

REINVIGORATING THE HERMES SPACECRAFT PROJECT

RESOLUTION

DOCUMENT NO. STARSYS-RES-2011-001

IN THE MEETING OF THE MANAGERS

PHOENIX, AZ

OCTOBER 16, 2011

COPYRIGHT © 2011, ALL RIGHTS RESERVED

ABSTRACT

Pursuant to the order of the Managers of October 16th, 2011, a Resolution to reinvigorate the Hermes spacecraft project and the business entity overseeing its research and development, and to enact provisions necessary to position the business entity to a standing suitable for supporting and/or conducting private, commercial spaceflight operations; referred to the Managers of the Hermes spacecraft project, Mr. Jarvis, Mr. Camiano, Mr. Schneider, and Mr. Longanbach, for consideration of such provisions as fall within the interests of the Managers so concerned.

I. INTRODUCTION

Whereas, It is declared:

1. This resolution may be cited as “Reinvigorating the Hermes Spacecraft Project”, herein referred to as the “Resolution”;
2. The purpose of this Resolution is to reinvigorate the Hermes spacecraft project and the business entity overseeing its research and development, and to enact provisions necessary to position the business entity to a standing suitable for supporting and/or conducting private, commercial spaceflight operations;
3. This Resolution was jointly introduced by the following managers of the Hermes spacecraft project, herein referred to as the “Managers”:

 Mr. Morris K. Jarvis,
 Mr. Robert D. Camiano,
 Mr. Kris R. Schneider,
 Mr. Mark A. Longanbach; and
4. Within this Resolution the terms:
 - a. “private” shall refer to business ventures not controlled by a government entity,
 - b. “commercial” shall refer to for-profit business ventures,
 - c. “spaceflight” shall refer to activities conducted at altitudes considered to be within the space environment,
 - d. “aerospace” shall refer to all forms of science and engineering in aeronautics, astronautics, and their relevant application to industry, academia and defense,
 - e. “research and development” shall refer to the study, conceptualization, application, design, fabrication, testing, evaluation, promotion and advocacy of aerospace vehicles,
 - f. “suborbital” shall refer to spaceflight conducted at velocities less than orbital velocities of the Earth,
 - g. “spacecraft” shall refer to aerospace vehicles developed for the purpose of conducting spaceflight.

II. FINDINGS

Whereas, the Managers find the following:

1. The privately built winged spacecraft known as, Hermes, named after the ancient Greek god of boundaries and the travelers who cross them, and having no relation to the proposed European Space Agency (ESA) spacecraft having the same name, was originally conceptualized in 1978 by founder and aerospace entrepreneur, Morris K. Jarvis;
2. Between the time of conceptualization and the year 1993, significant personal funds and efforts into research and development of the Hermes spacecraft concept were invested by Morris K. Jarvis;
3. In the year 1993, the corporate entity titled, “Satellite Transport and Retrieval Systems, Inc.” (a.k.a STAR Systems, Inc.) was incorporated by Morris K. Jarvis within the State of Arizona as a ‘C’ corporation to oversee research and development of, and pursue funding for, the Hermes spacecraft concept;
4. Between the years 1993 and 2000, significant personal funds and efforts were further invested by Morris K. Jarvis and Robert D. Camiano towards experimental development of prototype subsystems for the Hermes spacecraft concept;

5. In the year 2000, Morris K. Jarvis and Robert D. Camiano re-incorporated “Satellite Transport and Retrieval Systems, Inc.” as “Space Transport and Recovery Systems, Inc.” (a.k.a. STAR Systems, Inc.) within the State of Arizona as a ‘C’ corporation to begin seeking the larger scale funding necessary to continue research and development of the Hermes spacecraft concept;
6. By the year 2003, sufficient progress had been made in prototype development of several spacecraft subsystems to garner substantial sponsorship funding to begin full-scale, proof-of-concept, prototype development of the Hermes spacecraft;
7. During this development period between the years 2003 and 2008, substantial progress on the Hermes spacecraft was made not only in physical prototype hardware development, but also in business development, the receiving of endorsements, the filming of documentary video for use on major television networks, the development of industry relationships, in addition to many other forms of progress;
8. Also during this development period Morris K. Jarvis and Robert D. Camiano researched feasible and practical methods of rocket propulsion for the Hermes spacecraft, and at the time concluded that either a liquid or hybrid propellant rocket propulsion system would best serve the needs of the Hermes spacecraft, and thus set forth conceptualizing their design requirements;
9. In the year 2008, significant sponsorship funding was received to prepare the Hermes spacecraft for travel and display at events around the country, the efforts of which culminated in the Hermes spacecraft being towed across the Golden Gate Bridge in San Francisco, CA and gaining significant local media attention;
10. In September 2008, Morris K. Jarvis was transferred overseas for a period of two years for external work related purposes outside his control, and due to this circumstance, STAR Systems, Inc. and the Hermes spacecraft project began to experience a decline in notable progress and completed milestones which, by the summer of 2009, ultimately caused STAR Systems, Inc. and the Hermes spacecraft project to lapse into a period of hibernation;
11. During this time and prior, starting in 2004, after realizing the inability of national space programs to effectively develop affordable spaceflight under a government operating model, aerospace entrepreneurs, Kris R. Schneider and Mark A. Longanbach, were concurrently working on a business venture to develop an architecture of commoditized space transportation systems through a step-by-step, “build-a-little, test-a-lot” development process;
12. Between the years 2005 and 2007, Kris R. Schneider and Mark A. Longanbach conducted preliminary studies researching and conceptualizing the space transportation systems necessary to comprise such an architecture, as well as studies detailing an engineering design process to oversee their development, and, based on the results of market research and the notable progress of other private, commercial spaceflight ventures, ultimately concluded that the development of lower cost suborbital spacecraft for space tourism represented the greatest near-term potential, in both profit and development feasibility, to jump starting the development of a space transportation architecture;
13. During this period of research, the corporate entity titled “SDG Technologies Corporation” was established by Kris R. Schneider as a ‘C’ corporation in the State of Arizona to oversee research and development of such a space transportation architecture and begin business development for a suborbital spacecraft to enable lower cost suborbital spaceflight;
14. Also during this period of research, Kris R. Schneider and Mark A. Longanbach determined that a significant factor affecting efficient space transportation system development was propulsion system development, and subsequently determined that a hybrid rocket propulsion system represented the most practical and feasible type of rocket for developing a more robust, lower cost, commoditized rocket propulsion system for implementation into suborbital spacecraft;

15. Based on these determinations, Kris R. Schneider and Mark A. Longanbach thus set forth conceptualizing and designing such a hybrid rocket propulsion system known as the *Enabling Hybrid Rocket Propulsion System (EHRPS)*, which was named as such to signify its desired ability to jump start and enable development of the conceptualized space transportation architecture;
16. In the year 2007, SDG Technologies Corporation received a small, private investment to begin small-scale, proof-of-concept prototype development of the EHRPS for the purpose of demonstrating a commoditized business model for rocket propulsion system development and operations;
17. During this development period between the years 2007 and 2009, significant experience and progress was gained not only in prototype research and development of the EHRPS, but also in business development, aerospace public policy in Washington D.C., the receiving of endorsements, the development of industry relationships, in addition to many other forms of progress;
18. In the year 2009, Kris R. Schneider presented the suborbital spacecraft and EHRPS concepts to venture capitalists, engineers and the media at a conference and business plan competition held in conjunction with the 40th anniversary of Apollo 11 at NASA Ames Research Center;
19. While positive feedback was received at said event, it was determined by Kris R. Schneider that due to growing national economic turmoil at the time, securing private investments in the near-term to continue research and development of the suborbital spacecraft and EHRPS concepts on a larger scale would prove difficult;
20. Based on recommendations received at said event, the next year was devoted to revising the business development of the concepts and conceptualizing methods for achieving a substantially more attainable break-even point with a greater potential for return-on-investment;
21. In June of 2010, Kris R. Schneider and Mark A. Longanbach resolved to complete research and development of the EHRPS concept prototype, resulting in a successful static test-firing of said prototype in July of 2010, at which point SDG Technologies Corporation was dissolved and transformed into “Enabling Hybrid Rocket Propulsion System Program, LLC” (a.k.a. EHRPS Program, LLC) within the State of Arizona to focus on development of the hybrid rocket propulsion system;
22. In August of 2010, STAR Systems, Inc and EHRPS Program, LLC, separately and unknowingly to each other, submitted proposals for the Hermes spacecraft and EHRPS concepts to the NASA *Small Business Innovation Research (SBIR)* Program requesting federal funding to continue research and development of said concepts on a larger scale;
23. Due to continuing national economic turmoil from what is now regarded as the “Great Recession”, and due to the competitive nature of the NASA SBIR Program, it was separately determined by both companies that securing federal funding in the near-term to continue research and development of the Hermes spacecraft and EHRPS concepts on a larger scale would also prove difficult;
24. In September of 2010, realizing that they had similar ventures, similar business plans and forecasts, similar design concepts, a similar long-term vision for private, commercial space transportation systems development, similar barriers-to-entry, and had separately focused on different aspects of prototype development towards similar suborbital spacecraft in a similar locale, the managers of STAR Systems, Inc, Morris K. Jarvis and Robert D. Camiano, and the managers of EHRPS Program, LLC, Kris R. Schneider and Mark A. Longanbach, collectively met and determined that cooperation, instead of competition, would be needed to overcome the barriers-to-entry facing both ventures, and thus collectively resolved to join resources and expertise into a single venture;

25. Between October of 2010 and September of 2011, thousands of dollars of personal funds and hundreds of man hours were invested by Morris K. Jarvis, Robert D. Camiano, Kris R. Schneider and Mark A. Longanbach, to reinvigorate the Hermes spacecraft and its prototype subsystems in preparation for private, commercial spaceflight, the four of whom became the Managers of that effort, and which resulted in renewed garnering of support and recognition from product vendors, the media, potential investors, the public, in addition to many other forms of support; and
26. During that development period, the Managers resolved to scale up the EHRPS concept prototype to a larger, demonstration prototype rocket to test and evaluate the structure and operation of the EHRPS concept and demonstrate to investors the commoditized business model for rocket propulsion system development and operations enabled by its intellectual property, the efforts of which culminated in a successful static test-firing of the rocket system on July 23, 2011.

III. POSITION

Whereas, It is the opinion of the Managers:

1. That as a result of collective efforts, the Hermes spacecraft project holds numerous endorsements, long-standing media attention and public support, industry relationships, and currently stands in the form of prototyped hardware of several major subsystems inherent within spacecraft, including:
 - a. the Hermes aerodyne demonstrating competence in “structural systems” development,
 - b. the Hermes remote cockpit demonstrating competence in “avionics systems” development,
 - c. the *Enabling Hybrid Rocket Propulsion System* (i.e. EHRPS) prototype demonstrating intellectual property and competence in “propulsion systems” development;
2. A desire exists between the Managers to continue research and development of the Hermes spacecraft and its subsystems into a flight ready, suborbital space transportation vehicle capable of enabling private, commercial spaceflight;
3. A limited liability company structure would best serve the needs of the Managers in reinvigorating the Hermes spacecraft project pursuant to Section 1.2 of this Resolution;
4. The name, “Space Transport and Recovery Systems” (a.k.a. STAR Systems), holds long-standing recognition and support and should therefore be continued under a limited liability company structure initially registered within the State of Arizona;
5. In the spirit of cooperation and regard for community, an internal advisory council of persons representing both internal and external interests should be established to give advice and recommendations on the development of the Hermes spacecraft and the direction of the proposed company overseeing its research and development, and to assist the Managers in conducting outreach, developing support and giving due regard to external interests on behalf of the proposed company; and
6. In the spirit of further cooperation, the proposed company shall reserve the option to become cooperatively federated with other entities of an aerospace nature, sharing a common mission, vision, and values for the collective aerospace engineering discipline.

IV. PROVISIONS

Now, therefore, be it Resolved by the Managers in meeting assembled,

1. That the proposed company shall be named “Space Transport and Recovery Systems, LLC” (STAR Systems, LLC) pursuant to Section 3.4 of this Resolution, and may hereinafter be referenced as the “Company”;

2. That the Company shall initially be registered within the United States of America under the limited liability company laws of the State of Arizona pursuant to Sections 3.3 and 3.4 of this Resolution, and is authorized to expand its operations to other locations as deemed appropriate and necessary to the Company;
3. That in the spirit of cooperation and regard for community, the Company shall establish a Multi-stakeholder Advisory Council (MAC) pursuant to Section 3.5 of this Resolution, which, at the discretion and need of the Managers, may be comprised of representative members from the following considerations:
 - a. on the part and behalf of employee interests,
 - b. on the part and behalf of producer interests,
 - c. on the part and behalf of consumer interests,
 - d. on the part and behalf of educator interests,
 - e. on the part and behalf of student interests,
 - f. on the part and behalf of government interests,
 - g. on the part and behalf of public interests,
 - h. on the part and behalf of environmental interests,
 - i. on the part and behalf of any such interests as may be deemed significantly impacted by the operations of the Company;
4. That the insignia of the Company shall be adopted from the insignia of “Space Transport and Recovery Systems, Inc.” and appropriately adjusted to reflect the title of the Company;
5. That the Managers of the Company shall serve in the following executive capacities until such time that the transfer of such capacities to other members be determined appropriate and necessary:

Morris K. Jarvis as Chief Executive Manager,
Robert D. Camiano as Chief Technology Manager,
Kris R. Schneider as Chief Liaison Manager,
Mark A. Longanbach as Chief Operations Manager;
6. That the founder of the Hermes spacecraft, Morris K. Jarvis, shall have the power to administer a vote of final determination on matters where the Managers of the Company be equally divided;
7. That the Company shall adopt and adhere to a casual form of parliamentary procedure in its administrative deliberations, and shall adopt and adhere to a formal form of parliamentary procedure in its administrative records, the specifics of which shall be prescribed in subsequent charter documents of the Company;
8. That it is the intent of the Company to:
 - a. well and faithfully serve the needs of customers,
 - b. profit from the research and development of spacecraft and their relevant subsystems,
 - c. expand the progress and lessons learned from the Hermes spacecraft towards the cooperative development of future space transportation systems,
 - d. fully comply and adhere to, without purpose of evasion, all federal and state laws, regulations and determinations,
 - e. develop relationships and a good rapport with the Congress of the United States and any state legislatures and government instrumentalities as may be deemed appropriate and necessary,
 - f. serve as a resource of information and expertise on matters concerning the aerospace industry, and specifically those concerning the research and development of private, commercial spaceflight,

- g. nurture a community culture of clarity, structure, affirmation, cooperation, innovation and free enterprise where people can be inspired to see the best in themselves and others and discover their unique purpose, roles and responsibilities as they fulfill their dreams,
 - h. be mindful, considerate and good stewards of the impact of the Company on external interests and society as a whole;
9. That no part of this Resolution may be suspended unless itself so provides;
 10. That no subsequent charter documents developed by and for the Company be in conflict to this Resolution; and
 11. That if any part of this Resolution be found null and void, the remainder of this Resolution shall remain in full effect.

V. DELIVERABLES

Be it further Resolved,

1. That the Company shall draft and maintain the following additional charter documents to govern the organization, administration and operations of the Company, and shall submit each document to the expedient approval of the Managers:
 - a. Articles of Organization, to activate the provisions of this Resolution,
 - b. Operating Agreement, to establish the administration of the Company,
 - c. Code of Conduct, to establish the shared core values of the Company,
 - d. Business Plan, to establish the business model and strategic direction of the Company,
 - e. Standing Rules, to establish rules of research, development and operation of the Company,
 - f. Annual Report, to declare and summarize the annual status of the Company;
2. That the “Object” of the Company be established as a three-fold organizational purpose comprised of its mission, vision, and organizing goal and be clear and well-defined within the necessary and appropriate charter documents of the Company;
3. That the “Logo” of the Company be established and comprised of its company seal, insignia, logotype and motto;
4. That applications for license and/or permit be expediently submitted to the following entities pursuant to Section 4.8d of this Resolution:
 - a. to the United States Bureau of Alcohol, Tobacco, Firearms and Explosives (ATF) for the acquisition, handling and conducting of operations using potentially explosive material pursuant to Title 18 U.S. Code, Chapter 40,
 - b. to the United States Federal Aviation Administration, Office of Commercial Space Transportation for the research, development, testing, launching and recovering of experimental suborbital rockets pursuant to *The Commercial Space Launch Amendments Act of 2004*,
 - c. to the United States Federal Aviation Administration, Office of Commercial Space Transportation for the conducting of launch and reentry operations of suborbital spacecraft pursuant to Title 49 U.S. Code, Subtitle IX, Chapter 701,
 - d. to the appropriate chambers of commerce for the conducting of business,
 - e. to any and all other entities as they are found necessary and appropriate;
5. That the Company shall establish and maintain an official record of proceedings and transactions; and
6. That any and all other deliverables be expedited as they are found necessary and appropriate.

VI. SIGNATORIES

IN WITNESS WHEREOF, We, the Managers assembled in general meeting, do hereby affix our names as evidence of passage and adoption of this Resolution, and attest that the foregoing is the true act of the Managers, and hereby set our hands this 16th day of October in the year 2011.

Name: Morris K. Jarvis Signature: /s/ Morris K. Jarvis

Name: Robert D. Camiano Signature: /s/ Robert D. Camiano

Name: Kris R. Schneider Signature: /s/ Kris R. Schneider

Name: Mark A. Longanbach Signature: /s/ Mark A. Longanbach