

**DEPARTMENT OF BUSINESS,
ECONOMIC DEVELOPMENT & TOURISM**

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THEODORE E. LIU
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Statement of
THEODORE E. LIU
Director
Department of Business, Economic Development & Tourism
before the
HOUSE COMMITTEE ON ECONOMIC DEVELOPMENT AND BUSINESS CONCERNS
Thursday, January 31, 2007
8:30 a.m.
State Capitol, Conference Room 325
in consideration of
HB 2939
RELATING TO AEROSPACE DEVELOPMENT.

Chair Yamashita, Vice Chair Wakai, and members of the Committee. The department supports the concept behind HB 2939. There have been many good ideas introduced this legislative session that support the State's economic development goals. We note, however, that this appropriation was not included in the Executive's Supplemental Budget, and request that this appropriation not displace the priorities contained in that budget.

As you know, the State Legislature provided \$400,000 in seed funding for the Pacific International Space Center for Exploration Systems (PISCES) during the 2007 Session through Act 149. Since its formal inception in October of last year, PISCES has been utilizing these funds to achieve several significant

milestones, including the establishment of a headquarters office at the University of Hawaii at Hilo; implementation of a major international conference establishing collaborative R&D teams linking University of Hawaii faculty and local business entrepreneurs with NASA field centers, mainland universities, and major aerospace corporations; the first national student design competition inspiring college students to apply STEM-related disciplines in the conceptual design of a manned lunar base; the development of a curriculum for aerospace studies at the University of Hawaii at Hilo; and two successful proposals to NASA's Innovative Partnership Program resulting in grants totaling \$640,000 to support the design, development, testing and evaluation of innovative technologies in Hawaii to support future robotic and human missions to the Moon, Mars and beyond.

The additional funding requested through this bill will provide sustained support for PISCES through the upcoming fiscal year during a critical growth period for this program. As noted in the bill, these funds will not only help sustain and expand the significant scientific, educational, and R&D activities currently under development, but also enable the formulation of a comprehensive international grant application and fundraising campaign that will facilitate the evolution of PISCES as world-class program promoting international space exploration that is financially independent from State support.

Thank you for the opportunity to testify on this bill.

HB 2939 RELATING TO AEROSPACE DEVELOPMENT

Testimony Presented to the
House Committee on Economic Development & Business Concerns

January 30, 2008

by

Rose Tseng
Chancellor
University of Hawai'i at Hilo

Aloha,

On behalf of the University of Hawaii at Hilo, I am pleased to provide this testimony in support of House Bill 2939, for the continued support and funding of the Pacific International Center for Space Exploration Systems (PISCES) which will strengthen Hawaii's capabilities and competitiveness as a major player in the global space industry.

In the year since the Hawai'i State Legislature provided initial funding for PISCES, I have been impressed by the positive effect it has had for the programs and students at the University of Hawai'i at Hilo (UH Hilo). I write to you now in support of HB 2939, which would extend funding for a critical second year.

When I wrote to you last year in support of initial funding for PISCES, it was based on my hope that it would make contributions to international science, our educational programs at UH Hilo, and the economy of the Big Island. To be candid, I took a chance based on my hope that it would fulfill its promises.

I have watched the program develop over the last several months and I am pleased to report that, in its short life, PISCES is having a positive effect and I support its continuation. While still in its infancy, it has accomplished quite a lot but, like any such program, it will need nurturing for a short while longer.

PISCES has assembled a world-class group of scientists working on establishing a sustainable human habitat for the moon, Mars and beyond. It has begun developing academic programs at UH Hilo by establishing a Special Topics in Space Science course with a full enrollment of 20 students already studying the subject. PISCES is developing cooperative academic programs with faculty at UH Manoa to make this a genuinely systemwide program. A Memorandum of Understanding with Colorado School of Mines will increase UH Hilo's ability to provide science education and research for our local students and faculty. This is in keeping with my efforts to expand UH Hilo's capacity to provide outstanding research and educational opportunities for the children of our State.

As a result of its initial State funding, PISCES has already been awarded two NASA Partnership Grants totally approximately \$650,000; a degree of leverage that bodes well for the future. Scientists and Engineers from all over the country will be coming to the Big Island in November for a demonstration field test of robotics and in situ resource utilization projects.

I urge passage of HB 2939 and look forward to a long and increasing contribution to our State from PISCES.

JAMSS America, Inc.

16055 Space Center Blvd., Suite 240, Houston, TX 77062
Tel: 281-461-3700 • FAX: 281-461-3776



January 29, 2008

Dear Chairman Yamashita, Vice Chairman Wakai, and Members of the House Economic Development & Business Concerns Committee,

As a current member of the PISCES organizing committee, a ten-year participant in Hawaii's JUSTSAP forum, current President of JAMSS America, Inc. (a support contractor to the Japanese Space Agency), former Senior Vice President of SPACEHAB, Inc., and former NASA Johnson Space Center lunar mission operations specialist, I am acutely aware of the unique challenges that space exploration places on human ingenuity, on hardware and software technologies, and on test and simulation facilities that are representative of those in-space environments within which or on which space explorers will conduct their operations. As a young NASA engineer during the Apollo Program, I was indeed fortunate to accompany several of the Apollo crews to the Big Island where they experienced a simulated lunar surface training environment unlike any other on Planet Earth. To a crewmember, each Apollo astronaut returning from the moon said that Hawaii was the most useful training environment that they experienced during their extensive geologic and surface operations training program.

The journey is now set to continue as NASA sets its vision on the establishment of a permanent lunar base within this generation. I am proud to have been a part of the evolution of the PISCES program and have been quite amazed at the immediate bipartisan support received for PISCES from the State of Hawaii in this year's budget. NASA also has taken note - as has the Japan Space Exploration Agency (JAXA) - and PISCES has more than matched its original State funding with NASA research contracts awarded over the past six months. On Friday of this week (February 1), I will have the privilege of speaking with representatives of a number of the leading Japanese commercial aerospace corporations and of informing them of the many opportunities for exploration technologies development, test and checkout that PISCES will offer. I will also tell them that NASA has specifically offered to collaborate with each of these companies on the upcoming research projects in November of this year. My goal is to secure the commitment from one or more Japanese companies to investigate the possibilities with their NASA counterparts.

Your continued support of PISCES will help facilitate the next remarkable chapter of human space exploration in ways that are a fundamental departure from the Apollo program of four decades ago: 1) this renewed journey will very likely be international in nature with all major space faring nations as participants, 2) lunar explorers returning to the moon will establish a permanent lunar outpost which will require advanced and reliable technologies to sustain it, and 3) importantly, the students of Hawaii and other states and nations learning from their PISCES participation today will have unprecedented opportunities to be tomorrow's lunar outpost inhabitants.

I thank you for your leadership in supporting our space program through your continued support of PISCES in 2008-2009 through your approval of HB 2939.

Respectfully,

(original signed by:)

Dan A. Bland
President

Frederick C. Kiga
Vice President
Govt & Community Relations
Commercial Airplanes

The Boeing Company
P.O. Box 3707 MC 21-81
Seattle, WA 98124-2207

January 30, 2008

Hawaii State Legislature
State Capitol
Honolulu, Hawaii 96813



Subject: Endorsement of PISCES Bills HB 2939 and SB 2891

Members of the Twenty-Fifth State Legislature,

The Boeing Company applauds Hawaii's State initiative in funding the University of Hawaii's Pacific International Space Center for Exploration Systems (PISCES). For many years, since Project Apollo, Boeing has performed research using Hawaii's unique volcanic terrain to simulate lunar surface operations. In addition to simulating human space operation, Boeing has supported robotic space exploration using this ideal analog environment, under NASA contracts and internal research, in cooperation with the University.

Thank you for this great opportunity for aerospace research and education in Hawaii,

Sincerely,

A handwritten signature in black ink, appearing to be 'F. Kiga', written over a horizontal line.

Frederick C. Kiga
Vice President, State and Local Government Relations
Northwest Region
The Boeing Company

January 30, 2008

Testimony to the House Committee on Economic Development & Business Concerns
Subject: House Bill 2939

Chair Yamashita, Vice-Chair Wakai, and members of the Committee. I am writing this testimonial in strong support of House Bill 2939 that provides continued funding for the Pacific International Space Center for Exploration Systems (PISCES) in Hawaii.

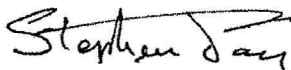
As you know, PISCES is a project that was envisioned and designed through the Japan-U.S. Science, Technology & Space Applications Program (JUSTSAP) – a unique independent group of scientists, business leaders, educators, and government officials from both Japan and the United States that convenes in Hawaii annually to promote scientific and technological collaboration in space-related ventures.

Over the years, JUSTSAP has spawned a broad range of innovative projects promoting advanced satellite communications, remote sensing for disaster management, microgravity research, the development of solar-powered alternative energy systems, and other space-related applications benefiting communities within the Asia-Pacific region. The Pacific International Space Center for Exploration Systems, the most recent brainchild of JUSTSAP, is a program being developed in Hawaii as an international center for space-related research and development, aerospace education, astronaut training, and the development of collaborative international space exploration missions. It will draw heavily upon the substantial scientific and technological expertise resident within JUSTSAP to promote collaborative research and educational partnerships with University of Hawaii faculty and students, as well as local business entrepreneurs statewide, to develop each component of this initiative.

A long-term project that will grow and mature over the next decade, PISCES primary objectives will be to: (1) leverage Hawaii's diverse natural resources, strong scientific and technological expertise, unique geographical terrain, and strategic mid-Pacific location to support the development and implementation of future international robotic and manned missions to the moon, Mars, and other planets (2) provide a broad range of scientific, economic, and educational opportunities to help grow Hawaii's research and development infrastructure, expand and diversify private sector initiatives in aerospace-related technology, and enhance secondary and college-level training and mentorship programs in advanced mathematics, engineering and science disciplines; and (3) help establish Hawaii as a globally-recognized leader in aerospace.

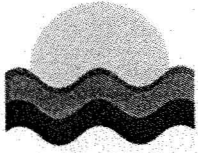
Given Hawaii's abundant natural resources and unique geography, resident expertise in space science and engineering, and strategic mid-Pacific location, we firmly believe the State of Hawaii is well positioned to support the development and operation of PISCES, as well as to directly benefit from its numerous space-related programs and activities. We also believe this represents a tremendous opportunity for the State of Hawaii to grow and diversify its aerospace industry, providing multiple opportunities for education, training and employment in science and technology-related disciplines. As such, we respectfully seek your continued support through this legislation to enable this most promising initiative to realize its full potential.

Thank you for the opportunity to testify on HB2939.



Chairman

The Japan-U.S. Science, Technology & Space Applications Program



Hawaii Island Economic Development Board
ISLAND OF OPPORTUNITY

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Vice President
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January 30, 2008

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Representative Kyle T. Yamashita, Chair
Representative Glenn Wakai, Vice Chair
Committee on Economic Development & Business Concerns
Hawai'i State Legislature
State Capitol, Honolulu, Hawai'i 96813

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President
Realty Investments

Reference: HB 2939 – Relating to Aerospace Development - PISCES
Hearing: Conference Room 325 at 8:30 a.m. Thursday January 31, 2008.

Secretary
Barry Mizuno
Owner's Representative
Puna Geothermal Venture

Dear Representative Yamashita, Representative Wakai and Committee Members:

Immediate Past Chair
Warren Lee
President
Hawaii Electric Light Company

On behalf of the directors and the 115 member organizations of the Hawaii Island Economic Development Board, we wholeheartedly support HB 2939 to enable the office of aerospace development, department of business, economic development and tourism to continue to build upon the foundation and great beginnings achieved thus far and to further the development of the Pacific International Space Center for Exploration Systems (PISCES) here in Hawai'i.

Director
Winston Chow
Senior Vice President
First Hawaiian Bank

The development of new education programs that PISCES will bring to the University of Hawai'i Hilo will allow for new opportunities for our students to further scientific and technical field research and assist in the preparation for a higher skilled labor force to support commercial development of aerospace projects.

Director
Roberta Chu
Senior Vice President
Bank of Hawaii

On behalf of the directors, we ask that you pass this legislation and appreciate the opportunity to submit testimony before you.

Director
Greg Chun, Ph.D.
President and General Manager
Kamehameha Investment Corp.

Director
Patricia Provalenko
President
PATDI, INC.

'O wau nō me ka ha'a ha'a

Director
James Takemine
Market Manager
American Savings Bank

Director
Barry K. Taniguchi
President and CEO
KTA Super Stores

Mark McGuffie
Executive Director

Director
Mark McGuffie
Executive Director

**Dedicated to the Creation and Promotion
of Partnerships for Space Commerce**



January 28, 2008

Hawaii State Legislature
State Capitol
Honolulu, Hawaii 96813

Dear Members of the Hawai'i State Legislature:

I am writing to express my strong support and endorsement of SB 2891 and HB 2939, which provide funding for the Pacific International Space Center for Exploration Systems (PISCES) for its second year.

Given my position as the current director of PISCES, you might view my support of these bills as obvious and not meaningful, but let me tell you about my situation here. I am fully retired, having spent a long and productive career in academia, following which time I spent three years at NASA headquarters in Washington, DC managing major programs designed to get companies into space to do research in partnership with NASA. Upon leaving NASA I founded SpacePartnerships.com, which helps bring universities together with companies and federal agencies into partnerships to do mission-related research and education.

When the idea for PISCES first emerged at the Japan-US Science, Technology and Space Applications Program (JUSTSAP) symposium, I realized that it was made to order for an industry/university/government partnership center of the kind I have had extensive experience with, both in academia and in government. I also saw that it needed strong leadership from someone who had the time and the experience to make it a reality. So I agreed to lead the center for its first two years to get it established. We are now at the midway point of that period. I have announced that I will step down as director at the end of the 2008-09 fiscal year and turn the center over to someone chosen in a nationwide search. If the center is to survive, that search must begin this year.

By any measure whatsoever, the first year of existence for PISCES has been spectacular. As soon as the JUSTSAP symposium ended, we organized quickly and wrote a proposal for State of Hawai'i funding. As you know, the legislature was impressed with our plans and decided to fund PISCES for its first year at a level of \$400K, and the governor signed the bill. Even before we received any of that money at UHH, we formally established the center, began work on our long-range strategic plan, started planning for our first conference and wrote a number of proposals for external funding from NASA. Two of the latter proposals, one for *In-Situ* Resource Utilization (ISRU) research and education and one for robotics testing, were successful and were funded at a total level of \$640K,

for work to be done at and with PISCES. We are now beginning the process of identifying and characterizing field sites where these NASA projects will be conducted.

We also held our first international conference, in November 2007, which was attended by over 100 people, representing four different countries, five NASA field centers, prominent aerospace companies such as Lockheed-Martin and Boeing, and numerous faculty members from UH-Hilo, UH-Manoa and other universities from around the world. At this conference we also heard from representatives of local business, civic and cultural organizations about their hopes, dreams and concerns for PISCES, along with a health dose of advice about involving local leaders in the planning. Largely as a result of this input, we have now formed a local cultural advisory committee and will hold the first meeting of that group next weekend.

So PISCES is off to a great start, thanks in large part to the vision and generosity of the State Legislature. I respectfully request that you act affirmatively on this continuation legislation so we can continue the progress we've made so far. It is critical, now that we have captured NASA's attention and won their confidence with these first two awards that we build on that confidence by showing them that the State is in this for the long term. As you will recall from our original proposal last year, we are planning for PISCES to be self-supporting after five years, with a State funding profile that increases for the first two years, followed by diminishing support after that. Thus this second year's funding is crucial for demonstrating State commitment and allowing us time to mount a vigorous fundraising campaign from private capital sources to complement our already successful efforts at securing operational funding from NASA.

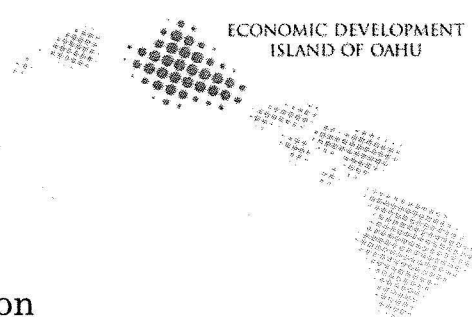
Thank you for your time and attention. I would be happy to testify before any of your committees concerning these bills.

Sincerely,



Dr. Frank Schowengerdt
President and CEO
SpacePartnerships.com
709 Fitzhugh Way
Alexandria, VA 22314

Phone: 571-309-3815
Email: schoweng@hawaii.edu



January 30, 2008

Hawaii State legislature
State Capital
Honolulu, Hawaii 96813

Support Testimony on
H.B. NO. 2939

RELATING TO AEROSPACE DEVELOPMENT

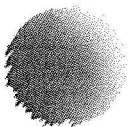
House Committee on Economic Development & Business Concerns
Representative Kyle T. Yamashita, Chair
Representative Glenn Wakai, Vice Chair

Thursday, January 31, 2007, 8:30 a.m., Conference Room 325

Enterprise Honolulu strongly **supports H.B. 2939**, providing continuing funding support for Hawaii's growing Aerospace sector. Hawaii has a realistic opportunity to benefit from the changes and events taking place in the aerospace, space sciences, optics, and astronomy sectors with continuing vision and support of out state legislature. Right now there are dozens of local companies; employing thousands of local residents in rewarding jobs that pay a living wage that are growing in the aerospace and dual-use sector.

Hawaii has a long testing history with NASA that dates back to the 1960's Apollo project and this supports the proposal for a testing center on the Big Island. This collaboration on lunar/Mars-like terrain, perfect for developing analog lunar base and testing/evaluating new technologies to support robotic/human missions to moon and Mars, is just one aspect.

Hawaii has resident experts in space-related fields, with over 40 NASA PIs at UH performing ongoing research in astronomy, planetary geosciences, robotics, satcom, laser-based power systems, and other technologies critical for supporting future space exploration missions around and beyond Earth). NASA and others recognize Hawaii's strategic assets/advantages and want to partner with Hawaii to advance space exploration goals. The **2007 Space Act Agreements** set forth a formula and steps to implement this partnership. Short- and long-term benefits to Hawaii include scientific, educational and economic benefit as many Hawaii companies could benefit from the R&D work envisioned in Hawaii. Many of these companies are the same defense companies we have all been working with to build to a sustainable sector. This will accelerate that process and include new Hawaii companies in research and testing.



ENTERPRISE
HONOLULU

THE BUSINESS CLIMATE OF PARADISE

737 Bishop Street, Suite 2040, Honolulu, Hawaii 96813 • 808-521-3611
Fax: 808-536-2281 • www.EnterpriseHonolulu.com

Approving the funding requested for Office of Aerospace Development will evidence the State's ongoing commitment to the industry and encourage both federal centers (like NASA) and private industry to seriously consider Hawaii for joint venture opportunities and investment in aerospace-related enterprise.

Insuring adequate funding to quickly proceed on the Pisces Project, advanced robotics activities, and the UH small satellite programs would provide clear benefits from this state investment with exciting new career opportunities for our children.

Again, Enterprise Honolulu strongly **supports HB 2939**.

Sincerely,

A handwritten signature in black ink, appearing to read "John R. Strom". The signature is fluid and cursive, with a large initial "J" and "R".

John Strom

VP Director of Business Development & Technology