



AUDIT AND ADVISORY SERVICES

Berkeley Education Alliance for Research in Singapore (BEARS) Audit

Project No. 15-641

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July 15, 2015

Claude Steele
Executive Vice Chancellor and Provost

Executive Vice Chancellor and Provost Steele:

We have completed our audit of the Berkeley Education Alliance for Research in Singapore (BEARS) as per our annual service plan in accordance with the Institute of Internal Auditors' *Standards for the Professional Practice of Internal Auditing* and the University of California Internal Audit Charter.

Our observations with management action plans are expounded upon in the accompanying report. Please destroy all copies of draft reports and related documents. Thank you to the staff from BEARS, Campus Shared Services – Team 2, the Center for Research in Energy Systems Transformation, and the Department of Electrical Engineering and Computer Sciences for their cooperative efforts throughout the audit process. Please do not hesitate to call on Audit and Advisory Services if we can be of further assistance in this or other matters.

Respectfully reported,

A large, stylized handwritten signature in black ink, appearing to read "Wanda Lynn Riley".

Wanda Lynn Riley
Chief Audit Executive

cc: Dean Shankar Sastry
Interim Vice Chancellor for Research Christopher McKee
Chief Operating Officer Julie Stein
Senior Vice President and Chief Compliance and Audit Officer Sheryl Vacca
Associate Chancellor Nils Gilman
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University of California, Berkeley
Audit and Advisory Services
Berkeley Education Alliance for Research in Singapore (BEARS)

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OVERVIEW

Executive Summary

The purpose of this audit was to assess the system of control to assure sound business practices are in place to support operational effectiveness and efficiency including compliance with university policies as well as international, federal and state regulations. Our audit covered the current state of the Berkeley Education Alliance for Research in Singapore (BEARS) as of March 2015.

Based upon our preliminary planning and our assessment of financial, operational, and compliance risks, we excluded most financial reporting areas from further testing due to reliance on external service providers and in particular audited financial statements for BEARS by Pricewaterhouse Coopers. We conducted limited inquiry with respect to payroll, purchasing, travel, entertainment, revenue, cash handling, contract management, gift management, facilities management, human resources, asset management, budgeting, event coordination, and risk management but, since these areas also relied primarily on external service providers, we did not conduct detailed testing. We did not note any reportable observations in these areas.

The primary objective of our audit testing focused on ongoing performance under and compliance with the BEARS agreement with the National Research Foundation (NRF) for the Republic of Singapore and the two research proposals, “Building Efficiency and Sustainability in the Tropics” (SinBerBEST) and “Singapore-Berkeley Research Initiative for Sustainable Energy” (SinBeRISE), incorporated into the agreement. We have two observations.

First, the agreement establishes residency requirements for Berkeley researchers who participate in either program. Based upon discussions with BEARS management as well as our review of stays by Berkeley PIs for each of the two programs, we understand that at least one Berkeley senior leader did not appear to fully meet the minimum stay requirement for residency stays for which BEARS did not obtain exceptional approval. To minimize the risk that BEARS could be perceived as not performing as proposed with respect to temporary Singaporean residency for senior leaders, we believe that BEARS should seek retroactive waivers or approvals for exceptions to the residency requirements for those senior leaders who did not fully meet all the provisions of the requirement.

Second, the key performance indicators (KPIs) for SinBerBEST and SinBeRISE established milestones (SinBerBEST) or annual goals (SinBeRISE) for each of the five years of the agreement. To date, neither the SinBerBEST nor the SinBeRISE collaboration achieved all of its KPI goals during the first three years of operation.

Although we understand from management that our relations with the NRF, Nanyang Technical University (NTU), and National University of Singapore (NUS) continue to be productive, collegial, and collaborative, we believe that it is in the best interest of BEARS to formally augment the initial agreement documents with mutually agreed upon and executed addenda that revise the existing KPI annual targets, waive them for particular years, or replace them with

more relevant KPIs given the collaborative efforts to date. Without such documented agreement, there is some risk that BEARS could be perceived as not performing as proposed and not collaborating in the spirit of best efforts, mutual cooperation and goodwill.

Purpose of the Audit

The purpose of this audit was to assess the system of control to assure sound business practices are in place to support operational effectiveness and efficiency including compliance with University policies as well as international, federal and state regulations.

Scope of the Audit

We considered the administrative processes and key business risks related to compliance with the agreement with the NRF for the Republic of Singapore as well as operational areas such as payroll, purchasing, travel, entertainment, revenues, cash handling, contract management, financial reporting, gift management, facilities management, human resources, asset management, budgeting, event coordination, risk management and program progress toward achievement of key partnership goals. Our audit covers the current state of BEARS as of March 2015.

Based upon our preliminary planning and our assessment of financial, operational, and compliance risks, we excluded most financial reporting areas from further testing due to reliance on external service providers and in particular audited financial statements for BEARS by Pricewaterhouse Coopers. We conducted limited inquiry with respect to payroll, purchasing, travel, entertainment, revenue, cash handling, contract management, gift management, facilities management, human resources, asset management, budgeting, event coordination, and risk management but, since these areas also relied primarily on external service providers, we did not conduct detailed testing. We did not note any reportable observations in these areas.

The primary focus of our audit testing focused on ongoing performance under and compliance with the BEARS agreement with the NRF and the two research proposals, SinBerBEST and SinBerRISE, incorporated into the agreement.

Background Information

On February 24, 2011, University of California Provost and Executive Vice President Lawrence Pitts authorized the Chancellor of the Berkeley campus, on behalf of the Regents, to establish and administer a foreign affiliate organization in Singapore, the Berkeley Education Alliance for Research in Singapore Limited (BEARS). BEARS is wholly owned by the University and operates in accordance with the August 2005 "Administrative Guidelines for the Establishment and Operation of University of California Foreign Affiliate Entities" (Guidelines) except as provided in the February 24, 2011 delegation of authority. Two exceptions exist specifically because the funding for BEARS is being provided by the NRF of the Republic of Singapore. The BEARS governing board consists of up to ten members who can be nominated by the Berkeley campus and the NRF in equal numbers. In addition, the assets of BEARS will not be irrevocably dedicated to the University. In all other respects, BEARS operates in accordance with the Guidelines, as they may from time to time be amended.

On August 25, 2011, the Regents executed an agreement with the NRF to create BEARS with a stated of purpose to "serve as an intellectual hub for research, scholarship, entrepreneurship and

postgraduate/postdoctoral training.” Two collaborative research projects, “Singapore-Berkeley Building Efficiency and Sustainability in the Tropics” (SinBerBEST) and “Singapore-Berkeley Research Initiative for Sustainable Energy” (SinBeRISE), were incorporated into the agreement at execution. The projects include research collaboration between subawardees, UC Berkeley, NTU, and NUS over a period of five years. The SinBerBEST and SinBeRISE programs created are part of NRF’s Campus for Research Excellence and Technological Enterprise (CREATE) initiative at NUS and under the agreement NRF provides the BEARS facility to conduct collaborative research rent-free. BEARS is registered as a company limited by guarantee and not having a share capital in the Republic of Singapore. The first meeting of BEARS Governing Board was in January 2012 and the collaboration is scheduled to last for a period of five years.

On March 12, 2014, Chancellor Nicholas Dirks delegated to the chief executive officer of BEARS certain authorities to

- oversee and administer the operation of BEARS;
- file appropriate submissions with the competent local authorities;
- approve disbursements on behalf of BEARS;
- execute transactions not exceeding \$85,000, which are based on campus agreement templates, for goods and services to be purchased or provided by BEARS;
- after approval by the campus Business Contracts and Brand Protection Office, execute contracts exceeding \$85,000 for BEARS to provide goods or services;
- after approval by the campus procurement office, execute contracts exceeding \$85,000 for BEARS to purchase goods or services;
- after approval by the campus Sponsored Projects Office, execute research agreements and subaward agreements with non-corporate sponsors; and
- after approval by the campus Industry Alliances Office, execute research agreements and subaward agreements with corporate sponsors.

For the period of this review, Professor Costas Spanos was the initial director of BEARS, program leader of SinBerBest and chief executive officer. He stepped down as director and CEO in September 2014 and is now the chief technology officer for BEARS. Professor Masayoshi Tomizuka now serves as director and CEO. Professor Ramamoorthy Ramesh was the program leader of SinBeRise until the end of 2014. Julie Stein is the executive director and chief operating officer. Professor Fiona Doyle serves as the chief academic officer.

BEARS utilizes local service providers in Singapore for legal services, audit services, corporate secretary and accounting services, tax agent, banking, human resources consulting and recruitment, as well as employee benefits.

Summary Conclusion

First, the agreement establishes residency requirements for Berkeley researchers who participate in either program. Based upon discussions with BEARS management as well as our review of stays by Berkeley PIs for each of the two programs, we understand that at least one Berkeley senior leader did not appear to fully meet the minimum stay requirement for residency stays for which BEARS did not obtain exceptional approval. To minimize the risk that BEARS could be perceived as not performing as proposed with respect to temporary Singaporean residency for

senior leaders; we believe that BEARS should seek retroactive waivers or approvals for exceptions to the residency requirements for those senior leaders who did not fully meet all the provisions of the requirement.

Second, the KPIs for SinBerBEST and SinBeRISE established milestones (SinBerBEST) or annual goals (SinBeRISE) for each of the five years of the agreement. To date, neither the SinBerBEST nor the SinBeRISE collaboration achieved all of its KPI goals during the first three years of operation. Although we understand from management that our relations with the NRF, NTU, and NUS continue to be productive, collegial, and collaborative, we believe that it is in the best interest of BEARS to formally augment the initial agreement documents with mutually agreed upon and executed addenda that revise the existing KPI annual targets, waive them for particular years, or replace them with more relevant KPIs given the collaborative efforts to date. Without such documented agreement, there is some risk that BEARS could be perceived as not performing as proposed and not collaborating in the spirit of best efforts, mutual cooperation and goodwill.

SUMMARY OF OBSERVATIONS & MANAGEMENT RESPONSE AND ACTION PLAN

Singaporean Residency Requirement for Berkeley Principal Investigators

The BEARS agreement with the NRF establishes residency requirements for Berkeley researchers who participate in either the SinBerBEST or SinBeRISE program. Each PI must have an aggregate period of residence of at least one year in Singapore over the five-year program period. This aggregate one year period must consist of an extended stay of at least six continuous months or a stay of more than six months comprising of two block periods with an interval in between of no more than one month. The remaining stays to complete the one year aggregate period are to be at least four continuous weeks.

Based upon discussions with BEARS management as well as our review of stays by Berkeley PIs for each of the two programs, we understand that at least one Berkeley senior leader did not appear to fully meet the minimum stay requirement for residency stays for which BEARS did not obtain exceptional approval.

We understand from management that our relations with the NRF, Nanyang Technological University (NTU), and National University of Singapore (NUS) continue to be productive, collegial, and collaborative. In addition, according to BEARS leadership, the NRF has verbally stated that this current pattern meets “the spirit” of the requirement, if not the letter. However, to minimize the risk that BEARS could be perceived as not performing as proposed in the agreement with respect to temporary Singaporean residency for senior leadership, we believe the campus should seek retroactive waivers or approvals for exceptions to the residency requirements for those senior leaders who did not fully meet all the provisions of the residency requirement.

Management Response and Action Plan

BEARS management will work with the assistant vice chancellor for research administration and compliance to determine the most effective strategy to seek retroactive approval from the NRF for exceptions to the residency requirements for BEARS senior leadership whose residency stays in Singapore through March 2015 did not fully meet all of the provisions of the residency requirements. Because the focus is on the past residency stays of senior leadership, management anticipates that the request for retroactive approval, and for any future approvals for residency stays of senior leadership, will be submitted to the NRF by the assistant vice chancellor for research administration and compliance, on behalf of the campus.

Completion Date for this Action Plan: March 31, 2016

For all other BEARS PIs, including for the SinBerBEST and SinBeRISE program leaders, the BEARS director will continue to seek approval from the NRF, in advance whenever possible, when a proposed residency stay or extended stay will not fully meet all of the provisions of the residency requirement. In the event that retroactive approval from the NRF is required, due to

unforeseen circumstances, the BEARS director will continue to seek that retroactive approval directly from the NRF. Management will seek the guidance and counsel of the assistant vice chancellor for research administration and compliance whenever specific challenges arise.

Meeting Annual Goals for Key Performance Indicators

The SinBerBEST and SinBeRISE research programs established KPIs and either cumulative milestones (SinBerBEST) or annual goals (SinBeRISE) for each of the five years of the agreement. These KPIs are mutually agreed to and shared by the NRF, NTU, NUS, and BEARS. The categories of the KPIs are as follows:

Category	SinBerBEST	SinBeRISE
Human Capital	<ul style="list-style-type: none"> • Number of PhD students trained and graduated • Number of post-docs completing employment • Others – undergraduate research students • MS research students • Industrial fellows (public entities included) 	<ul style="list-style-type: none"> • PhD students enrolled (cumulative) • Post-docs employed (cumulative) • Faculty positions in Singapore
Intellectual Capital	<ul style="list-style-type: none"> • Number of invention disclosures • Number of patent applications • Number of publications • Courses 	<ul style="list-style-type: none"> • Number of invention disclosures • Number of patent applications • Number of publications
Industry Relevance	<ul style="list-style-type: none"> • Number of projects with industry • Industry funding • Number of spin-offs and start-ups from results of research programme • Number of new product/process/service commercialized • Royalties and licensing revenue from research results 	<ul style="list-style-type: none"> • Number of projects with industry • Industry funding • Number of spin-offs and start-ups from results of research programme • Technology commercialization • Royalties and licensing revenue
International Awards and Fellowships	[not specified]	<ul style="list-style-type: none"> • Fellow of royal societies • US NAE/NAS • Japan/Kyoto Prize • MRS/APS/ACS/IEEE prizes

We understand that neither the SinBerBEST nor the SinBeRISE collaboration achieved all of its KPI goals during the first three years of operation and that NRF and BEARS leadership have had various discussions over time but have not held specific meetings to discuss the KPI's.

Although we understand from management that our relations with the NRF, NTU, and NUS continue to be productive, collegial, and collaborative, we believe that it is in the best interest of BEARS and the campus to formally augment the initial agreement documents with mutually

agreed upon and executed addenda that revise the existing KPI annual targets, waive them for particular years, or replace them with more relevant KPIs given the collaborative efforts to date.

Without such documented agreement, there is some risk that BEARS could be perceived as not performing as proposed in the accepted proposal documents and not collaborating in the spirit of best efforts, mutual cooperation and goodwill as specified in the NRF agreement.

Management Response and Action Plan

BEARS management acknowledges the concern that there could be some risk that BEARS may be perceived as not performing as proposed in the accepted proposal documents if the annual and cumulative KPIs in those documents are not met. It is important to recognize, though, that the BEARS agreement (11.2) states that an assessment of whether BEARS is likely to succeed in its objectives is measured in part by the SinBerBEST and SinBerISE performance indicators.

BEARS management proposes that the BEARS Governing Board (Board), in consultation with its Scientific Advisory Committees (SACs), be charged with documenting during its meetings, and reflecting in the minutes, that a) BEARS' performance to date is in compliance with the BEARS agreement, even if some of the KPIs in the proposal documents have not been met to date, i.e., document a waiver, and b) the Board shall undertake to revise the KPIs for either program upon the advice to do so from the respective program's SAC.

The rationale for this proposal is twofold. First, the Board is empowered by the BEARS agreement (6.4) to use reasonable efforts to resolve any disputes between the campus and the NRF. The campus is well represented on the Board. Second, the SACs are the primary bodies of expertise charged specifically with reviewing and evaluating the progress of research carried out by BEARS. The SACs report their findings to the Board after each progress review, and directly to the campus and the NRF as part of each program's midterm review. The SACs will evaluate program performance against the KPIs in the proposal documents during the reviews and will communicate their findings to the Board. The SACs can be asked to comment on the relevance of the current set of KPIs and they have the power to recommend changes in the KPIs.

As background for this proposal to charge the Board with obtaining any necessary waivers and to put in place any necessary modifications to the KPIs, BEARS management cites the written report from the SinBerBEST SAC from its progress review on August 4, 2014:

Background

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2. SinBerBEST started two and half year ago and is now at halftime of its funding period. The SAC meeting of August 4, 2014 had basically two tasks. First, critically analyze and comment the integration of the different groups into SinBerBEST, and the advances made since its start. Second, to make recommendations for optimizations and adaptations for the next halftime, and options for directions for a possible second phase of SinBerBEST. In addition, the SAC was asked to rate the individual thrusts.

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Recommendations

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17. KPIs: While the statistical KPIs need to remain, it is now essential to define a number of programmatic KPIs which clearly translate the originally set of overall goals to narrower goals for each thrust. These KPIs are crucial elements for following progress and define success. They are also an excellent instrument to plan and argue the needs for a phase II of SinBerBEST.

We will implement and provide documentation of the assessment of KPIs by July 1, 2016.