE GRANTED PATENT

5974349

<=1> GET 1st DRAWING SHEET OF 4

October 26, 1999

Remote, aircraft, global, paperless maintenance system

REISSUE: October 25, 2001 - Reissue Application filed Ex. Gp.: 3661; Re. S.N. 10/004,429 (O.G. June 18, 2002)

APPL-NO: 205331 (00)

FILED-DATE: December 4, 1998

GRANTED-DATE: October 26, 1999

CORE TERMS: aircraft, advisory, flight, manufacturer, satellite, module, crash, world wide, recorder, sensor ...

Your search request has found no CASES.

To edit the above request, use the arrow keys. Be sure to move the cursor to the end of the request before you enter it.

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For further explanation, press the H key (for HELP) and then the ENTER key.

1/1 PLUSPAT - ©QUESTEL-ORBIT

**Patent Number :**

US5974349 A 19991026 [US5974349]

**Title :**

(A) Remote, aircraft, global, paperless maintenance system

**Inventor(s) :**

(A) LEVINE SEYMOUR (US)

**Application Nbr :**

US20533198 19981204 [1998US-0205331]

**Filing Details :**

Cont. of US768313 19961217 [1996US-0768313]

Continuation of: US5890079

**Priority Details :**

US20533198 19981204 [1998US-0205331]

US76831396 19961217 [1996US-0768313]

**Intl Patent Class :**

(A) G06F-019/00

**EPO ECLA Class :**

B64F-005/00

G01S-005/00R1A

H04B-007/185B

**US Patent Class :**

ORIGINAL (O) : 701029000; CROSS-REFERENCE (X) : 340945000 701014000 701035000

**Document Type :**

Basic

**Citations :**

US4729102; US5153836; US5325302; US5383133; US5463656; US5467274; US5493309; US565700  
US5714948; US5740047; US5890079

**Publication Stage :**

(A) United States patent

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1/1 LGST - ©LEGSTAT

**Patent Number :**

US 5974349 [US5974349]

**Application Details :**

US 205331/98 19981204 [1998US-0205331]

**Document Type :**

US-P

**Action Taken :**

19981204 US/AE-A  
APPLICATION DATA (PATENT)  
US 205331/98 19981204 [1998US-0205331]

19991026 US/A  
PATENT

20020618 US/RF  
REISSUE APPLICATION FILED  
20011025

**Update Code :**

2002-26

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*1/1 CRXX - ©CLAIMS/RRX*

**Patent Number :**

5,974,349 A 19991026 [US5974349]

**Patent Assignee :**

Levine, Seymour

**Actions :**

20011025 REISSUE REQUESTED  
ISSUE DATE OF O.G.: 20020618  
REISSUE REQUEST NUMBER: 10/004429  
EXAMINATION GROUP RESPONSIBLE FOR REISSUEPROCESS: 3661

Reissue Patent Number:

Query/Command : ..st

to hear from you again soon.

/39/1

DIALOG(R) File 345:Inpadoc/Fam. & Legal Stat  
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14155273

Basic Patent (No,Kind,Date): GB 9726091 A0 19980211 <No. of Patents: 007>

Patent Family:

Patent No	Kind	Date	Applic No	Kind	Date	
FR 2757331	A1	19980619	FR 9715885	A	19971215	
FR 2757331	B1	20010518	FR 9715885	A	19971215	
GB 9726091	A0	19980211	GB 9726091	A	19971211	(BASIC)
GB 2321889	A1	19980812	GB 9726091	A	19971211	
GB 2321889	B2	20001213	GB 9726091	A	19971211	
US 5890079	A	19990330	US 768313	A	19961217	
US 5974349	A	19991026	US 205331	A	19981204	

Priority Data (No,Kind,Date):

US 768313 A 19961217  
US 205331 A 19981204  
US 768313 A1 19961217

PATENT FAMILY:

FRANCE (FR)

Patent (No,Kind,Date): FR 2757331 A1 19980619

SYSTEME ET PROCEDE POUR COLLECTER DES DONNEES RELATIVES A UN AVION ET  
POUR TRANSMETTRE DES CONSEILS (French)

Patent Assignee: SEYMOUR LEVINE (US)

Priority (No,Kind,Date): US 768313 A 19961217

Applic (No,Kind,Date): FR 9715885 A 19971215

IPC: \* H04B-007/26

Derwent WPI Acc No: \* G 98-350467; G 98-350467

Language of Document: French

Patent (No,Kind,Date): FR 2757331 B1 20010518

SYSTEME ET PROCEDE POUR COLLECTER DES DONNEES RELATIVES A UN AVION ET  
POUR TRANSMETTRE DES CONSEILS (French)

Patent Assignee: SEYMOUR LEVINE (US)

Priority (No,Kind,Date): US 768313 A 19961217

Applic (No,Kind,Date): FR 9715885 A 19971215

IPC: \* H04B-007/26

Derwent WPI Acc No: \* G 98-350467

Language of Document: French

FRANCE (FR)

Legal Status (No,Type,Date,Code,Text):

FR 9715885	AN	19980619	FR AGA	FIRST PUBLICATION OF APPLICATION (DELIVRANCE (PREM. PUB. DEMANDE DE BREVET))
FR 9715885	AN	20010518	FR AGA	SECOND PUBLICATION OF PATENT (DELIVRANCE (DEUX. PUB. BREVET))
FR 2757331	PN	19961217	FR AA	PRIORITY (PATENT) (PRIORITE (BREVET))
FR 2757331	PN	19971215	FR AE	APPLICATION DATE (DATE DE LA DEMANDE)
			FR 9715885	A 19971215

GREAT BRITAIN (GB)

Patent (No,Kind,Date): GB 9726091 A0 19980211

REMOTE AIRCRAFT FLIGHT RECORDER AND ADVISORY SYSTEM (English)

Patent Assignee: LEVINE SEYMOUR

Priority (No,Kind,Date): US 768313 A 19961217

Applic (No,Kind,Date): GB 9726091 A 19971211

Derwent WPI Acc No: \* G 98-350467

Language of Document: English

Karen Lehman EIC 3600 June 13, 2003

BOEING  
Ex. 1004, p. 283

Patent (No,Kind,Date): GB 2321889 A1 19980812  
 REMOTE AIRCRAFT FLIGHT RECORDER AND ADVISORY SYSTEM (English)  
 Patent Assignee: LEVINE SEYMOUR (US)  
 Author (Inventor): LEVINE SEYMOUR  
 Priority (No,Kind,Date): US 768313 A 19961217  
 Applic (No,Kind,Date): GB 9726091 A 19971211  
 National Class: \* B7W WRA WRA; B7W WRE WRE; B7W WRHB WRHB; B7W WRHC  
 WRHC; B7W WRHE WRHE; B7W WRHX WRHX; B7W WRX WRX  
 IPC: \* B64D-043/00; B64D-045/00; B64D-047/00; G08G-005/00  
 Derwent WPI Acc No: \* G 98-350467  
 Language of Document: English

Patent (No,Kind,Date): GB 2321889 B2 20001213  
 REMOTE AIRCRAFT FLIGHT RECORDER AND ADVISORY SYSTEM (English)  
 Patent Assignee: LEVINE SEYMOUR (US)  
 Author (Inventor): LEVINE SEYMOUR (US)  
 Priority (No,Kind,Date): US 768313 A 19961217  
 Applic (No,Kind,Date): GB 9726091 A 19971211  
 National Class: \* B7W WRA WRA; B7W WRE WRE; B7W WRHB WRHB; B7W WRHC  
 WRHC; B7W WRHE WRHE; B7W WRHX WRHX; B7W WRX WRX  
 IPC: \* B64D-043/00; B64D-045/00; B64D-047/00; G08G-005/00  
 Derwent WPI Acc No: \* G 98-350467  
 Language of Document: English

GREAT BRITAIN (GB)

Legal Status (No,Type,Date,Code,Text):  
 GB 2321889 P 19961217 GB AA PRIORITY (PATENT)  
 US 768313 A 19961217  
 GB 2321889 P 19971211 GB AE APPLICATION DATA (APPL.  
 DATA)  
 GB 9726091 A 19971211  
 GB 2321889 P 19980812 GB A1 APPLICATION PUBLISHED  
 (APPL. PUBLISHED)  
 GB 2321889 P 20001213 GB B2 PATENT GRANTED

UNITED STATES OF AMERICA (US)

Patent (No,Kind,Date): US 5890079 A 19990330  
 REMOTE AIRCRAFT FLIGHT RECORDER AND ADVISORY SYSTEM (English)  
 Patent Assignee: LEVINE SEYMOUR (US)  
 Author (Inventor): LEVINE SEYMOUR (US)  
 Priority (No,Kind,Date): US 768313 A 19961217  
 Applic (No,Kind,Date): US 768313 A 19961217  
 National Class: \* 701014000; 701029000; 701035000; 701301000;  
 701120000; 340961000; 342036000  
 IPC: \* G06F-165/00  
 Derwent WPI Acc No: \* G 98-350467  
 Language of Document: English

Patent (No,Kind,Date): US 5974349 A 19991026  
 REMOTE, AIRCRAFT, GLOBAL, PAPERLESS MAINTENANCE SYSTEM (English)  
 Patent Assignee: LEVINE SEYMOUR (US)  
 Author (Inventor): LEVINE SEYMOUR (US)  
 Priority (No,Kind,Date): US 205331 A 19981204; US 768313 A1  
 19961217  
 Applic (No,Kind,Date): US 205331 A 19981204  
 Addnl Info: 5890079 Patented  
 National Class: \* 701029000; 701014000; 701035000; 340945000  
 IPC: \* G06F-019/00  
 Derwent WPI Acc No: \* G 98-350467  
 Language of Document: English

UNITED STATES OF AMERICA (US)

Legal Status (No,Type,Date,Code,Text):  
 US 5890079 P 19961217 US AE APPLICATION DATA (PATENT).  
 (APPL. DATA (PATENT))  
 US 768313 A 19961217  
 US 5890079 P 19990330 US A PATENT



US 5890079 P 90914 US CC CERTIFICATE OF CORRECTION  
US 5974349 P 19961217 US AA PRIORITY  
US 768313 A1 19961217  
US 5974349 P 19981204 US AE APPLICATION DATA (PATENT)  
(APPL. DATA (PATENT))  
US 205331 A 19981204  
US 5974349 P 19991026 US A PATENT  
US 5974349 P 20020618 US RF REISSUE APPLICATION FILED  
(REISSUE APPL. FILED)  
20011025

Karen Lehman EIC 3600 June 13, 2003



GP 3661

Practitioner's Docket No. 57127

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: Seymour LEVINE

Reissue Application No.: 10/004,429

Group No.: 3661

Filed: 10/25/2002

Examiner: Unknown

Confirmation No.: 8221

For: REMOTE, AIRCRAFT, GLOBAL, PAPERLESS MAINTENANCE SYSTEM

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APR 19 2002

GROUP 3600

Commissioner for Patents  
Washington, D.C. 20231

COMPLETION OF FILING REQUIREMENTS--REISSUE APPLICATION

I. This replies to the Notice to File Missing Parts of Reissue Application (PTO-1533), which was mailed on February 12, 2002.

A copy of the Notice to File Missing Parts of Application--Filing Date Granted (Form PTO-1533) is enclosed.

II. CONSENT OF ASSIGNEE

The undersigned's office contacted the Initial Patent Examination Division upon receipt of the Notice to File Missing Parts of Reissue Application. We spoke with Mr. Haywood and told him that the Declaration

CERTIFICATION UNDER 37 C.F.R. §§ 1.8(a) and 1.10\*  
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Express Mail certification is optional.)

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Signature

Date: April 12 2002

Carol A. Welch

(type or print name of person certifying)

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and Power of Attorney by the Inventor included in the reissue application contained the declaration by the inventor that there was no assignee for this application. Mr. Haywood stated that we needed to simply file a statement to that effect in response to the Notice. Enclosed herewith for reference is a copy of the Reissue Application Declaration and Power of Attorney filed October 25, 2001 wherein that statement is contained; and we reaffirm the fact that since there were no assignments in this patent, there was no need to file a statement by an assignee under 37 CFR 3.73(b) and that the declaration by the inventor that the patent had not been assigned was sufficient.

**III. SMALL ENTITY STATUS**

An assertion that this filing is by a small entity was made by paying the basic filing fee as a small entity.

**IV. COMPLETION FEES**

No surcharge fee is deemed necessary based on the above comments.

**V. EXTENSION OF TIME**

The proceedings herein are for a patent application and the provisions of 37 C.F.R. § 1.136 apply.

Applicant believes that no extension of term is required. However, this conditional petition is being made to provide for the possibility that applicant has inadvertently overlooked the need for a petition for extension of time.

**VI. AUTHORIZATION TO CHARGE ADDITIONAL FEES**

The Office is hereby authorized to charge the following additional fees that may be required by this paper and during the pendency of this application to Account No. 06-0540.

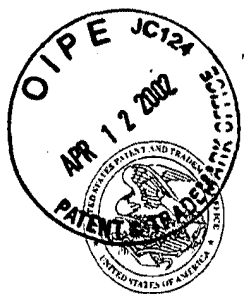
- 37 C.F.R. Section 1.16(a), (f) or (g) (filing fees)
- 37 C.F.R. Section 1.16(b), (c) and (d) (presentation of extra claims)
- 37 C.F.R. Section 1.16(e) (surcharge for filing the basic filing fee and/or declaration on a date later than the filing date of the application)
- 37 C.F.R. Section 1.17 (application processing fees)
- 37 C.F.R. Section 1.17(a)(1)-(5) (extension fees pursuant to Section 1.136(a))

Date: 9/12/2002

Fred H. Holmes  
Signature of Practitioner

Reg. No.: 43,677  
Tel. No.: 918-599-0621  
Customer No.: 22206

Fred H. Holmes  
FELLERS, SNIDER, BLANKENSHIP,  
BAILEY & TIPPENS, P.C.  
321 South Boston, Suite 800  
Tulsa, OK 74103-3318



## UNITED STATES PATENT AND TRADEMARK OFFICE

COMMISSIONER FOR PATENTS  
 UNITED STATES PATENT AND TRADEMARK OFFICE  
 WASHINGTON, D.C. 20231  
 www.uspto.gov

APPLICATION NUMBER	FILING/RECEIPT DATE	FIRST NAMED APPLICANT	ATTORNEY DOCKET NUMBER
10/004,429	10/25/2001	Seymour Levine	57127

CONFIRMATION NO. 8221

## FORMALITIES LETTER



\*OC000000007465188\*

22206

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 BAILEY & TIPPENS  
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 321 SOUTH BOSTON SUITE 800  
 TULSA, OK 74103-3318

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 APR 1-9 2002  
 GROUP 3600

Date Mailed: 02/12/2002

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*Filing Date Granted*

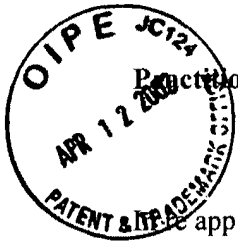
An application number and filing date have been accorded to this reissue application. The item(s) indicated below, however, are missing. Applicant is given **TWO MONTHS** from the date of this Notice within which to file all required items and pay any fees required below to avoid abandonment. Extensions of time may be obtained by filing a petition accompanied by the extension fee under the provisions of 37 CFR 1.136(a).

- Assignee's statement under 37 CFR 3.73(b) establishing ownership of the patent is missing. 37 CFR 1.172 requires that all assignees consenting to the reissue application establish their ownership interest in the patent by filing in the reissue application a statement in accordance with 37 CFR 3.73(b).

*A copy of this notice **MUST** be returned with the reply.*

Customer Service Center  
 Initial Patent Examination Division (703) 308-1202

PART 2 - COPY TO BE RETURNED WITH RESPONSE



Patent Application's Docket No. 57127

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Reissue application of: Seymour LEVINE

Reissue Application No.: 10/004,429  
Filed: 10/25/2002  
Confirmation No.: 8221  
For: REMOTE, AIRCRAFT, GLOBAL, PAPERLESS MAINTENANCE SYSTEM

Group No.: 3661  
Examiner: Unknown

RECEIVED  
APR 19 2002  
GROUP 3600

Commissioner for Patents  
Washington, D.C. 20231

COMPLETION OF FILING REQUIREMENTS  
— NON-PROVISIONAL APPLICATION

I. This replies to the Notice to File Missing Parts of Nonprovisional Application (PTO-1533), which was mailed on February 12, 2002.

A copy of the Notice to File Missing Parts of Application--Filing Date Granted (Form PTO-1533) is enclosed.

II. CONSENT OF ASSIGNEE

The undersigned's office contacted the Initial Patent Examination Division upon receipt of the Notice to File Missing Parts of Nonprovisional Application. We spoke with Mr. Haywood and told him that the Declaration and Power of Attorney by the Inventor included in the reissue application contained the

CERTIFICATION UNDER 37 C.F.R. §§ 1.8(a) and 1.10\*  
(When using Express Mail, the Express Mail label number is mandatory;  
Express Mail certification is optional.)

I hereby certify that, on the date shown below, this correspondence is being:

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- deposited with the United States Postal Service in an envelope addressed to the Assistant Commissioner for Patents, Washington D.C. 20231  
37 C.F.R. § 1.8(a) 37 C.F.R. § 1.10\*
- with sufficient postage as first class mail.  as "Express Mail Post Office to Addressee"  
Mailing Label No. EL923831981US (mandatory).

TRANSMISSION

- facsimile transmitted to the Patent and Trademark Office, (703) \_\_\_\_\_ - \_\_\_\_\_

*Carol A. Welch*

Signature

Date: April 12, 2002

Carol A. Welch  
(type or print name of person certifying)

\* Only the date of filing (§ 1.6) will be the date used in a patent term adjustment calculation, although the date on any certificate of mailing or transmission under § 1.8 continues to be taken into account in determining timeliness. See § 1.703(f). Consider "Express Mail Post Office to Addressee" (§ 1.10) or facsimile transmission (§ 1.6(d)) for the reply to be accorded the earliest possible filing date for patent term adjustment calculations.

declaration by the inventor that there was no assignee for this application. Mr. Haywood stated that we needed to simply file a statement to that effect in response to the Notice. Enclosed herewith for reference is a copy of the Reissue Application Declaration and Power of Attorney filed October 25, 2001 wherein that statement is contained; and we reaffirm the fact that since there were no assignments in this patent, there was no need to file a statement by an assignee under 37 CFR 3.73(b) and that the declaration by the inventor that the patent had not been assigned was sufficient.

**III. SMALL ENTITY STATUS**

An assertion that this filing is by a small entity was made by paying the basic filing fee as a small entity.

**IV. COMPLETION FEES**

No surcharge fee is deemed necessary based on the above comments.

**V. EXTENSION OF TIME**

The proceedings herein are for a patent application and the provisions of 37 C.F.R. § 1.136 apply.

Applicant believes that no extension of term is required. However, this conditional petition is being made to provide for the possibility that applicant has inadvertently overlooked the need for a petition for extension of time.

**VI. AUTHORIZATION TO CHARGE ADDITIONAL FEES**

The Office is hereby authorized to charge the following additional fees that may be required by this paper and during the pendency of this application to Account No. 06-0540.

- 37 C.F.R. Section 1.16(a), (f) or (g) (filing fees)
- 37 C.F.R. Section 1.16(b), (c) and (d) (presentation of extra claims)
- 37 C.F.R. Section 1.16(e) (surcharge for filing the basic filing fee and/or declaration on a date later than the filing date of the application)
- 37 C.F.R. Section 1.17 (application processing fees)
- 37 C.F.R. Section 1.17(a)(1)-(5) (extension fees pursuant to Section 1.136(a))

Date: 4/12/2002

Fred H. Holmes  
Signature of Practitioner

Reg. No.: 43,677  
Tel. No.: 918-599-0621  
Customer No.: 22206

Fred H. Holmes  
FELLERS, SNIDER, BLANKENSHIP,  
BAILEY & TIPPENS, P.C.  
321 South Boston, Suite 800  
Tulsa, OK 74103-3318

145317.1



UNITED STATES DEPARTMENT OF COMMERCE  
 Patent and Trademark Office  
 ASSISTANT SECRETARY OF COMMERCE AND  
 OWNER OF PATENTS AND TRADEMARKS  
 Washington, D.C. 20231

APPLICATION NUMBER	FILING/RECEIPT DATE	FIRST NAMED APPLICANT	ATTORNEY DOCKET NUMBER
10/004,429	10/25/2001	Seymour Levine	57127

22206  
 FELLERS SNIDER BLANKENSHIP  
 BAILEY & TIPPENS  
 THE KENNEDY BUILDING  
 321 SOUTH BOSTON SUITE 800  
 TULSA, OK 74103-3318

Date Mailed: 02/12/2002

**NOTICE TO FILE MISSING PARTS OF NONPROVISIONAL APPLICATION**

**FILED UNDER 37 CFR 1.53(b)**

*Filing Date Granted*

An application number and filing date have been accorded to this application. The item(s) indicated below, however, are missing. Applicant is given **TWO MONTHS** from the date of this Notice within which to file all required items and pay any fees required below to avoid abandonment. Extensions of time may be obtained by filing a petition accompanied by the extension fee under the provisions of 37 CFR 1.136(a).

Correction of the following is required to complete the reissue application:

The reissue specification has not been provided in double-column format as is required by 37 CFR 1.173(a)(1). A surcharge is not required when supplying this item.

Consent of the assignee is missing. 37 CFR 1.172 requires that the reissue oath/declaration be accompanied by the written consent of all assignees. Until this item is supplied, the oath/declaration remains defective; thus, **payment of the surcharge (\$130 for large entity; \$65 for small entity) under 37 CFR 1.53(f) and 37 CFR 1.16(e) is required in addition to the supplying of this item. See MPEP § 1410.01.**

Consent of the assignee is present, but is unsigned. A statement of consent bearing the signature of an official authorized to act on behalf of the assignee(s) must be provided, to comply with 37 CFR 1.172. Until this item is supplied, the oath/declaration remains defective; thus, **payment of the surcharge (\$130 for large entity; \$65 for small entity) under 37 CFR 1.53(f) and 37 CFR 1.16(e) is required in addition to the supplying of this item. See MPEP § 1410.01.**

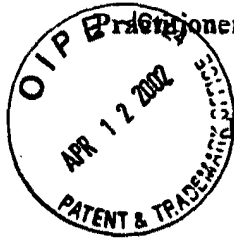
Assignee's statement under 37 CFR 3.73(b) establishing ownership of the patent is missing. 37 CFR 1.172 requires that all assignees consenting to the reissue establish their ownership interest in the patent by filing in the reissue application a statement in accordance with 37 CFR 3.73(b). See MPEP § 324. Until this item is supplied, the oath/declaration remains defective; thus, **payment of the surcharge (\$130 for large entity; \$65 for small entity) under 37 CFR 1.53(f) and 37 CFR 1.16(e) is required in addition to the supplying of this item. See MPEP § 1410.01.**

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*A copy of this notice **MUST** be returned with the reply.*

*C. M. Hayward*

Office of Initial Patent Examination (703) 308-0910



Inventor's Docket No. 57127

PATENT

REISSUE APPLICATION DECLARATION AND POWER OF ATTORNEY

DECLARATION BY THE INVENTOR

RECEIVED  
APR 19 2002  
GROUP 3600

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name, I believe I am the original, first and sole inventor of the subject matter that is described and claimed in letters patent number 5,974,349, granted on October 26, 1999, and for which invention I solicit a reissue patent on the invention entitled REMOTE, AIRCRAFT, GLOBAL, PAPERLESS MAINTENANCE SYSTEM, the specification of which is attached hereto

I hereby declare that there is no assignee for this application.

ACKNOWLEDGMENT OF REVIEW OF PAPERS AND DUTY OF CANDOR  
(37 C.F.R. Section 1.175)

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information that is material to patentability as defined in Title 37, Code of Federal Regulations, Section 1.56.

In compliance with this duty, there is attached an information disclosure statement in accordance with 37 C.F.R. Section 1.98.

PRIORITY CLAIM

I do not claim foreign priority benefits under Title 35, United States Code, Section 119 of any foreign application(s) for patent. No such applications have been filed.

STATEMENT OF INOPERATIVENESS  
OR INVALIDITY OF ORIGINAL PATENT  
(37 C.F.R. Section 1.175)

That I verily believe the original patent to be partly inoperative or invalid by reason of (37 C.F.R. Section 1.175(a)(1)):

- the patentee claiming more or less than the patentee had a right to claim in the patent.



At least one error upon which reissue is based is described below. If the reissue is a broadening reissue, such must be stated with an explanation as to the nature of broadening:

Claim 1 is partially inoperative because the claim is drawn too narrowly, for example, "an aircraft manufacturer's database means for providing aircraft data and maintenance information" is an unnecessary limitation. New claims have been drawn to eliminate this requirement.

That the error listed above, which are being corrected, up to the time of the filing of this reissue declaration arose without any deceptive intention on the part of the applicant. (37 C.F.R. Section 1.175(a)(2)).

**POWER OF ATTORNEY**

I hereby appoint the following practitioner(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith:

Fred H. Holmes	43,677
Dennis D. Brown	33,559
Terry L. Watt	42,214
R. Alan Weeks	36,050
Scott R. Zingerman	35,422

I hereby appoint the practitioner(s) associated with the Customer Number provided below to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith.

*Raymond Zenni*

(310) 559-2965

SEND CORRESPONDENCE TO

DIRECT TELEPHONE CALLS TO:

Address: Fred H. Holmes  
FELLERS, SNIDER, BLANKENSHIP,  
BAILEY, & TIPPENS, P.C  
321 South Boston, Suite 800  
Tulsa, OK 74103-3318

918-599-0621

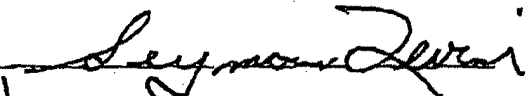
Customer No.: 22206

**DECLARATION**

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

**SIGNATURE BY THE INVENTOR**

Full name of sole or first inventor: SEYMOUR LEVINE

Inventor's signature: 

Date: 10-24-01

Country of Citizenship: US

Residence: Culver City, CA

Post Office Address: 4928 Maytime Lane  
Culver City, CA 92030



UNITED STATES PATENT AND TRADEMARK OFFICE

COMMISSIONER FOR PATENTS  
 UNITED STATES PATENT AND TRADEMARK OFFICE  
 WASHINGTON, D.C. 20231  
 www.uspto.gov

APPLICATION NUMBER	FILING/RECEIPT DATE	FIRST NAMED APPLICANT	ATTORNEY DOCKET NUMBER
10/004,429	10/25/2001	Seymour Levine	57127

CONFIRMATION NO. 8221

22206  
 FELLERS SNIDER BLANKENSHIP  
 BAILEY & TIPPENS  
 THE KENNEDY BUILDING  
 321 SOUTH BOSTON SUITE 800  
 TULSA, OK 74103-3318

FORMALITIES LETTER



\*OC000000007465188\*

Date Mailed: 02/12/2002

**NOTICE TO FILE MISSING PARTS OF REISSUE APPLICATION**

***Filing Date Granted***

An application number and filing date have been accorded to this reissue application. The item(s) indicated below, however, are missing. Applicant is given **TWO MONTHS** from the date of this Notice within which to file all required items and pay any fees required below to avoid abandonment. Extensions of time may be obtained by filing a petition accompanied by the extension fee under the provisions of 37 CFR 1.136(a).

- Assignee's statement under 37 CFR 3.73(b) establishing ownership of the patent is missing. 37 CFR 1.172 requires that all assignees consenting to the reissue application establish their ownership interest in the patent by filing in the reissue application a statement in accordance with 37 CFR 3.73(b).

*A copy of this notice **MUST** be returned with the reply.*

*C. M. Howell*

Customer Service Center  
 Initial Patent Examination Division (703) 308-1202

PART 3 - OFFICE COPY



UNITED STATES DEPARTMENT OF COMMERCE  
Patent and Trademark Office  
ASSISTANT SECRETARY OF COMMERCE AND  
OWNER OF PATENTS AND TRADEMARKS  
Washington, D.C. 20231

APPLICATION NUMBER	FILING/RECEIPT DATE	FIRST NAMED APPLICANT	ATTORNEY DOCKET NUMBER
10/004,429	10/25/2001	Seymour Levine	57127

22206  
FELLERS SNIDER BLANKENSHIP  
BAILEY & TIPPENS  
THE KENNEDY BUILDING  
321 SOUTH BOSTON SUITE 800  
TULSA, OK 74103-3318

Date Mailed: 02/12/2002

## NOTICE TO FILE MISSING PARTS OF NONPROVISIONAL APPLICATION

FILED UNDER 37 CFR 1.53(b)

*Filing Date Granted*

An application number and filing date have been accorded to this application. The item(s) indicated below, however, are missing. Applicant is given **TWO MONTHS** from the date of this Notice within which to file all required items and pay any fees required below to avoid abandonment. Extensions of time may be obtained by filing a petition accompanied by the extension fee under the provisions of 37 CFR 1.136(a).

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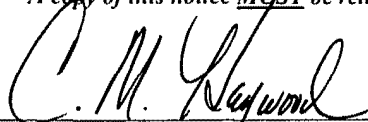
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*A copy of this notice **MUST** be returned with the reply.*

  
Office of Initial Patent Examination (703) 308-0910

12-06-01

A/Reissue

Practitioner's Docket No. 57127

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Date: October 25, 2001

Commissioner for Patents  
Washington, D.C. 20231

JC927 U.S. PTO  
10/004429  
10/25/01

REISSUE APPLICATION TRANSMITTAL

Transmitted herewith is the application for reissue of U.S. Utility Patent No. 5,974,349 issued on October 26, 1999.

Inventor: Seymour Levine

Title: REMOTE, AIRCRAFT, GLOBAL, PAPERLESS MAINTENANCE SYSTEM

**CERTIFICATION UNDER 37 C.F.R. § 1.8(a) and 1.10\***  
**(When using Express Mail, the Express Mail label number is mandatory;**  
**Express Mail certification is optional)**

I hereby certify that, on the date shown below, this correspondence is being:

MAILING

- deposited with the United States Postal Service in an envelope addressed to the Assistant Commissioner of Patents, Washington D.C. 20231  
37 CFR 1.8a
- with sufficient postage as first class mail.
- as "Express Mail Post Office to Addressee" Mailing Label  
37 CFR 1.10  
No. EL923831765US

TRANSMISSION

- facsimile transmitted to the Patent and Trademark Office, 703 \_\_\_\_\_

Nancy J. Moore  
Signature

Date: October 25, 2001

Nancy J. Moore  
Type or print name of person certifying

\* Only the date of filing (§ 1.6) will be the date used in a patent term adjustment calculation, although the date on any certificate of mailing or transmission under § 1.8 continues to be taken into account in determining timeliness. See § 1.703(f). Consider "Express Mail Post Office to Addressee" (§ 1.10) or facsimile transmission (§ 1.6(d)) for the reply to be accorded the earliest possible filing date for patent term adjustment calculations.

10/25/01  
1135 U.S. PTO

RECEIVED  
OCT 26 2001

**Enclosed are the following:**

**1. Specification, claim(s) and drawing(s) (37 C.F.R. Section 1.173)**

- (a) 4 pages of specification
- 2 pages of claims
- 1 page of abstract
- (b) No changes in the drawings, upon which the original patent was issued, are to be made. Therefore, in accordance with 37 C.F.R. Section 1.174(a), please find attached, in the size required for original drawings a copy of the printed drawings of the patent.

**2. Declaration and Power of Attorney**

3 pages of declaration and power of attorney

**3. Preliminary Amendment Attached**

**4. Information Disclosure Statement Attached**

Copies of the IDS citation(s) is/are attached.

**5. Basic Filing Fee Calculation (37 C.F.R. Section 1.16(h), (i) and (j))**

CLAIMS AS FILED			
Number Filed	Number Extra	Rate	Basic Fee (37 C.F.R. 1.16(h)) \$740.00
63	60	X \$18.00	\$1,080.00
Total Claims (37 C.F.R. 1.16(j))			
19	16	X \$84.00	\$1,344.00
Independent Claims (37 C.F.R. 1.16(i))			

Filing Fee Calculation

\$3,164.00

**6. Small Entity Status**

Claimed.  
 Not claimed.

Filing Fee Calculation (50% of above) \$1,582.00

**7. Total Fees Due**

Filing Fee	\$1,582.00
<b>Total Fees Due</b>	<b>\$1,582.00</b>

**8. Method Of Payment of Fees**

Enclosed is a check in the amount of \$1,456.00.  
Charge the deposit account of \$96.00.

**9. Authorization To Charge Additional Fees**

The Commissioner is hereby authorized to charge the following additional fees by this paper and during the entire pendency of this application to Account No. 06-0540:

- \* 37 C.F.R. Section 1.16(a), (f) or (g) (filing fees)
- \* 37 C.F.R. Section 1.16(b), (c) and (d) (presentation of extra claims)
- \* 37 C.F.R. Section 1.16(e) (surcharge for filing the basic filing fee and/or declaration on a date later than the filing date of the application)
- \* 37 C.F.R. Section 1.17(a)(1)-(5) (extension fees pursuant to Section 1.136(a))
- \* 37 C.F.R. Section 1.17 (application processing fees)

**10. Credit Deposit Account**

No. 06-0540 for any overpayment.

Date: 10/25/2001

Fred H. Holmes  
Signature of Practitioner

Reg. No.: 43,677  
Tel. No.: 918-599-0621  
Customer No.: 22206

Fred H. Holmes  
FELLERS, SNIDER, BLANKENSHIP,  
BAILEY & TIPPENS, P.C.  
321 South Boston, Suite 800  
Tulsa, OK 74103-3318

124353.1

12-06-01

A/Reissue

Practitioner's Docket No. 57127

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Date: October 25, 2001

Commissioner for Patents  
Washington, D.C. 20231

JC927 U.S. PTO  
10/004429  
10/25/01

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Inventor: Seymour Levine

Title: REMOTE, AIRCRAFT, GLOBAL, PAPERLESS MAINTENANCE SYSTEM

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No. EL923831765US

TRANSMISSION

- facsimile transmitted to the Patent and Trademark Office, 703 \_\_\_\_\_

Nancy J. Moore  
Signature

Date: October 25, 2001

Nancy J. Moore  
Type or print name of person certifying

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10/25/01  
1135 U.S. PTO

RECEIVED  
OCT 26 2001



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- (a) 4 pages of specification
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Filing Fee Calculation			\$3,164.00

**6. Small Entity Status**

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Filing Fee Calculation (50% of above) \$1,582.00

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<b>Total Fees Due</b>	<b>\$1,582.00</b>

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- \* 37 C.F.R. Section 1.16(b), (c) and (d) (presentation of extra claims)
- \* 37 C.F.R. Section 1.16(e) (surcharge for filing the basic filing fee and/or declaration on a date later than the filing date of the application)
- \* 37 C.F.R. Section 1.17(a)(1)-(5) (extension fees pursuant to Section 1.136(a))
- \* 37 C.F.R. Section 1.17 (application processing fees)

**10. Credit Deposit Account**

No. 06-0540 for any overpayment.

Date: 10/25/2001

Fred H. Holmes  
Signature of Practitioner

Reg. No.: 43,677  
Tel. No.: 918-599-0621  
Customer No.: 22206

Fred H. Holmes  
FELLERS, SNIDER, BLANKENSHIP,  
BAILEY & TIPPENS, P.C.  
321 South Boston, Suite 800  
Tulsa, OK 74103-3318

124353.1

## Application Data Sheet

### Application Information

Application Type:: Reissue  
Subject Matter:: Utility  
Suggested Classification::  
Suggested Group Art Unit:: 3661  
CD-ROM or CD-R? None  
Title:: Remote, Aircraft, Global, Paperless Maintenance System  
Attorney Docket Number:: 57127  
Request for Early Publication:: n/a  
Request for Non-Publication:: n/a  
Suggested Drawing Figure:: 4  
Total Drawing Sheets:: 4  
Small Entity:: Yes  
Petition Included:: No  
Secrecy Order in Parent Appl.?: No

### Application Information

Applicant Authority type:: Inventor  
Primary Citizenship Country:: US  
Status:: Full Capacity  
Given Name:: Seymour  
Middle Name::  
Family Name:: Levine  
City of Residence:: Topanga  
Country of Residence:: US

Street of Mailing Address:: 21645 Saddle Peak Rd.  
City of Mailing Address:: Topanga  
State or Province of Mailing Address:: CA  
Postal or Zip Code of Mailing Address:: 90290

### Correspondence Information

Name:: Fred H. Holmes, Esq.  
Street of Mailing Address:: 321 South Boston  
Suite 800  
City of Mailing Address:: Tulsa  
State or Province of Mailing Address:: OK  
Postal or Zip Code of Mailing Address:: 74103-3318  
Telephone:: (918) 599-0621  
Fax:: (918) 583-9659  
Electronic Mail:: fholmes@fellerssnider.com

### Representative Information

Representative Customer Number:	22206
---------------------------------	-------

### Domestic Priority Information

Application::	Continuity Type::	Parent Application::	Parent Filing Date::
This application is	Reissue of	09/205,331	12/04/1998
09/205,331	Continuation of	08/768,313	12/17/1996

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re reissue of: SEYMOUR LEVINE )  
Patent No.: 5,974,349 )  
 )  
Filed: 12/04/1998 )  
For: Remote, Aircraft, Global, )  
Paperless Maintenance System )  
Group No.: 3661 )  
Examiner: Gary Chin )

**Box Reissue  
Commissioner for Patents  
Washington, D.C. 20231**

**PRELIMINARY AMENDMENT**

Dear Sir:

Please amend the above-identified reissue application as follows:

In the Claims:

Please add new claims 4 - 63 as follows:.

- 1           4.    An aircraft maintenance system comprising:  
2                    a transmitter portable to be placed on an aircraft, said transmitter  
3                            configured for transmission of digital performance data across a  
4                            communication network; and

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99

1 a central station connected to said communication network configured to  
2 receive and analyze said transmission of digital performance data,  
3 wherein said digital data includes an identifier unique to a particular  
4 aircraft.

1 5. The aircraft maintenance system of claim 4 wherein said transmitter is  
2 positionable on an aircraft having a flight data recorder and at least a portion of said  
3 digital performance data comprises data directed to said flight data recorder.

1 6. The aircraft maintenance system of claim 4 further comprising:  
2 a sensor multiplexer located on said aircraft, said sensor  
3 multiplexer having a plurality of inputs for receiving aircraft performance  
4 and control parameters from existing aircraft sensors, and an output in  
5 communication with said transmitter for providing said digital  
6 performance data to said transmitter.

1 7. The aircraft maintenance system of claim 4 wherein said digital  
2 performance data further includes digitized audio information.

1           8.     The aircraft maintenance system of claim 4 wherein said digital  
2 performance data further includes digitized video information.

1           9.     The aircraft maintenance system of claim 5 wherein said digital  
2 performance data includes aircraft position data directed to said flight data recorder.

1           10.    The aircraft maintenance system of claim 9 wherein information provided  
2 by a GPS receiver is used in the calculation of said aircraft position data.

1           11.    The aircraft maintenance system of claim 10 wherein information provided  
2 by an inertial navigation system is used in the calculation of said aircraft position data.

1           12.    The aircraft maintenance system of claim 4, wherein said central station is  
2 further configured to transmit digital data on said communication network, further  
3 comprising:

4                   a receiver on said aircraft configured to receive digital data from said

5                               communication network; and

6                   a maintenance communication means, located on said aircraft, for

7 providing maintenance advice to maintenance personnel, said  
8 maintenance communication means having an input for receiving  
9 said maintenance advice from said receiver,  
10 wherein said maintenance advice is transmitted from said central station to  
11 said receiver.

1 13. The aircraft maintenance system of claim 12 wherein said maintenance  
2 advice is provides aurally to said maintenance personnel.

1 14. The aircraft maintenance system of claim 8 wherein said central station  
2 includes a storage system for storing said aircraft performance and control parameters.

1 15. An aircraft maintenance system comprising:  
2 a transmitter configured for transmission of data across a communication  
3 network, said transmitter positionable to be located on an aircraft;  
4 a ground based station connected to said communication network  
5 configured to receive said transmission of data; and  
6 a sensor multiplexer located on said aircraft, said sensor multiplexer  
7 having a plurality of inputs for receiving aircraft performance and



8 control parameters from aircraft sensors and an output in  
9 communication with said transmitter for providing said data to said  
10 transmitter;  
11 wherein said digital data further includes an aircraft identifier unique to a  
12 particular aircraft.

1 16. The aircraft maintenance system of claim 15, wherein said ground based  
2 station is further configured to transmit data on said communication network, further  
3 comprising:

4 a receiver located on said aircraft, said receiver configured to receive data  
5 from said communication network; and  
6 a maintenance communication means which receives maintenance  
7 advisory data from said receiver and provides maintenance advice  
8 to maintenance personnel,  
9 wherein said maintenance advice is transmitted from said ground based  
10 station to said receiver.

1 17. The aircraft maintenance system of claim 15 wherein said ground based  
2 station includes a storage system for archiving said aircraft performance and control

3 parameters.

1 18. A method for real-time monitoring and archiving of aircraft performance  
2 data including the steps of:  
3 providing a performance sensor in an aircraft, said performance sensor  
4 having an output indicative of an aircraft performance parameter;  
5 electronically transmitting at least said aircraft performance parameter to a  
6 global communication network;  
7 receiving said aircraft performance parameter from said global  
8 communication network at a ground based station; and  
9 archiving said aircraft performance parameter at said ground based station.

1 19. A method for determining whether to issue an aircraft maintenance  
2 advisory according to claim 18 including the steps of:  
3 performing the method of claim 18;  
4 analyzing said performance parameter;  
5 transmitting an aircraft maintenance advisory when the analysis of said  
6 performance parameter indicates an aircraft problem;  
7 receiving said maintenance advisory on said aircraft; and

8 displaying said maintenance advisory on said aircraft.

1 20. An in-flight advisory system comprising:  
2 a transmitter for transmitting an advisory to an aircraft in a digital form;  
3 a receiver located in said aircraft configured to receive said digital form of  
4 said advisory; and  
5 a display means for displaying said advisory in said aircraft,  
6 wherein said advisory includes an identifier exclusive to said aircraft.

1 21. The in-flight advisory system of claim 20 wherein said advisory  
2 comprises information selected from the group consisting of:  
3 (a) weather information;  
4 (h) air traffic control information; and  
5 (i) area traffic data.

1 22. An in-flight advisory system comprising:  
2 a transmitter for transmitting an advisory to an aircraft in a digital form;  
3 a receiver located in said aircraft configured to receive said digital form of  
4 said advisory; and

5 a display means for displaying said advisory in said aircraft,  
6 wherein said advisory comprises information selected from the group

7 consisting of:

- 8 (a) flight separation information;  
9 (b) topographical information;  
10 (c) wind shear information;  
11 (d) lightning information;  
12 (e) emergency information;  
13 (f) crash avoidance information;  
14 (g) information from the manufacturer of said aircraft;  
15 (h) air traffic information;  
16 (i) area traffic information;  
17 (j) safe to take off information; and  
18 (k) safe to fly information.

- 1 23. An in-flight advisory system comprising:  
2 a transmitter for transmitting an advisory via a global communication  
3 network;  
4 a receiver located in said aircraft configured to receive said advisory; and

5 a display means for displaying said advisory in said aircraft.

1 24. A digital data communication system for an aircraft comprising:  
2 a transceiver located on the aircraft, said transceiver configured to transmit  
3 and receive digital data to and from a global communication  
4 network; and  
5 a central station configured to transmit and receive digital data to and from  
6 said global communication network,  
7 wherein a transmission by an aircraft on said global communication  
8 network includes an identifier, said identifier being unique to a  
9 particular aircraft.

1 25. The digital data communication system of claim 24 further comprising:  
2 a sensor multiplexer having a plurality of inputs for receiving information  
3 from a plurality of aircraft sensors, said information including the  
4 position and heading of said aircraft, and an output for digitally  
5 communicating said information to said transceiver for  
6 transmission via said global communication network.

1           26.    The digital data communication system of claim 25 wherein said plurality  
2 of aircraft sensors includes a GPS receiver.

1           27.    The digital data communication system of claim 25 wherein said plurality  
2 of aircraft sensors includes an acoustic sensor for receiving audible information.

1           28.    The digital data communication system of claim 24 further comprising a  
2 display means on said aircraft, said display means configured to display information  
3 encoded in said digital data received by said transceiver.

1           29.    The digital data communication system of claim 24 wherein said central  
2 station includes data storage and at least a portion of said digital data transmitted from  
3 said aircraft is stored in said data storage.

1           30.    The digital data communication system of claim 29 wherein said portion  
2 of said digital data includes data selected from the group consisting of:

- 3                   (a)    airspeed of the aircraft;  
4                   (b)    aircraft attitude;  
5                   (c)    fuel status of the aircraft;

- 6 (d) engine status of the aircraft;
- 7 (e) flight control positions;
- 8 (f) landing gear status; and
- 9 (g) control surface positions.

1 31. The digital data communication system of claim 30 wherein said portion  
2 of said digital data is analyzed at said central station to determine if a flight safety  
3 advisory or a maintenance advisory is warranted.

1 32. The digital data communication system of claim 31 further comprising a  
2 display means on said aircraft, wherein said central station transmits said flight safety  
3 advisory or said maintenance advisory to said transceiver and said display means is  
4 configured to display said flight safety advisory or said maintenance advisory.

1 33. A digital data communication system for an aircraft comprising a receiver  
2 configured to receive a transmission from a central station, said transmission being  
3 relayed to said receiver by way of a satellite and said transmission comprising digitally  
4 encoded information, wherein said digitally encoded information includes an identifier  
5 unique to a particular aircraft.

1           34.    The digital data communication system of claim 33 wherein said digitally  
2 encoded information includes weather information.

1           35.    The digital data communication system of claim 33 wherein said digitally  
2 encoded information includes maintenance advisory information.

1           36.    A telemetric crash data recorder comprising:  
2           a sensor multiplexer receiver and transmitter; and  
3           a central ground based station having a data storage device,  
4           wherein said sensor multiplexer receiver and transmitter receives aircraft  
5           performance and control parameters from existing sensors on an  
6           aircraft and transmits said performance and control parameters to  
7           said central ground based station over a world wide  
8           communication system for storage in said data storage device.

1           37.    The telemetric crash data recorder of claim 36 further comprising:  
2           a GPS receiver in communication with said sensor multiplexer receiver  
3           and transmitter such that a position of said aircraft is transmitted to



4                                   said central ground based station.

1                   38.     The telemetric crash data recorder of claim 37 wherein said central ground  
2                   station includes a processor for analyzing performance and control parameters and said  
3                   aircraft position such that, in the event of a crash, said processor will calculate a crash  
4                   site.

1                   39.     The telemetric crash data recorder of claim 37 wherein said performance  
2                   and control parameters comprise information recorded by an on board flight data  
3                   recorder.

1                   40.     An air traffic control system comprising:  
2                   a radio frequency transceiver located on an aircraft, said radio frequency  
3                   transceiver configured to transmit and receive digital information;  
4                   an inertial navigation system located on said aircraft, said inertial  
5                   navigation system providing the position of said aircraft to said  
6                   transceiver; and  
7                   an air traffic control facility configured to receive and display said position  
8                   of said aircraft to an air traffic controller.

1           41.    The air traffic control system of claim 40 further comprising a GPS  
2 receiver, wherein said position of said aircraft is augmented with data from said GPS  
3 receiver.

1           42.    An improved air traffic control system of the type having an air traffic  
2 control facility wherein air traffic controllers observe a radar image of controlled aircraft,  
3 the improvement comprising:

4                   a ground based station comprising:

5                           a receiver for receiving precision navigation information from the  
6   controlled aircraft;

7                           a ground communication system in communication with the air  
8   traffic control facility,

9                   wherein said precision navigation information is transmitted to the air  
10                           traffic control facility over said ground communication system to  
11                           enhance the information provided to the air traffic controllers.

1           43.    The improved air traffic control system of claim 42 wherein said ground  
2 communication system includes a fiber optic link between said ground based station and

3 the air traffic control facility.

1 44. A ground collision avoidance system for an aircraft comprising:  
2 a positioning system for providing an aircraft position;  
3 a transceiver for transmitting said aircraft position and receiving a position  
4 of nearby aircraft;  
5 a display for displaying said position of nearby aircraft relative to said  
6 aircraft position,  
7 wherein each aircraft which transmits an aircraft position has a unique  
8 identifier and said unique identifier is included in each  
9 transmission.

1 45. The ground collision avoidance system of claim 44 wherein said  
2 positioning system comprises an inertial navigation system.

1 46. The ground collision avoidance system of claim 45 wherein said  
2 positioning system further comprises a GPS receiver.

1           47.    The ground collision avoidance system of claim 45 wherein said aircraft  
2 includes a flight data recorder and said positioning system provides data to said flight  
3 data recorder.

1           48.    The ground collision avoidance system of claim 45 wherein said  
2 positioning system further provides an aircraft heading and wherein said transceiver  
3 transmits said aircraft heading.

1           49.    A method for transmitting and receiving aircraft performance and control  
2 parameters comprising:

3                    providing a sensor multiplexer on an aircraft for receiving information  
4                    from aircraft sensors;  
5                    transmitting said information to a communication network with a first  
6                    transceiver aboard said aircraft, said first transceiver configured to  
7                    transmit digital information on said communication network; and  
8                    receiving said digital information at a ground station having a second  
9                    transceiver configured to receive information from said  
10                   communication network.

1           50.    An aircraft having a global digital communication system comprising:  
2                    a transceiver for digital communication over a global communication  
3                    system;  
4                    an in-cockpit display having a display means, said display means receiving  
5                                flight advisory data from said transceiver, and an operator input  
6                                means; and  
7                    a multiplexer for receiving information from aircraft sensors and from said  
8                                in-cockpit display, said multiplexer having an output in  
9                                communication with said transceiver for transmitting said  
10                              information over said global communication network,  
11                    wherein said information comprises aircraft performance and control  
12                              parameters provided to a flight data recorder on board the aircraft.

1           51.    The aircraft of claim 50 wherein said flight advisory data includes at least  
2            one advisory from the group consisting of:

- 3                    (a)    weather advisory;
- 4                    (b)    air traffic advisory;
- 5                    (c)    anti-collision advisory; and

- 6 (d) ground incursion advisory;
- 7 (e) flight information advisory;

1 52. The aircraft of claim 50 wherein said flight advisory information includes  
2 a maintenance advisory wherein said maintenance advisory is transmitted from a ground  
3 station to said transceiver over said communication upon the receipt and analysis of said  
4 information.

- 1 53. A method for avoiding an in-flight collision including the steps of:
- 2 (a) transmitting an identifier from an aircraft, said identifier being  
3 unique to said aircraft;
  - 4 (b) transmitting the position of said aircraft wherein said position of  
5 said aircraft includes a heading of said aircraft;
  - 6 (c) receiving said identifier and said position at a central station;
  - 7 (d) analyzing said position of said aircraft relative to other objects and  
8 the ground to determine a risk of collision;
  - 9 (e) sending a flight safety advisory to said aircraft when said analysis  
10 indicates there is a risk of collision.

1           54.    The method of claim 53 wherein the position of step (b) further includes:  
2                    the altitude of said aircraft;  
3                    the latitude of said aircraft;  
4                    the longitude of said aircraft; and

1           55.    The method of claim 54 wherein the position of step (b) further includes:  
2                    the pitch position of said aircraft; and  
3                    the roll position of said aircraft.

1           56.    The method of claim 55 wherein the position of step (b) further includes;  
2                    the rate of climb of said aircraft;  
3                    the velocity of said aircraft;  
4                    the yaw rate of said aircraft;  
5                    the pitch rate of said aircraft; and  
6                    the roll rate of said aircraft.

1           57.    The method of claim 53 wherein step (b) includes the substeps of:  
2                    (b)(i) obtaining a position of said aircraft from the inertial reference  
3                            system of said aircraft; and

4 (b)(ii) transmitting said position of said aircraft wherein said position of  
5 said aircraft includes a heading of said aircraft.

1 58. The method of claim 57 wherein step (b) includes the substeps of:

2 (b)(i) obtaining a position of said aircraft from the inertial reference  
3 system of said aircraft;

4 (b)(ii) obtaining a position of the flight controls of said aircraft;

5 (b)(iii) transmitting said position of said aircraft and said position of flight  
6 controls of said aircraft wherein said position of said aircraft  
7 includes a heading of said aircraft.

1 59. The method of claim 53 including the additional steps of:

2 (f) receiving said flight safety advisory on said aircraft; and

3 (g) displaying said flight safety advisory to the flight crew of said  
4 aircraft.

1 60. The method of claim 53 wherein step (d) includes the substeps of:

2 (d)(i) calculating a separation distance between said aircraft and a  
3 plurality of other objects; and



4 (d)(ii) analyzing said separation distance and the position of said aircraft  
5 relative to the ground to determine a risk of collision.

1 61. The method of claim 60 further including the steps of:

2 (f) sending said separation distance to said aircraft;

3 (g) displaying said separation distance to the flight crew of said

4 aircraft.

1 62. A safe to take off advisory system comprising:

2 a transceiver located in said aircraft configured to transmit aircraft

3 performance and control parameters and to receive a safe to take

4 off advisory; and

5 a central station for receiving said aircraft performance and control

6 parameters and transmitting said safe to take off advisory to an

7 aircraft based on said performance and control parameters;

8 a display means for displaying said safe to take off advisory in said

9 aircraft,

1           63.    The safe to take off advisory system of claim 62 wherein said central  
2 station obtains weather information and includes said weather information in said  
3 analysis to determine if it safe for said aircraft to take off.

**REMARKS**

This amendment adds claims 4-63 to which the Applicant was entitled at the time of filing of the original application and which are supported by the specification as originally filed. Since this reissue application is filed within two years of the issue date of United States Patent No. 5,974,349, namely October 26, 1999, Applicant may enlarge the scope of the claimed invention pursuant to 35 U.S.C. § 251 which provides:

No reissue patent shall be granted enlarging the scope of the original patent unless applied for within two years from the grant of the original patent.

No additional fee is believed to be due beyond the fee included in the reissue application filed contemporaneously herewith. However, if any fee is made payable by the filing of this paper, please consider this our authorization to charge the deposit account of the undersigned, Deposit Account No. 06-0540.

Respectfully submitted,

10/25/2001  
Date

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THE INFORMATION CONTAINED HEREIN IS UNCLASSIFIED

## REMOTE, AIRCRAFT, GLOBAL, PAPERLESS MAINTENANCE SYSTEM

This application is a continuation of application Ser. No. 08/768,313 filed Dec. 17, 1996 and now allowed as U.S. Pat. No. 5,890,079.

### BACKGROUND OF THE INVENTION

This invention relates to the field of flight recorders and more particularly to automatic, real-time, collection of aircraft data and then transmission of such data to a world wide communication system for subsequent reception, analysis, storage and generation of aircraft flight, safety, fuel efficiency and maintenance advisories at a Central Ground Based Processing Station (CGBS).

Whenever an airplane crashes, authorities are anxious to find the flight data recorder. This is because it may reveal the causes of the crash. It is important to determine the cause because it may result from a problem affecting many flying aircraft. The flight data or crash recorder, sometimes also called a black box, is usually a tape recorder which is capable of recording many channels of information. However, recorders utilizing other storage media, such as compact discs are starting to be used because of their increased storage capacity. Regardless of storage medium used, the information recorded includes various flight parameters, such as engine status, fuel status, airspeed, position, altitude, attitude, control settings, and cockpit acoustic information. The information comes from sensors in the cockpit and at other strategic locations around the airplane. However, the information stored by the data recorder is often discarded shortly after each flight. If all flight data were analyzed in conjunction with weather, air traffic control (ATC) data and map data, they could become a valuable resource for detecting potential problems and improving aircraft design.

Sometimes it is difficult to locate the crashed plane, and, even when the crash site is known, it is sometimes difficult to locate the flight data recorder. The latter is frequently a problem when the airplane crashes in water.

To fulfil their intended purpose, current flight data recorders must be made crash resistant. Consequently, they are constructed of rugged materials which means that they are costly to produce and heavy. Use of a lighter flight data recorder would result in an aircraft cost and weight savings.

Moreover, except for occasional post flight analysis, current, recorded flight data exists in a vacuum. If they were analyzed in conjunction with weather data, manufacturer's data, map data, ATC data and position and altitude data, it would become a much more powerful tool.

In recent years there have been a number of developments in flight data recorders. U.S. Pat. No. 4,729,102 discloses a flight data recorder system which monitors a number of aircraft parameters and compares them to stored information to provide for more efficient aircraft operation and detection of excessive wear. This information is displayed and stored on-board and may be downloaded periodically via a link to a ground readout unit.

U.S. Pat. No. 5,463,656 discloses a system for broadcasting full broadcast quality video to airplanes in flight via satellite relays. The system includes video bandwidth compression, spread spectrum waveform processing and an electronically steered, circular aperture, phased array antenna, that conforms to the surface of the aircraft.

U.S. Pat. No. 5,467,274 discloses a method of recording selected flight data, including GPS data, onto a VTR and

thereafter subjecting the recorded data to a data reduction process on the ground.

U.S. Pat. No. 5,325,302 discloses an aircraft collision warning system which includes a position determining subsystem, a trajectory determining subsystem, a collision predicting subsystem and a warning device.

U.S. Pat. No. 5,383,133 discloses a computerized, integrated, health monitoring and vibration reduction system for a helicopter.

However, none of these developments contemplates long term central storage of all recorded information for archival uses. Also none contemplates real-time radio transmission of aircraft data to a central station. Furthermore, none contemplates combining information from aircraft with global position data, global map data, global weather data, ATC system data and manufacturers' data and providing real-time feedback, in the form of real-time ground and in-flight advisories to aircraft.

What is needed is a flight recorder system that senses many flight parameters and many aircraft operational parameters, and transmits this information along with aircraft identification and cockpit audio and video to a world wide, two-way radio frequency (rf) network. This information could then be monitored and safely recorded at a remote location where it could be analyzed in conjunction with archived data, flight control data, weather data, topological data, global positioning data and manufacturers' data to allow identification of maintenance problems, on-ground safety advisories and in-flight safety advisories. There are three types of in-flight advisories: emergency or safety of flight, flight efficiency or fuel economy, and flight separation. On the ground there are also three types of advisories: safe to fly, safe to take off and maintenance actions.

In the event of a crash having the recorded data at a remote site would eliminate the need to search for flight data recorders and allow instant analysis of the failure mode. Further, the remotely recorded data would provide the best estimate of where the crashed plane could be found. This estimate would be based on the aircraft's last telemetry of its position, engine and control status, its flight dynamics and ATC radar data (when available). Use of this invention would allow replacement of the current, on-board flight data recorders thus saving costs and weight. Other advantages would be back-up for radar position data, better control of aircraft separation, and improved flight efficiency. Development of a such a system represents a great improvement in the fields of flight data recorder design, aircraft safety and airline efficiency, and satisfies a long felt need of airplane manufacturers, airlines, maintenance personnel and crash investigators.

### SUMMARY OF THE INVENTION

The present invention is a remotely located, aircraft, flight data recorder and advisory system. These functions are achieved by continuously monitoring aircraft sensors such as aircraft position, altitude, speed, control surface settings, engine revolutions per minute, temperatures, stress, and fuel. Then by rf world wide transmission, such as via satellite communication links, these parameters are communicated, along with cockpit audio data, video data, aircraft identification and configuration, to a central ground based monitoring station where they are continually and safely recorded and analyzed. The transmission of the aircraft data via the communication link permits the aircraft performance and cockpit communication data to be memorized in a ground based recorder for after crash analysis without the necessity

of rugged and waterproof monitoring apparatus aboard the aircraft. Also, in the event of a pilot initiated or ground station initiated alert, based on the real-time automated analysis of the aircraft's flight worthiness, a pilot crash avoidance safety advisory can be radioed back to the aircraft that provides the pilot with expert advice as to the safest approach for the operation of the aircraft.

The central ground based monitoring system utilizes the real-time aircraft sensor data, aircraft configuration data and experts familiar with the aircraft in arriving at the best safety advisory. The computational analysis processors used to perform the safety analysis on the ground are not limited by the space and power restrictions that exist aboard the aircraft and thus can provide high fidelity simulation and analysis of the aircraft's problem. In this mode of operation, the central, ground based monitoring site maintains communication, utilizing fiber optic ground or satellite links, with flight controller facilities and with the aircraft manufacturers. It distributes the aircraft sensor data to them in real-time so as to solicit their expert analysis and help in generating the crash avoidance advisories. Real-time analysis of the pre-flight aircraft data along with other data such as weather, airport and its local area map, three dimensional topographical map information, from data bases such as Digital Terrain Elevation Data (DTED), ATC data, wind shear, and aircraft configuration are also used to provide a safe to take off advisory.

In addition to the above, if an aircraft exhibits a mechanical equipment failure prior to take off, the aircraft's sensor monitoring data are also communicated back to the aircraft manufacturer in real-time. The aircraft manufacturer then provides the mechanics with a preferred maintenance advisory based on an expert system for fault isolation that will save both time and money in getting a safe to fly aircraft back in service.

For aircraft that are equipped to receive the satellite constellation Global Positioning System (GPS) or the Global Navigation Satellite System (GLONASS) precision navigation signals, these real-time sensor data of aircraft location are transmitted to the CGBS. This very accurate aircraft position data is utilized to augment the ATC in-flight and airport taxi collision avoidance systems as well as to enhance the all weather landing systems. It provides the air traffic controllers' ground based radar systems with a level of redundancy and enhances the radar systems by providing high fidelity, three dimensional, world wide aircraft separation distances. This eliminates five deficiencies in the current radar ATC systems:

- a. invisibility of small aircraft due to minimal radar cross-section;
- b. distinguishing multiple aircraft flying close to each other because of beam width ambiguity;
- c. beam shadowing problems;
- d. range problems; and
- e. earth curvature problems.

An added economic benefit of utilizing this position data blended with other aircraft sensor information and world wide weather and destination airport traffic data available at the CGBS is to provide the aircraft with a real-time fuel conservation and economy of flight information. The world wide communication up link advisory to the aircraft during flight for fuel conservation and economy of flight operation is based on the blending of the data sources in a ground based digital processor. Thus, for this additional function, there is no need for added equipment to be carried aboard the aircraft. It also allows for simpler, lower cost and lower power ATC radar.

In the event of a crash, the aircraft sensor data stored at the CGBS, which has a record of the operating condition of the aircraft at the time of the crash, provides the best estimate of the downed aircraft's location for timely recovery and potential rescue operations as well as the parameters that may have caused the crash. Furthermore, for operational aircraft experiencing an equipment failure or in a potentially over-congested area of operation, the real-time expert advisories communicated to the aircraft may well prevent the loss of life by giving the pilot the best crash avoidance information. In addition post-flight analysis of aircraft data may provide clues to the cause of a problem so as to prevent its recurrence in the future. Even for operational aircraft experiencing no current faults, the CGBS keeps a record of flight hours accumulated on the airframe and critical parts to assure that routine maintenance is timely performed and that the vehicle does not accumulate excessive stress build-up on flight critical assemblies. The CGBS sends out alerts for maintenance actions.

The system integrates voice, video and instrument data into a single aircraft telemetry system that provides two way, world wide communication with the aircraft, and ground based archival recording of the data. For maintenance actions, it also communicates, via a local computer terminal or visor display to the aircraft ground maintenance personnel, the problem specific, vehicle aircraft manual data that shows how best to service the vehicle. This eliminates much of the paper manuals and assures that the latest aircraft maintenance information is being utilized for repair. It also provides an expert fault isolation system that saves both time and money in getting a safe to fly aircraft back in service.

An appreciation of the other aims and objectives of the present invention and an understanding of it may be achieved by referring to the accompanying drawings and description of a preferred embodiment.

#### BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a block schematic of an aircraft's multiplexed flight sensors, sensor transmitter and advisory receiver according to the invention.

FIG. 2 illustrates worldwide communication via a satellite system and CGBS.

FIG. 3 is a block schematic of the CGBS according to the invention.

FIG. 4 is a block schematic of the Ground Based Distribution System according to the invention.

#### DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

FIG. 1 shows an aircraft 10 equipped with a Sensor Multiplexer Receiver & Transmitter (SMART) 14 which is a line replaceable unit. The aircraft is also equipped with a GPS receiver system 16. The GPS system 16 receives ultra high frequency (uhf) radio signals 36 from several GPS satellites 32 via its GPS antenna 40, calculates the position and altitude of the aircraft 10 and reports this position and altitude data 44 to the SMART 14. The SMART 14 also receives aircraft performance and control data 18, acoustic data 22, and video data 26. The video data 26 comes from cameras which monitor the cockpit, the passenger compartment, and the cargo compartment. SMART 14 periodically samples the sensor signals 18,22,26,44 converts all non-digital sensor signals 18,22,26,44 into digital format, adds a sensor identification label to each signal 18, 22, 26, 44 plus an aircraft identification and configuration label. Then the SMART 14 ultra high frequency radio electroni-

cally modulates the combined data and sends them to the aircraft satellite telemetry antenna 30. It should be noted that, to save weight, one antenna could serve the functions of the GPS antenna 40 and the aircraft satellite telemetry antenna 30. Then this uhf signal is transmitted by the aircraft antenna 30 to an earth orbiting communication satellite 38 that is located in a direct, unobstructed, line of sight with the aircraft 10. In addition to transmitting data, the SMART 14 receives data from the satellite 38. As will be described more fully below, this data is mostly in the form of advisories and alerts. Such advisories and alerts are reported to the crew via an on-board advisory system 72. While the aircraft 10 is on the ground, maintenance advisories can be requested and viewed via a plug-in terminal 76.

FIG. 2 illustrates the communication satellite link 34, 46, 48 between the aircraft 10 and the CGBS 42. It shows SMART 14 equipped aircraft 10 transmitting their sensor data over an uhf radio, unobstructed line of sight, transmission 34 to the closest communication satellite 38. The satellite, world wide communication link then relays the data by line of sight transmission 46 to other communication satellites 38 followed by line of sight transmission 48 to the CGBS 42. The transmission of aircraft advisories from the CGBS 42 to the aircraft 10 is accomplished by communicating along the same path but in the reverse direction. FIG. 2 depicts a continuous, around the clock, world wide communication link 34, 46, 48 that provides two way communication with all of the aircraft 10 equipped with SMART 14 in the Remote Aircraft Flight Recorder And Advisory (RAFT) System 50. The number of satellites 38 in the communication system depends on whether a geosynchronous or low earth orbit (LEO) satellite constellation is utilized. The system will work with either of the satellite constellations. The LEO constellation requires smaller, lighter and lower power equipment but a larger number of satellites.

FIG. 3 is a block diagram of the CGBS 42. It shows the CGBS receiving and transmitting antenna 54, and the antenna control and uhf interface 56 that converts the received satellite signal into an electrical signal. The received signal represents aircraft performance and control 18, audio 22, video 26, and high accuracy position and altitude data 44. These signals are then sent to: the CGBS processing station 62 for data analysis, and performance and problem simulation; the expert system module 64 for crash avoidance simulations; the archive 66 for data storage; the advisory module 70 for generating aircraft advisories; the aircraft manufacturer's module 74 for distribution to the aircraft manufacturer's ground based facilities for expert crash avoidance and maintenance advisories; and the ATC module 78 for distribution to airport and area ATC facilities. Since the CGBS 42 is on the ground its temperature, environment, humidity and air can be readily controlled so that the archive storage of the aircraft's sensor data 18, 22, 26, 44 is very reliable. In addition, the real-time analysis of the data will alert the operational aircraft 10 of problems. In some cases, this may occur prior to the pilot's recognition of a problem. Thus in addition to reducing the equipment aboard the aircraft it can lighten the pilot's work load.

Ground communication can be made over wide band-width, fiber optic cables, satellites or other rf communication links. In the continental United States the wide band-width, fiber optic communication link is preferred. The CGBS 42 acts as communication concentrator and it is through this facility 42 that world wide communication with the aircraft 10 occurs. At this facility 42 weather data is collected from the government weather bureau facilities. The weather data,

map data, DTED and ATC data is also combined with other aircraft operational data 18, 22, 26, 44 to provide: emergency or safety of flight advisories, flight efficiency or fuel economy advisories, and flight separation advisories.

FIG. 2 and 3 show how the closest, unobstructed line-of sight satellite 38 receives the data 18, 22, 26, 44 from aircraft 10 equipped with SMART modules 14. Data travels over the system to the satellite 38 closest to the CGBS 42. This satellite 38 is in line of sight communication with the CGBS 42, which transmits and receives data to and from the CGBS antenna 54. The antenna 54 is controlled by antenna control and uhf interface module 56. The uhf signals 18, 22, 26, 44 are also demodulated and sorted, by aircraft, in this module 56. The data 18, 22, 26, 44 is then sent to the ground processor 62 for analysis.

One function of the ground processor 62 is to send the data 18, 22, 26, 44 to the archival data storage system 66 where it is safely stored in an air conditioned environment, for future retrieval, on magnetic disc or tape, or optical memory. Another function of the processor 62 is to coordinate its data with the aircraft simulation processor 64. This processor 64 performs an expert system analysis based on past performance, i.e. archived, data, aircraft specific stress accumulation statistics and world wide weather and wind shear, DTED and ATC information. Based on this simulation, aircraft real-time advisories are generated by the advisory module 70. Emergency advisories are also based on the aircraft manufacturer's simulations conducted at their facilities and communicated to the CGBS 42 via the wide band-width, fiber optic link 82. The data can be viewed and controlled by the CGBS operators on the display and control system 86. The position, altitude and aircraft velocity data is also sent to the ATC module 78 for real-time transmission to the airport and area flight controllers over the wide band-width, fiber optic communication link 92.

Weather data from weather services are also communicated over this link 92. This data when mixed with the aircraft sensor data 18, 22, 26, 44 at the aircraft simulation module 64 provide world wide safety of flight trajectories, safe to take off and land, and fuel efficiency economy of flight advisories. These advisories are sent to the aircraft 10 over the world wide communication link illustrated in FIG. 2. In addition, world wide advisories are sent to the aircraft 10 by the ATC based on their information for aircraft separation. In a similar manner, the aircraft data 18, 22, 26, 44 is sent to aircraft manufacturer personnel by the communication module 74 over the wide band-width, fiber optic link 82.

Advisories can be sent by the manufacturers providing the best way to handle problems based on their expert knowledge of the aircraft 10. These aid in safely flying the aircraft or efficiently servicing an aircraft that is experiencing equipment malfunctions on the ground. The in-air safety of flight advisories go to the advisory center 70 to be integrated with CGBS and air traffic controller generated information so as to provide a single emergency advisory, based on all of the data. This advisory is sent to the aircraft 10 via the global communication network. For aircraft experiencing problems on the ground, an aircraft manufacturer remotely samples the aircraft's performance and then sends advisories over the network to the aircraft's ground maintenance personnel. These advisories represent the latest diagnostic procedures and problem specific maintenance information. These maintenance advisories are sent to an aircraft maintenance terminal display 76 that interfaces with the SMART communication system 14 on board the aircraft. Thus the maintenance advisory provides efficient, safe and effective repair of the aircraft using the most up-to-date procedures.

FIG. 4 provides greater detail about CGBS 42 communication with the ground based flight control and manufacturing facilities. The CGBS ground processor 62 communicates with the ATC communication module 78. Digital data is communicated serially over a wide band-width, fiber optic link 92 to the air traffic control facilities 100 and the area traffic control facilities 96. There are a large number of civil and military airport and area ATCs in present use. These are indicated 100a to 100n for the airport air traffic controllers and 96a to 96n for the area air traffic controllers. Each of the air traffic controllers 96, 100 can tap the wide band-width, fiber optic communication link 92 for the specific aircraft data of interest to them. The air traffic controllers can also send, to specific or to all SMART 14 equipped aircraft 10 in the world, advisory data over the same communication link.

The CGBS 42 communicates these advisories, via the satellite 38 communication link 48, 46, 34, to the aircraft 10. In a similar fashion the CGBS 42 receives world wide weather data from the weather bureau 104 and world wide map and topographic data from the map 105 and topographic 106 databases. The CGBS 42 then, by its knowledge of the aircraft location, flight plans and operational characteristics, tailors this global weather data to weather data that is specific to each aircraft's area of operation for safety and economy of flight advisories.

Aircraft manufacturing facilities 108 communicate with the CGBS 42 ground processor 62 via the aircraft manufacturer communication module's 74, wide band-width, fiber optic communication link 82. Since there are a number of different aircraft manufacturers they are indicated by reference numbers 108a to 108n. Their concomitant emergency and maintenance advisory facilities are indicated by the reference numbers 116a to 116n. Each manufacturer maintains an historical log of the aircraft 10 in service for configuration, stress, maintenance service and end of life assembly data. The manufacturers also maintain aircraft simulation capability 112 to aid in providing safety of flight advisories to aircraft 10 that are experiencing a problem. The different simulation facilities are shown by the reference numbers 112a to 112n. These advisories occur whether the problem was first surfaced by the in-air aircraft personnel, or by the on the ground monitoring personnel or by simulations at the CGBS 42 or aircraft manufacturer's facility 108.

The CGBS 42 and the aircraft manufacturer's facility 108 check the aircraft operational capability by remotely sampling the aircraft's operational status parameters 18, 22, 26, 44 and using other factors such as weather, ATC information, map, and DTED. The simulations utilize real-time analysis of the vehicle data and past performance to provide expert system advisories. For an aircraft that is experiencing a problem on the ground, the aircraft manufacturer's facilities 108 still sample the operational status of the aircraft's flight critical assemblies via the real-time, world wide, communication link 34, 46, 48. The manufacturer's facility 108 transmits expert system repair advisories to the aircraft's 10 maintenance personnel. These include the latest approved, problem specific, service manual data to efficiently and safely correct the aircraft's problem.

Operation of this invention, Remote Aircraft Flight Recorder and Advisory System, 50 can be summarized as follows. The aircraft 10 is fitted with a SMART module 14, that accepts sensor signals 18 depicting the performance of many of the flight safety critical assemblies. It converts any of the analog sensor data 18 into a digital format. These signals are the same as those that are presently sent to the existing flight crash recorders aboard aircraft which records vital flight information such as air speed, height, attitude,

landing gear status, fuel status as well as the position of the aircraft controls and latitude and longitude, which is gleaned from radio navigation aids and the inertial navigation system (INS), when available. Unlike the existing crash recorder that must be recovered from a crash site to obtain an understanding of the cause of the crash, the system depicted in FIGS. 1-4 has a telemetry system to radio these signals to a world wide communication system and to a final destination known as the CGBS 42.

In addition to the standard flight sensors presently used in existing flight recorders, position and altitude 44 signals from the GPS or GLONASS receivers, acoustical sensors 22 that record cockpit sounds, and video camera data 26 that records the passengers entering the vehicle, the states of the cargo, hull and the cockpit during flight, aircraft identification and latest configuration are also sent to SMART 14 for telemetry to the CGBS 42. The SMART module 14 accepts these signals 18, 22, 26, 44 and then transmits them over the uhf radio link 34, 46, 48. The preferred embodiment of this invention 50 utilizes a global satellite 38 communication system. The SMART module's 14 uhf output is sent to a satellite antenna 30 where the signal is radioed to a satellite 38 that is in a direct line of sight with the aircraft 10. The combined signal is then relayed, either by LEO or a synchronous orbit world wide communication satellite chain, until it is transmitted to the CGBS 42 by the communication satellite 38 that is in a direct line of sight with the CGBS antenna 54.

At the CGBS 42, these signals are archived. Also, aircraft data 18 and signals 22, 26, 44 are distributed, utilizing fiber optic ground or satellite links, to flight controller facilities 100, 96 and to the aircraft manufacturers 108. It distributes the aircraft sensor data 18, 22, 26, 44 to them in real-time so as to solicit their expert analysis and help in generating the advisories. Real-time analysis of the pre-flight aircraft data along with other data such as weather 104, airport and its local area map 105, three dimensional topographical map information 106, from data bases such as Digital Terrain Elevation Data (DTED), ATC data, wind shear, and aircraft configuration are also used in generating advisories.

The SMART 14 also accepts advisory signals sent from the CGBS 42 to the aircraft 10. There are maintenance advisories and three types of in-flight advisories: emergency or safety of flight, flight efficiency or fuel economy, and flight separation. The SMART module 14 receives these signals and sends maintenance advisories to an on-board maintenance communication subsystem. In-flight advisories are sent to the pilot's audio system and to the pilot's warning panel. Thus SMART 14 concentrates the audio, video, digital discrete and sensor signals to minimize the weight, power expended, cost of equipment and uhf radio antennas carried aboard the aircraft.

Large, commercial, passenger aircraft will be fitted with systems 50 capable of monitoring an extensive number of their performance and control signals 18. Small, private aircraft do not need such extensive monitoring and will have systems 50 capable of monitoring only a limited number of performance and control signals 18.

The following reference numerals are used on FIGS. 1-4.

- 10 Aircraft
- 14 Sensor Multiplexer Receiver & Transmitter
- 16 GPS or GLONASS receiver
- 18 Aircraft performance and control data
- 22 Acoustic data
- 26 Video data
- 30 Telemetry antenna

32 GPS or GLONASS satellite  
 34 UHF signal  
 36 GPS or GLONASS uhf signal  
 38 Satellite  
 40 GPS antenna  
 42 Central Ground Based Processing Station  
 44 Position and altitude data  
 46 Inter-satellite uhf communication link  
 48 Satellite/CGBS uhf link  
 50 Remote Aircraft Flight Recorder And Advisory (RAFT) System  
 54 Receiving antenna  
 56 Antenna and uhf interface module  
 62 Processing station  
 64 Simulation module  
 66 Archive module  
 70 Advisories module  
 72 On-board advisory system  
 74 Aircraft manufacturer's communications module  
 76 Plug-in maintenance system input, output and display terminal  
 78 ATC communications module  
 82 Wide band link to aircraft manufacturers  
 86 Display and control system  
 92 Wide band link to ATC system  
 96a-n Air traffic control facilities  
 100a-n Area traffic control facilities  
 104 Global weather bureau  
 105 Map database  
 106 Topographic and Digital Terrain Elevation Data (DTED) database  
 108a-n Aircraft manufacturer's facilities  
 112a-n Aircraft manufacturer's simulation facilities  
 116a-n Aircraft safety advisories modules  
 The remote aircraft flight recorder and advisory system 50 has been described with reference to a particular embodiment. Other modifications and enhancements can be made without departing from the spirit and scope of the claims that follow.

What is claimed is:

1. A global, paperless, aircraft maintenance system comprising:  
 an aircraft performance means for detecting aircraft performance and control parameters;  
 a maintenance communications means, located on board an aircraft, for providing maintenance advice to maintenance personnel;  
 a sensor multiplexer receiver and transmitter means, located on board said aircraft, for:  
 accepting said aircraft performance and control parameters; converting said aircraft performance and control parameters, when necessary, to digital form;  
 adding an aircraft identification and configuration label; converting said aircraft performance and control parameters and said identification and configuration label to an outgoing rf signal and broadcasting said outgoing rf signal; and  
 receiving an incoming rf signal, converting it to a maintenance advisory, and feeding said maintenance advisory to said maintenance communication means;  
 an aircraft manufacturer's database means for providing aircraft data and maintenance information;  
 a central station means, located on the ground, for receiving said outgoing rf signal and converting it to said aircraft performance and control parameters and said aircraft identification and configuration label, and broadcasting said incoming rf signal;

a processing means, connected to said central station means, for:  
 archiving said aircraft performance and control parameters thus creating an archived data database;  
 combining said aircraft performance and control parameters with said aircraft data and said maintenance information;  
 generating said maintenance advisory; and converting said maintenance advisory to said incoming rf signal;  
 a display and control means, connected to said processing means, for displaying operation of said processing means and for allowing operator control of said processing means; and  
 a global rf communications network means for conveying said outgoing signal from said aircraft to said central station means and conveying said incoming rf signal from said central station means to said aircraft.  
 2. A global, paperless, aircraft maintenance system comprising:  
 aircraft sensors which detect aircraft performance and control parameters;  
 means, located on board an aircraft, for providing maintenance advice to maintenance personnel;  
 a sensor multiplexer receiver and transmitter, located on board said aircraft, which:  
 accepts said aircraft performance and control parameters; converts said aircraft performance and control parameters, when necessary, to digital form;  
 adds an aircraft identification and configuration label; converts said aircraft performance and control parameters and said aircraft identification and configuration label to an outgoing rf signal and broadcasts said outgoing rf signal; and  
 receives an incoming rf signal, converts it to a maintenance advisory, feeds said maintenance advisory to said maintenance communication means;  
 an aircraft manufacturer's database for providing aircraft data and maintenance information;  
 a central station, located on the ground, which receives said outgoing rf signal and converts it to said aircraft performance and control parameters and said aircraft identification and configuration label, and broadcasts said incoming rf signal;  
 a processing means, connected to said central station, for:  
 archiving said aircraft performance and control parameters thus creating an archived data database;  
 combining said aircraft performance and control parameters with the archived data, and said aircraft data and maintenance information;  
 generating said maintenance advisory; and  
 converting said maintenance advisory to said incoming rf signal;  
 a display and control subsystem, connected to said processing means, and  
 a global rf communications network which conveys said outgoing signal from said aircraft to said central station and conveys said incoming rf signal from said central station to said aircraft.  
 3. A method of providing global, paperless, aircraft maintenance advisories comprising the steps of:  
 mounting a performance sensor in an aircraft;  
 mounting a control sensor in said aircraft;  
 mounting a means in said aircraft, for providing maintenance advice to maintenance personnel;  
 mounting a sensor multiplexer receiver and transmitter system, in said aircraft;



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providing communications access to an aircraft manufacturer's database;  
 providing a central ground based station;  
 providing a processing means within said central ground based station,  
 providing a display and control subsystem, connected to said processing means;  
 providing a global, rf communications network;  
 accepting signals from said aircraft performance and control sensors into said sensor multiplexer receiver and transmitter;  
 converting, in said sensor multiplexer receiver and transmitter, said signals from said aircraft performance and control sensors, when necessary, to digital form;  
 adding an aircraft identification and configuration label;  
 converting said signals from said aircraft performance and control sensors, and said aircraft identification and configuration label, in said sensor multiplexer receiver and transmitter, to an outgoing rf signal;  
 transmitting said outgoing rf signal from said sensor multiplexer receiver and transmitter to said central ground base station via said global rf communications network;  
 receiving said outgoing rf signal at said central ground based station; converting said outgoing rf signal at said

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ground based central station to said aircraft performance and control signals plus said aircraft identification and configuration label;  
 performing within said processing means the steps of:  
 archiving said aircraft performance and control signals thus creating an archived data database;  
 combining said aircraft performance and control signals with the archived data, and information from said aircraft manufacturer's database;  
 generating maintenance advisories; and  
 converting said maintenance advisories to an incoming rf signal;  
 sending said incoming rf signal, via said global communications network, from said central ground based station to said sensor multiplexer receiver and transmitter;  
 converting said incoming rf signal, at said sensor multiplexer receiver and transmitter, to said maintenance advisories; and  
 feeding said maintenance advisory from said sensor multiplexer receiver and transmitter to said maintenance communication means.

\* \* \* \* \*



US005974349A

# United States Patent [19]

[11] Patent Number: **5,974,349**

Levine

[45] Date of Patent: **\*Oct. 26, 1999**

[54] **REMOTE, AIRCRAFT, GLOBAL, PAPERLESS MAINTENANCE SYSTEM**

[76] Inventor: **Seymour Levine**, 21645 Saddle Peak Rd., Topanga, Calif. 90290

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[ \* ] Notice: This patent is subject to a terminal disclaimer.

Primary Examiner—Gary Chin  
Attorney, Agent, or Firm—Norton R. Townsley

[21] Appl. No.: **09/205,331**  
[22] Filed: **Dec. 4, 1998**

### [57] ABSTRACT

This invention is a system that monitors many performance parameters and many aircraft operational parameters, and broadcasts this information along with aircraft identification, audio, video, global positioning and altitude data, to a world wide two-way rf network. This information is monitored and recorded at a remote, centralized location. At this location, this information is combined with archived data, ATC data, weather data, topological data, map data, and manufacturers' data. Analysis of this combined data allows identification of problems and generation of advisories. Six types of advisories are generated: maintenance, safety of flight, flight efficiency, flight separation, safe to fly and safe to take off. In the event of a crash the remotely recorded data provides an instant indication of the cause of the crash as well as where the crashed plane can be found. Use of this invention allows replacement of the current, on-board flight data recorders thus saving costs and weight. Having the recorded data at a remote site eliminates the need to search for flight data recorders. Other advantages are back-up for ATC radar position data, better control of aircraft separation, improved flight efficiency, and allowing use of simpler and lower power radar.

### Related U.S. Application Data

[63] Continuation of application No. 08/768,313, Dec. 17, 1996, Pat. No. 5,890,079.

[51] Int. Cl.<sup>6</sup> ..... **G06F 19/00**

[52] U.S. Cl. .... **701/29; 701/14; 701/35; 340/945**

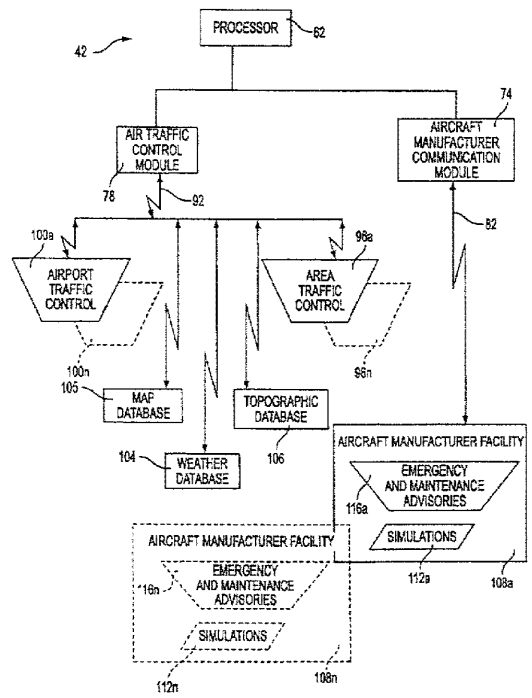
[58] Field of Search ..... 701/14, 29, 35, 701/120, 301; 340/945, 961, 963, 971; 342/29, 36, 37, 38, 454, 455, 456

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3 Claims, 4 Drawing Sheets



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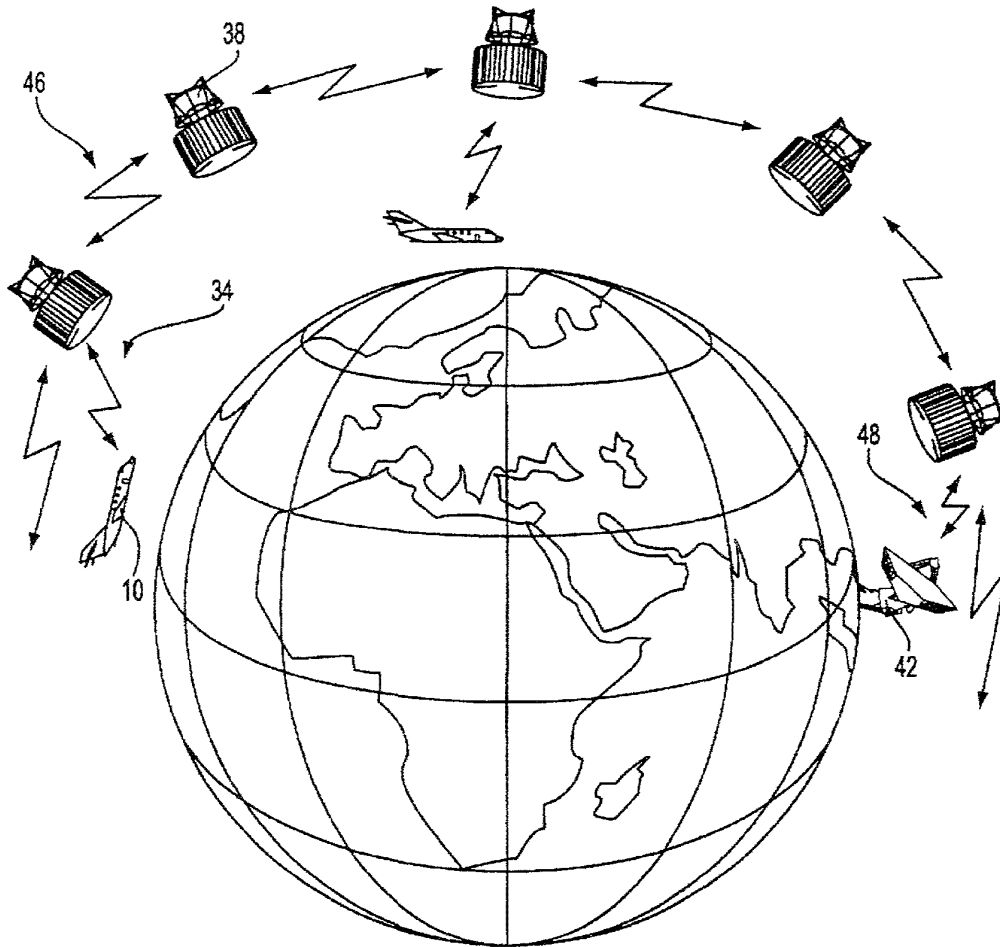


FIG. 2

FIG. 2

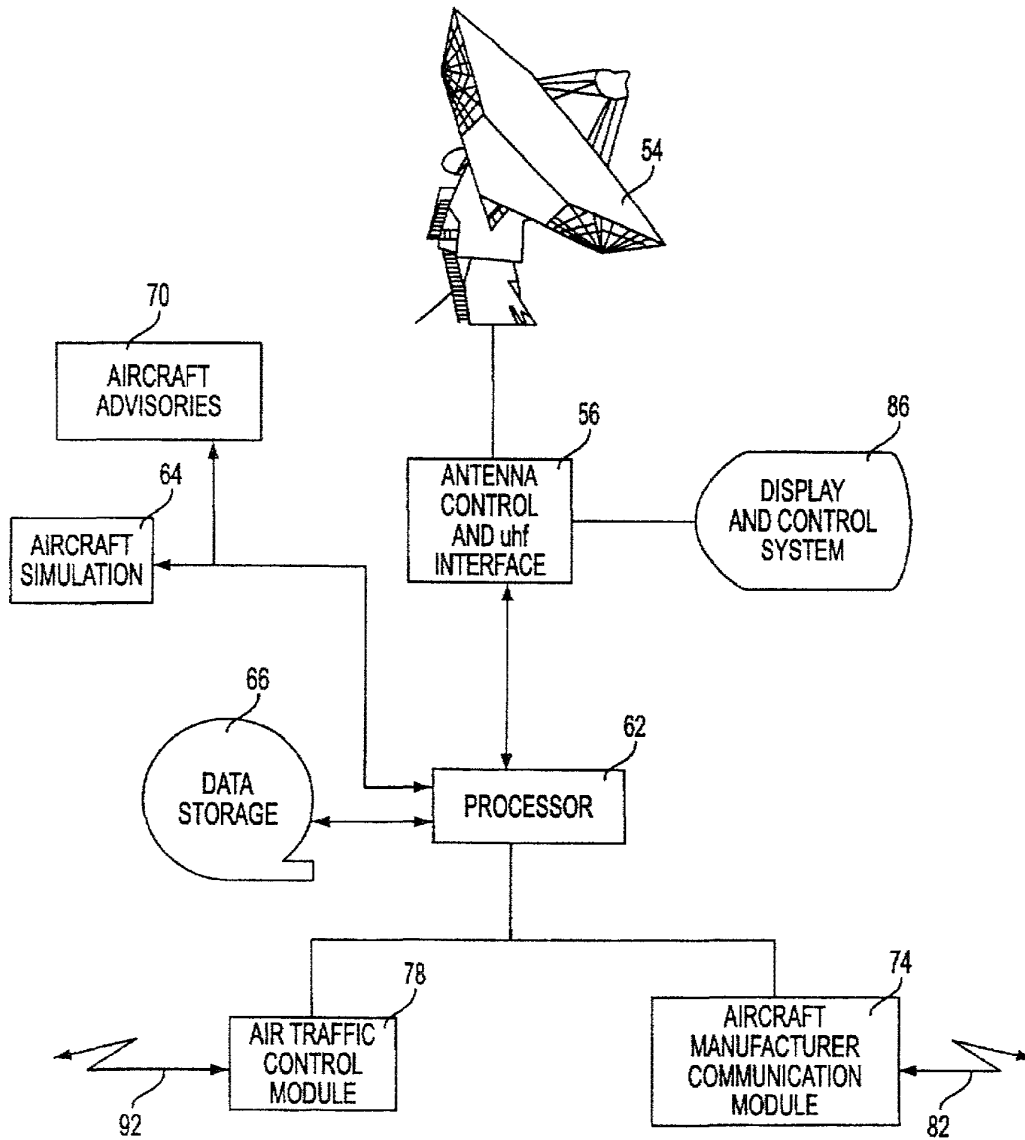


FIG. 3

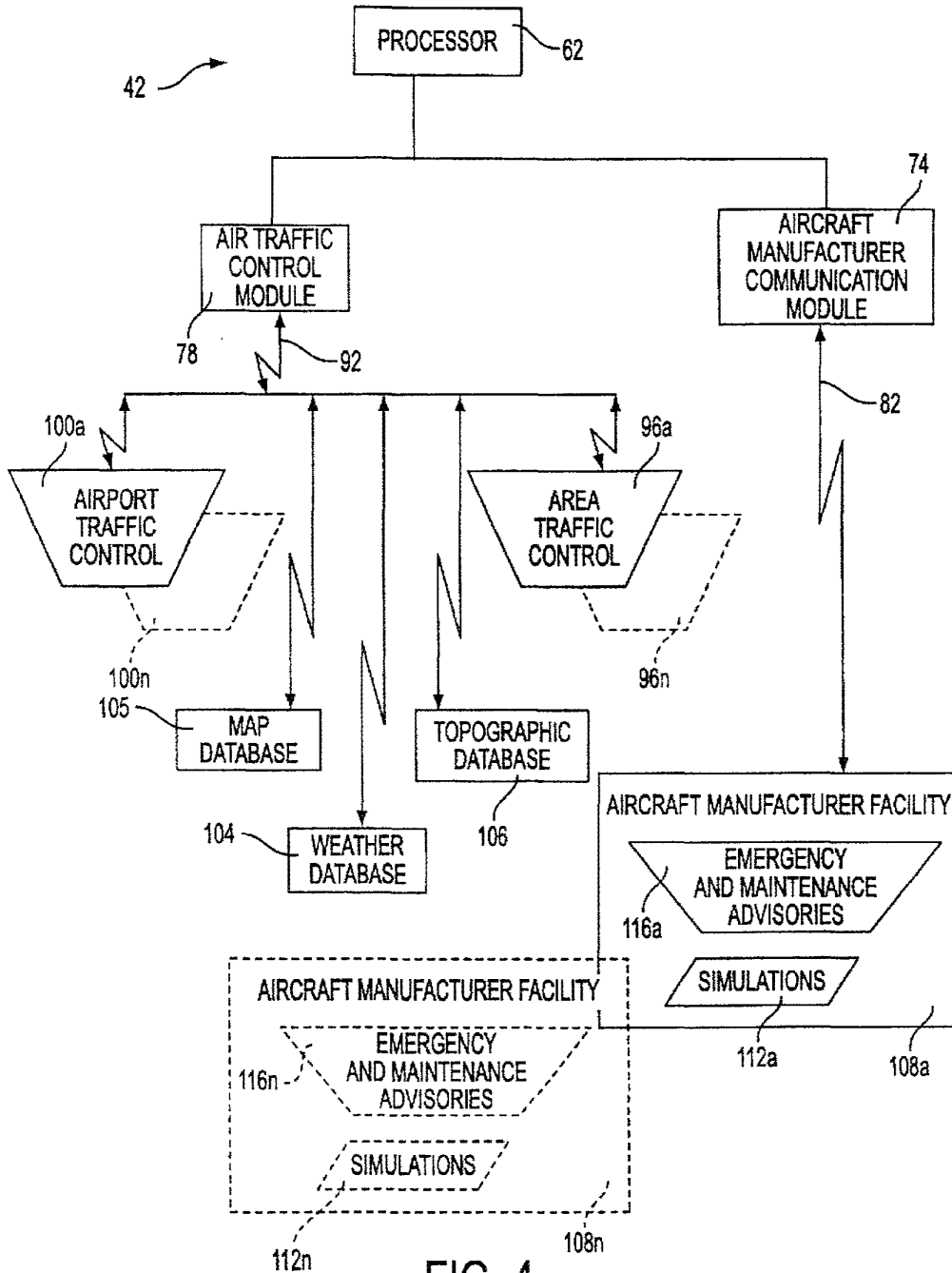


FIG. 4

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Practitioner's Docket No. 57127

PATENT

**REISSUE APPLICATION DECLARATION AND POWER OF ATTORNEY**

**DECLARATION BY THE INVENTOR**

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name, I believe I am the original, first and sole inventor of the subject matter that is described and claimed in letters patent number 5,974,349, granted on October 26, 1999, and for which invention I solicit a reissue patent on the invention entitled REMOTE, AIRCRAFT, GLOBAL, PAPERLESS MAINTENANCE SYSTEM, the specification of which is attached hereto

I hereby declare that there is no assignee for this application.

**ACKNOWLEDGMENT OF REVIEW OF PAPERS AND DUTY OF CANDOR**

(37 C.F.R. Section 1.175)

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information that is material to patentability as defined in Title 37, Code of Federal Regulations, Section 1.56.

In compliance with this duty, there is attached an information disclosure statement in accordance with 37 C.F.R. Section 1.98.

**PRIORITY CLAIM**

I do not claim foreign priority benefits under Title 35, United States Code, Section 119 of any foreign application(s) for patent. No such applications have been filed.

**STATEMENT OF INOPERATIVENESS  
OR INVALIDITY OF ORIGINAL PATENT**

(37 C.F.R. Section 1.175)

That I verily believe the original patent to be partly inoperative or invalid by reason of (37 C.F.R. Section 1.175(a)(1)):

- \* the patentee claiming more or less than the patentee had a right to claim in the patent.

FOSET PHOTO

At least one error upon which reissue is based is described below. If the reissue is a broadening reissue, such must be stated with an explanation as to the nature of broadening:

Claim 1 is partially inoperative because the claim is drawn too narrowly, for example, "an aircraft manufacturer's database means for providing aircraft data and maintenance information" is an unnecessary limitation. New claims have been drawn to eliminate this requirement.

That the error listed above, which are being corrected, up to the time of the filing of this reissue declaration arose without any deceptive intention on the part of the applicant. (37 C.F.R. Section 1.175(a)(2)).

**POWER OF ATTORNEY**

I hereby appoint the following practitioner(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith:

Fred H. Holmes	43,677
Dennis D. Brown	33,559
Terry L. Watt	42,214
R. Alan Weeks	36,050
Scott R. Zingerman	35,422

I hereby appoint the practitioner(s) associated with the Customer Number provided below to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith.

*Rayman Zivni* (310) 559-2965

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 Tulsa, OK 74103-3318

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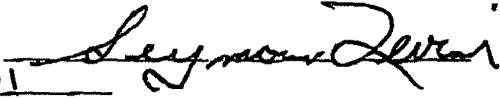


**DECLARATION**

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

**SIGNATURE BY THE INVENTOR**

**Full name of sole or first inventor:** SEYMOUR LEVINE

**Inventor's signature:** 

**Date:** 10-24-01

**Country of Citizenship:** US

**Residence:** Culver City, CA

**Post Office Address:** 4928 Maytime Lane  
Culver City, CA 92030

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1-9927 U.S. PTO  
10/004429  
10/28/01

Class	Subclass
ISSUE CLASSIFICATION	

PATENT NUMBER  
**5,914,349**

**U.S. REISSUE Patent Application**

O.I.P.E. <i>KW</i> SCANNED <i>NS3</i> O.A. <i>CP</i>	O.G. PUBLICATION DATE <i>06/18/02</i>	REISSUE PATENT DATE
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APPLICATION NO.	CONT/PRIOR	CLASS	SUBCLASS	ART UNIT	EXAMINER
10/004429	D	701	29	3661	CHIN

APPLICANTS: Seymour Levine  
TITLE: Remote, aircraft, global, paperless maintenance system  
PTO-2040  
12/99

SURRENDER OF ORIGINAL PATENT (Exr. Initials) ORIGINAL PATENT NUMBER

ISSUING CLASSIFICATION							
ORIGINAL		CROSS REFERENCE(S)					
CLASS	SUBCLASS	CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)				
INTERNATIONAL CLASSIFICATION							

Continued on Issue Slip Inside File Jacket

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	Sheets Drwg.	Figs: Drwg.	Print Fig.	Total Claims	Print Claim for O.G.
<input type="checkbox"/> The term of this patent subsequent to _____ (date) has been disclaimed. <input type="checkbox"/> The term of this patent shall not extend beyond the expiration date of U.S Patent. No. _____ <input type="checkbox"/> The terminal _____ months of this patent have been disclaimed.				<b>NOTICE OF ALLOWANCE MAILED</b>	
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Class	Sub.	Date	Exmr.
701	14 29 35 120 301	7-8-03	Sc
340	945 961 963 971		
342	29 36-38 454 455 456		
UPDATED	ABOVE	4-13-04	Sc

**SEARCH NOTES  
(INCLUDING SEARCH STRATEGY)**

	Date	Exmr.
Exact searched	7-1-03	Sc

**INTERFERENCE SEARCHED**

Class	Sub.	Date	Exmr.

ISSUE SLIP STAPLE AREA (for additional cross references)

POSITION	INITIALS	ID NO.	DATE
	SF		12-10-01
FEE DETERMINATION			
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FORMALITY REVIEW	CMW	67479	02/12/02
RESPONSE FORMALITY REVIEW			

INDEX OF CLAIMS

- ✓ ..... Rejected
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- (Through numeral) ... Canceled
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- N ..... Non-elected
- I ..... Interference
- A ..... Appeal
- O ..... Objected

Claim	Date
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PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Date: October 25, 2001

Commissioner for Patents  
Washington, D.C. 20231

REISSUE APPLICATION TRANSMITTAL

Transmitted herewith is the application for reissue of U.S. Utility Patent No. 5,974,349 issued on October 26, 1999.

Inventor: Seymour Levine

Title: REMOTE, AIRCRAFT, GLOBAL, PAPERLESS MAINTENANCE SYSTEM

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Nancy J. Moore  
Signature

Date: October 25, 2001

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\* Only the date of filing (§ 1.6) will be the date used in a patent term adjustment calculation, although the date on any certificate of mailing or transmission under § 1.8 continues to be taken into account in determining timeliness. See § 1.703(f). Consider "Express Mail Post Office to Addressee" (§ 1.10) or facsimile transmission (§ 1.6(d)) for the reply to be accorded the earliest possible filing date for patent term adjustment calculations.

1135 U.S. PTO  
10/25/01

10/25/01  
10/004429  
10/25/01

10004429-10004429

Enclosed are the following:

**1. Specification, claim(s) and drawing(s) (37 C.F.R. Section 1.173)**

- (a) 4 pages of specification
- 2 pages of claims
- 1 page of abstract
- (b) No changes in the drawings, upon which the original patent was issued, are to be made. Therefore, in accordance with 37 C.F.R. Section 1.174(a), please find attached, in the size required for original drawings a copy of the printed drawings of the patent.

**2. Declaration and Power of Attorney**

3 pages of declaration and power of attorney

**3. Preliminary Amendment Attached**

**4. Information Disclosure Statement Attached**

Copies of the IDS citation(s) is/are attached.

**5. Basic Filing Fee Calculation (37 C.F.R. Section 1.16(h), (i) and (j))**

CLAIMS AS FILED			
Number Filed	Number Extra	Rate	Basic Fee (37 C.F.R. 1.16(h)) \$740.00
63	60	X \$18.00	\$1,080.00
Total Claims (37 C.F.R. 1.16(j))			
19 Independent Claims (37 C.F.R. 1.16(i))	16	X \$84.00	\$1,344.00

Filing Fee Calculation

\$3,164.00

FOI 2025-00105

**6. Small Entity Status**

Claimed.  
 Not claimed.

Filing Fee Calculation (50% of above) \$1,582.00

**7. Total Fees Due**

Filing Fee	\$1,582.00
<b>Total Fees Due</b>	<b>\$1,582.00</b>

**8. Method Of Payment of Fees**

Enclosed is a check in the amount of \$1,456.00.  
Charge the deposit account of \$96.00.

**9. Authorization To Charge Additional Fees**

The Commissioner is hereby authorized to charge the following additional fees by this paper and during the entire pendency of this application to Account No. 06-0540:

- \* 37 C.F.R. Section 1.16(a), (f) or (g) (filing fees)
- \* 37 C.F.R. Section 1.16(b), (c) and (d) (presentation of extra claims)
- \* 37 C.F.R. Section 1.16(e) (surcharge for filing the basic filing fee and/or declaration on a date later than the filing date of the application)
- \* 37 C.F.R. Section 1.17(a)(1)-(5) (extension fees pursuant to Section 1.136(a))
- \* 37 C.F.R. Section 1.17 (application processing fees)

**10. Credit Deposit Account**

No. 06-0540 for any overpayment.

Date: 10/25/2001

Reg. No.: 43,677  
Tel. No.: 918-599-0621  
Customer No.: 22206

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Signature of Practitioner

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124353.1

FOSSOT 62110001

12-06-01

A/Reissue

Practitioner's Docket No. 57127

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Date: October 25, 2001

Commissioner for Patents  
Washington, D.C. 20231

REISSUE APPLICATION TRANSMITTAL

Transmitted herewith is the application for reissue of U.S. Utility Patent No. 5,974,349 issued on October 26, 1999.

Inventor: Seymour Levine

Title: REMOTE, AIRCRAFT, GLOBAL, PAPERLESS MAINTENANCE SYSTEM

**CERTIFICATION UNDER 37 C.F.R. §§ 1.8(a) and 1.10\***  
**(When using Express Mail, the Express Mail label number is mandatory;**  
**Express Mail certification is optional)**

I hereby certify that, on the date shown below, this correspondence is being:

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37 CFR 1.8a

37 CFR 1.10

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FOOSEOT" GEH000F

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321 South Boston, Suite 800  
Tulsa, OK 74103-3318

124353.1

FOSSOT 62H0001

FIG. 1

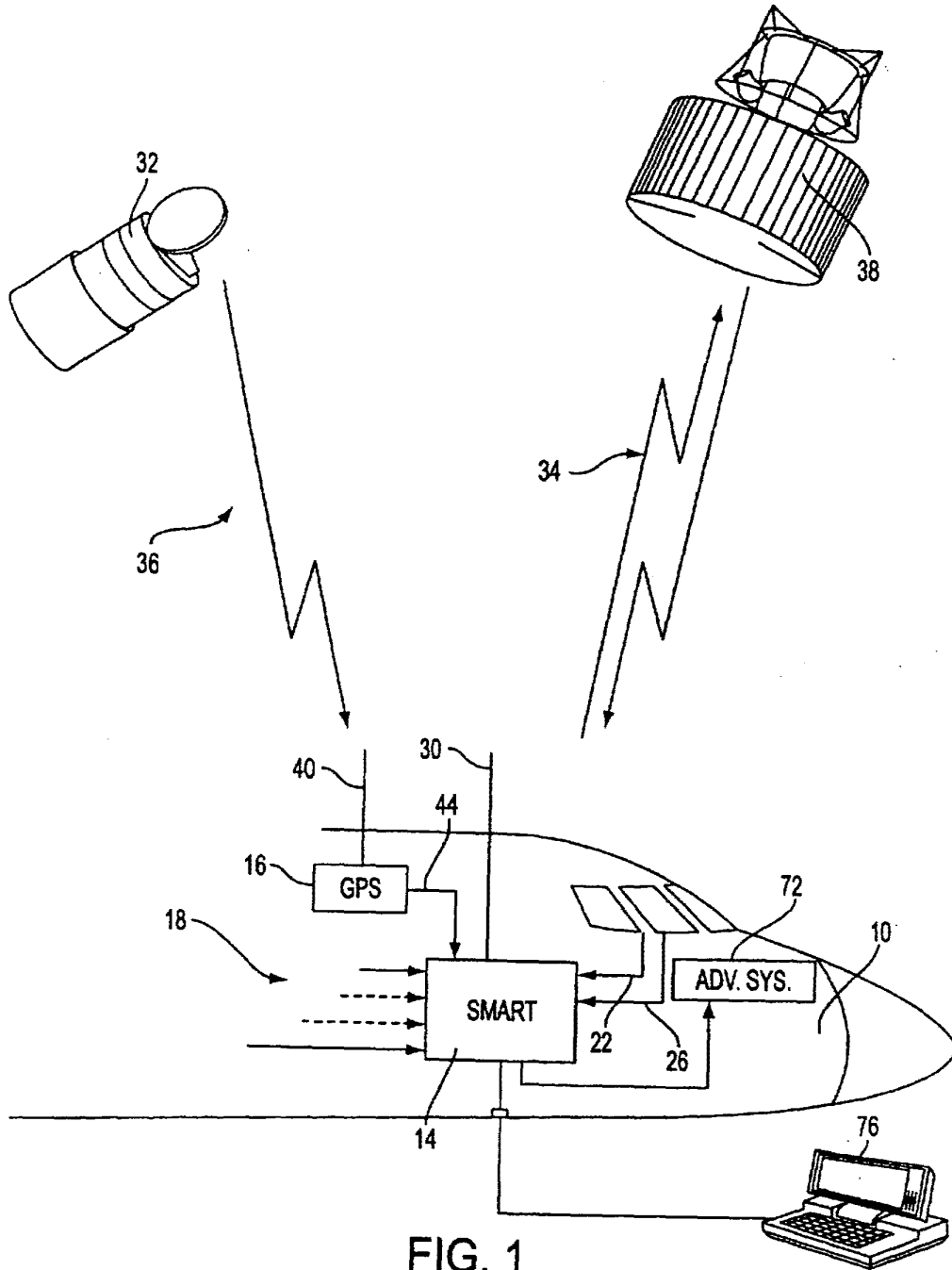


FIG. 1

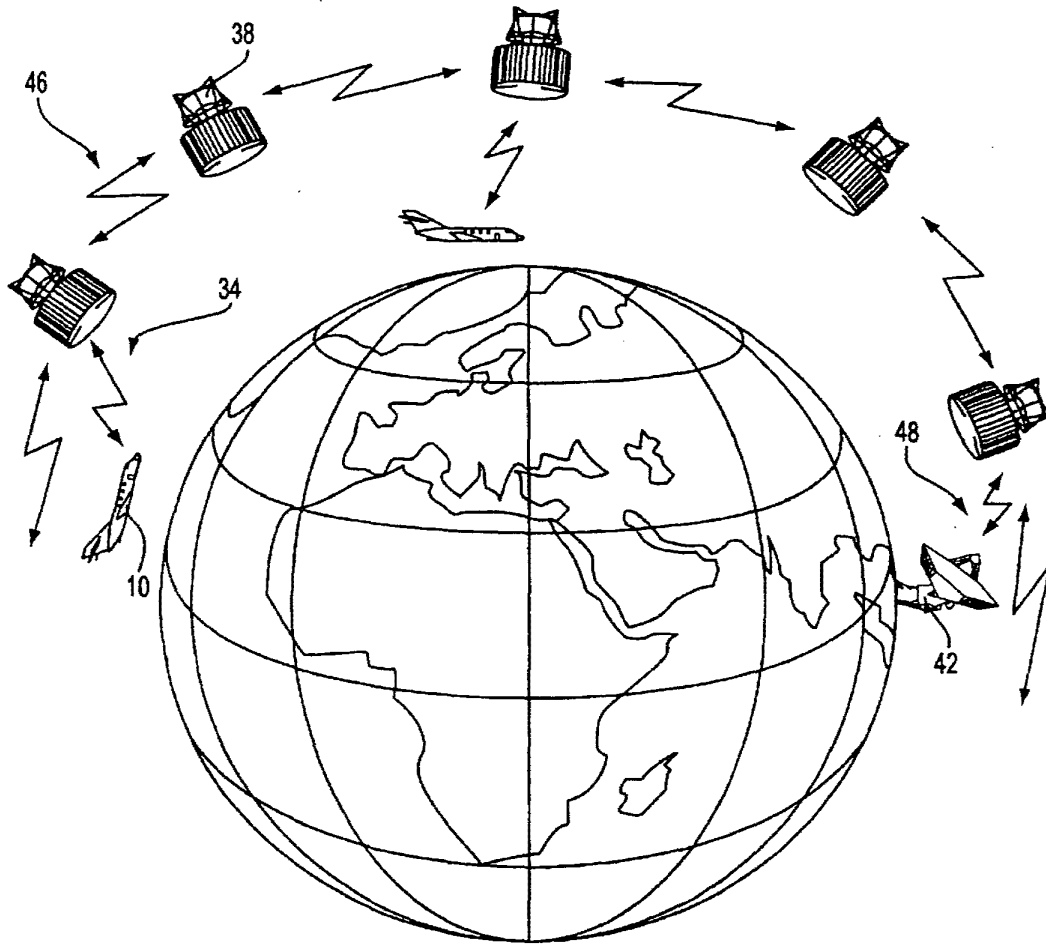


FIG. 2

FOR "GLOBE"

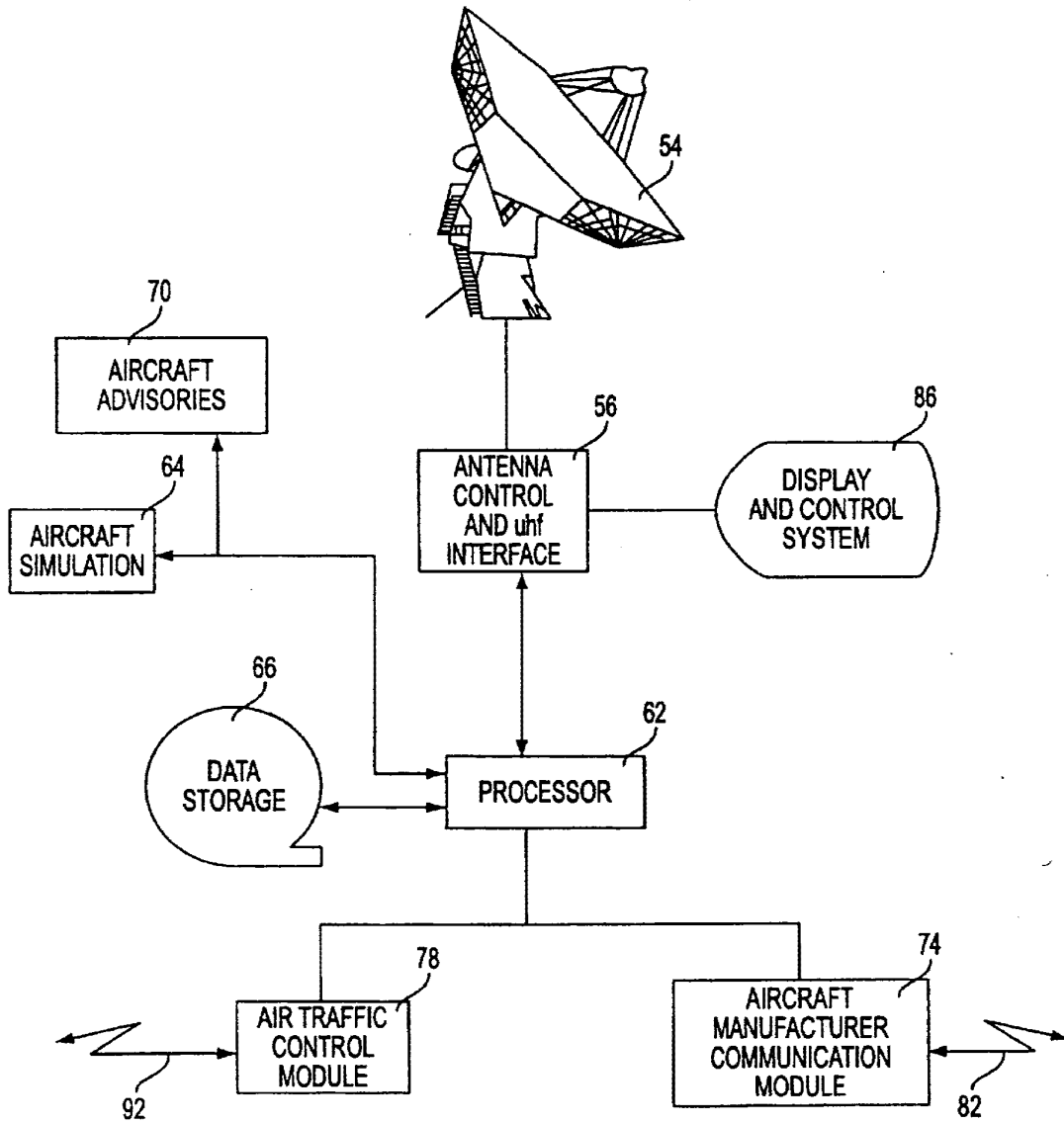


FIG. 3

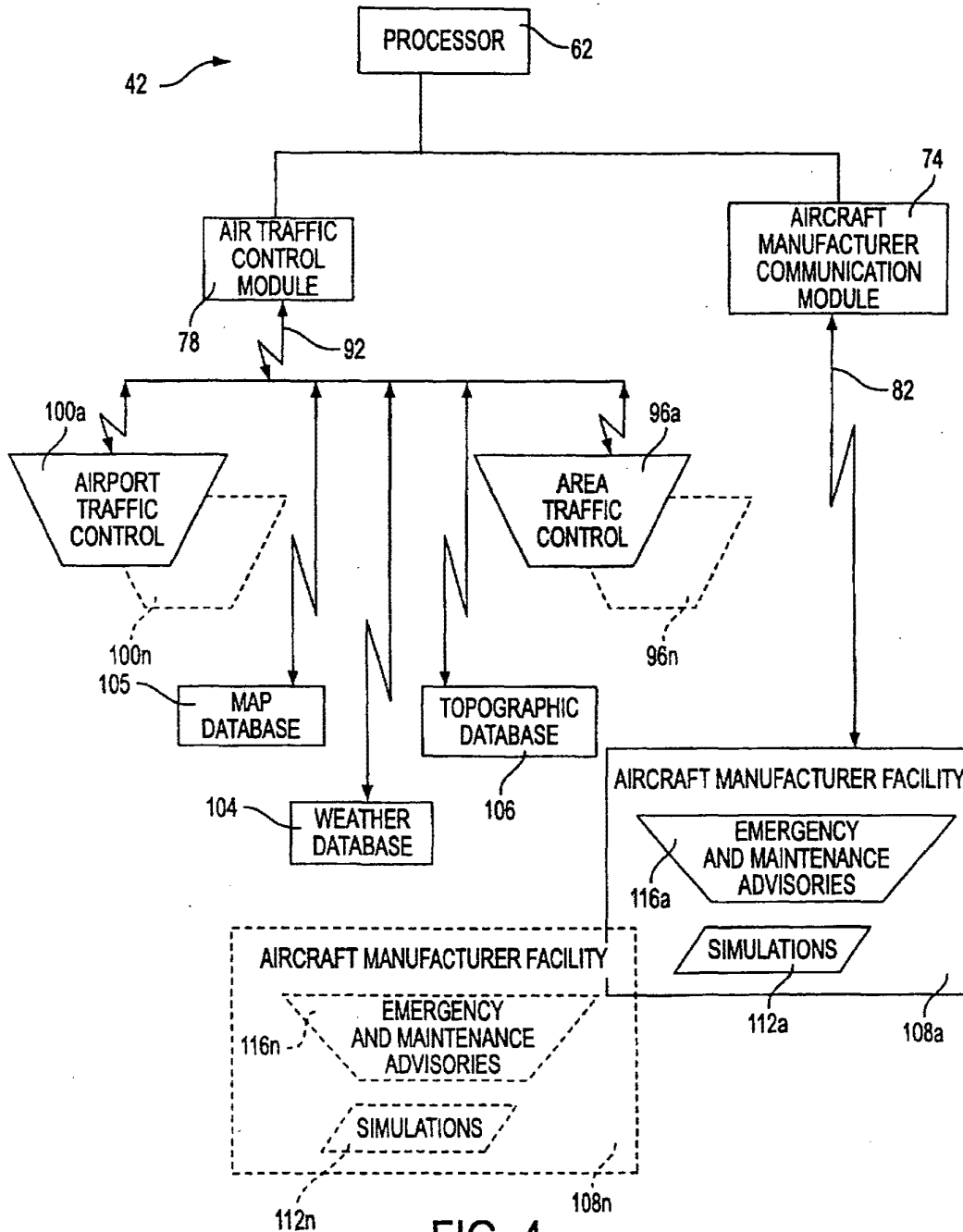


FIG. 4

FOR "OFF" POSITION

REMOTE, AIRCRAFT, GLOBAL, PAPERLESS MAINTENANCE SYSTEM

This application is a continuation of application Ser. No. 08/768,313 filed Dec. 17, 1996 and now allowed as U.S. Pat. No. 5,890,079.

BACKGROUND OF THE INVENTION

This invention relates to the field of flight recorders and more particularly to automatic, real-time, collection of aircraft data and then transmission of such data to a world wide communication system for subsequent reception, analysis, storage and generation of aircraft flight, safety, fuel efficiency and maintenance advisories at a Central Ground Based Processing Station (CGBS).

Whenever an airplane crashes, authorities are anxious to find the flight data recorder. This is because it may reveal the causes of the crash. It is important to determine the cause because it may result from a problem affecting many flying aircraft. The flight data or crash recorder, sometimes also called a black box, is usually a tape recorder which is capable of recording many channels of information. However, recorders utilizing other storage media, such as compact discs are starting to be used because of their increased storage capacity. Regardless of storage medium used, the information recorded includes various flight parameters, such as engine status, fuel status, airspeed, position, altitude, attitude, control settings, and cockpit acoustic information. The information comes from sensors in the cockpit and at other strategic locations around the airplane. However, the information stored by the data recorder is often discarded shortly after each flight. If all flight data were analyzed in conjunction with weather, air traffic control (ATC) data and map data, they could become a valuable resource for detecting potential problems and improving aircraft design.

Sometimes it is difficult to locate the crashed plane, and, even when the crash site is known, it is sometimes difficult to locate the flight data recorder. The latter is frequently a problem when the airplane crashes in water.

To fulfil their intended purpose, current flight data recorders must be made crash resistant. Consequently, they are constructed of rugged materials which means that they are costly to produce and heavy. Use of a lighter flight data recorder would result in an aircraft cost and weight savings.

Moreover, except for occasional post flight analysis, current, recorded flight data exists in a vacuum. If they were analyzed in conjunction with weather data, manufacturer's data, map data, ATC data and position and altitude data, it would become a much more powerful tool.

In recent years there have been a number of developments in flight data recorders. U.S. Pat. No. 4,729,102 discloses a flight data recorder system which monitors a number of aircraft parameters and compares them to stored information to provide for more efficient aircraft operation and detection of excessive wear. This information is displayed and stored on-board and may be downloaded periodically via a link to a ground readout unit.

U.S. Pat. No. 5,463,656 discloses a system for broadcasting full broadcast quality video to airplanes in flight via satellite relays. The system includes video bandwidth compression, spread spectrum waveform processing and an electronically steered, circular aperture, phased array antenna, that conforms to the surface of the aircraft.

U.S. Pat. No. 5,467,274 discloses a method of recording selected flight data, including GPS data, onto a VTR and

thereafter subjecting the recorded data to a data reduction process on the ground.

U.S. Pat. No. 5,325,302 discloses an aircraft collision warning system which includes a position determining subsystem, a trajectory determining subsystem, a collision predicting subsystem and a warning device.

U.S. Pat. No. 5,383,133 discloses a computerized, integrated, health monitoring and vibration reduction system for a helicopter.

However, none of these developments contemplates long term central storage of all recorded information for archival uses. Also none contemplates real-time radio transmission of aircraft data to a central station. Furthermore, none contemplates combining information from aircraft with global position data, global map data, global weather data, ATC system data and manufacturers' data and providing real-time feedback, in the form of real-time ground and in-flight advisories to aircraft.

What is needed is a flight recorder system that senses many flight parameters and many aircraft operational parameters, and transmits this information along with aircraft identification and cockpit audio and video to a world wide, two-way radio frequency (rf) network. This information could then be monitored and safely recorded at a remote location where it could be analyzed in conjunction with archived data, flight control data, weather data, topological data, global positioning data and manufacturers' data to allow identification of maintenance problems, on-ground safety advisories and in-flight safety advisories. There are three types of in-flight advisories: emergency or safety of flight, flight efficiency or fuel economy, and flight separation. On the ground there are also three types of advisories: safe to fly, safe to take off and maintenance actions.

In the event of a crash having the recorded data at a remote site would eliminate the need to search for flight data recorders and allow instant analysis of the failure mode. Further, the remotely recorded data would provide the best estimate of where the crashed plane could be found. This estimate would be based on the aircraft's last telemetry of its position, engine and control status, its flight dynamics and ATC radar data (when available). Use of this invention would allow replacement of the current, on-board flight data recorders thus saving costs and weight. Other advantages would be back-up for radar position data, better control of aircraft separation, and improved flight efficiency. Development of a such a system represents a great improvement in the fields of flight data recorder design, aircraft safety and airline efficiency, and satisfies a long felt need of airplane manufacturers, airlines, maintenance personnel and crash investigators.

SUMMARY OF THE INVENTION

The present invention is a remotely located, aircraft, flight data recorder and advisory system. These functions are achieved by continuously monitoring aircraft sensors such as aircraft position, altitude, speed, control surface settings, engine revolutions per minute, temperatures, stress, and fuel. Then by rf world wide transmission, such as via satellite communication links, these parameters are communicated, along with cockpit audio data, video data, aircraft identification and configuration, to a central ground based monitoring station where they are continually and safely recorded and analyzed. The transmission of the aircraft data via the communication link permits the aircraft performance and cockpit communication data to be memorized in a ground based recorder for after crash analysis without the necessity

Patented by Boeing

of rugged and waterproof monitoring apparatus aboard the aircraft. Also, in the event of a pilot initiated or ground station initiated alert, based on the real-time automated analysis of the aircraft's flight worthiness, a pilot crash avoidance safety advisory can be radioed back to the aircraft that provides the pilot with expert advice as to the safest approach for the operation of the aircraft.

The central ground based monitoring system utilizes the real-time aircraft sensor data, aircraft configuration data and experts familiar with the aircraft in arriving at the best safety advisory. The computational analysis processors used to perform the safety analysis on the ground are not limited by the space and power restrictions that exist aboard the aircraft and thus can provide high fidelity simulation and analysis of the aircraft's problem. In this mode of operation, the central, ground based monitoring site maintains communication, utilizing fiber optic ground or satellite links, with flight controller facilities and with the aircraft manufacturers. It distributes the aircraft sensor data to them in real-time so as to solicit their expert analysis and help in generating the crash avoidance advisories. Real-time analysis of the pre-flight aircraft data along with other data such as weather, airport and its local area map, three dimensional topographical map information, from data bases such as Digital Terrain Elevation Data (DTED), ATC data, wind shear, and aircraft configuration are also used to provide a safe to take off advisory.

In addition to the above, if an aircraft exhibits a mechanical equipment failure prior to take off, the aircraft's sensor monitoring data are also communicated back to the aircraft manufacturer in real-time. The aircraft manufacturer then provides the mechanics with a preferred maintenance advisory based on an expert system for fault isolation that will save both time and money in getting a safe to fly aircraft back in service.

For aircraft that are equipped to receive the satellite constellation Global Positioning System (GPS) or the Global Navigation Satellite System (GLONASS) precision navigation signals, these real-time sensor data of aircraft location are transmitted to the CGBS. This very accurate aircraft position data is utilized to augment the ATC in-flight and airport taxi collision avoidance systems as well as to enhance the all weather landing systems. It provides the air traffic controllers' ground based radar systems with a level of redundancy and enhances the radar systems by providing high fidelity, three dimensional, world wide aircraft separation distances. This eliminates five deficiencies in the current radar ATC systems:

- a. invisibility of small aircraft due to minimal radar cross-section;
- b. distinguishing multiple aircraft flying close to each other because of beam width ambiguity;
- c. beam shadowing problems;
- d. range problems; and
- e. earth curvature problems.

An added economic benefit of utilizing this position data blended with other aircraft sensor information and world wide weather and destination airport traffic data available at the CGBS is to provide the aircraft with a real-time fuel conservation and economy of flight information. The world wide communication up link advisory to the aircraft during flight for fuel conservation and economy of flight operation is based on the blending of the data sources in a ground based digital processor. Thus, for this additional function, there is no need for added equipment to be carried aboard the aircraft. It also allows for simpler, lower cost and lower power ATC radar.

In the event of a crash, the aircraft sensor data stored at the CGBS, which has a record of the operating condition of the aircraft at the time of the crash, provides the best estimate of the downed aircraft's location for timely recovery and potential rescue operations as well as the parameters that may have caused the crash. Furthermore, for operational aircraft experiencing an equipment failure or in a potentially over-congested area of operation, the real-time expert advisories communicated to the aircraft may well prevent the loss of life by giving the pilot the best crash avoidance information. In addition post-flight analysis of aircraft data may provide clues to the cause of a problem so as to prevent its recurrence in the future. Even for operational aircraft experiencing no current faults, the CGBS keeps a record of flight hours accumulated on the airframe and critical parts to assure that routine maintenance is timely performed and that the vehicle does not accumulate excessive stress build-up on flight critical assemblies. The CGBS sends out alerts for maintenance actions.

The system integrates voice, video and instrument data into a single aircraft telemetry system that provides two way, world wide communication with the aircraft, and ground based archival recording of the data. For maintenance actions, it also communicates, via a local computer terminal or visor display to the aircraft ground maintenance personnel, the problem specific, vehicle aircraft manual data that shows how best to service the vehicle. This eliminates much of the paper manuals and assures that the latest aircraft maintenance information is being utilized for repair. It also provides an expert fault isolation system that saves both time and money in getting a safe to fly aircraft back in service.

An appreciation of the other aims and objectives of the present invention and an understanding of it may be achieved by referring to the accompanying drawings and description of a preferred embodiment.

#### BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a block schematic of an aircraft's multiplexed flight sensors, sensor transmitter and advisory receiver according to the invention.

FIG. 2 illustrates worldwide communication via a satellite system and CGBS.

FIG. 3 is a block schematic of the CGBS according to the invention.

FIG. 4 is a block schematic of the Ground Based Distribution System according to the invention.

#### DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

FIG. 1 shows an aircraft 10 equipped with a Sensor Multiplexer Receiver & Transmitter (SMART) 14 which is a line replaceable unit. The aircraft is also equipped with a GPS receiver system 16. The GPS system 16 receives ultra high frequency (uhf) radio signals 36 from several GPS satellites 32 via its GPS antenna 40, calculates the position and altitude of the aircraft 10 and reports this position and altitude data 44 to the SMART 14. The SMART 14 also receives aircraft performance and control data 18, acoustic data 22, and video data 26. The video data 26 comes from cameras which monitor the cockpit, the passenger compartment, and the cargo compartment. SMART 14 periodically samples the sensor signals 18,22,26,44 converts all non-digital sensor signals 18,22,26,44 into digital format, adds a sensor identification label to each signal 18, 22, 26, 44 plus an aircraft identification and configuration label. Then the SMART 14 ultra high frequency radio electroni-



cally modulates the combined data and sends them to the aircraft satellite telemetry antenna 30. It should be noted that, to save weight, one antenna could serve the functions of the GPS antenna 40 and the aircraft satellite telemetry antenna 30. Then this uhf signal is transmitted by the aircraft antenna 30 to an earth orbiting communication satellite 38 that is located in a direct, unobstructed, line of sight with the aircraft 10. In addition to transmitting data, the SMART 14 receives data from the satellite 38. As will be described more fully below, this data is mostly in the form of advisories and alerts. Such advisories and alerts are reported to the crew via an on-board advisory system 72. While the aircraft 10 is on the ground, maintenance advisories can be requested and viewed via a plug-in terminal 76.

FIG. 2 illustrates the communication satellite link 34, 46, 48 between the aircraft 10 and the CGBS 42. It shows SMART 14 equipped aircraft 10 transmitting their sensor data over an uhf radio, unobstructed line of sight, transmission 34 to the closest communication satellite 38. The satellite, world wide communication link then relays the data by line of sight transmission 46 to other communication satellites 38 followed by line of sight transmission 48 to the CGBS 42. The transmission of aircraft advisories from the CGBS 42 to the aircraft 10 is accomplished by communicating along the same path but in the reverse direction. FIG. 2 depicts a continuous, around the clock, world wide communication link 34, 46, 48 that provides two way communication with all of the aircraft 10 equipped with SMART 14 in the Remote Aircraft Flight Recorder And Advisory (RAFT) System 50. The number of satellites 38 in the communication system depends on whether a geosynchronous or low earth orbit (LEO) satellite constellation is utilized. The system will work with either of the satellite constellations. The LEO constellation requires smaller, lighter and lower power equipment but a larger number of satellites.

FIG. 3 is a block diagram of the CGBS 42. It shows the CGBS receiving and transmitting antenna 54, and the antenna control and uhf interface 56 that converts the received satellite signal into an electrical signal. The received signal represents aircraft performance and control 18, audio 22, video 26, and high accuracy position and altitude data 44. These signals are then sent to: the CGBS processing station 62 for data analysis, and performance and problem simulation; the expert system module 64 for crash avoidance simulations; the archive 66 for data storage; the advisory module 70 for generating aircraft advisories; the aircraft manufacturer's module 74 for distribution to the aircraft manufacturer's ground based facilities for expert crash avoidance and maintenance advisories; and the ATC module 78 for distribution to airport and area ATC facilities. Since the CGBS 42 is on the ground its temperature, environment, humidity and air can be readily controlled so that the archive storage of the aircraft's sensor data 18, 22, 26, 44 is very reliable. In addition, the real-time analysis of the data will alert the operational aircraft 10 of problems. In some cases, this may occur prior to the pilot's recognition of a problem. Thus in addition to reducing the equipment aboard the aircraft it can lighten the pilot's work load.

Ground communication can be made over wide bandwidth, fiber optic cables, satellites or other rf communication links. In the continental United States the wide bandwidth, fiber optic communication link is preferred. The CGBS 42 acts as communication concentrator and it is through this facility 42 that world wide communication with the aircraft 10 occurs. At this facility 42 weather data is collected from the government weather bureau facilities. The weather data,

map data, DTED and ATC data is also combined with other aircraft operational data 18, 22, 26, 44 to provide: emergency or safety of flight advisories, flight efficiency or fuel economy advisories, and flight separation advisories.

FIG. 2 and 3 show how the closest, unobstructed line-of sight satellite 38 receives the data 18, 22, 26, 44 from aircraft 10 equipped with SMART modules 14. Data travels over the system to the satellite 38 closest to the CGBS 42. This satellite 38 is in line of sight communication with the CGBS 42, which transmits and receives data to and from the CGBS antenna 54. The antenna 54 is controlled by antenna control and uhf interface module 56. The uhf signals 18, 22, 26, 44 are also demodulated and sorted, by aircraft, in this module 56. The data 18, 22, 26, 44 is then sent to the ground processor 62 for analysis.

One function of the ground processor 62 is to send the data 18, 22, 26, 44 to the archival data storage system 66 where it is safely stored in an air conditioned environment, for future retrieval, on magnetic disc or tape, or optical memory. Another function of the processor 62 is to coordinate its data with the aircraft simulation processor 64. This processor 64 performs an expert system analysis based on past performance, i.e. archived, data, aircraft specific stress accumulation statistics and world wide weather and wind shear, DTED and ATC information. Based on this simulation, aircraft real-time advisories are generated by the advisory module 70. Emergency advisories are also based on the aircraft manufacturer's simulations conducted at their facilities and communicated to the CGBS 42 via the wide band-width, fiber optic link 82. The data can be viewed and controlled by the CGBS operators on the display and control system 86. The position, altitude and aircraft velocity data is also sent to the ATC module 78 for real-time transmission to the airport and area flight controllers over the wide bandwidth, fiber optic communication link 92.

Weather data from weather services are also communicated over this link 92. This data when mixed with the aircraft sensor data 18,22,26,44 at the aircraft simulation module 64 provide world wide safety of flight trajectories, safe to take off and land, and fuel efficiency economy of flight advisories. These advisories are sent to the aircraft 10 over the world wide communication link illustrated in FIG. 2. In addition, world wide advisories are sent to the aircraft 10 by the ATC based on their information for aircraft separation. In a similar manner, the aircraft data 18, 22, 26, 44 is sent to aircraft manufacturer personnel by the communication module 74 over the wide band-width, fiber optic link 82.

Advisories can be sent by the manufacturers providing the best way to handle problems based on their expert knowledge of the aircraft 10. These aid in safely flying the aircraft or efficiently servicing an aircraft that is experiencing equipment malfunctions on the ground. The in-air safety of flight advisories go to the advisory center 70 to be integrated with CGBS and air traffic controller generated information so as to provide a single emergency advisory, based on all of the data. This advisory is sent to the aircraft 10 via the global communication network. For aircraft experiencing problems on the ground, an aircraft manufacturer remotely samples the aircraft's performance and then sends advisories over the network to the aircraft's ground maintenance personnel. These advisories represent the latest diagnostic procedures and problem specific maintenance information. These maintenance advisories are sent to an aircraft maintenance terminal display 76 that interfaces with the SMART communication system 14 on board the aircraft. Thus the maintenance advisory provides efficient, safe and effective repair of the aircraft using the most up-to-date procedures.

FIG. 4 provides greater detail about CGBS 42 communication with the ground based flight control and manufacturing facilities. The CGBS ground processor 62 communicates with the ATC communication module 78. Digital data is communicated serially over a wide band-width, fiber optic link 92 to the air traffic control facilities 100 and the area traffic control facilities 96. There are a large number of civil and military airport and area ATCs in present use. These are indicated 100a to 100n for the airport air traffic controllers and 96a to 96n for the area air traffic controllers. Each of the air traffic controllers 96, 100 can tap the wide band-width, fiber optic communication link 92 for the specific aircraft data of interest to them. The air traffic controllers can also send, to specific or to all SMART 14 equipped aircraft 10 in the world, advisory data over the same communication link.

The CGBS 42 communicates these advisories, via the satellite 38 communication link 48, 46, 34, to the aircraft 10. In a similar fashion the CGBS 42 receives world wide weather data from the weather bureau 104 and world wide map and topographic data from the map 105 and topographic 106 databases. The CGBS 42 then, by its knowledge of the aircraft location, flight plans and operational characteristics, tailors this global weather data to weather data that is specific to each aircraft's area of operation for safety and economy of flight advisories.

Aircraft manufacturing facilities 108 communicate with the CGBS 42 ground processor 62 via the aircraft manufacturer communication module's 74, wide band-width, fiber optic communication link 82. Since there are a number of different aircraft manufacturers they are indicated by reference numbers 108a to 108n. Their concomitant emergency and maintenance advisory facilities are indicated by the reference numbers 116a to 116n. Each manufacturer maintains an historical log of the aircraft 10 in service for configuration, stress, maintenance service and end of life assembly data. The manufacturers also maintain aircraft simulation capability 112 to aid in providing safety of flight advisories to aircraft 10 that are experiencing a problem. The different simulation facilities are shown by the reference numbers 112a to 112n. These advisories occur whether the problem was first surfaced by the in-air aircraft personnel, or by the on the ground monitoring personnel or by simulations at the CGBS 42 or aircraft manufacturer's facility 108.

The CGBS 42 and the aircraft manufacturer's facility 108 check the aircraft operational capability by remotely sampling the aircraft's operational status parameters 18, 22, 26, 44 and using other factors such as weather, ATC information, map, and DTED. The simulations utilize real-time analysis of the vehicle data and past performance to provide expert system advisories. For an aircraft that is experiencing a problem on the ground, the aircraft manufacturer's facilities 108 still sample the operational status of the aircraft's flight critical assemblies via the real-time, world wide, communication link 34, 46, 48. The manufacturer's facility 108 transmits expert system repair advisories to the aircraft's 10 maintenance personnel. These include the latest approved, problem specific, service manual data to efficiently and safely correct the aircraft's problem.

Operation of this invention, Remote Aircraft Flight Recorder and Advisory System, 50 can be summarized as follows. The aircraft 10 is fitted with a SMART module 14, that accepts sensor signals 18 depicting the performance of many of the flight safety critical assemblies. It converts any of the analog sensor data 18 into a digital format. These signals are the same as those that are presently sent to the existing flight crash recorders aboard aircraft which records vital flight information such as air speed, height, attitude,

landing gear status, fuel status as well as the position of the aircraft controls and latitude and longitude, which is gleaned from radio navigation aids and the inertial navigation system (INS), when available. Unlike the existing crash recorder that must be recovered from a crash site to obtain an understanding of the cause of the crash, the system depicted in FIGS. 1-4 has a telemetry system to radio these signals to a world wide communication system and to a final destination known as the CGBS 42.

In addition to the standard flight sensors presently used in existing flight recorders, position and altitude 44 signals from the GPS or GLONASS receivers, acoustical sensors 22 that record cockpit sounds, and video camera data 26 that records the passengers entering the vehicle, the states of the cargo, hull and the cockpit during flight, aircraft identification and latest configuration are also sent to SMART 14 for telemetry to the CGBS 42. The SMART module 14 accepts these signals 18, 22, 26, 44 and then transmits them over the uhf radio link 34, 46, 48. The preferred embodiment of this invention 50 utilizes a global satellite 38 communication system. The SMART module's 14 uhf output is sent to a satellite antenna 30 where the signal is radioed to a satellite 38 that is in a direct line of sight with the aircraft 10. The combined signal is then relayed, either by LEO or a synchronous orbit world wide communication satellite chain, until it is transmitted to the CGBS 42 by the communication satellite 38 that is in a direct line of sight with the CGBS antenna 54.

At the CGBS 42, these signals are archived. Also, aircraft data 18 and signals 22, 26, 44 are distributed, utilizing fiber optic ground or satellite links, to flight controller facilities 100, 96 and to the aircraft manufacturers 108. It distributes the aircraft sensor data 18, 22, 26, 44 to them in real-time so as to solicit their expert analysis and help in generating the advisories. Real-time analysis of the pre-flight aircraft data along with other data such as weather 104, airport and its local area map 105, three dimensional topographical map information 106, from data bases such as Digital Terrain Elevation Data (DTED), ATC data, wind shear, and aircraft configuration are also used in generating advisories.

The SMART 14 also accepts advisory signals sent from the CGBS 42 to the aircraft 10. There are maintenance advisories and three types of in-flight advisories: emergency or safety of flight, flight efficiency or fuel economy, and flight separation. The SMART module 14 receives these signals and sends maintenance advisories to an on-board maintenance communication subsystem. In-flight advisories are sent to the pilot's audio system and to the pilot's warning panel. Thus SMART 14 concentrates the audio, video, digital discrete and sensor signals to minimize the weight, power expended, cost of equipment and uhf radio antennas carried aboard the aircraft.

Large, commercial, passenger aircraft will be fitted with systems 50 capable of monitoring an extensive number of their performance and control signals 18. Small, private aircraft do not need such extensive monitoring and will have systems 50 capable of monitoring only a limited number of performance and control signals 18.

The following reference numerals are used on FIGS. 1-4.

- 10 Aircraft
- 14 Sensor Multiplexer Receiver & Transmitter
- 16 GPS or GLONASS receiver
- 18 Aircraft performance and control data
- 22 Acoustic data
- 26 Video data
- 30 Telemetry antenna

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*in-flight advisory*

- 32 GPS or GLONASS satellite
- 34 UHF signal
- 36 GPS or GLONASS uhf signal
- 38 Satellite
- 40 GPS antenna
- 42 Central Ground Based Processing Station
- 44 Position and altitude data
- 46 Inter-satellite uhf communication link
- 48 Satellite/CGBS uhf link
- 50 Remote Aircraft Flight Recorder And Advisory (RAFT) System
- 54 Receiving antenna
- 56 Antenna and uhf interface module
- 62 Processing station
- 64 Simulation module
- 66 Archive module
- 70 Advisories module
- 72 On-board advisory system
- 74 Aircraft manufacturer's communications module
- 76 Plug-in maintenance system input, output and display terminal
- 78 ATC communications module
- 82 Wide band link to aircraft manufacturers
- 86 Display and control system
- 92 Wide band link to ATC system
- 96a-n Air traffic control facilities
- 100a-n Area traffic control facilities
- 104 Global weather bureau
- 105 Map database
- 106 Topographic and Digital Terrain Elevation Data (DTED) database
- 108a-n Aircraft manufacturer's facilities
- 112a-n Aircraft manufacturer's simulation facilities
- 116a-n Aircraft safety advisories modules

The remote aircraft flight recorder and advisory system 50 has been described with reference to a particular embodiment. Other modifications and enhancements can be made without departing from the spirit and scope of the claims that follow.

What is claimed is:

- 1. A global, paperless, aircraft maintenance system comprising:
  - an aircraft performance means for detecting aircraft performance and control parameters;
  - a maintenance communications means, located on board an aircraft, for providing maintenance advice to maintenance personnel;
  - a sensor multiplexer receiver and transmitter means, located on board said aircraft, for:
    - accepting said aircraft performance and control parameters; converting said aircraft performance and control parameters, when necessary, to digital form;
    - adding an aircraft identification and configuration label; converting said aircraft performance and control parameters and said identification and configuration label to an outgoing rf signal and broadcasting said outgoing rf signal; and
    - receiving an incoming rf signal, converting it to a maintenance advisory, and feeding said maintenance advisory to said maintenance communication means;
  - an aircraft manufacturer's database means for providing aircraft data and maintenance information;
  - a central station means, located on the ground, for receiving said outgoing rf signal and converting it to said aircraft performance and control parameters and said aircraft identification and configuration label, and broadcasting said incoming rf signal;

- a processing means, connected to said central station means, for:
    - archiving said aircraft performance and control parameters thus creating an archived data database;
    - combining said aircraft performance and control parameters with said aircraft data and said maintenance information;
    - generating said maintenance advisory; and converting said maintenance advisory to said incoming rf signal;
  - a display and control means, connected to said processing means, for displaying operation of said processing means and for allowing operator control of said processing means; and
  - a global rf communications network means for conveying said outgoing signal from said aircraft to said central station means and conveying said incoming rf signal from said central station means to said aircraft.
2. A global, paperless, aircraft maintenance system comprising:
- aircraft sensors which detect aircraft performance and control parameters;
  - means, located on board an aircraft, for providing maintenance advice to maintenance personnel;
  - a sensor multiplexer receiver and transmitter, located on board said aircraft, which:
    - accepts said aircraft performance and control parameters; converts said aircraft performance and control parameters, when necessary, to digital form;
    - adds an aircraft identification and configuration label; converts said aircraft performance and control parameters and said aircraft identification and configuration label to an outgoing rf signal and broadcasts said outgoing rf signal; and
    - receives an incoming rf signal, converts it to a maintenance advisory, feeds said maintenance advisory to said maintenance communication means;
  - an aircraft manufacturer's database for providing aircraft data and maintenance information;
  - a central station, located on the ground, which receives said outgoing rf signal and converts it to said aircraft performance and control parameters and said aircraft identification and configuration label, and broadcasts said incoming rf signal;
  - a processing means, connected to said central station, for:
    - archiving said aircraft performance and control parameters thus creating an archived data database;
    - combining said aircraft performance and control parameters with the archived data, and said aircraft data and maintenance information;
    - generating said maintenance advisory; and
    - converting said maintenance advisory to said incoming rf signal;
  - a display and control subsystem, connected to said processing means, and
  - a global rf communications network which conveys said outgoing signal from said aircraft to said central station and conveys said incoming rf signal from said central station to said aircraft.
3. A method of providing global, paperless, aircraft maintenance advisories comprising the steps of:
- mounting a performance sensor in an aircraft;
  - mounting a control sensor in said aircraft;
  - mounting a means in said aircraft, for providing maintenance advice to maintenance personnel;
  - mounting a sensor multiplexer receiver and transmitter system, in said aircraft;

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providing communications access to an aircraft manufacturer's database;  
 providing a central ground based station;  
 providing a processing means within said central ground based station; 5  
 providing a display and control subsystem, connected to said processing means;  
 providing a global, rf communications network;  
 accepting signals from said aircraft performance and control sensors into said sensor multiplexer receiver and transmitter; 10  
 converting, in said sensor multiplexer receiver and transmitter, said signals from said aircraft performance and control sensors, when necessary, to digital form; 15  
 adding an aircraft identification and configuration label;  
 converting said signals from said aircraft performance and control sensors, and said aircraft identification and configuration label, in said sensor multiplexer receiver and transmitter, to an outgoing rf signal; 20  
 transmitting said outgoing rf signal from said sensor multiplexer receiver and transmitter to said central ground base station via said global rf communications network; 25  
 receiving said outgoing rf signal at said central ground based station; converting said outgoing rf signal at said

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ground based central station to said aircraft performance and control signals plus said aircraft identification and configuration label;  
 performing within said processing means the steps of:  
 archiving said aircraft performance and control signals thus creating an archived data database;  
 combining said aircraft performance and control signals with the archived data, and information from said aircraft manufacturer's database;  
 generating maintenance advisories; and  
 converting said maintenance advisories to an incoming rf signal;  
 sending said incoming rf signal, via said global communications network, from said central ground based station to said sensor multiplexer receiver and transmitter;  
 converting said incoming rf signal, at said sensor multiplexer receiver and transmitter, to said maintenance advisories; and  
 feeding said maintenance advisory from said sensor multiplexer receiver and transmitter to said maintenance communication means.

\* \* \* \* \*

*ORIGINAL*

TOP SECRET "CONFIDENTIAL"



US005974349A

# United States Patent [19]

[11] Patent Number: **5,974,349**

Levine

[45] Date of Patent: **\*Oct. 26, 1999**

[54] REMOTE, AIRCRAFT, GLOBAL, PAPERLESS MAINTENANCE SYSTEM.

5,657,009	8/1997	Gordon	701/14
5,677,841	10/1997	Shiomi et al.	701/301
5,714,948	2/1998	Farmakis et al.	340/961
5,740,047	4/1998	Pilley et al.	701/301
5,890,079	3/1999	Levine	701/14

[76] Inventor: Seymour Levine, 21645 Saddle Peak Rd., Topanga, Calif. 90290

Primary Examiner—Gary Chin  
Attorney, Agent, or Firm—Norton R. Townsley

[\*] Notice: This patent is subject to a terminal disclaimer.

### [57] ABSTRACT

[21] Appl. No.: 09/205,331

This invention is a system that monitors many performance parameters and many aircraft operational parameters, and broadcasts this information along with aircraft identification, audio, video, global positioning and altitude data, to a world wide two-way rf network. This information is monitored and recorded at a remote, centralized location. At this location, this information is combined with archived data, ATC data, weather data, topological data, map data, and manufacturers' data. Analysis of this combined data allows identification of problems and generation of advisories. Six types of advisories are generated: maintenance, safety of flight, flight efficiency, flight separation, safe to fly and safe to take off. In the event of a crash the remotely recorded data provides an instant indication of the cause of the crash as well as where the crashed plane can be found. Use of this invention allows replacement of the current, on-board flight data recorders thus saving costs and weight. Having the recorded data at a remote site eliminates the need to search for flight data recorders. Other advantages are back-up for ATC radar position data, better control of aircraft separation, improved flight efficiency, and allowing use of simpler and lower power radar.

[22] Filed: Dec. 4, 1998

### Related U.S. Application Data

[63] Continuation of application No. 08/768,313, Dec. 17, 1996, Pat. No. 5,890,079.

[51] Int. Cl.<sup>6</sup> ..... G06F 19/00

[52] U.S. Cl. .... 701/29; 701/14; 701/35; 340/945

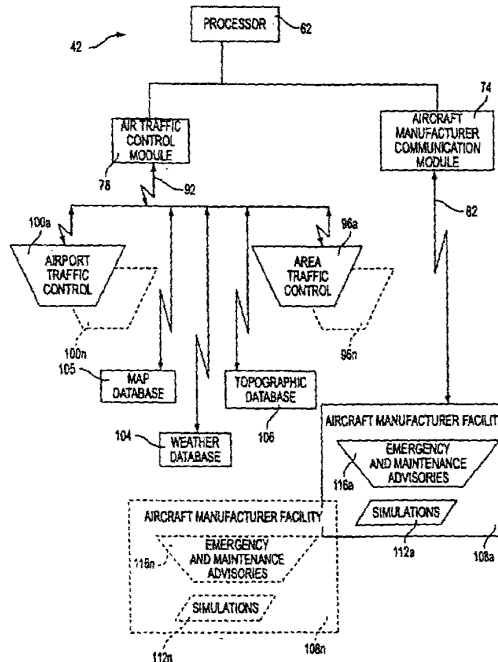
[58] Field of Search ..... 701/14, 29, 35, 701/120, 301; 340/945, 961, 963, 971; 342/29, 36, 37, 38, 454, 455, 456

### [56] References Cited

#### U.S. PATENT DOCUMENTS

4,729,102	3/1988	Miller, Jr. et al.	701/14
5,153,836	10/1992	Fraughton et al.	701/301
5,325,302	6/1994	Izidon et al.	701/301
5,383,133	1/1995	Staple	340/963
5,463,656	10/1995	Polivka et al.	375/200
5,467,274	11/1995	Vax	701/14
5,493,309	2/1996	Bjornholt	701/301

3 Claims, 4 Drawing Sheets



FOR "SEE" REFERENCE

Practitioner's Docket No. 57127

**PATENT**

**REISSUE APPLICATION DECLARATION AND POWER OF ATTORNEY**

**DECLARATION BY THE INVENTOR**

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name, I believe I am the original, first and sole inventor of the subject matter that is described and claimed in letters patent number 5,974,349, granted on October 26, 1999, and for which invention I solicit a reissue patent on the invention entitled REMOTE, AIRCRAFT, GLOBAL, PAPERLESS MAINTENANCE SYSTEM, the specification of which is attached hereto

I hereby declare that there is no assignee for this application.

**ACKNOWLEDGMENT OF REVIEW OF PAPERS AND DUTY OF CANDOR**  
(37 C.F.R. Section 1.175)

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information that is material to patentability as defined in Title 37, Code of Federal Regulations, Section 1.56.

In compliance with this duty, there is attached an information disclosure statement in accordance with 37 C.F.R. Section 1.98.

**PRIORITY CLAIM**

I do not claim foreign priority benefits under Title 35, United States Code, Section 119 of any foreign application(s) for patent. No such applications have been filed.

**STATEMENT OF INOPERATIVENESS  
OR INVALIDITY OF ORIGINAL PATENT**  
(37 C.F.R. Section 1.175)

That I verily believe the original patent to be partly inoperative or invalid by reason of (37 C.F.R. Section 1.175(a)(1)):

- \* the patentee claiming more or less than the patentee had a right to claim in the patent.

REISSUE APPLICATION

At least one error upon which reissue is based is described below. If the reissue is a broadening reissue, such must be stated with an explanation as to the nature of broadening:

Claim 1 is partially inoperative because the claim is drawn too narrowly, for example, "an aircraft manufacturer's database means for providing aircraft data and maintenance information" is an unnecessary limitation. New claims have been drawn to eliminate this requirement.

That the error listed above, which are being corrected, up to the time of the filing of this reissue declaration arose without any deceptive intention on the part of the applicant. (37 C.F.R. Section 1.175(a)(2).

**POWER OF ATTORNEY**

I hereby appoint the following practitioner(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith

Fred H. Holmes	43,677
Dennis D. Brown	33,559
Terry L. Watt	42,214
R. Alan Weeks	36,050
Scott R. Zingerman	35,422

I hereby appoint the practitioner(s) associated with the Customer Number provided below to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith.

*Seymour Zevni*

(310) 559-2965

SEND CORRESPONDENCE TO

DIRECT TELEPHONE CALLS TO:

Address: Fred H. Holmes  
FELLERS, SNIDER, BLANKENSHIP,  
BAILEY, & TIPPENS, P.C  
321 South Boston, Suite 800  
Tulsa, OK 74103-3318

918-599-0621

Customer No.: 22206

TELETYPE UNIT

**DECLARATION**

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

**SIGNATURE BY THE INVENTOR**

**Full name of sole or first inventor:** SEYMOUR LEVINE

**Inventor's signature:** *Seymour Levine*

**Date:** 10-24-01

**Country of Citizenship:** US

**Residence:** Culver City, CA

**Post Office Address:** 4928 Maytime Lane  
Culver City, CA 92030

FOOTNOTES





UNITED STATES PATENT AND TRADEMARK OFFICE

COMMISSIONER FOR PATENTS  
 UNITED STATES PATENT AND TRADEMARK OFFICE  
 WASHINGTON, D.C. 20231  
 www.uspto.gov



Bib Data Sheet

CONFIRMATION NO. 8221

<b>SERIAL NUMBER</b> 10/004,429	<b>FILING DATE</b> 10/25/2001 <b>RULE</b>	<b>CLASS</b> 701	<b>GROUP ART UNIT</b> 3661	<b>ATTORNEY DOCKET NO.</b> 57127
------------------------------------	---	---------------------	-------------------------------	-------------------------------------

**APPLICANTS**  
 Seymour Levine, Culver City, CA;

**\*\* CONTINUING DATA \*\*\*\*\***  
 THIS APPLICATION IS A REI OF 09/205,331 12/04/1998 PAT 5,974,349  
 WHICH IS A CON OF 08/768,313 12/17/1996 PAT 5,890,079

**\*\* FOREIGN APPLICATIONS \*\*\*\*\***

**IF REQUIRED, FOREIGN FILING LICENSE GRANTED\*\* SMALL ENTITY \*\***  
 \*\* 02/12/2002

Foreign Priority claimed 35 USC 119 (a-d) conditions met Verified and Acknowledged	<input type="checkbox"/> yes <input type="checkbox"/> no <input type="checkbox"/> yes <input type="checkbox"/> no <input type="checkbox"/> Met after Allowance Examiner's Signature _____ Initials _____	<b>STATE OR COUNTRY</b> CA	<b>SHEETS DRAWING</b> 4	<b>TOTAL CLAIMS</b> 63	<b>INDEPENDENT CLAIMS</b> 19
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**ADDRESS**  
 22206

**TITLE**  
 Remote, aircraft, global, paperless maintenance system

<b>FILING FEE RECEIVED</b> 1429	FEES: Authority has been given in Paper No. _____ to charge/credit DEPOSIT ACCOUNT No. _____ for following:	<input type="checkbox"/> All Fees
		<input type="checkbox"/> 1.16 Fees ( Filing )
		<input type="checkbox"/> 1.17 Fees ( Processing Ext. of time )
		<input type="checkbox"/> 1.18 Fees ( Issue )
		<input type="checkbox"/> Other _____
		<input type="checkbox"/> Credit

DRS

PATENT APPLICATION SERIAL NO. \_\_\_\_\_

U.S. DEPARTMENT OF COMMERCE  
PATENT AND TRADEMARK OFFICE  
FEE RECORD SHEET

12/10/2001 SFELEKE1 00000064 060540 10004429

01 FC:208		370.00	DP
<del>02 FC:202</del>		<del>672.00</del>	<del>DP</del>
<del>03 FC:203</del>	126.00	<del>414.00</del>	<del>DP</del>

Adjustment Date: 02/08/2002 TLUI11  
~~12/10/2001 SFELEKE1 00000064 060540 10004429~~  
~~02 FC:202 -672.00 DP~~  
~~03 FC:203 126.00 CR -414.00 DP~~

02/08/2002 TLUI11 00000003 10004429

01 FC:210		387.00	DP
02 FC:209		672.00	DP

Repln. Ref: 02/08/2002 TLUI11 0008334100  
 Dds:060540 Name/Numbers:10004429  
 FC: 704 627.00 CR

**PATENT APPLICATION FEE DETERMINATION RECORD**

Effective October 1, 2001

Application or Docket Number

10/004429

**CLAIMS AS FILED - PART I**

	(Column 1)	(Column 2)
TOTAL CLAIMS		
FOR	NUMBER FILED	NUMBER EXTRA
TOTAL CHARGEABLE CLAIMS	3 63 minus 20 = *	43
INDEPENDENT CLAIMS	3 19 minus 3 = *	16
MULTIPLE DEPENDENT CLAIM PRESENT <input type="checkbox"/>		

\* If the difference in column 1 is less than zero, enter "0" in column 2

**CLAIMS AS AMENDED - PART II**

*A*

	(Column 1)	(Column 2)	(Column 3)
AMENDMENT A	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA
Total	* 35	Minus ** 63	=
Independent	* 9	Minus *** 19	=
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM <input type="checkbox"/>			

SMALL ENTITY TYPE

RATE	FEE
BASIC FEE	370.00
X\$ 9=	387
X42=	672
+140=	
TOTAL	1429

OR OTHER THAN SMALL ENTITY

RATE	FEE
BASIC FEE	740.00
X\$18=	
X84=	
+280=	
TOTAL	

SMALL ENTITY

RATE	ADDITIONAL FEE
X\$ 9=	
X42=	
+140=	
TOTAL ADDIT. FEE	

OR OTHER THAN SMALL ENTITY

RATE	ADDITIONAL FEE
X\$18=	
X84=	
+280=	
TOTAL ADDIT. FEE	

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*B*

	(Column 1)	(Column 2)	(Column 3)
AMENDMENT B	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA
Total	*	Minus **	=
Independent	*	Minus ***	=
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM <input type="checkbox"/>			

RATE	ADDITIONAL FEE
X\$ 9=	
X42=	
+140=	
TOTAL ADDIT. FEE	

RATE	ADDITIONAL FEE
X\$18=	
X84=	
+280=	
TOTAL ADDIT. FEE	

*C*

	(Column 1)	(Column 2)	(Column 3)
AMENDMENT C	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA
Total	*	Minus **	=
Independent	*	Minus ***	=
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM <input type="checkbox"/>			

RATE	ADDITIONAL FEE
X\$ 9=	
X42=	
+140=	
TOTAL ADDIT. FEE	

RATE	ADDITIONAL FEE
X\$18=	
X84=	
+280=	
TOTAL ADDIT. FEE	

\* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.

\*\* If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20."

\*\*\* If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3."

The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

# CLAIMS ONLY

SERIAL NO. 10/004429  
 APPLICANT(S)

FILING DATE

## CLAIMS

	AS FILED		AFTER 1st AMENDMENT		AFTER 2nd AMENDMENT			*		*		*	
	IND.	DEP.	IND.	DEP.	IND.	DEP.		IND.	DEP.	IND.	DEP.	IND.	DEP.
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2	/						52		/				
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TOTAL DEP.		↓		↓		↓	TOTAL DEP.	44	↓		↓		↓
TOTAL CLAIMS		↓		↓		↓	TOTAL CLAIMS	63	↓		↓		↓

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\* MAY BE USED FOR ADDITIONAL CLAIMS OR ADMENDMENTS

**Application Data Sheet**

**Application Information**

Application Type:: Reissue  
Subject Matter:: Utility  
Suggested Classification::  
Suggested Group Art Unit:: 3661  
CD-ROM or CD-R? None  
Title:: Remote, Aircraft, Global, Paperless Maintenance System  
Attorney Docket Number:: 57127  
Request for Early Publication:: n/a  
Request for Non-Publication:: n/a  
Suggested Drawing Figure:: 4  
Total Drawing Sheets:: 4  
Small Entity:: Yes  
Petition Included:: No  
Secrecy Order in Parent Appl.?:: No

FOIA b 7 - D

**Application Information**

Applicant Authority type:: Inventor  
Primary Citizenship Country:: US  
Status:: Full Capacity  
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Middle Name::  
Family Name:: Levine  
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Country of Residence:: US

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 Fax:: (918) 583-9659  
 Electronic Mail:: fholmes@fellerssnider.com

FELLERS SNIDER

**Representative Information**

Representative Customer Number:	22206
---------------------------------	-------

**Domestic Priority Information**

Application::	Continuity Type::	Parent Application::	Parent Filing Date::
This application is	Reissue of	09/205,331	12/04/1998
09/205,331	Continuation of	08/768,313	12/17/1996

*examined*  
1-19,  
24-39 & 49

#3  
6-802  
DRS  
PreA

**PATENT**  
Express Mail No. EL923831765US

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re reissue of: SEYMOUR LEVINE )  
Patent No.: 5,974,349 )  
Filed: 12/04/1998 )  
For: Remote, Aircraft, Global, )  
Paperless Maintenance System )  
Group No.: 3661 )  
Examiner: Gary Chin )

**Box Reissue  
Commissioner for Patents  
Washington, D.C. 20231**

**PRELIMINARY AMENDMENT**

Dear Sir:

Please amend the above-identified reissue application as follows:

In the Claims:

Please add new claims 4 - 63 as follows:.

AI  
1 103  
2 877 = new 140  
3 7/1/29  
4  
add claim number to underline  
(37 CFR 1.173(b)(2))

*not in claim 1000*  
4. An aircraft maintenance system comprising:  
a transmitter portable to be placed on an aircraft, said transmitter  
configured for transmission of digital performance data across a  
communication network; and

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1 a central station connected to said communication network configured to  
2 receive and analyze said transmission of digital performance data,  
3 wherein said digital data includes an identifier unique to a particular  
4 aircraft.

1 5. The aircraft maintenance system of claim 4 wherein said transmitter is  
2 positionable on <sup>said</sup> (an) aircraft having a flight data recorder and at least a portion of said  
3 digital performance data comprises data directed to said flight data recorder.

1 6. The aircraft maintenance system of claim 4 further comprising:  
2 a sensor multiplexer located on said aircraft, said sensor  
3 multiplexer having a plurality of inputs for receiving aircraft performance  
4 and control parameters from existing aircraft sensors, and an output in  
5 communication with said transmitter for providing said digital  
6 performance data to said transmitter.

1 7. The aircraft maintenance system of claim 4 wherein said digital  
2 performance data further includes digitized audio information.

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1 1458 8. The aircraft maintenance system of claim 4 wherein said digital  
2 performance data further includes digitized video information.

1 9. The aircraft maintenance system of claim 5 wherein said digital  
2 performance data includes aircraft position data directed to said flight data recorder.

1 10. The aircraft maintenance system of claim 9 wherein information provided  
2 by a GPS receiver is used in the calculation of said aircraft position data.

1 11. The aircraft maintenance system of claim 10 wherein information provided  
2 by an inertial navigation system is used in the calculation of said aircraft position data.

1 12. The aircraft maintenance system of claim 4, wherein said central station is  
2 further configured to transmit digital data on said communication network, further  
3 comprising:

4 a receiver on said aircraft configured to receive digital data from said

5 communication network; and

6 a maintenance communication means, located on said aircraft, for

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7 providing maintenance advice to maintenance personnel, said  
8 maintenance communication means having an input for receiving  
9 said maintenance advice from said receiver,  
10 wherein said maintenance advice is transmitted from said central station to  
11 said receiver.

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FOOTNOTES

1 13. The aircraft maintenance system of claim 12 wherein said maintenance  
2 advice is provides<sup>d</sup> aurally to said maintenance personnel.

1 14. The aircraft maintenance system of claim 8 wherein said central station  
2 includes a storage system for storing said aircraft performance and control parameters.

1 15. An aircraft maintenance system comprising:  
2 a transmitter configured for transmission of data across a communication  
3 network, said transmitter positionable to be located on an aircraft;  
4 a ground based station connected to said communication network  
5 configured to receive said transmission of data; and  
6 a sensor multiplexer located on said aircraft, said sensor multiplexer  
7 having a plurality of inputs for receiving aircraft performance and

8 control parameters from aircraft sensors and an output in  
9 communication with said transmitter for providing said data to said  
10 transmitter;  
11 *note* wherein said digital data further includes an aircraft identifier unique to a  
12 particular aircraft.

1 16. The aircraft maintenance system of claim 15, wherein said ground based  
2 station is further configured to transmit data on said communication network, further  
3 comprising:

4 a receiver located on said aircraft, said receiver configured to receive data  
5 from said communication network; and  
6 a maintenance communication means which receives maintenance  
7 advisory data from said receiver and provides maintenance advice  
8 to maintenance personnel,  
9 wherein said maintenance advice is transmitted from said ground based  
10 station to said receiver.

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1 17. The aircraft maintenance system of claim 15 wherein said ground based  
2 station includes a storage system for archiving said aircraft performance and control

3 parameters.

1 9/21/29 18. A method for real-time monitoring and archiving of aircraft performance  
2 102 data including the steps of:  
3 5381140  
4 providing a performance sensor in an aircraft, said performance sensor  
5 having an output indicative of an aircraft performance parameter;  
6 electronically transmitting at least said aircraft performance parameter to a  
7 global communication network;  
8 receiving said aircraft performance parameter from said global  
9 communication network at a ground based station; and  
10 archiving said aircraft performance parameter at said ground based station.

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19. A method for determining whether to issue an aircraft maintenance  
20 advisory according to claim 18 including the steps of:  
21 performing the method of claim 18;  
22 analyzing said performance parameter;  
23 transmitting an aircraft maintenance advisory when the analysis of said  
24 performance parameter indicates an aircraft problem;  
25 receiving said maintenance advisory on said aircraft; and

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8 displaying said maintenance advisory on said aircraft.

1 340/945<sup>t</sup> 20. An in-flight advisory system comprising:  
2 a transmitter for transmitting an advisory to an aircraft in a digital form;  
3 a receiver located in said aircraft configured to receive said digital form of  
4 said advisory; and  
5 a display means for displaying said advisory in said aircraft,  
6 wherein said advisory includes an identifier exclusive to said aircraft.

1 21. The in-flight advisory system of claim 20 wherein said advisory  
2 comprises information selected from the group consisting of:

- 3 (a) weather information;  
4 (h) air traffic control information; and  
5 (i) area traffic data.

1 22. An in-flight advisory system comprising:  
2 a transmitter for transmitting an advisory to an aircraft in a digital form;  
3 a receiver located in said aircraft configured to receive said digital form of  
4 said advisory; and

5 a display means for displaying said advisory in said aircraft,  
6 wherein said advisory comprises information selected from the group  
7 consisting of:  
8 (a) flight separation information;  
9 (b) topographical information;  
10 (c) wind shear information;  
11 (d) lightning information;  
12 (e) emergency information;  
13 (f) crash avoidance information;  
14 (g) information from the manufacturer of said aircraft;  
15 (h) air traffic information;  
16 (i) area traffic information;  
17 (j) safe to take off information; and  
18 (k) safe to fly information.

1 23. An in-flight advisory system comprising:  
2 a transmitter for transmitting an advisory via a global communication  
3 network;  
4 a receiver located in said aircraft configured to receive said advisory; and

5 a display means for displaying said advisory in said aircraft.

1 24. A digital data communication system for an aircraft comprising:  
2 a transceiver located on the aircraft, said transceiver configured to transmit  
3 and receive digital data to and from a global communication  
4 network; and  
5 a central station configured to transmit and receive digital data to and from  
6 said global communication network,  
7 wherein a transmission by an aircraft on said global communication  
8 network includes an identifier, said identifier being unique to a  
9 particular aircraft.

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1 25. The digital data communication system of claim 24 further comprising:  
2 a sensor multiplexer having a plurality of inputs for receiving information  
3 from a plurality of aircraft sensors, said information including the  
4 position and heading of said aircraft, and an output for digitally  
5 communicating said information to said transceiver for  
6 transmission via said global communication network.

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1           26.    The digital data communication system of claim 25 wherein said plurality  
2 of aircraft sensors includes a GPS receiver.

1           27.    The digital data communication system of claim 25 wherein said plurality  
2 of aircraft sensors includes an acoustic sensor for receiving audible information.

1           28.    The digital data communication system of claim 24 further comprising a  
2 display means on said aircraft, said display means configured to display information  
3 encoded in said digital data received by said transceiver.

1           29.    The digital data communication system of claim 24 wherein said central  
2 station includes data storage and at least a portion of said digital data transmitted from  
3 said aircraft is stored in said data storage.

1           30.    The digital data communication system of claim 29 wherein said portion  
2 of said digital data includes data selected from the group consisting of:

- 3           *not in spec* (a)    airspeed of the aircraft;  
4                    (b)    aircraft attitude;  
5                    (c)    fuel status of the aircraft;



- 6                    (d)    engine status of the aircraft;
- 7                    (e)    flight control positions;
- 8                    (f)    landing gear status; and
- 9                    (g)    control surface positions.

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31. The digital data communication system of claim 30 wherein said portion of said digital data is analyzed at said central station to determine if a flight safety advisory or a maintenance advisory is warranted.

32. The digital data communication system of claim 31 further comprising a display means on said aircraft, wherein said central station transmits said flight safety advisory or said maintenance advisory to said transceiver and said display means is configured to display said flight safety advisory or said maintenance advisory.

33. A digital data communication system for an aircraft comprising a receiver configured to receive a transmission from a central station, said transmission being relayed to said receiver by way of a satellite and said transmission comprising digitally encoded information, wherein said digitally encoded information includes an identifier unique to a particular aircraft.

1                    34.    The digital data communication system of claim 33 wherein said digitally  
2 encoded information includes weather information.

1                    35.    The digital data communication system of claim 33 wherein said digitally  
2 encoded information includes maintenance advisory information.

1                    36.    A telemetric crash data recorder comprising:  
2                    a sensor multiplexer receiver and transmitter; and  
3                    a central ground based station having a data storage device,  
4                    wherein said sensor multiplexer receiver and transmitter receives aircraft  
5                    performance and control parameters from existing sensors on an  
6                    aircraft and transmits said performance and control parameters to  
7                    said central ground based station over a world wide  
8                    communication system for storage in said data storage device.

1                    37.    The telemetric crash data recorder of claim 36 further comprising:  
2                    a GPS receiver in communication with said sensor multiplexer receiver  
3                    and transmitter such that a position of said aircraft is transmitted to

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4 said central ground based station.

1 38. The telemetric crash data recorder of claim 37 wherein said central ground  
2 station includes a processor for analyzing performance and control parameters and said  
3 aircraft position such that, in the event of a crash, said processor will calculate a crash  
4 site.

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w. J. J.*

*N.M.*

1 39. The telemetric crash data recorder of claim 37 wherein said performance  
2 and control parameters comprise information recorded by an on board flight data  
3 recorder.

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1 40. An air traffic control system comprising:  
2 a radio frequency transceiver located on an aircraft, said radio frequency  
3 transceiver configured to transmit and receive digital information;  
4 an inertial navigation system located on said aircraft, said inertial  
5 navigation system providing the position of said aircraft to said  
6 transceiver; and  
7 an air traffic control facility configured to receive and display said position  
8 of said aircraft to an air traffic controller.

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1           41.    The air traffic control system of claim 40 further comprising a GPS  
2 receiver, wherein said position of said aircraft is augmented with data from said GPS  
3 receiver.

1           42.    An improved air traffic control system of the type having an air traffic  
2 control facility wherein air traffic controllers observe a radar image of controlled aircraft,  
3 the improvement comprising:

- 4                   a ground based station comprising:
  - 5                           a receiver for receiving precision navigation information from the
  - 6   controlled aircraft;
  - 7                           a ground communication system in communication with the air
  - 8   traffic control facility,

9                   wherein said precision navigation information is transmitted to the air  
10   traffic control facility over said ground communication system to  
11   enhance the information provided to the air traffic controllers.

1           43.    The improved air traffic control system of claim 42 wherein said ground  
2 communication system includes a fiber optic link between said ground based station and

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3 the air traffic control facility.

1 701 | 301 44. A ground collision avoidance system for an aircraft comprising:  
2 a positioning system for providing an aircraft position;  
3 a transceiver for transmitting said aircraft position and receiving a position  
4 of nearby aircraft;  
5 a display for displaying said position of nearby aircraft relative to said  
6 aircraft position,  
7 wherein each aircraft which transmits an aircraft position has a unique  
8 identifier and said unique identifier is included in each  
9 transmission.

1 45. The ground collision avoidance system of claim 44 wherein said  
2 positioning system comprises an inertial navigation system.

1 46. The ground collision avoidance system of claim 45 wherein said  
2 positioning system further comprises a GPS receiver.

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1                   47.    The ground collision avoidance system of claim 45 wherein said aircraft  
2 includes a flight data recorder and said positioning system provides data to said flight  
3 data recorder.

1                   48.    The ground collision avoidance system of claim 45 wherein said  
2 positioning system further provides an aircraft heading and wherein said transceiver  
3 transmits said aircraft heading.

1                   49.    A method for transmitting and receiving aircraft performance and control  
2 parameters comprising:

3                               providing a sensor multiplexer on an aircraft for receiving information  
4                               from aircraft sensors;

5                               transmitting said information to a communication network with a first  
6                               transceiver aboard said aircraft, said first transceiver configured to  
7                               transmit digital information on said communication network; and

8                               receiving said digital information at a ground station having a second  
9                               transceiver configured to receive information from said  
10                              communication network.

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1 50. An aircraft having a global digital communication system comprising:  
2 a transceiver for digital communication over a global communication  
3 system;  
4 an in-cockpit display having a display means, said display means receiving  
5 flight advisory data from said transceiver, and an operator input  
6 means; and  
7 a multiplexer for receiving information from aircraft sensors and from said  
8 in-cockpit display, said multiplexer having an output in  
9 communication with said transceiver for transmitting said  
10 information over said global communication network,  
11 wherein said information comprises aircraft performance and control  
12 parameters provided to a flight data recorder on board the aircraft.

1 51. The aircraft of claim 50 wherein said flight advisory data includes at least  
2 one advisory from the group consisting of:  
3 (a) weather advisory;  
4 (b) air traffic advisory;  
5 (c) anti-collision advisory; and

- 6 (d) ground incursion advisory;
- 7 (e) flight information advisory;

1 52. The aircraft of claim 50 wherein said flight advisory information includes  
2 a maintenance advisory wherein said maintenance advisory is transmitted from a ground  
3 station to said transceiver over said communication upon the receipt and analysis of said  
4 information.

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FOOT SHEET
- 701301 1 53. A method for avoiding an in-flight collision including the steps of:
- 2 (a) transmitting an identifier from an aircraft, said identifier being
  - 3 unique to said aircraft;
  - 4 (b) transmitting the position of said aircraft wherein said position of
  - 5 said aircraft includes a heading of said aircraft;
  - 6 (c) receiving said identifier and said position at a central station;
  - 7 (d) analyzing said position of said aircraft relative to other objects and
  - 8 the ground to determine a risk of collision;
  - 9 (e) sending a flight safety advisory to said aircraft when said analysis
  - 10 indicates there is a risk of collision.



1 54. The method of claim 53 wherein the position of step (b) further includes:  
2 the altitude of said aircraft;  
3 the latitude of said aircraft;  
4 the longitude of said aircraft; and

1 55. The method of claim 54 wherein the position of step (b) further includes:  
2 the pitch position of said aircraft; and  
3 the roll position of said aircraft.

1 56. The method of claim 55 wherein the position of step (b) further includes;  
2 the rate of climb of said aircraft;  
3 the velocity of said aircraft;  
4 the yaw rate of said aircraft;  
5 the pitch rate of said aircraft; and  
6 the roll rate of said aircraft.

1 57. The method of claim 53 wherein step (b) includes the substeps of:  
2 (b)(i) obtaining a position of said aircraft from the inertial reference  
3 system of said aircraft; and

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4 (b)(ii) transmitting said position of said aircraft wherein said position of  
5 said aircraft includes a heading of said aircraft.

1 58. The method of claim 57 wherein step (b) includes the substeps of:

2 (b)(i) obtaining a position of said aircraft from the inertial reference  
3 system of said aircraft;

4 (b)(ii) obtaining a position of the flight controls of said aircraft;

5 (b)(iii) transmitting said position of said aircraft and said position of flight  
6 controls of said aircraft wherein said position of said aircraft  
7 includes a heading of said aircraft.

1 59. The method of claim 53 including the additional steps of:

2 (f) receiving said flight safety advisory on said aircraft; and

3 (g) displaying said flight safety advisory to the flight crew of said  
4 aircraft.

1 60. The method of claim 53 wherein step (d) includes the substeps of:

2 (d)(i) calculating a separation distance between said aircraft and a  
3 plurality of other objects; and

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4 (d)(ii) analyzing said separation distance and the position of said aircraft  
5 relative to the ground to determine a risk of collision.

1 61. The method of claim 60 further including the steps of:

2 (f) sending said separation distance to said aircraft;

3 (g) displaying said separation distance to the flight crew of said

4 aircraft.

1 340/945 62. A safe to take off advisory system comprising:

2 a transceiver located in said aircraft configured to transmit aircraft

3 performance and control parameters and to receive a safe to take

4 off advisory; and

5 a central station for receiving said aircraft performance and control

6 parameters and transmitting said safe to take off advisory to an

7 aircraft based on said performance and control parameters;

8 a display means for displaying said safe to take off advisory in said

9 aircraft.

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1           63.    The safe to take off advisory system of claim 62 wherein said central  
2           station obtains weather information and includes said weather information in said  
3           analysis to determine if it safe for said aircraft to take off.

**REMARKS**

This amendment adds claims 4-63 to which the Applicant was entitled at the time of filing of the original application and which are supported by the specification as originally filed. Since this reissue application is filed within two years of the issue date of United States Patent No. 5,974,349, namely October 26, 1999, Applicant may enlarge the scope of the claimed invention pursuant to 35 U.S.C. § 251 which provides:

No reissue patent shall be granted enlarging the scope of the original patent unless applied for within two years from the grant of the original patent.

No additional fee is believed to be due beyond the fee included in the reissue application filed contemporaneously herewith. However, if any fee is made payable by the filing of this paper, please consider this our authorization to charge the deposit account of the undersigned, Deposit Account No. 06-0540.

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Respectfully submitted,

10/25/2001  
Date

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SIGNATURE OF PRACTITIONER

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# ARTIFACT SHEET

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