

George R. Ariyoshi  
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Honolulu, HI 96813

**TESTIMONY**

February 9, 2009

Re: SB537 relating to aerospace

Dear Members of the Twenty-Fifth Legislature:

I am writing this testimonial in strong support of SB 537, which proposes the establishment of an Aerospace Advisory Committee that will help guide and promote the growth of Hawaii's aerospace industry.

Over the past half century, the aerospace industry has played a pivotal role in expanding and diversifying our national economy. From aviation to space exploration, aerospace research and development has forged new inroads in science and technology, dramatically advanced our national engineering and manufacturing expertise, spurred spinoffs of commercial products that have significantly enhanced our qualities of life, provided rich educational and training opportunities for K-12 and college students, and ultimately afforded new frontiers for humankind to explore and develop.

The National Aeronautics and Space Administration (NASA) has outlined a new vision for future space exploration – one which embraces the development of innovative technologies, knowledge and infrastructure, articulated through multinational partnerships, that can lead us back to the Moon, to Mars and beyond. To meet this substantial challenge, considerable resources will need to be devoted to the development, testing and evaluation of new technologies to support both robotic and human missions; to the training of scientists, engineers and astronauts to help design and implement these missions; and to educating the general public.

Hawaii's diverse natural resources, first-class technological infrastructure, and resident scientific and engineering expertise provide an ideal venue to both support NASA's vision for space exploration and to develop a robust aerospace industry in the islands.

Since its inception, our State has been an active participant in aerospace-related activities – beginning with astronaut training programs and the development of world-class observatories in the 1960's. Over the past four decades, the University of Hawaii, the U.S. military, and numerous companies

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statewide also have engaged in a variety of nationally-funded programs in planetary geosciences, satellite communications, space-based remote sensing and environmental monitoring, deep-space surveillance, and other areas utilizing aerospace-related technologies. Yet new opportunities are arising in aerospace that are ideally suited for our state – many with substantial scientific, educational and commercial promise.

For example, the Institute for Astronomy is seeking to apply its resident expertise in adaptive optics and remote sensing toward the development of advanced sensor technologies for commercialization. Local companies such as Oceanit, Textron, Solipsys, NovaSol and Trex Enterprises are working to develop new commercial products and services to support atmospheric monitoring and weather forecasting, land and coastal resource assessment, and advanced optical communications and electro-optical tracking systems.

In addition, major aerospace corporations such as Boeing, Raytheon, BAE Systems, Lockheed Martin, and Northrop Grumman are looking to expand their operations in Hawaii as a bridge to Asia-Pacific markets – especially in the development and delivery of advanced systems for aviation maintenance and training, air traffic control, satellite communications, and space tracking, surveillance and reconnaissance.

Finally, Hawaii's strategic environmental and technological assets are ideally suited to support the commercial launch of small satellites and other payloads for university research, private telecommunications networks, the monitoring, management and mitigation of regional disasters, and the development of space power systems to capture sunlight as a renewable energy resource for both interplanetary spacecraft and earth-based applications.

For the past two decades, DBEDT (initially through the Office of Space Industry and now through its Office of Aerospace Development, or OAD) has played a significant role in facilitating aerospace activities in Hawaii, including international conferences and workshops, public exhibitions, research and development projects, and public outreach programs. In doing so, the department has networked with multiple state, national and international contacts in the aerospace industry, and through OAD is now well positioned to continue these efforts in helping expand our State's scientific, educational and commercial base in aerospace.

But to maximize our engagement with the global space community, as well as the benefits aerospace can bring to Hawaii, we need to engage the experience and expertise of government, academic and business leaders, both in Hawaii and overseas, who are well versed with Hawaii's strategic assets and capabilities, as well as the current and projected requirements of the aerospace industry, to help us more effectively connect our rich supply of resources with national and global demand.

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The proposed Aerospace Advisory Committee is ideally suited to facilitate this objective, and would work closely with OAD to help monitor and assess aerospace industry development statewide, providing written reviews and policy recommendations to the State Administration and Legislature that (a) identify strategic areas for Hawaii to expand and diversify aerospace-related activities statewide; and (b) propose scientific, educational and economic strategies by which innovative aerospace training and business development programs may be realized.

The broad professional affiliations represented by Advisory Committee members will both underscore Hawaii's high-level commitment to developing its aerospace sector as well as facilitate networking between Hawaii and major corporate and educational institutions abroad, thereby attracting investments and promoting public-private partnerships that can accelerate the expansion and diversification of Hawaii's aerospace industry.

I am aware of the fiscal challenges facing the State, but at the same time you cannot turn your backs on the future of Hawaii.

I therefore strongly concur with the Legislature's proposal to establish an Aerospace Advisory Committee for Hawaii, and urge you to pass this legislation.

Thank you for the opportunity to provide these comments.

Sincerely,



George R. Ariyoshi

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## Testimony in Support of SB 537

Date: 10 February 2009

Submitted by: Joseph E. Ciotti, PhD  
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In a sense, it is remarkable that the expansive ocean, which isolates our island state and long ago charted it as the seafaring crossroads of the Pacific, has been so likewise instrumental in developing spacefaring ventures on our shores. From world-class astronomical observatories ... to NASA-sponsored *in situ* rehearsals of manned and robotic space missions ... to its role in international airline transportation and potential future space tourism, Hawai'i is uniquely poised for significant economic growth through the leadership choices it makes regarding the aerospace industry.

The current and future trends of our aerospace efforts were recently addressed at a Special Session on Aerospace at the Hawaii State Capitol on August 21, 2008. The projects and issues presented—from STEM-based aerospace education to the development of spaceplane launch/landing facilities at Hawai'i airports—were bold and far-reaching—all demanding expertise in a wide range of fields, including business, education, science, and technology.

In its responsibility to oversee economic growth in this fast-paced industry, DBEDT's Office of Aerospace Development would be duly served by an Aerospace Advisory Committee comprised of community members with a diverse mix of expertise in the aerospace field. I believe that SB 537 provides the necessary formula for ensuring that the Office of Aerospace Development is adequately supported in providing well-informed, timely decisions and recommendations regarding the Hawai'i's future in aerospace.

As such, I strongly support SB 537.



Pacific International  
Space Center for  
Exploration Systems

## TESTIMONY

**Date:** February 9, 2009  
**To:** Members of the Hawai'i State Legislature  
**From:** Dr. Frank Schowengerdt  
**Subject:** Testimony Supporting SB537

I am writing to express my strong support for Senate Bill 537, establishing an Aerospace Advisory Committee within the Office of Aerospace Development in the Department of Business, Economic Development and Tourism. As Director of the Pacific International Space Center for Exploration Systems (PISCES) at the University of Hawai'i at Hilo, I am especially interested in seeing such an office become a reality because I believe that Hawai'i has significant potential for becoming a world leader in space exploration, that a thriving space industry can provide an economic boost for Hawai'i and that the advent of PISCES has already thrust the State into a lead role in this area. However, I also believe that the State is in need of guidance from a committee such as is proposed in this bill in order to achieve its full potential.

Chief among the attributes Hawai'i enjoys is its geographic location at the approximate center of the Pacific Rim. Of the six countries that have or are planning missions to the Moon, five are located around the Pacific Rim, each of which is less than an eight-hour flight from the State. In addition, the Big Island of Hawai'i has vast open areas of lunar-like terrain and ubiquitous deposits of volcanic ash that approximates lunar regolith as closely as anywhere on Earth.

Recognizing these geological attributes, NASA chose Hawai'i as a training site for the Apollo astronauts and has more recently chosen the PISCES test site on the lower slopes of Mauna Kea to conduct tests of systems designed to produce water and oxygen on the Moon, as well as rovers that will one day drill, excavate and process lunar soil for support of life at a permanent outpost. The November 2008 tests by NASA, CSA (the Canadian Space Agency), DLR (the German Space Agency) and a number of companies were the first successful pilot-scale demonstrations that we can indeed produce consumables from the Hawaiian volcanic ash as a critical first step toward sustaining life on the Moon and beyond. These tests received worldwide publicity for PISCES and Hawai'i in both the technical and the popular press.

While I realize that the legislature will have difficulty justifying any new expenditures in the current economic environment, I should point out that SB537 requires only modest outlays through an existing office within DBEDT to attract industry that can create good jobs and help the State recover from the current and future recessions. Aerospace jobs

pay twice the national average and are sorely needed in this State, especially on the Big Island. At a time when State revenues are down, all new investments should be judged in light of their potential for stimulating growth of desirable, high-paying jobs. I believe that aerospace can provide such jobs and do so without creating sprawl or environmental problems.

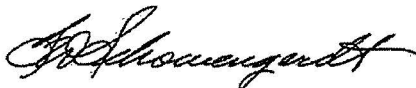
The Aerospace Advisory Committee proposed in SB537 offers a sound, cost-effective way for the State to move forward in developing its aerospace industry. I believe such a committee will take a careful look at what has worked in other states and what hasn't, and chart a course for Hawai'i that takes advantage of those lessons-learned, along with its unique attributes. For example, I don't believe this committee would recommend the placement of large airframe factories or vertical-launch facilities in the State because those kinds of facilities exist in other states, such as California and Florida, where the leads are so large that Hawai'i would be hard-pressed to compete successfully. Instead, the State should seek to attract companies doing high-tech research and development in space-related areas such as communications, space resources, closed-loop life support, lunar (hydroponic) agriculture, materials science, Planetology, robotics and solar energy, which can support the coming global push to expand our economy into space.

I also believe such a committee will encourage the State to develop its educational institutions to support a future space economy in Hawai'i by providing the required research expertise at its universities, by preparing the future space-economy workforce through vocational programs at its community colleges and by strengthening STEM education at the K-12 levels in its public schools.

But whatever the new committee recommends, I believe it is important for Hawai'i to seek this kind of outside advice so it can properly position itself for the coming space age. It is clear that the State can't be all things to all people with regard to its space future. It needs to focus; to plan its future carefully and with expert advice as can be provided by the proposed committee.

In conclusion, I urge you to support this bill because I believe space exploration can be the key to a strong economic future for the State of Hawai'i and that an aerospace advisory committee can help the State plan wisely for that future.

Sincerely,



Dr. Frank Schowengerdt  
Director of PISCES

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