UNITED STATES DISTRICT COURT
DISTRICT OF NEVADA

Jed Margolin,

Plaintiff

v.

CHARLES F. BOLDEN, in his official capacity as Administrator,
National Aeronautics and Space Administration, and
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Defendants.

Appendix Volume 2

For Second Amended Complaint

Jed Margolin
1981 Empire Rd.
VC Highlands, NV 89521-7430
Phone: 775-847-7845
Email: jm@jmargolin.com

Dated: December 22, 2009

Appendix Volume 2 - Index

Exhibit 17

Exhibit 17

Two boxes of documents from NASA on November 16, 2009.

Exhibit 18

Exhibit 18

National Aeronautics and Space Administration

Headquarters
Washington, DC 20546-0001

November 5, 2009

Reply to Attn of: 08-HQ-F-00270

Mr.Jed Margolin
1981 Empire Road
Reno, NV 89521

Dear Mr. Margolin:

This is a supplemental response to your Freedom of Information Act (FOIA) request for "all documents related to the Administrative Claim of Jed Margolin for Infringement of U.S. Patent Nos. 5,566,073 and 5,904,724; NASA Case No. I-222," from the files of the National Aeronautics and Space Administration (NASA).

Although arguably outside the scope of your request to the NASA Headquarters FOIA Office, NASA has expanded its search to identify additional records, provided by offices located at the Johnson Space Center (JSC), Langley Research Center (LaRC), the NASA Management Office (NMO) and Headquarters (HQ), which are considered responsive to your request. These enclosed documents, consisting of approximately 4,000 pages of agency records are a part of a system of records exempt from the mandatory disclosure provisions under Title 5, USC §552 of the FOIA. Certain documents and portions of documents have been withheld under applicable FOIA exemptions.

The removal of this information constitutes a partial denial pursuant to the following provisions of Title 5, USC, §552:

(b)(3) – implementing nondisclosure provisions that are contained in 41 U.S.C. § 253b, which protects "proposals in the possession or control of an executive agency";

(b)(4) – which protects "trade secrets and commercial or financial information obtained from a person that is privileged or confidential";

(b)(5) – which protects inter-agency documents generated which "are predecisional and/or deliberative in nature" and information protected as attorney work product; and

(b)(6) – which protects the privacy interests of individuals by protecting "information concerning his or her person."

Since you have appealed the initial response to this FOIA and instituted litigation against NASA on your request, your administrative remedies stemming from this supplemental response have been exhausted and any appeal on this supplemental response must be addressed in that action.

Any further questions should be directed to the undersigned, at (202) 358-0068.

Sincerely,

Stephen L. McConnell
NASA Freedom of Information Act Officer

Exhibit 19

Exhibit 19

The Players

The following people were involved in the Patent Claim and/or FOIA request. Their current job functions are listed for identification purposes. They may have had different job titles during different periods of the life of the claim and/or FOIA action. Some have retired. Some came onboard relatively recently, such as Jan McNutt who came to NASA from DOD's Defense Information Systems Agency (DISA) around 2008 after Alan Kennedy retired.

Major Players

1. Alan Kennedy (Attorney, Office of the General Counsel, NASA HQ, now retired)

2. Barry V. Gibbens (Patent Attorney, Langley Research Center, now deceased)

3. Edward K. Fein (Intellectual Property Counsel, NASA Johnson Space Center).

4. John Muratore (Program Manager, X-38/Crew Return Vehicle).

5. Francisco (Frank) J. Delgado of the Engineering Directorate (Johnson Space Center) headed up the software project for the X-38 program.

6. Mike Abernathy (Rapid Imaging Software) is the contractor who supplied the synthetic vision software for the X-38 project.

7. Gary G. Borda (Office of the Associate General Counsel, Agency Lead Attorney, NASA HQ)

8. Robert F. Rotella (Attorney, Office of the General Counsel, Commercial and Intellectual Property Law Practice Group)

9. Dan Baize (Project Manager, Synthetic Vision, NASA Langley Research Center)

10. Mark W. Homer (Patent Counsel, NASA Management Office -JPL)

11. John H. Del Frate is director of the Advanced Planning and Partnerships Office at NASA's Dryden Flight Research Center.

12. Kurt G. Hammerle is a patent attorney at Johnson Space Center.

13. Mr. Jan McNutt (Attorney, Office of the Associate General Counsel, Commercial and Intellectual Property Law Practice Group, NASA Agency Counsel for Intellectual Property, NASA HQ)

People in the loop. There is no evidence in the documents of their responses, or that they responded. However, absence of evidence is not evidence of absence.

14. James Whittington (SBIR Specialist at the Johnson Space Center)

15. Mary E. Dickerson (Paralegal Specialist at the Johnson Space Center).

16. Kathy Bayer is a Legal Technician in the Office of the Associate General Counsel.

17. Christopher J. Culbert is the Deputy Division Chief of the Automation, Robotics, and Simulation Division at NASA/Johnson Space Center.

18. Frank J. Benz is the Manager of the NASA Johnson Space Center (JSC) White Sands Test Facility (WSTF) near Las Cruces, New Mexico. Appointed to this position in 2005.

19. Charlene E. Gilbert is the Director of the Technology Transfer Office at Johnson Space Center.

20. John (Jack) E. James is Assistant Director, Technology Transfer Office, Johnson Space Center.

21. Cliff L. Farmer is Chief of the Display & Control Development Office, Johnson Space Center.

22. Guy W. Walter is Chief of the Automation, Robotics, and Simulations Division, Engineering Directorate. Mr. Walter is a real engineer who has made significant contributions to the space program. Why did they have to drag him into this mess?

23. Trey Arthur works at the NASA Langley Research Center. He is listed as the co-author on several reports from the early 2000's on synthetic vision.

24. Lt Col Eric A. Boe, (JSC-CB) (NASA), now Colonel. Colonel Boe is an astronaut. Why did NASA bother him with this?

25. James M. Cate was an Patent Attorney at Johnson Space Center, now retired.

26. Theodore U. Ro is currently a Patent Attorney at Johnson Space Center.

27. Kumar Krishen (JSC-HA) is currently Technology Account Manager at Johnson Space Center.

28. David D. Haines (JSC-HA) is currently Technology Account Manager at Johnson Space Center.

29. Collin Hieger (JSC-HA) (UNK) is current SBIR Associate at Johnson Space Center.

30. Dr. Helen W. Lane (JSC-AD) (NASA) is currently National Aeronautics and Space Administration (NASA), Johnson Space Center (JSC) Chief Nutritionist and Manager of the NASA JSC University Research and Affairs Office.

31. Greg W. Hayes (JSC-AD) (NASA) is currently Director of Human Resources and Education at Johnson Space Center.

32. Bernard J. Roan (JSC-AL) (NASA) is currently Chief Counsel of the Legal Office at Johnson Space Center, and provides in-depth legal support to the center's activities, including satellite installations and offices.

33. Daniel R. Remington (DAN) (JSC-AL) (NASA) was Deputy Chief Counsel of the Legal Office at Johnson Space Center.

34. Linda Blackburn was Patent Counsel in the Office of Chief Counsel, Langley Research Center. She retired on Oct. 26, 2009.

35. Dr. Stephen E. Fredrickson (JSC-ER) is currently the Assistant Chief of the Special Projects Office in the Automation, Robotics and Simulation Division of Johnson Space Center.

36. Mr. Thomas Moore (OSD-ATL) - “OSD” indicates he is with the Office of the Secretary of Defense. “ATL” might mean Atlanta, but it probably means Acquisition, Technology & Logistics (AT&L).

37. 'Davey, Jon (Bingaman)' is a staffer for U.S. Senator Jeff Bingaman (D-NM) . He is Senator Bingaman's Legislative Assistant for issues related to the military and veterans' affairs. He graduated from Carleton College in 2003 with a bachelor's degree in International Relations.

Other

38. Stephen L. McConnell (NASA Freedom of Information Act Officer, NASA HQ)

39. Kellie Robinson (FOIA Public Liaison Officer, NASA HQ)

40. Thomas S. Luedtke (Associate Administrator for Institutions and Management, NASA HQ)

41. John H. Del Frate is director of the Advanced Planning and Partnerships Office at NASA's Dryden Flight Research Center.

42. Brent R. Cobleigh is Director of the Exploration Systems Mission Directorate at NASA's Dryden Flight Research Center,

43. David A. Samuels is Chief Counsel of NASA’s Dryden Flight Research Center.

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Exhibit 20

Exhibit 20

[redacted] Claim 1

X-Sender: [redacted]
X-Mailer: QUALCOMM Windows Eudora Version 5.1
Date: Mon, 19 May 2003 11:15:04 -0400
To: [redacted]
From: "Barry V. Gibbens, LaRC" <[redacted] b(6)
Subject: Fwd: Re: X-38, Synthetic Vision, Patents, Claim for Compensation
Cc: "Linda B. Blackburn" <[redacted]
robin W Edwards <[redacted]
"Kurt G. Hammerle" [redacted]

b(5) [redacted]

Date: Tue, 13 May 2003 17:14:07 -0400
To: "Jed Margolin" <[redacted] b(6)
From: "Kurt G. Hammerle @ Langley Research Center" [redacted]
Subject: Re: X-38, Synthetic Vision, Patents, Claim for Compensation
Cc: linda

Dear Mr. Margolin:

This reply acknowledges my receipt of your correspondence below.

Sincerely,
Kurt Hammerle

At 11:13 PM 5/12/2003 -0700, you wrote:
Dear Mr. Hammerle,

This is in reference to our telephone conversation of May 12, 2003, where I expressed my belief that NASA may have used one or more of my patents in connection with the X-38 project and may be using one or more of my patents in other projects using Synthetic Vision.

Summary

Barry V. Gibbens
NASA Langley Research Center
Intellectual Property Law Team - Office of Chief Counsel
[redacted]0001

phone: (757) 864-7141
fax: (757) 864-9190
email: [redacted]
wwwebsite: http://tech-transfer.larc.nasa.gov/

NEW E-MAIL ADDRESS: Please note that effective immediately, my e-mail address is now [redacted]. Please update your mail systems accordingly. Thanks.

Barry V. Gibbens
NASA Langley Research Center
Intellectual Property Law Team - Office of Chief Counsel
[redacted]

phone: (757) 864-7141
fax: (757) 864-9190
email: [redacted]
wwwebsite: http://tech-transfer.larc.nasa.gov/

NEW E-MAIL ADDRESS: Please note that effective immediately, my e-mail address is now [redacted] Please update your mail systems accordingly. Thanks.

Barry V. Gibbens
NASA Langley Research Center
Intellectual Property Law Team - Office of Chief Counsel
[redacted]

phone: (757) 864-7141
fax: (757) 864-9190
email: [redacted]
wwwebsite: http://tech-transfer.larc.nasa.gov/

NEW E-MAIL ADDRESS: Please note that effective immediately, my e-mail address is now [redacted] Please update your mail systems accordingly. Thanks.

FW: Administrative Claim of Jed Margolin for Infringement of U.S. Patent 5,904,724 by the X-38 Project

From: FEIN, EDWARD K. (JSC-HA) (NASA) [redacted]
To: Kennedy, Alan [redacted]

Date: Jul 09 2004 - 4:17pm
Viewed On: - - ?date?

Alan ... Not sure I forwarded this one.

-Ed
-----Original Message-----
From: Mike Abernathy [mailto:[redacted] b(6)
Sent: Monday, June 28, 2004 9:10 AM
To: FEIN, EDWARD K. (JSC-HA) (NASA)
Subject: RE: Administrative Claim of Jed Margolin for Infringement of U.S. Patent 5,904,724 by the X-38 Project

Hi Ed,

Frank is back in West Virginia presenting SmartCam3D for NASA Software of the Year.

What kinds of things would be used to demonstrate that a patent is invalid? Is it necessary to show that people had done this before the patent was issued or before the patent application?
This patent claims in the 1995 application that it developed the method of pilot aid using a 3D synthetic environment. But at this webpage, you can see that a Dutch university had already flown such an environment in 1994:
http://www.synthetic-vision.tudelft.nl/
(See First flight of the DELPHINS Tunnel-in-the-sky display at the bottom of the list of links).

The patent claims a pilot aid using a synthetic environment – if the method were used for another purpose than aiding the pilot like for example aiding a camera operator instead would that be infringement?

What bothers me about this patent is that it appears to be not a patent on peanut butter, nor on jelly, but rather a patent on the method of making a sandwich by combining the two. This to me appears to be a non-novel use of existing technologies to create a "method". Everyone familiar with the field of synthetic vision is boggled that such a patent has been issued because it is obvious use of existing technologies.

Let me know how I can help.

Best regards,

Mike Abernathy
Rapid Imaging Software, Inc.
[redacted] b(6)

www.landform.com
www.visualflight.com

-----Original Message-----
From: FEIN, EDWARD K. (JSC-HA) (NASA) [mailto:[redacted] b(6)
Sent: Thursday, June 24, 2004 9:01 AM
To: DELGADO, FRANCISCO J. (FRANK) (JSC-ER2) (NASA)
Cc: [redacted] WHITTINGTON, JAMES (JSC-HA) (USA); DICKERSON, MARY E. (JSC-HA) (NASA); MURATORE, JOHN F. (JSC-MS) (NASA) b(6)
Subject: RE: Administrative Claim of Jed Margolin for Infringement of U.S. Patent 5,904,724 by the X-38 Project

Frank ... Haven't heard from you in a while. Where are we on this project? I just spoke with Mike Abernathy, Rapid Imaging, one of our SBIR contractors. He said he'd be happy to help us. He has information which may

be relevant to antedating the subject patent.

-Ed
-----Original Message-----
From: FEIN, EDWARD K. (JSC-HA) (NASA)
Sent: Monday, February 23, 2004 10:10 AM
To: DELGADO, FRANCISCO J. (FRANK) (JSC-ER2) (NASA)
Cc: 'Kennedy, Alan'; MURATORE, JOHN F. (JSC-MS) (NASA)
Subject: RE: Administrative Claim of Jed Margolin for Infringement of U.S. Patent 5,904,724 by the X-38 Project
Thanks, Frank!

-Ed
-----Original Message-----
From: DELGADO, FRANCISCO J. (FRANK) (JSC-ER2) (NASA)
Sent: Friday, February 20, 2004 8:16 PM
To: MURATORE, JOHN F. (JSC-MS) (NASA); FEIN, EDWARD K. (JSC-HA) (NASA)
Cc: 'Kennedy, Alan'
Subject: RE: Administrative Claim of Jed Margolin for Infringement of U.S. Patent 5,904,724 by the X-38 Project

[redacted]

b(5)

[redacted]

Thanks,

Frank Delgado

Frank Delgado
Building 1, Room 920C
Phone: [redacted]
Fax: [redacted]
Pager: [redacted]

b(6)

-----Original Message-----
From: MURATORE, JOHN F. (JSC-MS) (NASA)
Sent: Friday, February 20, 2004 6:37 PM
To: FEIN, EDWARD K. (JSC-HA) (NASA); DELGADO, FRANCISCO J. (FRANK) (JSC-ER2) (NASA)
Cc: 'Kennedy, Alan'
Subject: RE: Administrative Claim of Jed Margolin for Infringement of U.S. Patent 5,904,724 by the X-38 Project

b(5)

[redacted]

jm
-----Original Message-----

From: FEIN, EDWARD K. (JSC-HA) (NASA)
Sent: Friday, February 13, 2004 10:52 AM
To: MURATORE, JOHN F. (JSC-MS) (NASA)
Cc: 'Kennedy, Alan'
Subject: Administrative Claim of Jed Margolin for Infringement of U.S. Patent 5,904,724 by the X-38 Project

b(5)

[redacted]

-Ed

Edward K. Fein
Intellectual Property Counsel
NASA Johnson Space Center

b(6)

Fax:
E-Mail:

FW: Margolin Infringement

From: FEIN, EDWARD K. (JSC-HA) (NASA) <
To: DICKERSON, MARY E. (JSC-HA) (NASA
Date: Jul 09 2004 - 2:43pm
Viewed On: - - ?date?

b(6)

RE: - 267k

RE: - 100k

RE: - 9.7k

FW: - 12k

FW: - 12k

-----Original Message-----
From: FEIN, EDWARD K. (JSC-HA) (NASA)
Sent: Friday, July 09, 2004 2:41 PM
To: 'Kennedy, Alan'

Cc: 'Bayer, Kathy';
Subject: Margolin Infringement

b(5) [redacted]

RE:

From: Mike Abernathy [redacted] b(6)
To: 'FEIN, EDWARD K. (JSC-HA) (NASA)' [redacted]
Date: Jun 28 2004 - 1:29pm
Viewed On: - - ?date?

FW: Patents 5566073 and 5904724

From: FEIN, EDWARD K. (JSC-HA) (NASA) [redacted] b(6)
To: CULBERT, CHRISTOPHER J. (CHRIS) (JSC-ER) (NASA) [redacted]
Date: Jul 13 2004 - 1:26pm
Viewed On: - - ?date?

[redacted] b(5)

-----Original Message-----
From: FEIN, EDWARD K. (JSC-HA) (NASA)
Sent: Tuesday, July 13, 2004 8:37 AM
To: BENZ, FRANK J. (JSC-EA) (NASA); GUY, WALTER W. (JSC-ER) (NASA); FARMER, CLIFF L. (JSC-ER) (NASA)
Cc: GILBERT, CHARLENE E. (JSC-HA) (NASA); JAMES, JOHN E. (JACK) (JSC-HA) (NASA)
Subject: Patents 5566073 and 5904724

b(5) [redacted]

Edward K. Fein
Intellectual Property Counsel
NASA Johnson Space Center
Mail Code HA
[redacted] b(6)
Fax: [redacted]
E-Mail: [redacted]

-----Original Message-----

04606

From: FEIN, EDWARD K. (JSC-HA) (NASA)
Sent: Monday, July 12, 2004 11:00 AM
To: DELGADO, FRANCISCO J. (FRANK) (JSC-ER2) (NASA); 'Kennedy, Alan'; [redacted] b(6)
Cc: FARMER, CLIFF L. (JSC-ER) (NASA); MURATORE, JOHN F. (JSC-MS) (NASA)
Subject: RE: Patents 5566073 and 5904724

Frank ... Thank you so much for your detailed analysis and research on this matter. I know that you invested considerable time into assisting in the defense of this infringement claim. Your effort, together with valuable input from Mike Abernathy, will be the basis for NASA's denying the administrative claim. There is always a chance that Margolin will file a law suit, but with all of the information you guys have turned up, I think the chance of that is small.

Thanks again!

-Ed

Edward K. Fein
Intellectual Property Counsel
NASA Johnson Space Center
[redacted] b(6)
Fax
E-Mail: [redacted]

Hi,

The material I sent you was actually with reference to the other Margolin patent 5,506,673.

Best regards,

Mike Abernathy
Rapid Imaging Software, Inc.
[redacted] b(6)
www.landform.com
www.visualflight.com

-----Original Message-----
From: FEIN, EDWARD K. (JSC-HA) (NASA) [mailto: [redacted] b(6)
Sent: Monday, June 28, 2004 9:13 AM
To: 'Mike Abernathy'
Cc: 'Kennedy, Alan'
Subject: RE:

Thanks, Mike!

-Ed
-----Original Message-----
From: Mike Abernathy [mailto [redacted] b(6)
Sent: Monday, June 28, 2004 9:48 AM
To: FEIN, EDWARD K. (JSC-HA) (NASA)
Subject:
Ok, one more:

04607

[redacted] G. Sachs:

[redacted] b(4)

Best regards,

Mike Abernathy
Rapid Imaging Software, Inc.
(505) 265 7020

www.landform.com
www.visualflight.com

RE: FW: Jed Margolin (I 222)

From: DICKERSON, MARY E. (JSC-HA) (NASA) <[redacted] b(6)
To: Kathryn L. Bayer <[redacted]
CC: FEIN, EDWARD K. (JSC-HA) (NASA) [redacted]
Date: Jun 09 2004 - 1:16pm
Viewed On: - - ?date?

b(5) [redacted]

-----Original Message-----
From: Kathryn L. Bayer [mailto:Kathy.Bayer@nasa.gov]
Sent: Wednesday, June 09, 2004 1:10 PM
To: DICKERSON, MARY E. (JSC-HA) (NASA)
Subject: Re: FW: Jed Margolin (I 222)

b(5) [redacted]

At 01:07 PM 6/9/2004 -0500, you wrote:
b(5) >[redacted]
>
>[redacted]
>
>-----Original Message-----
>From: FEIN, EDWARD K. (JSC-HA) (NASA)

Exhibit 21

Exhibit 21

Jan. 5, 1971 I. COOPER ET AL 3,552,980

PACKAGED FOOD PRODUCT AND PROCESS FOR MAKING SAME

Filed Nov. 12, 1969

Fig. 1

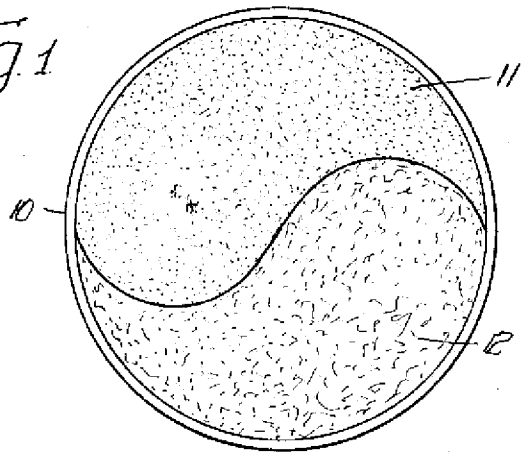


Fig. 2

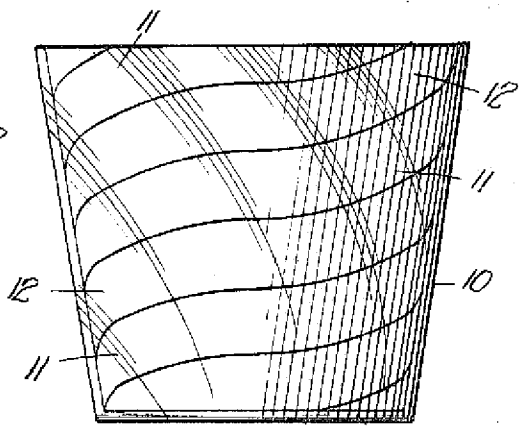
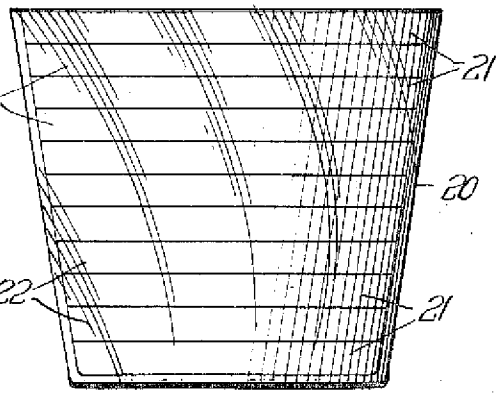


Fig. 3



Inventors:
Irwin Cooper,
Edwin I. Sexton,
Daniel Melnick,
Marcus I. Wegner,
By [illegible] Attys.

United States Patent Office

3,552,980
Patented Jan. 5, 1971

3,552,980

PACKAGED FOOD PRODUCT AND PROCESS FOR MAKING SAME

Irwin Cooper, Staten Island, N.Y., and Edwin Leon Sexton, Red Bank and Daniel Melnick, Teaneck, N.J., and Marcus I. Wegner, Lanham, Md., assignors to CPC International Inc., a corporation of Delaware

Continuation-in-part of application Ser. No. 594,015, Nov. 14, 1966. This application Nov. 12, 1969, Ser. No. 876,026

Int. Cl. A23l *1/36, 1/38, 1/106*

U.S. Cl. 99—128 23 Claims

ABSTRACT OF THE DISCLOSURE

A hydrophilic spread such as peanut butter is packaged in contact with a modified sweet aqueous spread, which is virtually indistinguishable in flavor, texture, spreadability and mouthing characteristics from a conventional jelly, jam, or the like. The modified sweet aqueous spread, which can readily be prepared by modifying a suitable conventional jelly, jam, or the like, has the following composition; from about 10% to about 20% water; from about 10% to about 20% of a non-aqueous edible liquid viscosity reducing agent such as glycerine, the water and viscosity reducing agent being present in an amount of from about 25% to about 35%; from about 10% to about 30% corn syrup solids; the remainder of the spread comprising water-soluble carbohydrates, naturally-occurring fruit solids, plus, if desired, minor amounts of various optional ingredients customarily present in jellies, jams, or the like. The spread is further characterized by less than 50% of the non-aqueous portion thereof comprising carbohydrate materials having a molecular weight of less than 200. The two spreads can be packaged in contact with one another for an indefinite period of time, without any water migrating from the modified sweet aqueous spread into the hydrophilic spread, and without any crystallization of the sugars contained in the modified sweet aqueous spread.

This application is a continuation-in-part of our copending application Ser. No. 594,015, filed Nov. 14, 1966, now abandoned.

This invention relates to new food products. More particularly, it relates to stable, packaged peanut butter-base foods such as sandwich spreads, and to methods of making them.

This invention also relates to a process of treating sweet aqueous spreads such as preserves, jams, jellies, and the like, to make them stable against water loss when in contact with a hydrophilic material such as peanut butter, without deleteriously affecting their texture, spreadability, flavor, color and mouthing characteristics.

Various types of preserves, jellies, jams, and confections are ordinarily delicious when freshly mixed with peanut butter. Unfortunately, when sweet, aqueous spreads of this kind are mixed with peanut butter, and the mixture is allowed to stand for a few days, the peanut butter becomes hard, appears dry even though its moisture content has increased, and generally becomes an unattractive brown in appearance and very objectionable in taste. The aqueous spread in the mixture loses its moisture to the peanut butter spread and objectionable sugar crystallization occurs. If the mixture stands for any prolonged period of time, such as, for example, the several-week period that would be typical of transit time and shelf life for peanut butter or the like in a grocery store, the mixture changes so drastically that it is no longer a marketable product. Moreover, mixtures of peanut butter with some materials such as, for example, grape jelly, are very unattractive in appearance and, if thoroughly mixed and then packaged, probably would look too unattractive to be readily saleable even in the fresh state.

One of the most popular sandwich combinations is peanut butter and fruit jelly, such as apple jelly. A stable packaged food product containing a combination of peanut butter and jelly would be a great convenience to the consumer, would be very pleasant to use, and could be packaged in a number of attractive ways. Unfortunately, it has not been possible in the past to make up stable packages of such mixtures.

One object of the present invention is to provide a new, attractive packaged food product.

Another object of the invention is to provide a new packaged food product that is a stable combination of different foods that can be eaten together to provide a delicious taste that is attributable to their combination.

A related object of the invention is to provide a new, attractive, stable packaged food product that includes peanut butter in combination with at least one other different and separate food in the same package, where the food, other than the peanut butter, is a sweet spread that has an appreciable moisture level.

A further object of the invention is to provide a new packaged food spread of the character described, that is stable over prolonged periods of time under practical temperature storage conditions.

Still another object of the invention is to provide a new packaged food product, of good appearance, that includes at least two separate spreads, one of which is peanut butter, and another of which is a modified sweet aqueous spread, that does not change in appearance upon aging, even at the interface between phases, that is stable in flavor over prolonged periods of time under practical temperatures of storage, and that is not susceptible to microbiological spoilage.

A related object of the invention is to provide new, practical techniques for making food products of the character described.

Other objects of the invention will be apparent hereinafter from the description of the invention and from the recitals of the appended claims:

In the drawing:

FIG. 1 is a top plan of an open jar (i.e., a jar with its top removed) containing twin spirals of peanut butter and of a modified sweet aqueous spread, having a strawberry preserve base, made and packed in accordance with one preferred embodiment of this invention, as described in greater detail hereafter in Example I;

FIG. 2 is a side elevation thereof, and

FIG. 3 is a side elevation of an open jar containing alternating layers of peanut butter and of a modified sweet aqueous spread, made and packed in accordance with another preferred embodiment of this invention, as also described in greater detail in Example I.

We have discovered a method of preparing a spread, hereinafter referred to as a "modified sweet aqueous spread," which is virtually indistinguishable from a conventional jelly, jam, preserve, fruit butter, or the like in

appearance, flavor, texture, and mouthing characteristics, which can be packaged in direct contact with peanut butter or other such hydrophilic, proteinaceous spread, over long periods of storage, without deterioration of either the modified sweet aqueous spread or the hydrophilic spread. The modified sweet aqueous spread comprises from about 10% to about 90% by weight of the product of our invention, and preferably from about 30% to about 70% of the total product, by weight.

All references hereafter to parts or to percentage compositions are by weight.

The modified sweet aqueous spread should have the following composition:

(1) From about 10% to about 20% water;

(2) From about 10% to about 20% non-aqueous, edible liquid viscosity-reducing-agent (to be defined); the combination of ingredients (1) and (2) being present in an amount of from about 25% to about 35%;

(3) From about 10% to about 30% corn syrup solids (to be defined);

(4) The remainder comprising water-soluble carbohydrates and naturally occurring fruit solids (to be defined) plus, if desired, such optional ingredients as natural or artificial flavoring and/or coloring materials, artificial sweeteners, additional pectin (other than that present in the fruit) or other gelling agents, and the like.

A further requirement of the modified sweet aqueous spread, in addition to the above-listed ingredients, is that less than 50% of the non-aqueous ingredients (i.e. ingredients (2) through (4)) be carbohydrates having a molecular weight of less than 200, e.g. monosaccharides, low molecular weight derivatives of monosaccharides, or polyhydric alcohols.

Ingredient number (2) can be any non-aqueous, edible liquid which will reduce the viscosity of the spread and restore to it the texture and mouthing characteristics of a conventional jelly, jam, or the like. Jellies, jams, and the like customarily contain about 28% to about 32% water. As will be discussed more fully hereinafter, the preferred method of preparing the spread is to employ a conventional jelly or the like as the starting material and modify it appropriately. However, a jelly or similar spread having a water content of between 10% and 20% is quite viscous, i.e. it has an objectionably heavy body and does not have the spreadability and mouthing characteristics generally associated with products of this type. Therefore, to restore to the spread the viscosity, body, spreadability and mouthing characteristics of a conventional spread an appropriate amount of a viscosity reducing agent is added. The essential characteristics of the viscosity reducing agent are that it be edible (obviously), liquid, non-aqueous, water-miscible, and capable of restoring the body, mouthing characteristics, etc. of the spread to their original state. Also, it should not have a strong or objectionable flavor which would mask or interfere with the flavor of the spread. Suitable viscosity reducing agents are glycerine and the edible liquid glycols such as propylene glycol. For reasons of economy and availability glycerine is preferred.

The amount of viscosity reducing agent used will vary from about 10% to about 20% of the final modified sweet aqueous spread, the latter with a total moisture content ranging from about 10% to about 20%. The combination of these liquid materials (a non-aqueous viscosity reducing agent and water) in the final modified sweet aqueous spread ranges from about 25% to about 35%. Using the minimum concentrations of each of the two types of liquids set forth (i.e. 10% moisture, 10% non-aqueous liquid) is inadequate to give a satisfactory spread since it is then undesirably stiff, generally sticky and dry. The minimum concentration of the combination of the aqueous and non-aqueous liquids must therefore be about 25% of the final modified sweet aqueous spread. Conversely, using the maximum concentrations of each of the individual liquid components gives an unacceptable product; the modified sweet aqueous spread is then

thin, resulting in flow characteristics that are undesirable. Such a modified sweet aqueous spread, when packaged according to the teaching of this invention, will run off and drain to the bottom of the container as the product is in use. The concentration of the combination of aqueous and non-aqueous liquids must therefore be no greater than about 35% of the final modified sweet aqueous spread.

By the term "corn syrup solids" (ingredient number (3)) is meant those products, measured on a dry basis, derived from the hydrolysis of corn starch or related starches, such as milo starch, by acid and/or enzyme catalysis, whereby the starch is hydrolyzed to a "dextrose equivalent" (D.E.) ranging from about 10 to about 70. Those corn syrup solids having a D.E. in the range of about 10 to about 20 are preferred.

The corn syrup solids are present in the spread in an amount of within the range of from about 10% to about 30%, based on the total weight of the spread. The purpose of the corn syrup solids is twofold. First, because of their hydrophilic nature, they act to "bind up," or hold, the water present in the spread and thereby prevent its migration into the hydrophilic spread (e.g. peanut butter). Second, they inhibit the crystallization of the other sugars (e.g. sucrose) present in the spread, which crystallization would normally take place rapidly in a jelly or jam with a water content of 10% to 20%.

The remainder of the modified sweet aqueous spread comprises those materials ordinarily present in fruit jellies, fruit jams, fruit preserves, fruit butters, fruit sauces (e.g. apple sauce or cranberry sauce), and similar fruit-based, spreadable foodstuffs. These materials are primarily naturally occurring fruit solids (i.e. those solid materials present in fruit juice, plus fruit pulp if the product is a jam or the like) and additional water-soluble carbohydrates such as sucrose. Other optional ingredients can also be present, e.g. additional pectin or other gelling agents if necessary, natural or artificial flavoring agents, natural or artificial coloring materials, preservatives, synthetic sweeteners, etc.

The exact process employed in the preparation of the modified sweet aqueous spread is immaterial, the only requirement being that the finished product have the composition set forth and have a spreadable, semi-solid consistency typical of jellies, jams, fruit butters and sauces, etc. The simplest, and therefore preferred, method of preparation is to start with a suitable conventional jam, jelly, or the like and modify it to form the composition of the invention. By the term "conventional" jam, jelly, or the like is meant any such product customarily so identified, either "home made" or commercially prepared. Commercial fruit jellies, jams, preserves and butters, including the artificially sweetened type, must necessarily meet the standards set by the Food and Drug Administration. By the term "suitable" conventional jam, etc. is meant a product having such composition that it can be modified to the composition of the sweet aqueous spread of the invention.

The following discussion will illustrate the foregoing remarks, and will also illustrate various methods of practicing the invention.

Taking fruit jelly as an example, the FDA standards (Code of Federal Regulations Title 21, Chapter 1, Section 29.2) define fruit jelly as a gelled food made from a mixture composed of not less than 45 parts fruit juice to each 55 parts of an approved saccharine ingredient, which mixture may also contain specified optional ingredients. Among the saccharine ingredients are the following: (1) sucrose; (2) invert sugar syrup; (3) any combination of (1) and (2); (4) dextrose in combination with (1), (2) or (3); (5) corn syrup solids or the like (40 D.E. or higher) in combination with (1), (2), (3) or (4), provided the combination comprises no more than 25% corn syrup solids; (6) honey; (7) certain combinations of

First, assume the starting material to be a jelly prepared by combining 45 parts fruit juice (containing about 15% solids) and 55 parts sucrose, and cooking to a final moisture content of about 28%. The jelly will have approximately the following composition:

	Percent
Water	28
Sucrose	64
Fruit solids	8
	100

The jelly could be modified to form a modified sweet aqueous spread in accordance with the invention by merely adding appropriate amounts of corn syrup solids and glycerine. For example, combining 50 parts of the jelly with 25 parts corn syrup solids and 15 parts glycerine would result in a spread having the following approximate composition:

	Percent
Water	15.5
Sucrose	35.6
Fruit solids	4.4
Corn syrup solids	27.8
Glycerine	16.7
Monosaccharides	0.0
	100.0

Water plus glycerine: 32.2%
Percentage of non-aqueous portion consisting of materials having a molecular weight not greater than 200:19.8 (glycerine only)

An apparent error in the above figures will readily be observed, i.e. the fact that the figures show no monosaccharides to be present. It is known, of course, that fruit solids consist primarily of sugars, both mono- and disaccharides. It is also known that during the manufacture of fruit jelly or the like, and also during storage of the finished product, a certain amount of inversion of the sucrose to dextrose and levulose takes place, the amount of inversion depending upon the acidity of the environment. With respect to the monosaccharides contributed by the fruit solids, the amount, which will depend upon the particular fruit employed, is insignificantly small and therefore can be ignored. As to the amount of monosaccharides produced by inversion, this is immaterial to the practice of the invention, the important consideration being the amount and nature of the saccharine ingredients put into the initial jelly formula or later added to the jelly during the modification of same to form the modified sweet aqueous spread. Therefore, when we refer to the proportion of monosaccharides or other carbohydrates of molecular weight not greater than 200 (and we use the term "carbohydrates" in its broad sense, to include such polyhydric alcohols as glycerine and glycols), it should be understood that this refers to the carbohydrates as originally used in the formulation of the jelly or modified sweet aqueous spread, and not as formed through inversion.

As a second illustration, assume the jelly to have been prepared as in the first illustration, with the addition of 55 parts of a saccharine ingredient to 45 parts of fruit juice, but with the saccharine ingredient comprising 25% corn syrup solids and 75% sucrose. The composition of the jelly will then be:

	Percent
Water	28
Sucrose	48
Corn syrup solids	16
Fruit solids	8
	100

This jelly could readily be modified to form the spread of the invention by simply removing a suitable portion of the water and replacing it with a viscosity reducing agent such as glycerine. If, for example, the water is reduced to 15% and glycerine added in an amount equal to the water removed, the spread will have the following composition:

	Percent
Water	15
Sucrose	48
Fruit solids	8
Corn syrup solids	16
Glocerine	13
Monosaccharides	0
	100

Water plus glycerine: 28%
Percentage of non-aqueous portion consisting of materials having a molecular weight not greater than 200:15.3%

As a third illustration, assume the jelly to have been prepared using invert syrup as the sole saccharine ingredient, and further assume invert syrup to comprise only monosaccharides. The composition of the jelly will then be as follows:

	Percent
Water	28
Monosaccharides	64
Fruit solids	8
	100

This jelly could not be used as a starting material in the practice of the invention, because it would be virtually impossible to modify it in such a way as to produce a modified sweet aqueous spread in which the non-aqueous portion contained less than 50% carbohydrates having a molecular weight of 200 or less.

Frequently, during the preparation of the modified sweet aqueous spread, excess air is introduced into the spread (e.g. during the incorporation of the corn syrup solids and/or the viscosity reducing agent into the jelly or the like), which will cause the spread to lose the smooth translucent appearance generally associated with jams, etc. If this occurs it is highly desirable to deaerate the product, as by subjecting it to a vacuum, to restore the original "jelly like" appearance.

Once the modified sweet aqueous spread has been prepared, it can be packaged in direct contact with a hydrophilic spread such as peanut butter. It should be noted that no treatment of the hydrophilic spread itself is necessary. No migration of water occurs across the interface between the two phases, or, if there is migration, it is minimal and not detectable organoleptically. When peanut butter is used as the hydrophilic spread, no darkening or stiffening of the peanut butter or flavor defects are noted at the interface, and no crystallization of the sugars in the modified sweet aqueous spread will occur during extended periods of storage of up to 5 months in the temperature range of 45° F. to 95° F. or during use by the consumer.

By the term "hydrophilic spread" is meant any food material that has a spreadable consistency and that has a relatively high content of protein and carbohydrate (both hydrophilic materials) and of fat, and that is essentially moisture-free having a low water content (about 4% or less). Typical of these spreads are the well known nut butters such as peanut butter, as well as other spreads and sandwich fillings that are hydrophilic in character and that have low moisture contents. Examples of the latter are compounds of skim milk solids with carbohydrates and fats, with or without flavorings and colors to provide spreads with the same usage as the nut butters. Following the addition of water in limited amounts, these hydrophilic spreads are all characterized by becoming firm, appearing dry (even though their moisture content has increased) and objectionable in taste within a short period of time (viz several days). On the further addition of moisture, these products will thin out but flavor stability will still be

poor and now microbiological hazards will be introduced.

The fact that a hydrophilic spread such as peanut butter does not stiffen or increase in viscosity when placed in direct contact with a modified sweet aqueous spread treated in accordance with our invention is totally unexpected. It is known, of course, that water or a water-containing material such as conventional jelly will, when placed in contact with peanut butter, cause the peanut butter to stiffen. It is also known that the addition of glycerine to peanut butter results in greater oil retention of the peanut solids and thereby increases the viscosity of the peanut butter. It is further known that a dry pulverulent material such as corn syrup solids or the like also has a drying and stiffening effect on peanut butter. It is totally unexpected, therefore, that a modified sweet aqueous spread, prepared in accordance with our invention, and containing water, glycerine and corn syrup solids, can now be packed in direct contact with peanut butter for an extremely long period of time without causing any stiffening or increased viscosity of the peanut butter. Also of importance are the observations that no darkening of the peanut butter or objectionable flavors develop when this hydrophilic spread is in contact with our modified sweet aqueous spread.

The hydrophilic spread can be any spreadable food that is characterized by a moisture content of less than 4%, that contains about 15 to about 35% protein, about 30 to about 55% by weight of fat, and the remainder being essentially carbohydrate solids, except for the coloring and flavoring agents (including salt) that may be added. Nut butters, nut butter products, nut spreads, and composites of milk solids, of soy flour, of protein isolates, singly and in combinations along with carbohydrates and fats are all satisfactory. Peanut butter is a preferred material.

The conventional process for making peanut butter comprises the steps of roasting shelled peanuts, cooling and blanching the peanuts, removing the nibs, hand picking the objectionable peanuts for discard, grinding the peanuts that passed inspection, mixing in the sugar and salt flavorings, and then regrinding. During the roasting of the peanuts, the moisture content is reduced so that the final product will contain less than 4% moisture. In making the stabilized peanut butters now on the market, a hydrogenated component described below is introduced prior to the last grinding operation. About 92.5% of the product (90–95%) is ground roasted peanuts. The protein content of conventional peanut butter is about 29% (27–32%; NX6.25) and the oil content is about 50% (48–52%).

Conventional peanut butters in the past consisted of ground roasted peanuts and sugar (dextrose and/or sucrose) and salt flavorings. Because this product exhibits gravitational instability (oil layer separating on top of the product), it has become regular practice to add a relatively high melting fat component to the hot peanut butter (about 170° F.), at some time prior to the filling of the product into jars. This high melting fat component usually has a melting point in excess of 110° but less than 160° F. and may be: a partially hydrogenated fat, a completely hydrogenated fat, mono- (and di-) glyceride esters of the unsaturated fatty acids, or mixtures of these firming up agents. These high melting fat components, when added in small amounts (viz 1–3% of the peanut butter), may be introduced as a supplement to the ground roasted peanuts or when added in larger amounts (viz 5–10% of the peanut butter) may be introduced after an equivalent amount of the liquid peanut oil in the ground roasted peanuts has been removed. The added hard fat sets up as continuous or semi-continuous stearine structure within the final supercooled peanut butter during the holding of the product at room temperature and in so doing prevents oil from separating from the peanut butter. During this period the peanut butter, packed originally as a supercooled flowable product, changes to a non-flowable but still spreadable product. The sugar and salt flavorings are added in peanut butter manufacture in total amount usually less than 10%. Liquid non-hydrogenated vegetable oil is frequently added to the mixture in amounts up to about 5%. Since ground roasted peanuts consist of about 50% peanut oil and 50% non-fat peanut solids, we estimate the quantity of ground roasted peanuts in peanut butter by multiplying the non-fat peanut solids by 2. Thus a product with 46.25% non-fat peanut solids would characterize a peanut butter made from 92.5% ground roasted peanuts.

While it is preferred to practice the present invention with the use of a stabilized peanut butter as the hydrophilic spread, old fashioned peanut butter (not stabilized) can also be used, provided the supercooled finished product is refrigerated immediately after packaging and distributed and used thereafter in the refrigerated state. Under such circumstances, oil separation in the peanut butter will not occur. Peanut butter products that are sweetened to make them particularly attractive to children, peanut butter products that are protein enriched, and peanut butter products that include moisture-free foods and flavorings other than ground nuts can also be used as the hydrophilic spread.

In packaging the modified sweet aqueous spread and the hydrophilic spread together, it is preferred to use twin nozzles, each nozzle to inject a stream of one of the two spreads into the package, such as a glass jar. The use of twin nozzles permits the two streams to be dispensed into a rotating glass jar as twin spirals, for example, which permits filling the package with separate and alternating helices of the different spreads; the end product has a very attractive appearance simulating that of a barber pole. Other attractive packaging techniques can also be employed such as, for example, alternating layers of the two spreads. The hydrophilic spread must be flowable for proper packaging and adequately chilled (supercooled) to provide a rapid set in the jar thereby keeping the two spreads separate from each other.

The invention will now be further illustrated by reference to specific examples thereof.

EXAMPLE I

Commercially purchased strawberry preserves, which had been prepared initially by combining 45 parts strawberries, 55 parts sucrose, and minor amounts of pectin and citric acid, and cooking the mixture to a composition having 28% moisture, were used as the starting material. The preserves were ground to reduce the pieces of fruit to tiny particle sizes. 55 parts of the ground preserves, 27 parts of corn syrup solids having a D.E. within the range of about 10 to about 20, and 18 parts of glycerine were intimately blended together, and the blend was heated to 160° F. The mixture was then deaerated and cooled to about 90° F. At this point, the modified sweet aqueous spread had a moisture content of 15.4% by weight. The combination of moisture and glycerine totalled 33.4%.

This modified sweet aqueous spread was then delivered through one of two twin nozzles into glass jars, while a smooth texture, supercooled but still flowable, stabilized peanut butter (92.5% ground roasted peanuts) was delivered through the second nozzle. The jars were each rotated as they were filled, so that the peanut butter and modified sweet aqueous spread were disposed in twin spirals within each jar.

Each jar had the appearance shown in FIGS. 1 and 2 of the drawing. The numeral **10** refers to the jar. The spiral **11** of the modified sweet aqueous spread, together with the spiral **12** of peanut butter, fill the jar, and are in contact with each other over their broad, confronting, engaged surfaces.

The jars were sealed and stored after filling. No change was observed in the contents after aging for periods of time within the normal expected supermarket shelf time of four to six months. The spirals of modified sweet aque-

ous spread and of the peanut butter showed no characteristics of dehydration or of hydration respectively. The modified sweet aqueous spread remained translucent and of good color and free of any evidence of sugar crystallization even when the combined product was stored for months on end in the refrigerator at 45° F. The peanut butter showed no hardening or browning whatsoever and the absence of such undesirable changes was noted even at the interphase despite storage even at elevated temperature (viz 95° F.). The flavor of each spread was characteristic and comparable to the flavor it would have if stored separately in its own jar.

The contents were easily removed by knife or spoon, were easily spreadable, and were delicious alone or spread on either crackers or bread. The flavor of the mixture of the two phases was appealingly sweet, and the separate flavors and textures of each of the two phases were readily discernible.

Equally satisfactory results were obtained when the modified sweet aqueous spread was packed, in twin spiral form, with stabilized peanut butters of regular (creamy) and of chunky textures respectively.

In another demonstration of the invention with the same modified sweet aqueous spread and with a smooth texture stabilized peanut butter, filling was in alternating fashion, so that first the supercooled peanut butter flowed into the container, then the peanut butter flow stopped, and modified sweet aqueous spread flowed into the container, on top of the set-up peanut butter and so on. Each jar was held stationary as it was filled. Each filler jar contained alternating layers of peanut butter and of modified sweet aqueous spread, as shown in FIG. 3, where the numeral **20** denotes the jar, and the layers **21** are peanut butter, and the alternate layers **22** are modified sweet aqueous spread. The same satisfactory characteristics of stability, delicious taste, spreadability, good mouthing, and attractive appearance were observed.

EXAMPLE II

Commercially purchased pineapple preserves were used as the starting material. The preserves had been prepared in a manner similar to that of the strawberry preserves of Example I, except that pineapple had been substituted for the strawberries, and the saccharine ingredient had been a blend of 25% invert sugar and 75% sucrose.

First, the moisture content of the preserves was reduced to about 18% by weight by evaporation under moderate vacuum in a wiped film evaporator. Then, corn syrup solids derived from the hydrolysis of milo starch, having a D.E. of about 15, were added to reduce the moisture content further to about 14%. Glycerine was then added to the batch while maintaining the vacuum and the batch was mixed carefully, still under vacuum, to complete the deaeration and to obtain uniform composition throughout. The modified sweet aqueous spread had an appearance, color, flavor, viscosity and eating characteristics very similar to that of the initial preserve. The modified sweet aqueous spread had the following composition:

MODIFIED SWEET AQUEOUS SPREAD

Ingredients:	Percent by weight
Solids from the original pineapple preserves	53
Water remaining	12
Corn syrup solids (15 D.E.)	18
Glycerine	17
Total	100

The modified preserve (modified sweet aqueous spread) was then permitted to cool in a holding tank, to a point where it was still easily pumpable. The modified preserve was then delivered through a nozzle into glass jars, at the same time that a second nozzle was used to direct a smooth textured, supercooled, stabilized (90% ground roasted peanuts) peanut butter into the same jars. The jars were each rotated as they were filled, so that the [illegible] nut butter and modified preserve were disposed in twin spirals within each jar.

The jars were then sealed and stored. The results were equally satisfactory as the results obtained in Example I.

EXAMPLE III

A compounded hydrophilic spread was made up as follows:

COMPOUNDED HYDROPHILIC SPREAD

Components:	Percent by weight
Non-fat dry milk powder (250 mesh)	19.5
Casein-Lactalbumin fusion product (Ca-Sal of 200 mesh, 85% protein content obtained from Crest Food Products)	15.5
Flour salt	0.5
Corn syrup solids (10–20 D.E.)	20.5
Peanut oil	42.0
Hydrogenated cottonseed stearine (M.P.=140° F.)	2.0

The peanut oil and stearine were heated together to 150° F. Ethyl vanillin (0.005%) and carotene (equivalent to 6000 units of Vitamin A per pound of product) were dissolved or dispersed in the oil. The mixed dry ingredients were then stirred in. The mixture was deaerated and was then supercooled in an agitated heat exchanger, to 80° F.

It was still flowable and was then packed in spiral fashion into glass jars with a modified sweet aqueous spread like that of Example I except with grape jelly replacing the strawberry preserve of Example I, and the modified sweet aqueous spread now containing 19% by weight of propylene glycol in place of the 18% glycerine. The combination of moisture and viscosity reducing agent in this spread totalled 34.4% by weight. The jars were then sealed and stored. No change was observed in the contents after aging for periods of time covering a four months observation period with exposure temperatures ranging from 45° F. to 95° F. The modified jelly showed no signs of dehydration and the compounded hydrophilic phase showed no signs of hydration, i.e. no detectable moisture transfer between phases occurred.

The contents were spoonable, were easily spread, and were delicious alone or on crackers or bread. The flavor of each phase was appealingly sweet, and the separate flavors and textures of the two phases complemented each other. The product did not require refrigerated storage and was not susceptible to microbiological spoilage.

EXAMPLE IV

The procedure described above in Example I was modified in another demonstration of the invention. The ground strawberry preserves were heated under vacuum to remove roughly about half of the water present in the preserves (12% weight reduction). These partially dehydrated preserves were then used in the following formulation:

MODIFIED SWEET AQUEOUS SPREAD

Ingredients:	Percent by weight
Partially dehydrated ground strawberry preserves (18% moisture)	74.8
Corn syrup, 42 D.E. (20% moisture)	14.0
Glycerine	11.2

These components were blended and heated to 160° F., deaerated, and then cooled to about 90° F. The moisture content of this modified, sweet aqueous spread was 16.3% by weight and the combination of moisture and viscosity reducing agent totalled 27.5%

The modified preserves were then packaged with peanut butter in the manner described in Example I. The product was highly satisfactory in all regards.

EXAMPLE V

The procedure of Example IV was modified in another [illegible] of the invention. The partially dehydrated

strawberry preserves of Example IV were employed in the following formulation:

MODIFIED SWEET AQUEOUS SPREAD

Ingredients:	Parts by weight
Partially dehydrated pulverized strawberry preserves (18% moisture)	77.0
Corn syrup solids (10–20 D.E.)	11.5
Glycerine	11.5

These materials were blended and heated to about 160° F., deaerated, and cooled. The modified sweet aqueous spread so obtained was packed as in Example I with a smooth texture, stabilized, supercooled peanut spread (82.5% ground roasted peanuts), at a temperature of about 90° F. The product was highly satisfactory. The moisture content, by analysis, of the modified fruit preserve phase, as packaged, was 14.6%, and the combination of moisture and viscosity reducing agent totalled 26.1% by weight.

Equally good results are obtained when the modified sweet aqueous spread is prepared fom a material such as, for example, fruit butter, fruit-flavored syrups, fruit sauces, and the like, modified to have a final water content in the range of from about 10% to about 20% by weight thereof, a non-aqueous liquid viscosity reducing agent in an amount of from about 10% to about 20% by weight thereof, the combined amount of water and viscosity reducing agent being within the range of from about 25% to about 35%, and a sufficient content of corn syrup solids (within the range of from about 10% to about 30%) to provide sufficient water retentativeness to negate the aqueous absorptive attraction of any of the hydrophilic spreads which constitute one of the components of this invention.

Products made in accordance with this invention are especially attractive to children, particularly when made and packaged in the form of twin spirales of peanut butter and modified preserves. A sandwich made from the product of the invention is indeed superior, from a utility standpoint, to a sandwich prepared using peanut butter and preserves from separate jars. Not only does the present invention permit the convenience of packaging the two different phases in a single container under conditions where the contents are stable over prolonged periods of time, but in one single application, both phases are applied to the bread slice. In peanut butter, the external phase is fat or oil; in preserves, the external phase is water. Since water and oil do not readily mix, it is virtually impossible for a child to apply peanut butter on bread which has already been coated with preserves. Only when a preserve or jelly is thin enough in viscosity, can a child readily apply it on top of peanut butter which has been spread on bread. The smart youngster goes for a double-decker sandwich, one slice of bread covered with peanut butter, and the other covered with jelly or preserves. With the product of our invention, we discovered that the two phases are far more compatible in viscosity, spreadability and handling characteristics than are the presently commercially available peanut butters and jams as packed in separate jars. With the products of the present invention, a child can spread a single slice of bread with both peanut butter and the modified jam at the same time, and during this application, the two phases do not separate from each other but blend somewhat, into a highly desirable and attractive marbleized appearance. This provides even an open sandwich which contains both components, each contributing its own distinctive flavor, texture and color; in addition, the sweet aqueous spread operates to cut down on the stickiness in the mouth of the peanut butter phase.

We claim:

1. A stable, packaged, spreadable food product comprising at least two separate, discrete spreads that are in contact with each other over confronting, engaging surfaces:

one of said spreads comprising a hydrophilic spread in the form of a modified sweet aqueous spread which is essentially moisture-free and which contains protein, carbohydrate, and fat; and

a second of said spreads being a modified sweet aqueous spread comprising:

from about 10% to about 20% water;

from about 10% to about 20% of a non-aqueous, edible liquid viscosity reducing agent;

the combination of water and viscosity reducing agent being present in an amount of from about 25% to about 35%;

from about 10 % to about 30% corn syrup solids; aqueous portion thereof consisting of carbohydrates and naturally occurring fruit solids;

the modified sweet aqueous spread having the further characteristic of less than 50% of the non-aqueous portion thereof consisting of carbohydrates having a molecular weight of less than about 200.

2. A food product in accordance with claim 1 wherein one spread comprises from about 10% to about 90% by weight of the food product.

3. A food product in accordance with claim 1 wherein one spread comprises from about 30% to about 70% by weight of the food product.

4. A food product in accordance with claim 1 wherein the modified sweet aqueous spread comprises a modified fruit jam.

5. A food product in accordance with claim 1 wherein the modified sweet aqueous spread comprises a modified fruit jelly.

6. A food product in accordance with claim 1 wherein the modified sweet aqueous spread comprises modified fruit preserves.

7. A food product in accordance with claim 1 wherein said viscosity reducing agent is a non-aqueous edible liquid selected from the group consisting of glycerine, glycols, and mixtures thereof.

8. A food product in accordance with claim 1 wherein said hydrophilic spread contains by weight about 15% to about 35% protein, about 30% to about 55% of fat, and the remainder essentially carbohydrate solids.

9. A food product in accordance with claim 8 wherein said hydrophilic spread comprises a nut butter product.

10. A food product in accordance with claim 9 wherein said hydrophilic spread comprises peanut butter.

11. A food product in accordance with claim 1 wherein said corn syrup solids have a D.E. within the range of about 10 to about 70.

12. A food product in accordance with claim 1 wherein said corn syrup solids have a D.E. within the range of about 10 to about 20.

13. A process for modifying a sweet, semi-solid, fruit-based spread, which spread has been prepared by cooking together fruit and a saccharine ingredient, wherein a major portion of said saccharine ingredient comprises carbohydrate material having a molecular weight in excess of about 200, in order to inhibit the release of water from the spread when it is in contact with a hydrophilic food material, comprising:

adjusting the water content of the spread to a final concentration of from about 10% to about 20% by weight;

adjusting the amount of corn syrup solids present in with spread to from about 10% to about 30% by weight;

adding to said spread an edible, non-aqueous liquid viscosity reducing agent in an amount of from about 10% to about 20% by weight, the combination of water and viscosity reducing agent being present in an amount of from about 25% to about 35% by weight; and

deaerating the modified sweet aqueous spread to restore the translucent appearance of the spread.

14. A process in accordance with claim 13 wherein said modified sweet aqueous spread contains corn syrup, and

wherein the water content and corn syrup solids content of the spread are adjusted by removing a part of the water from the spread.

15. A process in accordance with claim **13** wherein the water content and the corn syrup solids content of the spread are adjusted by incorporating into said spread a sufficient amount of corn syrup solids to bring the concentration of corn syrup solids in the final modified spread to an amount of from about 10% to about 30% and the water content of the final modified spread to an amount of from about 10% to about 20%.

16. A process in accordance with claim **13** wherein said sweet semi-solid spread is selected from the group consisting of fruit jelly, fruit jam, fruit preserves, fruit butters, and fruit sauces.

17. A process in accordance with claim **13** wherein said corn syrup solids have a D.E. within the range of from about 10 to about 20.

18. A process for making a stable, packaged, spreadable food product comprising at least two separate, discrete spreads that are in contact with each other over confronting, engaging surfaces comprising:

injecting into a container separate streams of the different spreads, in such a fashion as to fill the container with said separate streams; wherein

at least one of said streams comprises a supercooled and still flowable hydrophilic spread that is essentially moisture-free and that contains protein, carbohydrate, and fat; and

at least a second of said streams comprising a modified sweet aqueous spread comprising:

from about 10% to about 20% water;

from about 10% to about 20% of a non-aqueous, edible liquid viscosity reducing agent;

the combination of water and viscosity reducing agent being present in an amount of from about 25% to about 35%;

from about 10% to about 30% corn syrup solids;

the remainder comprising water-soluble carbohydrates and naturally-occurring fruit solids;

said modified sweet aqueous spread having the further characteristic of less than 50% of the non-aqueous portion thereof consisting of carbohydrates having a molecular weight of less than about 200.

19. A process in accordance with claim **18** wherein the streams are injected simultaneously and so directed into the container as to form spirals therein.

20. A process in accordance with claim **18** wherein the corn syrup solids have a D.E. within the range of from about 10 to about 20.

21. A process in accordance with claim **18** wherein the streams are injected alternately and are so directed into the container as to form alternating layers.

22. A process in accordance with claim **18** wherein said hydrophilic spread is peanut butter.

23. A process in accordance with claim **18** wherein said modified sweet aqueous spread is a member selected from the group consisting of modified fruit jelly, modified fruit jam, modified fruit preserves, modified fruit butters, and modified fruit sauces.

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A. LOUIS MONACELL, Primary Examiner

R. M. ELLIOTT, Assistant Examiner

U.S. Cl. X.R.

99—101, 129

PO-1050
(5/69)

UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,552,980 Dated January 5, 1971

Inventor(s) Irwin Cooper, E. L. Sexton, D. Melnick and Marcus L. Wegn

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

Column 6, line 10, "Glocerine" should read ---Glycerine---;

Column 9, line 30, "filler" should read ---filled---;

Dolumn 11, line 4, "Parts by weight" should read ---% by weight---;

Column 11, line 21, "fom" should read ---from---;

Column 11, line 37 "spirales" should read ---spirals---;

Column 12, line 11, "aqueous portion thereof consisting of carbohyd and naturally occuring fruit solids" should read ---the remainder comprising water-soluble carbohydrates and naturally occuring fruit solids ---.

Signed and sealed this 28th day of September 1971.

(SEAL)
Attest:

EDWARD M.FLETCHER,JR.
Attesting Officer

ROBERT GOTTSCHALK
Acting Commissioner of P

Exhibit 22

Exhibit 22

[redacted]

From: "FEIN, EDWARD K. (JSC-HA) (NASA)" <[redacted]
To: "'Mike Abernathy'" <[redacted]
Cc: "'Kennedy, Alan'" <[redacted]
"DELGADO, FRANCISCO J. (FRANK) (JSC-ER2) (NASA)" <[redacted]>
Subject: RE:
Date: Mon, 28 Jun 2004 14:54:17 -0500
X-Mailer: Internet Mail Service (5.5.2657.72)
X-imss-version: 2.5
X-imss-result: Passed
X-imss-approveListMatch: *@nasa.gov

b(6)

Very interesting, Mike. Much thanks! I'm cc'ing Alan Kennedy, in the Office of General Counsel, who has been coordinating this matter.

-Ed

-----Original Message-----
From: Mike Abernathy [mailto:[redacted]
Sent: Monday, June 28, 2004 2:43 PM
To: FEIN, EDWARD K. (JSC-HA) (NASA)
Subject:

b(6)

Hi Ed,

Here is a summary plus a few more things that we found.

In patent #5566073 the owner asserts claim on what can be generally described as a method for "Pilot aid using a synthetic environment" which involves using the information about the airplane flight status to drive a synthetic reality display by creating a 3D synthetic scene. This technology is called synthetic vision by other researchers. He also asserts claim for a version of this system to unmanned aerial vehicles in patent 5904724.

I do not understand how the first patent can be valid given that there was widely published research and flight testing being conducted in this field prior to this time. A good example of the prior art is shown in the DELPHIN I synthetic vision developed at the U of Delft in Holland and flown in 1994.

This patent claims in the 1995 application that it developed the method of pilot aid using a 3D synthetic environment. But at this webpage, you can see that a Dutch university had already flown such an environment in 1994:
http://www.synthetic-vision.tudelft.nl/

(See First flight of the DELPHINS Tunnel-in-the-sky display at the bottom of the list of links).

Here is an example of papers published in widely distributed engineering journals describing what seems to me to be a very similar system.

H. Möller, G. Sachs:
Synthetic Vision for Enhancing Poor Visibility Flight Operations.
IEEE Aerospace and Electronic Systems Magazine, Volume 9, No. 3, S. 27-30, 1994

G. Sachs, H. Möller, K. Dobler, G. Schänzer, K. Möhlenkamp:
Bodenrollführung durch synthetische Sicht und Präzisionsnavigation.
Jahrbuch 1994 I der Deutschen Gesellschaft für Luft- und Raumfahrt, Bonn, S. 475-482, 1994

G. Sachs, H. Möller, K. Dobler, G. Schänzer, K. Möhlenkamp:
Computer Generated Vision for Improving On-Board Guidance and Control of Surface Movement.
ECAC/APATSI and EC Workshop on Surface Movement Guidance and Control Systems,
Frankfurt/Main, 6.4.-8.4. 1994, European Civil Aviation Conference, Bretigny-sur-Orge, France,
ECAC/APATSI Paper S. 1-10, 1994

[redacted]

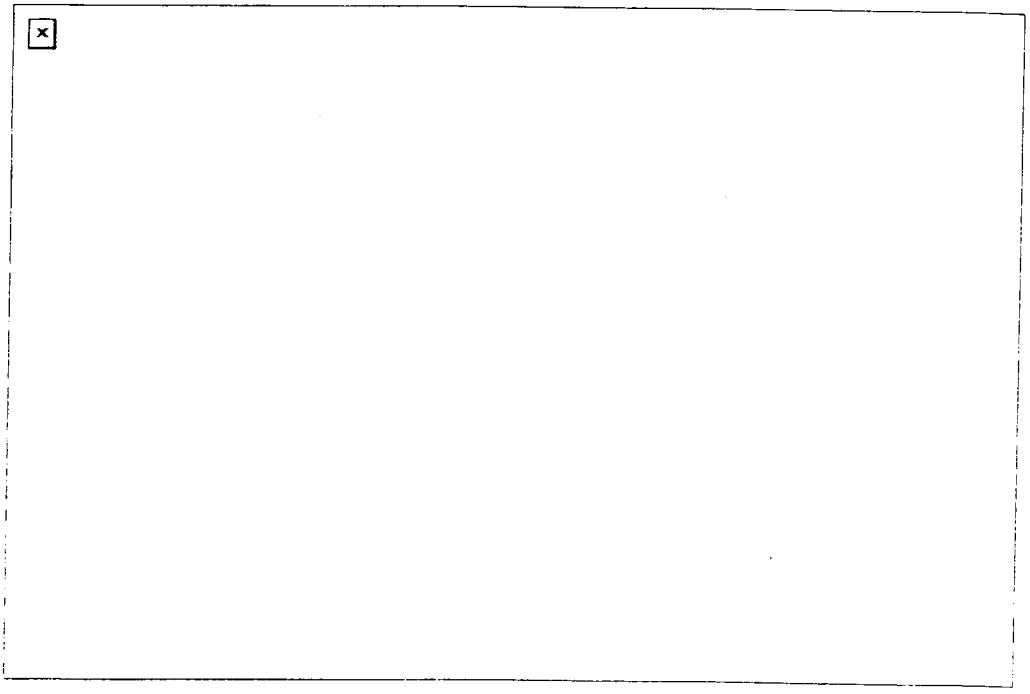
G. Sachs, H. Möller, K. Dobler, G. Schänzer, K. Möhlenkamp:
Synthetic Vision and Precision Navigation for Aircraft Taxi Guidance in Low Visibility.
AIAA Guidance, Navigation and Control Conference Proceedings, Scottsdale, AZ, August 1.-3., S. 1202
1211, 1994

Finally, please look at this history of perspective flightpath displays. In light of this
I cannot understand the basis for a these two patents.

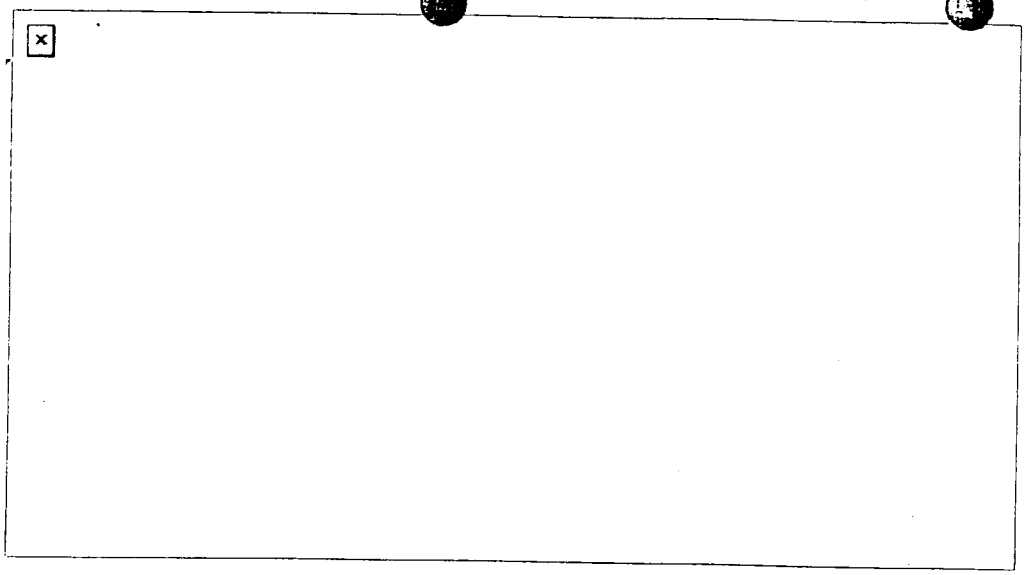
http://www.delphins.tudelft.nl/history.html

DELPHINS first flight test

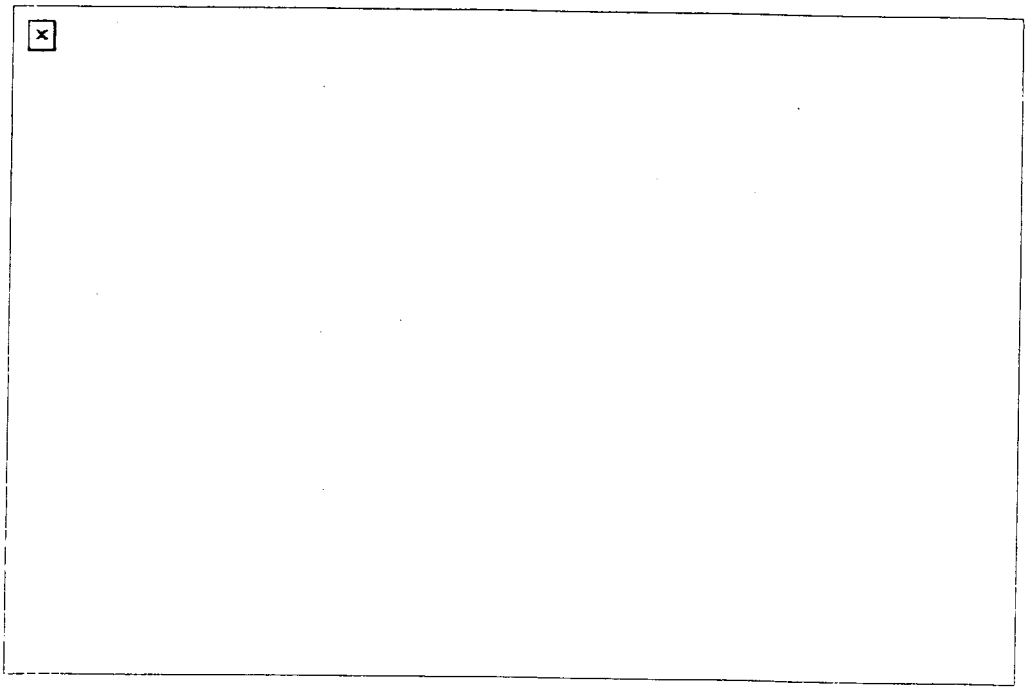
The first flight test of the DELPHINS system took place in december 1994. To achieve this, the Radionavigation group rented the Citation II laboratory aircraft that is jointly owned by Delft University a the National Aerospace Laboratory NLR. All display hardware and software that was used in this flight was developed by the Radionavigation group of the Faculty of Electrical Engineering, nowadays part o Faculty of Information Technology and Systems



Installation of the experimental display in the cockpit of the Citation II



Erik Theunissen (TU Delft, Faculty of Electrical Engineering) preparing the system the evening before first flight. The yellow marking shows the experimental display in the cockpit



First test flight of the DELPHINS Tunnel-in-the-Sky display (december 19, 1994) from Amsterdam to Aberdeen

I look forward to reading your thoughts.

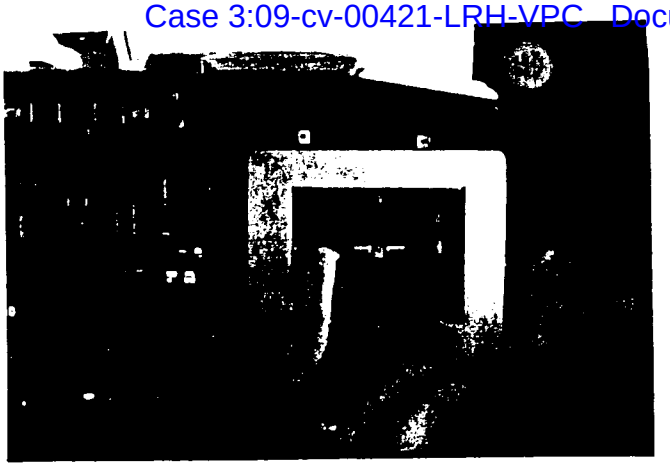
Best regards,

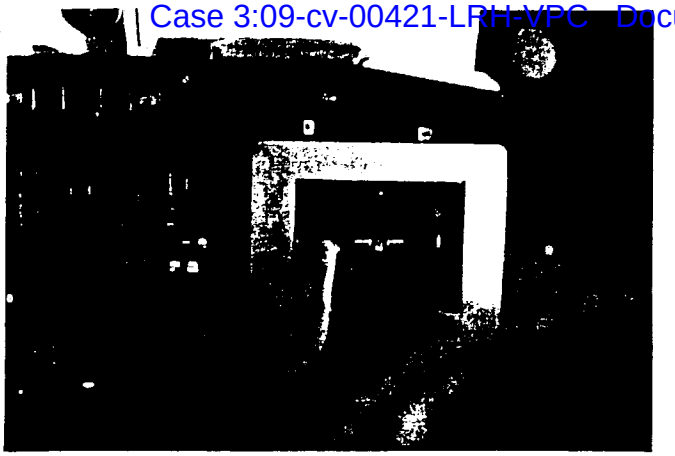
Mike Abernathy
Rapid Imaging Software, Inc.
[redacted] b(6)
www.landform.com
www.visualflight.com


image0011.jpg


image002.jpg


image003.jpg





De rust van een fuik

NAVIGATIE

door MARK TRAA

In een oogopslag zien of je op de juiste koers zit is er voor piloten nu nog niet bij. Een vluchtdek vol klokjes en metertjes geeft een overdosis informatie. Maar in de toekomst wordt de essentie van het vliegen afgebeeld op een beeldscherm dat de piloot veilig door een kunstmatige tunnel voert.

Het grote verschil tussen een vliegtuig en een auto is dat de laatste zich over de weg begeeft. Het klinkt als een open deur (en dat is het ook), maar juist dit gegeven maakt vliegen zo veel moeilijker dan autorijden.

Navigeren op de snelweg is een eitje. Het asfalt strekt zich tientallen, soms honderden meters of nog verder voor de auto uit en dat maakt anticiperen mogelijk. Een piloot heeft het moeilijker. Hij beweegt zich in drie dimensies en heeft amper aanknopingspunten: geen strepen, geen vangrails, geen borden. Koers houden doet een piloot door metertjes af te lezen die onder meer de stand van het vliegtuig, de snelheid, de hoogte, de kompasrichting en de stijgsnelheid aangeven. Bij de nadering van een vliegveld zijn er wel kaarten beschikbaar, maar die wijken nogal eens af/leiden en moeten bovendien door de piloot worden 'vertaald' naar de werkelijke situatie.

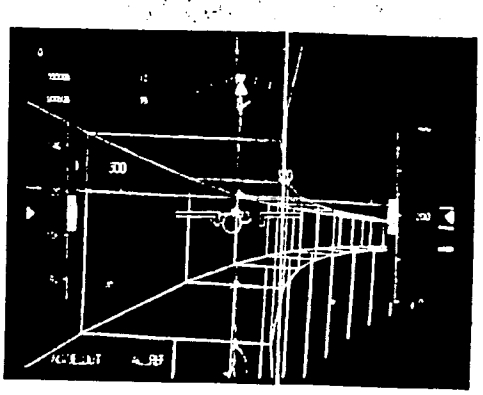
Doordat het luchtverkeer steeds drukker wordt, zal de nadering van een vliegveld in de toekomst lastiger worden – dochtiger in elk geval. Nu zorgt een piloot dat hij bij het aanvliegen in het verlengde van de landingsbaan komt en in de greep raakt van bakens die radiosignalen uitzenden. Dan is het zaak om een paar schuivende naalden op de kunstmatige horizon in de cockpit te volgen: ietsje naar beneden, een tikje naar rechts.

Dat lijkt eenvoudig, op een vrijwel rechte weg zo'n naald achterna sturen. Het wordt lastiger als er bochten in het traject komen. Probeer het maar eens in de auto: als je even naar de strepen in het midden van de weg tuurt, er voor zorgend dat je er hooguit een paar van tevoren ziet aankomen, rijd je direct een stuk krampachtiger. Je bent geneigd, een overdreven grote ruk aan het stuur te geven zodra de strepen lijken af te buigen. Komt er een scherpe bocht of een flauwe? Een afrit misschien?

Vangrail

Het is duidelijk dat er wat verbeterd kan worden aan de *situational awareness* van de piloot. Hij moet zich bewust zijn van de situatie om hem heen en de plaats van zijn eigen toestel. Dat kan door een weg aan te leggen voor het vliegtuig. Of beter nog – vanwege die drie dimensies – een tunnel.

Een tunnel in the sky, daarover ging de lezing die ir. Erik Theunissen gisteren hield op het luchtvaartsymposium 'Looking Ahead' in de RAI. Theunissen is verbonden aan de faculteit Elektrotechniek van de TU Delft en hoopt te promoveren op een project dat hij in 1990 begon: het *DElft Program for Hybridized Instrumentation and Navigation Systems* (DELPHINS). Wat hem betreft stuurt de piloot van de toekomst zijn



Vliegen door een tunnel: voor piloten een veel ontspannender manier van orienteren dan metertjes aflezen in het vrije luchtruim. FOTO TUD

toestel als in een videospelletje door een tunnel die is geprojecteerd op een beeldscherm.

„Dat is inderdaad vaak de eerste reactie, het lijkt wel een videospelletje", zegt Theunissen als hij op een computerscherm een vliegtuigsymbool behendig door een rechthoekige tunnel stuurt. De tunnel is niet dicht, maar is opgebouwd als een draadmodel: daardoor is het verdere verloop ervan tot aan de (kunstmatige) horizon te zien. Over anticiperen gesproken.

Theunissen: „Onderweg, op grote hoogte, heb je als piloot heel weinig visuele 'feedback'; je ziet buiten amper het resultaat van een manoeuvre. Dat is bij een landing juist het tegenovergestelde. Dan komt er een geweldige hoeveelheid informatie op je af. In beide gevallen is de piloot gebaat bij een natuurlijk beeld van de omgeving en niet bij heel abstracte informatie: symboolties die op een schaaltje bewegen of draaiende cijfers die over een lijntje schuiven."

„Doordat hij straks steeds meer bochten moet gaan maken, is het mentale plaatje van de vlieger ingewikkelder geworden. Voor hem is het heel belangrijk dat hij een idee heeft waar hij is, waar hij naartoe moet en hoe hij daar komt. Daarvoor dient zo'n tunnel. Als de piloot die op zijn scherm ziet, hoeft hij alleen nog te zorgen dat hij erin komt. In een oogopslag ziet hij vervolgens hoe het traject verder loopt en of hij dreigt af te wijken. Dat hele intensieve getuur naar de instrumenten hoeft dan niet meer. Naar buiten kijken blijft overigens gewoon mogelijk; het tunnelscherm wordt ingebouwd in het vluchtdek tussen de andere instrumenten."

Het is niet zo dat de luchttunnel in één klap alle cockpitinstrumenten vervangt. De belangrijkste meters bieken prima onder te brengen in het tunnelplaatje dat de piloot ziet. Dat gold onder meer voor de stand van het vliegtuig en de kompasrichting. Andere gegevens, zoals de snelheid en de hoogte, blijft de piloot aflezen op een cijferschaal. Die kan echter geprojecteerd worden op het tunnelscherm, zodat het exact aflezen mogelijk blijft zonder dat de piloot alsnog zijn aandacht op een metertje elders in de cockpit hoeft te richten.

Losse pols

Theunissen: „Als je een bepaalde stuuractie inzet, dan weet je dat je dat niet met oneindige nauwkeurigheid kunt doen. Je bent dus gebaat bij informatie die aangeeft hoe veel je afwijkt. Als je dichter bij de randen van de tunnel komt – in feite de vangrail – is het wel zaak dat je die informatie gebruikt."

Het is volgens Theunissen niet de bedoeling dat piloten overmoedig gaan worden en met de losse pols door zo'n tunnel gaan sjezen. De tunnel is immers niet breder dan absoluut noodzakelijk; dat bevordert de nauwkeurigheid waarmee wordt gestuurd. Ook blijft het gewoon opletten geblazen, hoewel de intensiteit van het sturen wordt verminderd. De schuivende naalden in de 'oude' cockpit zijn vervangen door een vliegtuigsymboolfje dat door de tunnel vliegt. In een oogopslag zie je of dat ding de goede kant op gaat. Is dat niet het geval, dan kan ingrijpen gewenst zijn. Kán, want dank zij het tunnelzicht zie je meteen of het wel zo'n ramp is als je toestel wat naar links afwijkt, als er straks toch naar links moet worden gedraaid, dan is een correctie misschien helemaal niet nodig.

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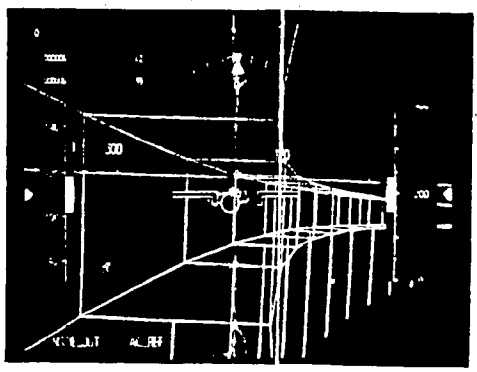

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Exhibit 23

Exhibit 23

Mr. Abernathy,

It has come to our attention that your company provides Synthetic Vision to fly UAV both in real time and in simulation.

I am sure that Mr. Francisco Delgado of NASA and your other clients would agree with your company having a proper license of our intellectual property.

Hence as a legal formality, we are inviting your company to license our technology seeing that your company is already commercially using and selling said technology as covered by our IP listed below:

United States Patent 5,566,073 Margolin October 15, 1996 Pilot aid using a synthetic environment

United States Patent 5,904,724 Margolin May 18, 1999, Method and apparatus for remotely piloting an aircraft

We are pleased that you recognize the value of using Synthetic Vision to allow UAV's to See-and-Avoid other aircraft; this is covered by our patents as noted above.

Please contact us so that we can a proper legal license with our attorneys for your use of our technology and/or you may contact our attorneys (HYPERLINK "http://by106fd.bay106.hotmail.msn.com/cgi-bin/compose?mailto=1&msg=0BE8FF07-CD08-47B5-A58D-A825698FD5EB&start=0&len=6480&src=&type=x&[redacted]cc=&bcc=&subject=&body=&curmbox=00000000-0000-0000-0000-000000000001&a=ad17460c4976d4c8a2dcf004b74ca88163cef3516fe0531abada331a64870d4[redacted]

[redacted]o arrange a proper license of said intellectual property. You have 15 days to do so.

Sincerely,

Robert Adams, CEO

Optima Technology Group

RA/cp

-enclosure links-
~~~

RE: US Patents 5566073 and 5904724

b(6)

From: FEIN, EDWARD K. (JSC-HA) (NASA[redacted]
To: Barry V. Gibbens, LaRC [redacted]
CC: Linda B. Blackburn [redacted]
Date: Sep 01 2004 - 4:33pm

02635
~~~

Rats! I guess I'd should research things better before I blindly send them out. Btw, the real Bahamas get hurricanes too.

-----Original Message-----
From: Barry V. Gibbens, LaRC [mailto[redacted]
Sent: Wednesday, September 01, 2004 3:26 PM
To: FEIN, EDWARD K. (JSC-HA) (NASA)
Cc: Linda B. Blackburn
Subject: RE: US Patents 5566073 and 5904724

b(6)

Very nice! I went to the Nassau Bay website, and looked under "New Things . . . Check It Out." Three of the highlights were "Storm Preparedness Information," "Hurricane Tracking Chart," and "You Can Now Pay Traffic Fines On Line." Sounds like my kind of place!!!

BG

At 02:44 PM 9/1/2004 -0500, you wrote:

No need to telecommute from the Bahamas, Barry. Nassau Bay is right across the street from JSC! Check out http://www.nassaubay.com/. See -- we got it all! And please do pass the word. I'd even risk the wrath of Linda and Kathy to snag one of you guys.

[redacted]

Take care ...

b(5)

-Ed

-----Original Message-----
From: Barry V. Gibbens, LaRC [mailto:[redacted]
Sent: Wednesday, September 01, 2004 2:21 PM
To: FEIN, EDWARD K. (JSC-HA) (NASA)
Subject: RE: US Patents 5566073 and 5904724

b(6)

Thanks Ed - I'll pass the word. Just for future reference, if any of us were to apply for the job, how would you feel about tele-commuting from, say, the Bahamas?????

[redacted]

b(5)

At 12:30 PM 9/1/2004 -0500, you wrote:

Thanks Barry ...

b(5)

[redacted]

Best regards ...

-Ed

Btw, Jim Cate is retiring at the end of the month, and we definitely will be filling the slot. So please spread the word. Good things about JSC is the high locality pay differential in Houston, and the relatively low cost of living here. The downside is that the poor person will have to deal with my bad a** on a daily basis.

Take care ...
-----Original Message-----
From: Barry V. Gibbens, LaRC [redacted] b(6)
Sent: Wednesday, September 01, 2004 11:29 AM
To: Mike Abernathy; 'Kennedy, Alan'
Cc: Linda B. Blackburn; Dan Baize; 'Trey Arthur'; DELGADO, FRANCISCO J. (FRANK) (JSC-ER2) (NASA); FEIN, EDWARD K. (JSC-HA) (NASA); BOE, ERIC A., LTCOL. (JSC-CB) (NASA)
Subject: Re: US Patents 5566073 and 5904724

Hi Alan (and others),
Just to clarify the message below, I spoke with Mike Abernathy this morning, and I've spoken with Dan Baize on a number of occasions concerning this topic. I've also spoken with you (Alan) briefly, and with Linda Blackburn, Patent Counsel here at Langley (not Linda "Blackwell" :-). It seems clear that the technical folks have determined that the Margolin patent on Synthetic Vision creates a substantial problem for many of our partners in the aviation safety industry for a variety of reasons. It also seems clear that there is substantial prior art in existence to make an argument for re-examination of the Margolin patent. Linda has stated that we at Langley are willing to support an analysis of this situation at the Center level. She has, however, also told me that we first need to perform a formal infringement analysis to confirm (from a legal perspective) that we are in fact practicing the patent as described by its claims. If that analysis shows probable infringement, then we can proceed with a re-examination request, which Dan Baize has indicated he would be willing to fund. It is my understanding that you (again Alan) gave your blessing this morning for us to proceed at the Center level on these activities. If that is the case, I'll go ahead and begin moving on the formal infringement analysis, keeping you apprised of progress as it develops. Please let me know if you are in agreement with the situation as I have described it. If so, I'll begin work here shortly.
Thanks,
Barry

At 09:33 AM 9/1/2004 -0600, Mike Abernathy wrote:

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Best regards,
Mike Abernathy
Rapid Imaging Software, Inc.
[redacted]m b(6)
HYPERLINK "http://www.visualflight.com/"www.visualflight.com

Barry V. Gibbens
NASA Langley Research Center
Intellectual Property Law Team - Office of Chief Counsel
[redacted]

[redacted] b(6)
wwwebsite: http://tech-transfer.larc.nasa.gov/

NEW E-MAIL ADDRESS: Please note that effective immediately, my e-mail address is no[redacted]
Please update your mail systems accordingly. Thanks.

Barry V. Gibbens
NASA Langley Research Center
Intellectual Property Law Team - Office of Chief Counsel
[redacted]

[redacted] b(6)
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~~~

RE: US Patents 5566073 and 5904724

b(6)

From: FEIN, EDWARD K. (JSC-HA) (NASA)[redacted]
To: Barry V. Gibbens, LaRC [redacted]
BCC: ROAN, BERNARD J. (JSC-AL) (NASA)[redacted]
Date: Sep 01 2004 - 2:44pm
~~~

No need to telecommute from the Bahamas, Barry. Nassau Bay is right across the street from JSC! Check out http://www.nassaubay.com/. See -- we got it all! And please do pass the word. I'd even risk the wrath of Linda and Kathy to snag one of you guys.

[redacted]

b(5)

Take care ...

-Ed

-----Original Message-----
From: Barry V. Gibbens, LaRC [mailto:Barry.V.Gibbens@NASA.GOV]
Sent: Wednesday, September 01, 2004 2:21 PM
To: FEIN, EDWARD K. (JSC-HA) (NASA)
Subject: RE: US Patents 5566073 and 5904724

Thanks Ed - I'll pass the word. Just for future reference, if any of us were to apply for the job, how would you feel about tele-commuting from, say, the Bahamas?????

[redacted]

b(5)

At 12:30 PM 9/1/2004 -0500, you wrote:

Thanks Barry ...

[redacted]

b(5)

Best regards ...

-Ed

Btw, Jim Cate is retiring at the end of the month, and we definitely will be filling the slot. So please spread the word. Good things about JSC is the high locality pay differential in Houston, and the relatively low cost of living here. The downside is that the poor person will have to deal with my bad a** on a daily basis.

Take care ...

-----Original Message-----
From: Barry V. Gibbens, LaRC [redacted]
Sent: Wednesday, September 01, 2004 11:29 AM
To: Mike Abernathy; 'Kennedy, Alan'
Cc: Linda B. Blackburn; Dan Baize; 'Trey Arthur'; DELGADO, FRANCISCO J. (FRANK) (JSC-ER2) (NASA); FEIN, EDWARD K. (JSC-HA) (NASA); BOE, ERIC A., LTCOL. (JSC-CB) (NASA)
Subject: Re: US Patents 5566073 and 5904724

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Best regards,

Mike Abernathy
Rapid Imaging Software, Inc.
[redacted]

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HYPERLINK "http://www.visualflight.com/"www.visualflight.com

Barry V. Gibbens
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[redacted]1

b(6)

[redacted]
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Please update your mail systems accordingly. Thanks.

Barry V. Gibbens
NASA Langley Research Center
Intellectual Property Law Team - Office of Chief Counsel
[redacted]
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wwebsite: http://tech-transfer.larc.nasa.gov/

NEW E-MAIL ADDRESS: Please note that effective immediately, my e-mail address is no[redacted]gov.
Please update your mail systems accordingly. Thanks.

~~~

FW: US Patents 5566073 and 5904724

b(6)

From: FEIN, EDWARD K. (JSC-HA) (NASA[redacted]
To: RO, THEODORE U., JD (JSC-HA) (NASA[redacted]v>, CATE, JAMES M., JD (JSC-HA) (NASA) [redacted]
CC: KRISHEN, KUMAR (JSC-HA) (NASA) [redacted]>, WHITTINGTON, JAMES (JSC-HA) (USA) [redacted] HAINES, DAVID D. (JSC-HA) (NASA) [redacted]>, HIEGER, COLLIN (JSC-HA) (UNK) [redacted] LANE, HELEN W. (JSC-AD) (NASA) [redacted]>, HAYES, GREG W. (JSC-AD) (NASA) [redacted] ROAN, BERNARD J. (JSC-AL) (NASA) [redacted], REMINGTON, DANIEL R. (DAN) (JSC-AL) (NASA) [redacted]v>
Date: Sep 01 2004 - 12:51pm

Claims Analysis of Patent.doc - 2.1MB - View in Outlook

[redacted]

b(5)

-Ed

-----Original Message-----
From: Mike Abernath[redacted]
Sent: Wednesday, September 01, 2004 12:25 PM
To: FEIN, EDWARD K. (JSC-HA) (NASA)
Subject: RE: US Patents 5566073 and 5904724

Here it is.

Best regards,

Mike Abernathy
Rapid Imaging Software, Inc.
~~~

(505) 265 7020

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-----Original Message-----
From: FEIN, EDWARD K. (JSC-HA) (NASA) [redacted] b(6)
Sent: Wednesday, September 01, 2004 11:19 AM
To: 'Mike Abernathy'
Subject: RE: US Patents 5566073 and 5904724

Barry Gibbens is a good man, Mike, and no, you haven't sent me the claims analysis. I am pleased to learn that the Agency is moving on this.

-Ed
-----Original Message-----
From: Mike Abernathy [redacted] b(6)
Sent: Wednesday, September 01, 2004 11:45 AM
To: FEIN, EDWARD K. (JSC-HA) (NASA)
Cc: DELGADO, FRANCISCO J. (FRANK) (JSC-ER2) (NASA)
Subject: RE: US Patents 5566073 and 5904724
Hi Ed,

Happy to keep you involved. I appreciated that article you sent me on the topic. The one thing that concerned me in the article is that I realized if Alan just sends the claims analysis to the PTO without requesting a re-exam then the owner will have the leisure to think up excuses for why this is not so, and prepare a defense maybe even ask for his own re-exam. Yikes! If NASA does not ask for the re-exam upon finding the prior art, we are basically strengthening his position to sue NASA by allowing him the time to synthesize a defense against the defects of his patent. It appears that Barry Gibbens is ready to press forward, happily.

Have I sent you the claims analysis yet?

Best regards,

Mike Abernathy
Rapid Imaging Software, Inc.
[redacted]

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-----Original Message-----
From: FEIN, EDWARD K. (JSC-HA) (NASA) [redacted] b(6)
Sent: Wednesday, September 01, 2004 10:06 AM
To: 'Mike Abernathy'
Subject: RE: US Patents 5566073 and 5904724

Thanks, Mike, for keeping me in the loop.

-Ed
-----Original Message-----
From: Mike Abernathy [redacted]
Sent: Wednesday, September 01, 2004 10:33 AM
To: 'Kennedy, Alan'
Cc: 'Barry V. Gibbens, LaRC'; Dan Baize; 'Trey Arthur'; DELGADO, FRANCISCO J. (FRANK) (JSC-ER2) (NASA); FEIN, EDWARD K. (JSC-HA) (NASA); BOE, ERIC A., LTCOL. (JSC-CB) (NASA)
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Best regards,

Mike Abernathy
Rapid Imaging Software, Inc.
[redacted]

~~~

b(6)

RE: US Patents 5566073 and 5904724

From: Mike Abernathy [redacted]
To: 'FEIN, EDWARD K. (JSC-HA) (NASA)' [redacted]
Date: Sep 01 2004 - 12:44pm

Sir,

Could you read this and let me know what you think of it? I know it will evolve a lot in Barry's hands – which is good. But I would like your thoughts on it for my own and Frank's edification.

Best regards,

Mike Abernathy
Rapid Imaging Software, Inc.
[redacted]

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-----Original Message-----
From: FEIN, EDWARD K. (JSC-HA) (NASA) [redacted]
Sent: Wednesday, September 01, 2004 11:41 AM
To: 'Mike Abernathy'
Subject: RE: US Patents 5566073 and 5904724

thanks!
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Sent: Wednesday, September 01, 2004 12:25 PM
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Subject: RE: US Patents 5566073 and 5904724
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www.visualflight.com

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[redacted]

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Claims Analysis of Patent.doc

~~~

Re: US Patents 5566073 and 5904724

From: Barry V. Gibbens, LaR[redacted]V>
To: Mike Abernathy [redacted] 'Kennedy, Alan' [redacted]>
CC: Linda B. Blackbur[redacted] Dan Baize [redacted],
'Trey Arthur' <[redacted]V>, DELGADO FRANCISCO J. (FRANK)
[redacted], FEIN, EDWARD K. (JSC-HA) (NASA)
[redacted] Eric Boe [redacted]
Date: Sep 01 2004 - 11:29am

b(6)

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Mike Abernathy

Rapid Imaging Software, Inc.

[redacted]

www.landform.com

HYPERLINK "http://www.visualflight.com/"www.visualflight.com

Barry V. Gibbens
NASA Langley Research Center
Intellectual Property Law Team - Office of Chief Counsel
[redacted]
[redacted]1
[redacted]90
[redacted]
wwwebsite: http://tech-transfer.larc.nasa.gov/

[redacted] b(6)

NEW E-MAIL ADDRESS: Please note that effective immediately, my e-mail address is no[redacted]. Please update your mail systems accordingly. Thanks.

From: McNutt, Jan (HQ-MC000)
Sent: Wednesday, August 06, 2008 1:36 PM

To: Fein, Edward K. (JSC-AL)
Cc: Borda, Gary G. (HQ-MC000); Rotella, Robert F. (HQ-MA000)
Subject: Patent Infringement claim from Jed Margolin; NASA Case No. I-222

Hello Mr. Fein,

I am a new attorney working commercial law and also helping out Gary and Bob. Do you remember working on this infringement claim, and if so, what was the outcome, if any? See attached.

<< File: Kennedy to JSC.pdf >> << File: Margolin FOIA.pdf >> << File: Letter from Optima 20080714.pdf >>

Thank you,

Jan S. McNutt
Attorney-Advisor (Commercial)
Office of the General Counsel
NASA Headquarters
[redacted] b(6)

02647

Exhibit 24

Exhibit 24

[redacted]

From: Fein, Edward K. (JSC-AL)
Sent: Wednesday, August 06, 2008 3:29 PM
To: McNutt, Jan (HQ-MC000)
Cc: Borda, Gary G. (HQ-MC000); Rotella, Robert F. (HQ-MA000)
Subject: RE: Patent Infringement claim from Jed Margolin; NASA Case No. I-222

[redacted]

(b)(5)

RE: Read: Let us chat on about SCOUT, SC3D, the X-38 program and RIS; noted below are our patents that cover said technology that RIS and your groups are using.

From: Mike Abernathy [redacted] (b)(6)
To: 'Delgado, Francisco J. (JSC-ER2)' [redacted], 'Fein, Edward K. (JSC-AL)' [redacted], 'Kennedy, Alan J. (HQ-MC000)' [redacted]
CC: 'Fredrickson, Steven E. (JSC-ER)' [redacted]
Date: Sep 26 2006 12:13pm

(b)(6) (b)(6)

Thank you very much. It means very much to Carolyn and I right now.

Mike Abernathy

Rapid Imaging Software, Inc.

From: Delgado, Francisco J. (JSC-ER2) [redacted] (b)(6)
Sent: Monday, September 25, 2006 9:42 PM
To: Mike Abernathy; Fein, Edward K. (JSC-AL); Kennedy, Alan J. (HQ-MC000); [redacted]
Cc: Delgado, Francisco J. (JSC-ER2); Fredrickson, Steven E. (JSC-ER)
Subject: FW: Read: Let us chat on about SCOUT, SC3D, the X-38 program and RIS; noted below are our patents that cover said technology that RIS and your groups are using.

See email from "Mr. Adams" below.

This is getting more ridiculous by the minute. I have resisted replying in any form as suggested by JSC council. However, this matter has been left open for quite some time and something needs to be done NOW. It has come to my attention that Mr. Adams and company have issued a letter that prohibits RIS from selling any of their software until this issue is resolved. We have had a very "intellectually" fruitful relationship with RIS for almost a decade and would like to

continue this relationship for many years to come. Some of the technology concepts in question were co-developed by RIS and I during many "brainstorming sessions" on how to provide optimal situation awareness to various users.

The folks pressing forward with this claim do not have solid ground to stand on (IMHO). Based on the previous research performed, I do not see how their patent claims are valid and I would like to request that NASA's council take this matter seriously and get the patents invalidated (as it should have been done when this first showed up a couple of years ago). This is not only the right legal thing to do, but also the right moral thing to do. If we allow an individual to continue to harass small companies and stand-by with little/no action, then we are no better than the company doing the harassing. As a government organization, we need to keep the public faith and trust and again, "do the right thing." I realize that patience is important in legal matter, but believe that the time for sitting idle and hoping that this matter goes away is way past due and that something needs to be done ASAP. Putting companies that NASA relies on to help move technology forward out of business with a barrage of unwarranted litigation does not seem like it is in NASA's (or our taxpayers) best interest.

Please let me know what I need to do on my end to help move this along.

BTW: If we do not deal with issue immediately it will only get worse for NASA. I know of several Projects within JSC, JPL, and Langley that use independently developed technology (i.e. technology that does not use what RIS and I came up with) that I am sure Mr. Adams and company would claim infringes on their "Patents." We seem to be on his radar at the moment because we do what government organizations are encouraged to do ("Publish their work").

Thank You,

Frank Delgado

(b)(6) From: Robert Adams [mailto[redacted]
Sent: Mon 9/25/2006 5:58 PM
To: Delgado, Francisco J. (JSC-ER2)
Subject: RE: Read: Let us chat on about SCOUT, SC3D, the X-38 program and RIS; noted below are our patents that cover said technology that RIS and your groups are using.

Sir,

Since you have clearly refused to cooperate, please provide us your department's heads information and said contact information including a contact in your IP litigation department. We are aware that you received your read receipt of our email sent to you regarding:

Let us chat on about SCOUT, SC3D, the X-38 program, and RIS; noted below are our patents that cover said technology that RIS and your groups are using.

United States Patent 5,566,073 Margolin October 15, 1996 Pilot aid using a synthetic environment

United States Patent 5,904,724 Margolin May 18, 1999, Method and apparatus for remotely piloting an aircraft

We simple have one goal in mind and that is have a chat regarding the technology and that RIS and NASA take a license of said IP technology.

Thank you

From: Delgado, Francisco J. (JSC-ER2) [redacted] (b)(6) 00065

From: Delgado, Francisco J. (JSC-ER2) [mailto[redacted]] (b)(6)
Sent: Monday, September 25, 2006 9:42 PM
To: Mike Abernathy; Fein, Edward K. (JSC-AL); Kennedy, Alan J. (HQ-MC000); [redacted]
Cc: Delgado, Francisco J. (JSC-ER2); Fredrickson, Steven E. (JSC-ER)
Subject: FW: Read: Let us chat on about SCOUT, SC3D, the X-38 program and RIS; noted below are our patents that cover said technology that RIS and your groups are using.

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Thank You,

Frank Delgado

From: Robert Adams [[redacted]] (b)(6)
Sent: Mon 9/25/2006 5:58 PM
To: Delgado, Francisco J. (JSC-ER2)
Subject: RE: Read: Let us chat on about SCOUT, SC3D, the X-38 program and RIS; noted below are our patents that cover said technology that RIS and your groups are using.

Sir,

Since you have clearly refused to cooperate, please provide us your department's heads information and said contact information including a contact in your IP litigation department. We are aware that you received your read receipt of our email sent to you regarding:

Let us chat on about SCOUT, SC3D, the X-38 program, and RIS; noted below are our patents that cover said technology that RIS and your groups are using.

United States Patent 5,566,073 Margolin October 15, 1996 Pilot aid using a synthetic environment

United States Patent 5,904,724 Margolin May 18, 1999, Method and apparatus for remotely piloting an aircraft

We simple have one goal in mind and that is have a chat regarding the technology and that RIS and NASA take a license of said IP technology.

Thank you

From: Delgado, Francisco J. (JSC-ER2) [redacted] (b)(6)
Sent: Tuesday, September 19, 2006 7:30 AM
Subject: Read: Let us chat on about SCOUT, SC3D, the X-38 program and RIS; noted below are our patents that cover said technology that RIS and your groups are using.

Your message

To: Delgado, Francisco J. (JSC-ER2)

Cc:

Subject: Let us chat on about SCOUT, SC3D, the X-38 program and RIS;

noted below are our patents that cover said technology that RIS and your

groups are using.

Sent: Tue, 19 Sep 2006 08:52:25 -0500

was read on Tue, 19 Sep 2006 09:30:05 -0500

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FW: and the very last communication of the day

From: Fein, Edward K. (JSC-AL) [redacted]
To: Kennedy, Alan J. (HQ-MC000) [redacted] (b)(6)
CC: Borda, Gary G. (HQ-MC000) [redacted]
Date: Sep 26 2006 - 8:11am

[redacted]

(b)(5)

[redacted]

From: Mike Abernathy [redacted] (b)(6)
Sent: Monday, September 25, 2006 8:18 PM
To: Delgado, Francisco J. (JSC-ER2); Fein, Edward K. (JSC-AL)
Subject: FW: and the very last communication of the day

00063
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Mike Abernathy

Rapid Imaging Software, Inc.

From: Mike Abernathy [mailto[redacted]] (b)(6)
Sent: Monday, September 25, 2006 6:25 PM
To: FEIN, EDWARD K. (JSC-HA) (NASA); DELGADO FRANCISCO J. (FRANK) [redacted]; Kennedy, Alan J. (HQ-MC000); [redacted]; 'Moore, Thomas, Mr, OSD-ATL'; 'Davey, Jon (Bingaman)'
Subject: and the very last communication of the day

(6)(6)

(b)(6)

Hi All,

Let me summarize what I think has just happened to our company.

In late 1995 we introduce our LandForm synthetic vision system to the market as COTS software product.

In 1997/8 we sell this to NASA and together we are the first people on earth to create a synthetic vision flight guidance system for a remotely piloted vehicle. Starting in 1998 the X38 is captive carried and test flown using this system. We documented our success in the attached document written in 1998 and published in early 1999. It was my privilege to be at Edwards when it happened, and is the highlight of my career until the program is cancelled in 2002.

We go on and demonstrate that our software can be used as pilot aid to other UAVs including Predator, Shadow, Tern, and many more. We receive no interest in this application, but instead they use it for sensor operator stations. It is a commercial success and people say good things about it. It is sold to mostly to a commercial UAV manufacturer named AAI Corporation. Many tests are done and the military guys all like it.

In 1999 the patent office issues a patent to a former Atari employee named Margolin for a Synthetic Environment for Remotely Piloted Vehicle. He had evidently applied for it in 1996. Shortly thereafter he begins to complain to NASA that they and RIS infringed upon his patent presumably by flying a system 2 years before he received his patent. Is this a joke?

In 7 years he never so much as asked RIS about using his technology. Margolin as best I can tell never built this system and never test flew it. Can't say as I blame him because his system looks to me like a crater looking for an address. It cannot be safely operated in the form patented (no autopilot). No one is even stupid enough to build it this way, not even him.

00069

Sometime after that, I am alerted to the patent. I read it, but since there are major differences in the way X-38 worked with our software, I felt strongly that we had not infringed. I provide this information, plus evidence of prior art to NASA legal counsel. I am troubled because really I can't see how his system could fly because it would fail during link loss. Margolin also had a patent on synthetic vision for manned aircraft (if you can imagine) and we found copious prior art for that. I am also troubled because I never hear that the request for reexamination has been sent in by NASA.

Last week I received an email from Optima technology group threatening (thinly veiled) to destroy our relationships with our customers and sue us if we don't license their technologies. We explain that we do not sell software for use in piloting unmanned aerial vehicles any more owing to insurance which is true. We had demonstrated this in the past, but there really is not much market that we could see. We also explained that we had not infringed and why we thought we had been respectful of their patent, but they just tried to make it look like we infringed. But we did not.

They know we cannot withstand the onslaught of their lawsuits, even though we are clearly and obviously not guilty of infringement. They think that we will have to fold and accept their license, but we cannot do this because they are legal blackmailers, and because they are selling defective technology. If we give in, then they will just destroy some other little companies they way they did ours. And we cannot let anyone pay them off for us, because that just gives them funds to go destroy another company. For many years our company has tried to provide an innovative product with an excellent value and never compromise our integrity. I cannot let this nonsense bring that to an end by pretending that we are licensing technology when what they are selling is a fraud.

When I asked politely if their system has ever been tested Mr. Adams simply tells us to go get a lawyer, he is referring the matter for filing. I felt that it was not unreasonable to ask to know this but it really made him furious. Anyway I told him to tell it to our lawyer Mr. Ben Allison of Sutinfirm with whom I shall meet tomorrow. Tonight they said that they will issue a cease and desist order, which I believe means that we will be unable to sell our software anymore which will destroy our income stream and that will be it. I can't waste anymore time on this now. It is time for me to get back to work on things that matter for our users.

I have a docs appointment tomorrow at 8-10 local time. I had throat surgery recently so I really can't talk and frankly I find I tend to break into tears very frequently when I try to do so. But I want you all to know that I will stand firm until it is over. What would the soldiers who have used our software in combat think of me if I gave ground? Then bring it on.

I know it sounds bad for us right now, but remember that whatever happens to us no one can take away the honor and the privilege of working with NASA, the OSD, and all the other completely excellent people with whom we have worked.

Mike Abernathy

Rapid Imaging Software, Inc.

Attached are the other communications from them.

From: Robert Adams [redacted] (b)(6)
Sent: Monday, September 25, 2006 3:51 PM
To: 'Mike Abernathy'
Subject: RE: license

000[illegible]

Mike,

Let me try and be clear, all such development at OTG on behalf and or/or by our licensee is covered by NDA's and thus our company can be sued should we violate such agreements. As to your company's infringement of our patents, since that was clearly not covered by a NDA with us; please provide said information in detail:

Other then those items listed at your website and NASA's, what other projects did you do that infringed on our invention? If so when, where, and how?
Who at NASA flight-tested your product that used our invention? Please provide us with the name of the Pilot in Command, the responsible Flight Test Engineer, the model and block number of the vehicle and GCS, and the range or location at which such testing might have taken place with NASA and others. Also, indicate the dates of such testing. If flight test reports are available, as well please provide them to us.

Mike, I have no time to play games with someone who clearly infringes and thinks nothing of respecting our IP.

I will forward said matter to our legal department for further research and filing in accordance with the Federal laws. Please have your legal IP counsel contact our attorneys.

Robert Adams

From: Mike Abernathy [redacted] (b)(6)
Sent: Monday, September 25, 2006 2:26 PM
To: 'Robert Adams'
Subject: RE: license

Robert,

You have offered to license your technology to our company. You have stated that this technology is useful for "see and avoid applications" for UAVs which is an interesting market arena. We are making a good faith effort to consider your offer. We must know whether this technology has been brought into existence and whether it was ever test flown as a matter of due diligence.

We are not asking these questions out of idle curiosity and we certainly not trying to be difficult – we need this information in order to know the market value of the technology to our users, and there are certain elements of the method that we have concerns about. A flight test report – even if the system was implemented on a model airplane – will almost certainly allay our concerns and we can get on with this. The fact of whether or not this technology has been tested does not require an NDA.

00071

Robert, throughout our dealings I have been honest and responsive to all of your requests, perhaps at peril to our company. I now ask you to please reciprocate my efforts in a small way and provide the requested information so that we may consider your offer of license.

Mike Abernathy

Rapid Imaging Software, Inc.

From: Robert Adams [mailto:[redacted]] (b)(6)
Sent: Monday, September 25, 2006 2:49 PM
To: 'Mike Abernathy'
Subject: RE: license

Mike,

Neither the company nor I are in any way anxious in signing any more licensees's as we have many already, but as you know we must protect our patents in order to preserve said Intellectual Property.

As to your questions, they do not relate to a license and/or a licensee. Our Intellectual Property has been tested in court and is proven solid by far such standards the Federal Court including the Federal Appeals Court. In addition, as to matters of disclosure, all such development at OTG and by our licensee is covered by NDA's.

Should you wish to challenge such, then I advise you to seek proper legal counseling as we are not an attorney nor will ours advice you on such a matters.

Your company has clearly infringed and OTG must protect itself against such matters just as your company would do if in the same position.

Robert Adams

From: Mike Abernathy [redacted] (b)(6)
Sent: Monday, September 25, 2006 1:29 PM
To: 'Robert Adams'
Subject: license

Dear Robert,

00072

Please tell the legal team thanks for getting back to us right away – we appreciate it.

You have asked us to consider licensing and this we are now doing. In the interest of due diligence as a prospective licensor of your technology, we ask that you provide us with the following information about the subject invention:

Was this invention ever constructed? If so when, where, and how?
Was this invention ever flight tested? Please provide us with the name of the Pilot in Command, the responsible Flight Test Engineer, the model and block number of the vehicle and GCS, and the range or location at which such testing might have taken place. Also, indicate the dates of such testing. If flight test reports are available please provide them to us, as well.

I know that you are anxious for us to consider your license offer, please provide us with this information.

Mike Abernathy

Rapid Imaging Software, Inc.

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latest from Optima

From: Mike Abernathy [redacted] (b)(6)
To: FEIN, EDWARD K. (JSC-HA) (NASA) [redacted], Kennedy, Alan J. (HQ-MC000) [redacted]
Date: Sep 25 2006 - 3:08pm

image002.gif - 6.9k - View in Outlook (b)(6)

Ed,

This has not blown over. We would rather lose our company than see NASA hurt by this. Ed, it appears that RIS situation is hopeless. They know that we did not infringe, yet they continue because they know that we lack the funds to fight them. Our situation appears hopeless but we cannot accept a license for technology that we know is dangerous to the public, so I cannot accept this deal that they have offered.

Let us know what you think as soon as possible.

Mike Abernathy

Rapid Imaging Software, Inc.

From: Robert Adams [redacted] (b)(6)

00073
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Sent: Monday, September 25, 2006 12:26 PM
To: 'Mike Abernathy'
Subject: Privileged and Confidential Settlement Communications Protected Under Rule 408 of the Federal Rules of Evidence

Privileged and Confidential Settlement Communications Protected

Under Rule 408 of the Federal Rules of Evidence

Mike,

My legal team has read your response and it is a personal shame since you would rather cut and run verse facing the facts and take a license for past and future business, as I am sure it would be substantially less then litigation.

As you have been made aware in our prior communications, among other inventions, the Patents protect a number of features that are implemented in products capable of flying any and all UAV's (1.3) remotely and/or using Synthetic Vision and/or using a synthetic environment.

1.1 "Patent Portfolio" shall mean the portfolio consisting of United States Patent Numbers 5,904,724 (Method and Apparatus for Remotely Piloting an Aircraft), 5,566,073 (Pilot Aid Using a Synthetic Environment), and those future United States patents that may be added in accordance with the covenants and warranties.

1.2 "RPV" shall mean "remotely piloted vehicle." A "remotely piloted aircraft" is an RPV. "UAV" shall mean "unmanned aerial vehicle." RPV is an older term for UAV. "UCAV" shall mean "Unmanned Combat Aerial Vehicle." UCAV is also sometimes defined as an "Uninhabited Combat Aerial Vehicle." UCAV is a UAV that is intended for use in combat. UCAS means "Unmanned Combat Air System."

1.3 "Synthetic Vision" is the current term for "Synthetic Environment" and is the three dimensional projected image data presented to the pilot or other observer.

Of the ten companies responsible for the establishment of UAV Specifications or standard, eight of those companies sell UAV-Devices under brands they control, and each of those companies, i.e., Boeing Aerospace; Lockheed; Nakamichi Corporation; General Atomics Corporation; L-3 and Jacor Corporation; Raytheon; and Geneva Aerospace, pay Optima running royalties for the above referenced patents.

The substantial terms and conditions of our licensing Agreement: i) resulted from negotiations with the market leading manufacturers of UAV's; ii) are subject to most favored nation clauses; and iii) are, therefore, not negotiable.

The Agreement i) is exceedingly fair; ii) does not obligate Infringer to anything more than an industry accepted reasonable royalty for the Patents; iii) does not obligate Infringer to anything more than an industry accepted reasonable terms; and iv) may be canceled by Infringer at any time.

Mike, there is no reason to permit Infringer (Your company) to further drag on the execution of said Agreement based on the facts present on the infringement matter.

Infringer must appreciate that the Patents cover a range of different inventions required to implement the UAV using Synthetic Vision Specifications; and there exists pending divisions of the Patents having claims that are read on by implementation of the UAV Specifications. Infringer principal competitors have appreciated the exceptional litigation strength and flexibility of my patent portfolio and have decided to accept a license rather than expose themselves to an injunction.

Infringer must appreciate that if litigation between the parties is initiated: i) the matter will immediately become personal for both parties; ii) I do not have to account to any other person; and iii) no license or settlement of any kind will ever be possible under any of my intellectual properties. Infringer's competitors require that Infringer be either licensed or enjoined.

I have resolved myself to this course of action in the event an agreement reached shortly, I firmly believe that enjoining Infringer from selling UAV-Devices will not result in lost royalties; and it is in Optima's long-term interests to make an example of a company that has refused to take a license.

Anyone who is fully knowledgeable of the strength and scope of my patent portfolio, and who appreciates the risk-taking and tenacity that I have demonstrated, would not, in light of the terms being offered, recommend jeopardizing the UAV business Infringer enjoys in the U.S.

1.

I have just returned from business travel, and have not had a chance to look over your communications in detail. Thank you very much for bringing your concerns to our attention. Let me assure you that we will do everything in our power, now and in the future, to avoid infringement of these or any patents. We have already begun another careful analysis of them and will act swiftly upon what we learn, should any problems be found. We have been aware of these patents for some years and have not ever infringed upon them, and will not do so. When we first learned of them, we carefully examined our activities and those of our customers to make sure there was no possible infringement of them. As soon as we learned of it, we also informed the legal departs of our major customers to alert them to the existence of USP 5,904,724, but so far no UAV manufacturers have been seriously interested in offering synthetic vision for their UAV pilot stations.

RIS own admission they knew about '724 will go to show that their infringement was willful, which means treble damages Robert. (They probably found out about it when NASA interviewed Jed about their X-38 project.) We will find out at trail and/or during the discover phase.

From their web site: http://www.landform.com/

SmartCam3D provides unparalleled situation awareness for UAS sensor operators. It fuses video with synthetic vision to create the most powerful situation awareness technology currently available. SmartCam3D is an augmented reality system that has been developed, flight tested, and deployed in the most demanding conditions including combat, and as a result it is highly evolved technology which is in use today around the world. The reason that SmartCam3D is so popular is simple: it makes sensor operators more effective, and reduces the target response time. SmartCam3D is deployed with US Army Shadow UAV, and is at present being integrated to the USAF Predator, as well as the Army Warrior UAS. SmartCam3D is the war fighter's choice for sensor operator situational awareness.

Improving a patented invention by adding something to it (in this case fusing video with synthetic vision) is still

infringement. Indeed, you may be able to patent the improvement. However, you may not practice the improved invention without the permission of the original patent holder. (It also means that the holder of the original patent may not practice your improvement without your permission.)

Since they publicly admit SmartCam3D is being used with US Army Shadow, USAF Predator, and Army Warrior his statement "no UAV manufacturers have been seriously interested in offering synthetic vision for their UAV pilot stations" is obviously false.

Also from their web site:

Software License Changes

RIS, Inc. changed insurance carriers, and effective September 1st, 2006 we updated our Software User License agreement. It now states that "The user is prohibited from using this software to pilot manned or unmanned aircraft." Our licenses have always prohibited use of our software for piloting manned aircraft. As you know, we had hoped that we would find a market for our UAV Glass Cockpit Product line. However, there is simply not sufficient market interest for us to bring such a product to market at this time, so we have decided not to release it. As a small company, we need to focus on our energy on the Sensor Operator and Intelligence Analyst at this time.

He is saying that his product should not be used for the very purpose it being advertised, sold, and used for. Lame. And it doesn't get him off the hook as he is still legally liable.

Since it did not state this until September 1, 2006, he has started to take this seriously, and he is clearly worried thus, he changed the terms to try to reduce the liability. I will have our team use wayback site and pull up the old Software User License agreement prior to Sept 1, 2006 this is when I bet they made all their sales and that is what OTG would be entitled too as well.

Here is a short lesson on infringement for Mike.

From: : http://inventors.about.com/library/bl/toc/bl_patent-infringement.htm

Text Box: Infringement can be direct, indirect, or contributory. Anyone who makes, uses, or sells the patented invention is a direct infringer. If a person actively encourages another to make, use, or sell the invention, the person so inducing is liable for indirect infringement. Contributory infringement can be committed by knowingly selling or supplying an item for which the only use is in connection with a patented invention. Good faith or ignorance is no defense for direct infringement, but it can be for indirect or contributory infringement. The remedies for infringement consist of: 1. Injunctive relief,
2. damages (including treble damages for willful infringement),
3. attorneys' fees in some cases, and
4. court costs.

2.

We discovered that the system described the in patent pertaining to remotely piloted vehicles USP 5,904,724 contains an entire clause in claim 1 that did not exist in the X38 or other UAVs that we have seen – this is the final paragraph of clause 1 regarding the method for handling delay in the control loop by "adjusting control sensitivity". This simply is not present in any form in any vehicles with which we have experience. Since all claims of this patent include this clause by reference, that patent is not relevant to these vehicles because none of them have this feature.

The clause he is referring to is:

a set of one or more remote flight controls coupled to said computer for inputting said flight control information, wherein said computer is also for determining a delay time for communicating said flight data between said computer and said remotely piloted aircraft, and wherein said computer adjusts the sensitivity of said set of one or more remote flight controls based on said delay time.

Time delays in a control system are unavoidable. Normally, a control system has fixed time delays and the system is designed to operate properly with these time delays. Because of the complexity of a UAV system these time delays may

not be known at the time the system (including the control laws) are designed. These time delays may also change during a mission due to the communications path changing. If the system does not properly deal with these changing time delays it will lead to pilot-induced oscillation and there is a good chance the aircraft will crash.

Anyone designing a UAS that does not adjust for changing time delays is an idiot. I don't think the people making UAVs are idiots. That does not relieve him of contributory infringement. It is likely that these time delays are dealt with as part of the control law system which Abernathy might not be privy to and thus a court order will provide us his insider info.

3.

More important however, is that all UAV control systems with which we are familiar require a device called an autopilot which is not contemplated at all in the subject patent. This device is similar to ones in modern manned aircraft, but it is used to control the aircraft flight in the pitch, heading, and roll axes. On UAVs, the communications delay is not handled by determining the delay and adjusting the control sensitivity as Margolin prescribes. Instead, an autopilot is installed onboard the aircraft where it senses changes in pitch, heading, and roll locally on board the aircraft. The pilot still makes control inputs to fly the airplane, but only via the autopilot on board the aircraft. The autopilot corrects attitude drift instantaneously avoiding the problem of substantial communication delays, and allows the pilot to control the vehicle in a more stable manner.

Most important, the autopilot is absolutely required to deal with the frequent communications outages which occur between the UAV and the ground control segment (This can be anywhere from a second to an hour in length, generally). In the system of Margolin, a communications outage would often result in the loss of the aircraft, because the pilot would be unable to correct attitude drift during communication link loss and the air vehicle would go out of control and could crash. In the last decade of working with UAVs never have I witnessed a flight in which the communication link was not lost at least once during the flight. If the control communication link goes down, no control inputs can be made to the aircraft from the pilot on the ground, but the autopilot keeps the airplane from crashing by flying straight and level or gently banking until the link is restored. The system of Margolin does not recognize the problem of link loss, and fails to offer any solution. The autopilot functionality can be located in various components in the X38 it was in the on board GNC (Guidance Navigation and Control) computer, as I recollect.

The fact that '724 does not explicitly teach an autopilot is irrelevant. Adding an autopilot to '724 is still infringement, just as adding a video overlay is infringement.

There is also the matter of the Doctrine of Equivalence. See attached file patents1.pdf

Consider Column 2, lines 12-18:

The computers in the system allow for several modes of operation. For example, the remote aircraft can be instructed to fly to given coordinates without further input from the remote pilot. It also makes it possible to provide computer assistance to the remote pilot. In this mode, the remote flight control controls absolute pitch and roll angles instead pitch and roll rates which is the normal mode for aircraft.

That legal sounds like a defined autopilot to me and that as we need to show infringement at the Markman hearing..

4.

There is another on-board component called a SAS or Stability Augmentation System found on most large modern UAVs such as Predator, and which performs additional real-time stabilization to that done by the autopilot. Again, the SAS is not contemplated by the Margolin patent, yet is required to dampen control system oscillations in order to safely operate a UAV in systems that may suffer from communications delays to remote user control inputs. There are many more differences that we found when we first examined it, but as you can see we have never worked with a vehicle upon which your system could have been implemented and safely flown, and therefore we realized that it is impossible for us to have infringed this patent 5,904,724. You may easily independently verify the fact of these profound and fundamental differences from your system by examining the printed published materials regarding UAV control system and NASAs many publications on X-38 control systems.

Again, adding something to '724 is still infringement.

As far as examining the control systems on NASA's X-38 project is concerned, in a telephone conversation with NASA's Alan Kennedy in the Office of the General Counsel on February 9, 2006, he repeated his claim that, "The X-38 does fly." NASA has a video of the X-38 (flying) on its web site. (See http://www.dfrc.nasa.gov/Gallery/Movie/X-38/HTML/EM-0038-

01.html)

5.

We have never allowed our software to be used as an aid in piloting manned aircraft and thus cannot have infringed 5,566,073. If you aware of anyone doing this with our software, kindly inform us immediately, and we will ask them to desist.

We still have him on infringing on '724.

6.

Finally, let me set your mind at ease by informing you that our software product license currently explicitly contains the following clause: "The user is prohibited from using this software to pilot manned or unmanned aircraft." Alas, the requirements of our current company insurance policy, combined with the profound lack of a market for this possible application of our technology facilitated this business decision. Your letter said we recognize the "value" of this technology, but in view of the current situation "lack of value" is probably more appropriate.

From: Mike Abernathy [redacted] (b)(6)
Sent: Monday, September 25, 2006 9:08 AM
To: 'Robert Adams'
Subject: question

Robert,

Thanks for your offer to call but I am still getting over throat surgery from 2 weeks ago so my phone is forwarded, but I look forward to email from you and/or your attorneys.

In trying to understand the value of your IP I would like to ask 2 questions regarding USP 5,904,724. Was this system ever built? Was it ever flight tested? Of course you need not answer, but it really would be helpful in understanding what is required to get your technology to market.

Mike Abernathy

Rapid Imaging Software, Inc.

From: Robert Adams [redacted] (b)(6)
Sent: Monday, September 25, 2006 8:55 AM
To: 'Mike Abernathy'
Subject: RE: Rapid Imaging Software, Inc. patent infringement

Mike,

Thanks for your email, I will forward it today over to my patent and review legal team. Once they complete a review of your comments, I will give you a ring on the phone and a response via the post and/or attorneys.

Respectfully,

Robert Adams

From: Mike Abernathy [redacted] (b)(6)
Sent: Sunday, September 24, 2006 4:29 PM
To: 'Robert Adams'
Subject: RE: Rapid Imaging Software, Inc. patent infringement

Dear Mr. Adams,

I have just returned from business travel, and have not had a chance to look over your communications in detail. Thank you very much for bringing your concerns to our attention. Let me assure you that we will do everything in our power, now and in the future, to avoid infringement of these or any patents. We have already begun another careful analysis of them and will act swiftly upon what we learn, should any problems be found. We have been aware of these patents for some years and have not ever infringed upon them, and will not do so. When we first learned of them we carefully examined our activities and those of our customers to make sure there was no possible infringement of them. As soon as we learned of it, we also informed the legal departs of our major customers to alert them to the existence of USP 5,904,724, but so far no UAV manufacturers have been seriously interested in offering synthetic vision for their UAV pilot stations.

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More important however, is that all UAV control systems with which we are familiar require a device called an autopilot which is not contemplated at all in the subject patent. This device is similar to ones in modern manned aircraft, but it is used to control the aircraft flight in the pitch, heading, and roll axes. On UAVs, the communications delay is not handled by determining the delay and adjusting the control sensitivity as Margolin prescribes. Instead, an autopilot is installed onboard the aircraft where it senses changes in pitch, heading, and roll locally on board the aircraft. The pilot still makes control inputs to fly the airplane, but only via the autopilot on board the aircraft. The autopilot corrects attitude drift instantaneously avoiding the problem of substantial communication delays, and allows the pilot to control the vehicle in a more stable manner.

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be unable to correct attitude drift during communication link loss and the air vehicle would go out of control and could crash. In the last decade of working with UAVs never have I witnessed a flight in which the communication link was not lost at least once during the flight. If the control communication link goes down, no control inputs can be made to the aircraft from the pilot on the ground, but the autopilot keeps the airplane from crashing by flying straight and level or gently banking until the link is restored. The system of Margolin does not recognize the problem of link loss, and fails to offer any solution. The autopilot functionality can be located in various components in the X38 it was in the on board GNC (Guidance Navigation and Control) computer, as I recollect.

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We have never allowed our software to be used as an aid in piloting manned aircraft and thus cannot have infringed 5,566,073. If you aware of anyone doing this with our software, kindly inform us immediately, and we will ask them to desist.

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We will get back to you just as soon as we have had a chance to study these patent claims further. For now, is there anything else that our company can reasonably do in regard to the concern that you expressed?

Sincerely,

Mike Abernathy

Rapid Imaging Software, Inc.

From: Robert Adams [mailto:[redacted] – (b)(6)
Sent: Tuesday, September 19, 2006 7:53 AM
To: [redacted]
Cc: [redacted]
Subject: [Norton AntiSpam] Rapid Imaging Software, Inc. patent infringement

It has come to our attention that your company provides Synthetic Vision to fly UAV both in real time and in simulation.

September 19, 2006

Michael F. Abernathy

Rapid Imaging Software, Inc.

[redacted] (b)(6)

Sent via US MAIL, FAX & EMAIL

Mr. Abernathy,

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I am sure that Mr. Francisco Delgado of NASA and your other clients would agree with your company having a proper license of our intellectual property.

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[redacted]-0000-

[redacted]o arrange a proper license of said intellectual property. You have 15 days to do so.

Sincerely,

Robert Adams, CEO

Optima Technology Group

RA/cp

-enclosure links-

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FW: question

(b)(6)

From: Mike Abernathy <[redacted]
To: DELGADO FRANCISCO J. (FRANK) <[redacted]>, 'Fein, Edward K. (JSC-AL)' <[redacted]>, 'Kennedy, Alan J. (HQ-MC000)' <[redacted]>, <[redacted]>
Date: Sep 25 2006 - 11:44am

One more FYI.

(b)(6)

Mike Abernathy

Rapid Imaging Software, Inc.

From: Mike Abernathy [[redacted]] (b)(6)
Sent: Monday, September 25, 2006 10:08 AM
To: 'Robert Adams'
Subject: question

Robert,

Thanks for your offer to call but I am still getting over throat surgery from 2 weeks ago so my phone is forwarded, but I look forward to email from you and/or your attorneys.

In trying to understand the value of your IP I would like to ask 2 questions regarding USP 5,904,724. Was this system ever built? Was it ever flight tested? Of course you need not answer, but it really would be helpful in understanding what
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is required to get your technology to market.

Mike Abernathy

Rapid Imaging Software, Inc.

From: Robert Adams [redacted] (b)(6)
Sent: Monday, September 25, 2006 8:55 AM
To: 'Mike Abernathy'
Subject: RE: Rapid Imaging Software, Inc. patent infringement

Mike,

Thanks for your email, I will forward it today over to my patent and review legal team. Once they complete a review of your comments, I will give you a ring on the phone and a response via the post and/or attorneys.

Respectfully,

Robert Adams

From: Mike Abernathy [redacted] (b)(6)
Sent: Sunday, September 24, 2006 4:29 PM
To: 'Robert Adams'
Subject: RE: Rapid Imaging Software, Inc. patent infringement

Dear Mr. Adams,

I have just returned from business travel, and have not had a chance to look over your communications in detail. Thank you very much for bringing your concerns to our attention. Let me assure you that we will do everything in our power, now and in the future, to avoid infringement of these or any patents. We have already begun another careful analysis of them and will act swiftly upon what we learn, should any problems be found. We have been aware of these patents for some years and have not ever infringed upon them, and will not do so. When we first learned of them we carefully examined our activities and those of our customers to make sure there was no possible infringement of them. As soon as we learned of it, we also informed the legal departs of our major customers to alert them to the existence of USP 5,904,724, but so far no UAV manufacturers have been seriously interested in offering synthetic vision for their UAV pilot stations.

We discovered that the system described the in patent pertaining to remotely piloted vehicles USP 5,904,724 contains an

entire clause in claim 1 that did not exist in the X38 or other UAVs that we have seen – this is the final paragraph of clause 1 regarding the method for handling delay in the control loop by "adjusting control sensitivity". This simply is not present in any form in any vehicles with which we have experience. Since all claims of this patent include this clause by reference, that patent is not relevant to these vehicles because none of them have this feature.

More important however, is that all UAV control systems with which we are familiar require a device called an autopilot which is not contemplated at all in the subject patent. This device is similar to ones in modern manned aircraft, but it is used to control the aircraft flight in the pitch, heading, and roll axes. On UAVs, the communications delay is not handled by determining the delay and adjusting the control sensitivity as Margolin prescribes. Instead, an autopilot is installed onboard the aircraft where it senses changes in pitch, heading, and roll locally on board the aircraft. The pilot still makes control inputs to fly the airplane, but only via the autopilot on board the aircraft. The autopilot corrects attitude drift instantaneously avoiding the problem of substantial communication delays, and allows the pilot to control the vehicle in a more stable manner.

Most important, the autopilot is absolutely required to deal with the frequent communications outages which occur between the UAV and the ground control segment (This can be anywhere from a second to an hour in length, generally). In the system of Margolin, a communications outage would often result in the loss of the aircraft, because the pilot would be unable to correct attitude drift during communication link loss and the air vehicle would go out of control and could crash. In the last decade of working with UAVs never have I witnessed a flight in which the communication link was not lost at least once during the flight. If the control communication link goes down, no control inputs can be made to the aircraft from the pilot on the ground, but the autopilot keeps the airplane from crashing by flying straight and level or gently banking until the link is restored. The system of Margolin does not recognize the problem of link loss, and fails to offer any solution. The autopilot functionality can be located in various components in the X38 it was in the on board GNC (Guidance Navigation and Control) computer, as I recollect.

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Finally, let me set your mind at ease by informing you that our software product license currently explicitly contains the following clause: "The user is prohibited from using this software to pilot manned or unmanned aircraft." Alas, the requirements of our current company insurance policy, combined with the profound lack of a market for this possible application of our technology facilitated this business decision. Your letter said we recognize the "value" of this technology, but in view of the current situation "lack of value" is probably more appropriate.

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Sincerely,

Mike Abernathy

Rapid Imaging Software, Inc.

From: Robert Adams [mailto:[redacted]] (b)(6)
Sent: Tuesday, September 19, 2006 7:53 AM
To: [redacted]
Cc: [redacted]
Subject: [Norton AntiSpam] Rapid Imaging Software, Inc. patent infringement

It has come to our attention that your company provides Synthetic Vision to fly UAV both in real time and in simulation.

September 19, 2006

Michael F. Abernathy

Rapid Imaging Software, Inc.

[redacted] (b)(6)

Sent via US MAIL, FAX & EMAIL

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Sincerely, (b)(6)

Robert Adams, CEO

Optima Technology Group

RA/cp

-enclosure links-

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(b)(6)

RE: Rapid Imaging Software, Inc. patent infringement

From: Fein, Edward K. (JSC-AL) [redacted]
To: Mike Abernathy [redacted], DELGADO FRANCISCO J. (FRANK) [redacted]
CC: Kennedy, Alan J. (HQ-MC000) [redacted]
Date: Sep 25 2006 - 10:38am

(b)(6)

Thanks, Mike.

-Ed
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From: Mike Abernathy [redacted] (b)(6)
Sent: Monday, September 25, 2006 10:32 AM
To: Fein, Edward K. (JSC-AL); DELGADO FRANCISCO J. (FRANK)
Cc: Kennedy, Alan J. (HQ-MC000)
Subject: FW: Rapid Imaging Software, Inc. patent infringement

FYI

Mike Abernathy

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Respectfully,

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Sincerely,

Mike Abernathy

Rapid Imaging Software, Inc.

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Sent: Tuesday, September 19, 2006 7:53 AM
To: [redacted]
Cc: [redacted]
Subject: [Norton AntiSpam] Rapid Imaging Software, Inc. patent infringement

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September 19, 2006

Michael F. Abernathy

Rapid Imaging Software, Inc.

[redacted]) (6)(6)

Sent via US MAIL, FAX & EMAIL

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(b)(6)

Robert Adams, CEO

Optima Technology Group

RA/cp

-enclosure links-

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RE: Rapid Imaging Software, Inc. patent infringement
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(b)(6)

From: Fein, Edward K. (JSC-AL) [redacted]
To: Mike Abernathy [redacted], DELGADO FRANCISCO J. (FRANK) [redacted]
CC: Kennedy, Alan J. (HQ-MC000) [redacted]
Date: Sep 25 2006 - 10:38am

Thanks, Mike.

(b)(6)

-Ed

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Sent: Monday, September 25, 2006 10:32 AM
To: Fein, Edward K. (JSC-AL); DELGADO FRANCISCO J. (FRANK)
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From: Robert Adams [redacted] (b)(6)
Sent: Tuesday, September 19, 2006 7:53 AM
To: [redacted]
Cc: [redacted]
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September 19, 2006

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Rapid Imaging Software, Inc.

[redacted] (b)(6)

Sent via US MAIL, FAX & EMAIL

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(b)(6)

Sincerely,

Robert Adams, CEO

Optima Technology Group

RA/cp

-enclosure links-

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RE: Rapid Imaging Software, Inc. patent infringement

From: Fein, Edward K. (JSC-AL) [redacted]
To: Mike Abernathy [redacted], Delgado, Francisco J. (JSC-ER2) [redacted], Kennedy, Alan J. (HQ-MC000) [redacted]
Date: Sep 25 2006 - 9:59am

Thanks, Mike!

(b)(6)

(b)(6)

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RE: Rapid Imaging Software, Inc. patent infringement

From: Fein, Edward K. (JSC-AL) [redacted]
To: Delgado, Francisco J. (JSC-ER2) [redacted], Mike Abernathy [redacted], Kennedy, Alan [redacted]
Date: Sep 25 2006 - 8:55am

(b)(6)

(b)(6)

[redacted]

(b)(5)

[redacted]

Edward K. Fein
Deputy Chief Counsel/
Intellectual Property Counsel
NASA Johnson Space Center
[redacted]

(b)(6)

From: Delgado, Francisco J. (JSC-ER2)
Sent: Monday, September 25, 2006 1:12 AM
To: Mike Abernathy; Fein, Edward K. (JSC-AL)
Subject: RE: Rapid Imaging Software, Inc. patent infringement

Please work with Mr. Fein on a time to call. I can 'sneak' away from any activity tomorrow to join a conference call.

thanks,

Frank

From: Mike Abernathy [redacted] - (b)(6)
Sent: Sun 9/24/2006 6:38 PM
To: Fein, Edward K. (JSC-AL); Delgado, Francisco J. (JSC-ER2)
Subject: Rapid Imaging Software, Inc. patent infringement

Gentlemen,

I strongly believe that these two patents are defective, but more important I feel strongly that NASA and RIS did not infringe either one of them, in spite of these accusations.

I would like to ask for your help urgently since these people are threatening to sue us and since they have falsely accused us of infringement.

I therefore would like to ask both of you to read my letter attached below which has been sent to Mr. Adams, to make sure that I am stating things properly. Would it be possible for me to call you tomorrow on the phone?

Mike Abernathy

Rapid Imaging Software, Inc.

From: Mike Abernathy [redacted] - (b)(6)
Sent: Sunday, September 24, 2006 5:29 PM
To: 'Robert Adams'
Subject: RE: [Norton AntiSpam] Rapid Imaging Software, Inc. patent infringement

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We discovered that the system described the in patent pertaining to remotely piloted vehicles USP 5,904,724 contains an entire clause in claim 1 that did not exist in the X38 or other UAVs that we have seen – this is the final paragraph of clause 1 regarding the method for handling delay in the control loop by "adjusting control sensitivity". This simply is not present in any form in any vehicles with which we have experience. Since all claims of this patent include this clause by reference, that patent is not relevant to these vehicles because none of them have this feature.

More important however, is that all UAV control systems with which we are familiar require a device called an autopilot which is not contemplated at all in the subject patent. This device is similar to ones in modern manned aircraft, but it is used to control the aircraft flight in the pitch, heading, and roll axes. On UAVs, the communications delay is not handled by determining the delay and adjusting the control sensitivity as Margolin prescribes. Instead, an autopilot is installed onboard the aircraft where it senses changes in pitch, heading, and roll locally on board the aircraft. The pilot still makes control inputs to fly the airplane, but only via the autopilot on board the aircraft. The autopilot corrects attitude drift instantaneously avoiding the problem of substantial communication delays, and allows the pilot to control the vehicle in a more stable manner.

Most important, the autopilot is absolutely required to deal with the frequent communications outages which occur between the UAV and the ground control segment (This can be anywhere from a second to an hour in length, generally). In the system of Margolin, a communications outage would often result in the loss of the aircraft, because the pilot would be unable to correct attitude drift during communication link loss and the air vehicle would go out of control and could crash. In the last decade of working with UAVs never have I witnessed a flight in which the communication link was not lost at least once during the flight. If the control communication link goes down, no control inputs can be made to the aircraft from the pilot on the ground, but the autopilot keeps the airplane from crashing by flying straight and level or gently banking until the link is restored. The system of Margolin does not recognize the problem of link loss, and fails to offer any solution. The autopilot functionality can be located in various components in the X38 it was in the on board GNC (Guidance Navigation and Control) computer, as I recollect.

There is another on-board component called a SAS or Stability Augmentation System found on most large modern UAVs such as Predator, and which performs additional real-time stabilization to that done by the autopilot. Again, the SAS is not contemplated by the Margolin patent, yet is required to dampen control system oscillations in order to safely operate a UAV in systems that may suffer from communications delays to remote user control inputs. There are many more differences that we found when we first examined it, but as you can see we have never worked with a vehicle upon which your system could have been implemented and safely flown, and therefore we realized that it is impossible for us to have infringed this patent 5,904,724. You may easily independently verify the fact of these profound and fundamental differences from your system by examining the printed published materials regarding UAV control system and NASAs many publications on X-38 control systems.

We have never allowed our software to be used as an aid in piloting manned aircraft and thus cannot have infringed

5,566,073. If you aware of anyone doing this with our software, kindly inform us immediately, and we will ask them to desist.

Finally, let me set your mind at ease by informing you that our software product license currently explicitly contains the following clause: "The user is prohibited from using this software to pilot manned or unmanned aircraft." Alas, the requirements of our current company insurance policy, combined with the profound lack of a market for this possible application of our technology facilitated this business decision. Your letter said we recognize the "value" of this technology, but in view of the current situation "lack of value" is probably more appropriate.

We will get back to you just as soon as we have had a chance to study these patent claims further. For now, is there anything else that our company can reasonably do in regard to the concern that you expressed?

Sincerely,

Mike Abernathy

Rapid Imaging Software, Inc.

From: Robert Adams [redacted] (b)(6)
Sent: Tuesday, September 19, 2006 7:53 AM
To: [redacted]
Cc: [redacted]
Subject: [Norton AntiSpam] Rapid Imaging Software, Inc. patent infringement

It has come to our attention that your company provides Synthetic Vision to fly UAV both in real time and in simulation.

September 19, 2006

Michael F. Abernathy
[redacted] (b)(6)
[redacted]

[redacted] (b)(6)

Sent via US MAIL, FAX & EMAIL

Mr. Abernathy,

It has come to our attention that your company provides Synthetic Vision to fly UAV both in real time and in simulation.

I am sure that Mr. Francisco Delgado of NASA and your other clients would agree with your company having a proper license of our intellectual property.

Hence as a legal formality, we are inviting your company to license our technology seeing that your company is already commercially using and selling said technology as covered by our IP listed below:

United States Patent 5,566,073 Margolin October 15, 1996 Pilot aid using a synthetic environment

United States Patent 5,904,724 Margolin May 18, 1999, Method and apparatus for remotely piloting an aircraft

We are pleased that you recognize the value of using Synthetic Vision to allow UAV's to See-and-Avoid other aircraft; this is covered by our patents as noted above.

Please contact us so that we can a proper legal license with our attorneys for your use of our technology and/or you may contact our attorneys (HYPERLINK [redacted]

[redacted] to arrange a proper license of said intellectual property. You have 15 days to do so.

Sincerely,

(b)(6)

Robert Adams, CEO

Optima Technology Group

RA/cp

-enclosure links-

RE: Rapid Imaging Software, Inc. patent infringement

From: Delgado, Francisco J. (JSC-ER2) [redacted]
To: Mike Abernathy [redacted], Fein, Edward K. (JSC-AL)
[redacted]
Date: Sep 25 2006 - 1:13am

(b)(6)

Please work with Mr. Fein on a time to call. I can 'sneak' away from any activity tomorrow to join a conference call.

thanks,

Frank

(b)(6)

From: Mike Abernathy [redacted]
Sent: Sun 9/24/2006 6:38 PM
To: Fein, Edward K. (JSC-AL); Delgado, Francisco J. (JSC-ER2)
Subject: Rapid Imaging Software, Inc. patent infringement

Gentlemen,

I strongly believe that these two patents are defective, but more important I feel strongly that NASA and RIS did not infringe either one of them, in spite of these accusations.

I would like to ask for your help urgently since these people are threatening to sue us and since they have falsely accused us of infringement.

I therefore would like to ask both of you to read my letter attached below which has been sent to Mr. Adams, to make sure that I am stating things properly. Would it be possible for me to call you tomorrow on the phone?

Mike Abernathy

Rapid Imaging Software, Inc.

(b)(6)

From: Mike Abernathy [redacted]
Sent: Sunday, September 24, 2006 5:29 PM
To: 'Robert Adams'
Subject: RE: [Norton AntiSpam] Rapid Imaging Software, Inc. patent infringement

Dear Mr. Adams,

I have just returned from business travel, and have not had a chance to look over your communications in detail. Thank you very much for bringing your concerns to our attention. Let me assure you that we will do everything in our power, now

and in the future, to avoid infringement of these or any patents. We have already begun another careful analysis of them and will act swiftly upon what we learn, should any problems be found. We have been aware of these patents for some years and have not ever infringed upon them, and will not do so. When we first learned of them we carefully examined our activities and those of our customers to make sure there was no possible infringement of them. As soon as we learned of it, we also informed the legal departs of our major customers to alert them to the existence of USP 5,904,724, but so far no UAV manufacturers have been seriously interested in offering synthetic vision for their UAV pilot stations.

We discovered that the system described the in patent pertaining to remotely piloted vehicles USP 5,904,724 contains an entire clause in claim 1 that did not exist in the X38 or other UAVs that we have seen – this is the final paragraph of clause 1 regarding the method for handling delay in the control loop by "adjusting control sensitivity". This simply is not present in any form in any vehicles with which we have experience. Since all claims of this patent include this clause by reference, that patent is not relevant to these vehicles because none of them have this feature.

More important however, is that all UAV control systems with which we are familiar require a device called an autopilot which is not contemplated at all in the subject patent. This device is similar to ones in modern manned aircraft, but it is used to control the aircraft flight in the pitch, heading, and roll axes. On UAVs, the communications delay is not handled by determining the delay and adjusting the control sensitivity as Margolin prescribes. Instead, an autopilot is installed onboard the aircraft where it senses changes in pitch, heading, and roll locally on board the aircraft. The pilot still makes control inputs to fly the airplane, but only via the autopilot on board the aircraft. The autopilot corrects attitude drift instantaneously avoiding the problem of substantial communication delays, and allows the pilot to control the vehicle in a more stable manner.

Most important, the autopilot is absolutely required to deal with the frequent communications outages which occur between the UAV and the ground control segment (This can be anywhere from a second to an hour in length, generally). In the system of Margolin, a communications outage would often result in the loss of the aircraft, because the pilot would be unable to correct attitude drift during communication link loss and the air vehicle would go out of control and could crash. In the last decade of working with UAVs never have I witnessed a flight in which the communication link was not lost at least once during the flight. If the control communication link goes down, no control inputs can be made to the aircraft from the pilot on the ground, but the autopilot keeps the airplane from crashing by flying straight and level or gently banking until the link is restored. The system of Margolin does not recognize the problem of link loss, and fails to offer any solution. The autopilot functionality can be located in various components in the X38 it was in the on board GNC (Guidance Navigation and Control) computer, as I recollect.

There is another on-board component called a SAS or Stability Augmentation System found on most large modern UAVs such as Predator, and which performs additional real-time stabilization to that done by the autopilot. Again, the SAS is not contemplated by the Margolin patent, yet is required to dampen control system oscillations in order to safely operate a UAV in systems that may suffer from communications delays to remote user control inputs. There are many more differences that we found when we first examined it, but as you can see we have never worked with a vehicle upon which your system could have been implemented and safely flown, and therefore we realized that it is impossible for us to have infringed this patent 5,904,724. You may easily independently verify the fact of these profound and fundamental differences from your system by examining the printed published materials regarding UAV control system and NASAs many publications on X-38 control systems.

We have never allowed our software to be used as an aid in piloting manned aircraft and thus cannot have infringed 5,566,073. If you aware of anyone doing this with our software, kindly inform us immediately, and we will ask them to desist.

Finally, let me set your mind at ease by informing you that our software product license currently explicitly contains the following clause: "The user is prohibited from using this software to pilot manned or unmanned aircraft." Alas, the

requirements of our current company insurance policy, combined with the profound lack of a market for this possible application of our technology facilitated this business decision. Your letter said we recognize the "value" of this technology, but in view of the current situation "lack of value" is probably more appropriate.

We will get back to you just as soon as we have had a chance to study these patent claims further. For now, is there anything else that our company can reasonably do in regard to the concern that you expressed?

Sincerely,

Mike Abernathy

Rapid Imaging Software, Inc.

From: Robert Adams [redacted] (b)(6)
Sent: Tuesday, September 19, 2006 7:53 AM
T[redacted]
Cc: [redacted]
Subject: [Norton AntiSpam] Rapid Imaging Software, Inc. patent infringement

It has come to our attention that your company provides Synthetic Vision to fly UAV both in real time and in simulation.

September 19, 2006

Michael F. Abernathy

Rapid Imaging Software, Inc.

[redacted] (b)(6)

Sent via US MAIL, FAX & EMAIL

Mr. Abernathy,

It has come to our attention that your company provides Synthetic Vision to fly UAV both in real time and in simulation.

I am sure that Mr. Francisco Delgado of NASA and your other clients would agree with your company having a proper license of our intellectual property.

Hence as a legal formality, we are inviting your company to license our technology seeing that your company is already commercially using and selling said technology as covered by our IP listed below:

United States Patent 5,566,073 Margolin October 15, 1996 Pilot aid using a synthetic environment

United States Patent 5,904,724 Margolin May 18, 1999, Method and apparatus for remotely piloting an aircraft

We are pleased that you recognize the value of using Synthetic Vision to allow UAV's to See-and-Avoid other aircraft; this is covered by our patents as noted above.

Please contact us so that we can a proper legal license with our attorneys for your use of our technology and/or you may contact our attorneys (HYPERLINK [redacted] to arrange a proper license of said intellectual property. You have 15 days to do so.

Sincerely,

(b)(6)

Robert Adams, CEO

Optima Technology Group

RA/cp

-enclosure links-
~~~

✉ **RE: US Patents 5566073 and 5904724**

From: FEIN, EDWARD K. (JSC-HA) (NASA) [redacted]
To: Barry V. Gibbens, LaRC [redacted]
CC: Linda B. Blackburn [redacted]
Date: Sep 01 2004 - 4:33pm

(b)(6)

00103
~~~

Exhibit 25

Exhibit 25

[redacted]

From: Burns, Laura (HQ-MA000)
Sent: Friday, August 15, 2008 2:10 PM
To: McNutt, Jan (HQ-MC000)
Subject: UAS.vs.OTG

Jan,

Attached are some documents from the Universal case. Several of the documents were not available because they were sealed. If you have any questions, let me know.


UAs.vs.OTG.docket .pdf


OTG.Answer.to.UA S.Complaint.pd...


OTG.Amended.Ans wer.pdf


UAS.Reply.Counter claims.pdf


UAS.Order.Motion. Dismiss.4.9.0...


USA.2ndAmendedC omplaint.pdf


OTG.Answer.2nd.A mended.Complai...


UAS.Reply.to.OTG. Counterclaims...

Laura

Laura Burns
Law Librarian for the Office of the General Counsel
NASA Headquarters
300 E Street, SW, Suite 9W39A
Washington, DC 20546

202-358-2078 (v)
202-358-4355 (f)

02663

[redacted]

From: Burns, Laura (HQ-MA000)
Sent: Wednesday, October 01, 2008 2:18 PM
To: McNutt, Jan (HQ-MC000)
Subject: RE: UAS.vs.OTG

Jan,

Attached is the update for the docket. Please let me know which documents you would like.

docket.update.pdf

Laura

Laura Burns
Law Librarian for the Office of the General Counsel
NASA Headquarters
[redacted]
b(6)

From: McNutt, Jan (HQ-MC000)
Sent: Wednesday, October 01, 2008 11:05 AM
To: Burns, Laura (HQ-MA000)
Subject: RE: UAS.vs.OTG

Laura,

Could you get an update on this case for me. I've included the last docket document you sent me for the case.

<< File: UAs vs OTG docket.pdf >>

Thanks,
Jan

From: Burns, Laura (HQ-MA000)
Sent: Friday, August 15, 2008 2:10 PM
To: McNutt, Jan (HQ-MC000)
Subject: UAS.vs.OTG

Jan,

Attached are some documents from the Universal case. Several of the documents were not available because they were sealed. If you have any questions, let me know.

<< File: UAs.vs.OTG.docket.pdf >>

<< File: OTG.Answer.to.UAS.Complaint.pdf >> << File: OTG.Amended.Answer.pdf >> << File: UAS.Reply.Counterclaims.pdf >> << File: UAS.Order.Motion.Dismiss.4.9.08.pdf >> << File:

USA.2ndAmendedComplaint.pdf >> << File: OTG.Answer.2nd.Amended.Complaint.pdf >> << File: UAS.Reply.to.OTG.Counterclaims.pdf >>

Laura

Laura Burns
Law Librarian for the Office of the General Counsel
NASA Headquarters
[redacted]46
b(6)

Exhibit 26

Exhibit 26

[redacted]

From: Homer, Mark W. (JPL-0910)
Sent: Tuesday, October 21, 2008 11:17 AM
To: Borda, Gary G. (HQ-MC000); Rotella, Robert F. (HQ-MA000)
Subject: FW: UAV Patent Infringement Issue
Attachments: Patent 5904724 Margolin.jd.pdf

Gentlemen,

According to DFRC's technical folks (as you can see by the attached), the UAVs flown at Dryden don't infringe on the patent (several elements in the independent claims aren't found in these aircraft). Please let me know if you need any further assistance.

Mark Homer
818-354-7770

From: Del Frate, John H. (DFRC-Z)
Sent: Tue 10/21/2008 11:00 AM
To: Homer, Mark W. (JPL-0910)
Cc: Brent Cobleigh; Samuels, David A. (DFRC-L)
Subject: Re: UAV Patent Infringement Issue

Mark,
Attached is the patent document with my notes for each sub-element in claims 1 and 13. Let me know if you have any trouble seeing them. I could not do a copy and paste off the pdf file (it must have been locked) so rather than re-typing the sections, I just used the "note" tool in Acrobat to capture my responses.

Since May of 1999, we have tested a number of UAVs. This patent would be addressed to our most sophisticated UAVs which would include: X-36, X-45 (UCAV), Pathfinder Plus, Helios/Centurion, Altus, Altair, Ikhana, Hyper-X (X-43) and X-48B (currently flying). As I mentioned in a previous e-mail, our level of complexity in the ground control stations never reached the level described in the patent. It could go there, but it is very costly and our niche is in testing the aircraft and doing research to enable capabilities. The environment described in the patent is more for the operational level UAVs.

Again, please let me know if you need anything else.

John

On 10/20/08 1:54 PM, "Homer, Mark W. (JPL-0910)" <mark.w.homer@nasa.gov> wrote:

John,

Thanks for your effort. Based on this information, it appears that the UAVs Dryden has used do not infringe the patent (in order for infringement to occur, all of the "sub-elements" in the independent claims (1 and 13) must be met. If you could simply provide me with why you believe that certain of the sub-elements of these two claims weren't used by Dryden, a little more specifically, so I can provide this info to HQ, that would be great. Thanks again.

Mark

From: Del Frate, John H. (DFRC-Z)
Sent: Mon 10/20/2008 10:56 AM

To: Homer, Mark W. (JPL-0910)
Cc: Brent Cobleigh
Subject: Re: UAV Patent Infringement Issue

Mark,
I'm not sure how best to respond to your request, but I will take a stab, and then you can tell me what else you need. I will be responding to the Patent Claims fairly broadly but I will let Brent Cobleigh speak for the capability of the General Atomics family of aircraft.

The patent in question, in general, captures some typical features that are inherent in all UAVs. However when it shifts into using computer generated terrain models and head mounted displays, that level of sophistication was never found in our Ground Control Stations – it was possible, but we were cost and schedule constrained and it was not a requirement for meeting our goals.

I will list the claim numbers followed by a Y or N or ?. I use "?" when I'm not sure if we had that feature.

1 – By my count 6 sub-claims: Y, Y, N, N, N, N
2 – 2 sub-claims: Y, ?
3 – Y
4 – Y
5 – Y
6 – Y
7 – N
8 – N
9 – Y
10 - ?
11 - ?
12 – N
13 – Y, N, Y, N (in some parts of this paragraph), N (but it depends how this is defined)
14 – Y
15 – Y
16 – N
17 – Y
18 - ?
19 - ?
20 – Y (some of the UAVs could do this)

Let me know what else you need.

John

On 10/17/08 10:25 AM, "Homer, Mark W. (JPL-0910)" <mark.w.homer@nasa.gov> wrote:

John,

Attached is the patent we discussed. Please focus your analysis on the numbered claims at the back of the patent. As I mentioned, the UAVs that Dryden has flown must include every element listed in the broadest claim(s) for there to be any infringement of the patent. I would focus on claim 1 and claim and claim 13 (although the elements are pretty similar in each--I'm guessing if we infringe claim 1, we also will infringe claim 13). Let me know if you have any questions. Thanks for your assistance.

Mark Homer
818-354-7770

<<Patent 5904724 Margolin.pdf>>

00613