THE SENATE
TWENTY-NINTH LEGISLATURE, 2017
STATE OF HAWAII

S.C.R. NO. 63

MAR 0 3 2017

SENATE CONCURRENT RESOLUTION

REQUESTING THE OFFICE OF AEROSPACE DEVELOPMENT TO FACILITATE THE FORMATION OF A MULTINATIONAL LUNAR ARCHITECTURE ALLIANCE TO GUIDE THE DEVELOPMENT AND IMPLEMENTATION OF A PROTOTYPE LUNAR BASE ON THE ISLAND OF HAWAII.

WHEREAS, Hawaii's strategic mid-Pacific near-equatorial location, Moon/Mars-like terrain, resident expertise in multiple aerospace-related technologies, and long-standing ties with space-faring nations worldwide confer clear strategic assets and capabilities that can be leveraged to realize humankind's full potential in space, and in doing so enable the State to engage as a major contributor to and beneficiary of global space enterprise; and

WHEREAS, for the past half century, Hawaii has played a seminal role in developing the national space program, beginning with astronaut training for the Apollo lunar missions and the development of world-class observatories on the Island of Hawaii; and

WHEREAS, over the past four decades, the University of Hawaii, the United States military, and numerous companies statewide have pioneered nationally-funded programs in planetary geosciences, satellite communications, space-based remote sensing and environmental monitoring, deep-space surveillance, and other areas employing aerospace-related technologies; and

WHEREAS, new opportunities are forthcoming in the aerospace industry related to robotics, renewable energy, additive manufacturing, and other areas that are ideally suited for Hawaii and could generate substantial scientific, educational, and commercial benefits for the State's residents; and

WHEREAS, the Moon contains abundant geological resources, proximal to Earth, that can be utilized to advance interplanetary travel and improve quality of life on Earth; and

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WHEREAS, an expanded and diversified space economy, based upon innovative commercial utilization of lunar resources including but not limited to lunar mining, harvesting of space-based solar power, and the development of cis-lunar propellant depots, could enrich terrestrial civilizations, help preserve the Earth's fragile environment, and ultimately enable sustainable human exploration throughout the Solar System; and

WHEREAS, global technologies and economic capacities have advanced to the point where self-sustaining space economies could be created through international collaboration and public-private partnerships, and rapidly expanding governmental and corporate interests in lunar enterprise worldwide can facilitate the development of these economies; and

WHEREAS, sustainable space settlement will require advances in key technologies beyond rocket propulsion including life support systems, telecommunications, power generation, and food production and terrestrial-based testing and evaluation of these technologies will play an indispensable role in their long-term development and implementation; and

WHEREAS, the Island of Hawaii's Moon-like terrain offers an ideal environment for multinational teams to develop, test, and validate such technologies, which in turn would enable multiple opportunities for local scientists, engineers, entrepreneurs, and students to participate in this enterprise; and

WHEREAS, rapidly expanding international interest and investment in future lunar missions, as well as multinational collaboration in lunar research and development enabled through public-private partnerships, could help reduce the costs, enhance the benefits, and accelerate timetables for future space missions; and

WHEREAS, Hawaii's resident expertise in space science and education, as well as ongoing research and commercial partnerships with space-faring nations worldwide, well position the State to play a leadership role in space exploration, utilization, and commerce, beginning with the development, testing, and evaluation of prototype habitats and related in

situ resource utilization technologies to enable and support future missions to the Moon; and

WHEREAS, there exist significant and diverse scientific, educational, and economic benefits of space exploration, and a preliminary emphasis on lunar-related enterprise could enable more affordable and sustainable space enterprise in the long term, expanding humanity's reach through the solar system as well as improving quality of life on Earth, and leading toward development of a sustainable space economy; now, therefore,

BE IT RESOLVED by the Senate of the Twenty-ninth Legislature of the State of Hawaii, Regular Session of 2017, the House of Representatives concurring, that the Office of Aerospace Development (OAD) is requested to facilitate the formation of a Multinational Lunar Architecture Alliance (MLAA) with representatives from government, industry, and academia to provide recommendations and guidance for the development of a prototype lunar base on the Island of Hawaii, to include but not be limited to modular habitats, telerobotic systems, communications networks, cis-lunar positioning and navigation systems, and in situ resource utilization technologies; and

BE IT FURTHER RESOLVED that the MLAA be launched through an International Lunar Summit (ILS) in Hawaii, coordinated through OAD during the fall of 2017, with the goal of engaging representatives from:

(1) Hawaii-based organizations, including but not limited to OAD, the Pacific International Space Center for Exploration Systems (PISCES), Hawaii Space Exploration Analog and Simulation (HI-SEAS) program, Hawaii Space Flight Laboratory (HSFL), and University of Hawaii College of Engineering;

(2) Appropriate federal agencies and institutions, including but not limited to the National Aeronautics and Space Administration (NASA), Federal Aviation Administration (FAA), United States Pacific Command (USPACOM), United States Army Pacific (USARPAC), Lunar Exploration and Analysis Group (LEAG), University

Space Research Association (USRA), and Lunar and Planetary Institute (LPI);

(3) International space agencies and organizations, including but not limited to the European Space Agency (ESA), Canadian Space Agency (CSA), Japan Aerospace Exploration Agency (JAXA), International Lunar Exploration Working Group (ILEWG), International Space Exploration Coordination Group (ISECG), Committee on Space Research (COSPAR), and United Nations Office for Outer Space Affairs (UNOOSA);

(4) Major corporations representing aerospace, information technology, renewable energy, robotics, and other appropriate industrial sectors; and

(5) Space advocacy agencies and organizations, including but not limited to the National Space Society (NSS), Lunar Explorers Society (LES), Space Frontiers Foundation (SFF), and American Astronautical Society (AAS); and

BE IT FURTHER RESOLVED that the ILS primarily focus on identifying the major goals and challenges associated with the design and validation of a prototype lunar base in Hawaii, as well as the formulation of strategies for enabling public-private partnerships to support the organization and implementation of multinational research activities and commercial ventures, on the lunar surface and in cis-lunar space, toward the development of a sustainable space economy; and

BE IT FURTHER RESOLVED that the ILS submit a report of its recommendations, including any proposed legislation, to the Legislature and the Office of the Governor no later than twenty days prior to the convening of the regular session of 2018; and

BE IT FURTHER RESOLVED that certified copies of this Concurrent Resolution be transmitted to the Commander of the United States Pacific Command; Commander of the United States Pacific Fleet; Commander of the United States Pacific Air Forces; Commanding General of the United States Army Pacific;

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Commander of the United States Marine Corps Forces, Pacific; Administrator of the National Aeronautics and Space Administration; Federal Aviation Administration Local Coordinator for the Pacific; Office of the Governor; Office of the Lieutenant Governor; Director of Business, Economic Development, and Tourism; Chairperson of the Board of Regents of the University of Hawaii; Adjutant General; Director of the Office of Aerospace Development; Executive Director of the Pacific International Space Center for Exploration Systems; President of the University Space Research Association; Director of the Lunar and Planetary Institute; Director General of the European Space Agency; President of the Canadian Space Agency; President of the Japan Aerospace Exploration Agency; President of the Committee on Space Research; Director of the United Nations Office for Outer Space Affairs; Board of Directors of the National Space Society; Advisory Committee for the Lunar Explorers Society; Board of Directors of the Space Frontiers Foundation; and President of the American Astronautical Society.

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