

## PILOT FATIGUE STUDY STAFF REPORT

### SUMMARY

The Board of Pilot Commissioners for the Bays of San Francisco, San Pablo, and Suisun (Board) entered into a contract (Agreement) with the San Jose State University Research Foundation (SJSURF) to perform a study (Study) of the effects of work and rest periods on physiological and psychological ability and safety of pilots licensed by the Board, and to make recommendations to the Board for regulations that would prevent pilot fatigue. The National Aeronautics and Space Administration (NASA) also participated in the Study at no cost to the Board.

The SJSURF contract expires on June 30, 2020. Study Tasks 3 and 4 involve the researchers assisting the Board with regulation development and post-regulation implementation assessment, which tasks have yet to be completed. Additionally, there is approximately \$51,000 remaining unspent in the Agreement budget. To ensure adequate time and funding to complete all Study tasks, the Board may desire to consider extending the Agreement term and augmenting the Agreement budget.

### DISCUSSION

**Agreement/Study.** The Board entered into the Agreement with the SJSURF effective June 16, 2016, with an expiration date of June 30, 2019. The Agreement scope of work included:

- A study to identify the effects of work and rest periods on physiological and psychological ability and safety for pilots licensed by the Board.
- An evaluation of sleep- and human-related factors for pilots.
- The provision of information and recommendations to the Board on how to prevent pilot fatigue, and to ensure the safe operation of vessels, including recommendations for regulations intended to prevent pilot fatigue.
- If requested by the Board, assist the Board with fatigue management regulation development and conduct a post-regulation assessment.

Due principally to delays in the commencement of the study, the Agreement was subsequently amended by the Board with an effective date of July 5, 2018, and did the following:

- Changed the Agreement end date from June 30, 2018, to June 30, 2020.
- Increased the maximum dollar amount of the Agreement from \$359,186.00 to \$416,000.00.
- Made additions and deletions to the key Agreement personnel.
- Modified the Agreement schedule of deliverables to eliminate certain optional tasks.

The SJSURF subsequently submitted the *San Francisco Bay Pilot Fatigue Study* (BOPC Study) to the Board in July 2018 in satisfaction of part of the Agreement scope of work. Since that

time, the Board has approved pilot fatigue management policies, and directed the Pilot Fitness Committee to commence work on pilot fatigue mitigation regulations.

**Incomplete Agreement Tasks.** Agreement scope of work Phases 3 and 4 have not yet been completed, and including the following:

Deliverable	Description
<b>PHASE 3</b>	
Deliverable 9. ** Assist BOPC with the development of fatigue regulations	<u>Task 9. Regulation Development</u> <ul style="list-style-type: none"> <li>• Review of existing regulations.</li> <li>• Advise BOPC on development of draft regulations.</li> <li>• Coordination with BOPC on development of regulations as necessary.</li> </ul>
<b>PHASE 4</b>	
Deliverables 10. ** Post-intervention evaluation report	<u>Task 10. Post-intervention Evaluation</u> <ul style="list-style-type: none"> <li>• Design of post-intervention evaluation</li> <li>• Development and trial of evaluation survey.</li> <li>• Data analysis.</li> <li>• Preparation of draft report.</li> <li>• Preparation of final report.</li> </ul>

\*\*The SJSURF shall not begin work on Tasks 9 and 10 until it receives written approval from the Board. Any work conducted on either of these tasks prior to receiving Board approval will be at the University's own costs, and will not be compensated by the State.

**Agreement Budget.** There is \$50,900.41 remaining unspent in the Agreement budget. The researchers charge hourly for work conducted per the Agreement.

To ensure adequate funding of Phases 3 and 4, Board staff and Dr. Hobbs, the primary Agreement researcher, have determined that \$75,000 would be a sufficient amount to ensure the completion of the remaining Agreement deliverables. There is available surplus budget authority in the Board's fiscal year 2019-20 budget to encumber a \$75,000 augmentation to the Agreement budget.

**Changes to Key Personnel.** Dr. Hobbs notified Board staff that there is an additional researcher, Nicholas Bathurst, who has and will continue to work with his staff on the Agreement Scope of Work, that Kevin Gregory is no longer with the University, but is still with NASA, and there is a new SJSURF administrative contact, Luann Chu.

**Contractor Potential Conflict of Interest.** Several Agreement researchers have contracted with a pilot organization to study its pilot assignment issues, and to make a recommendation on an appropriate number of pilots.

SJSURF and NASA jointly were retained by the Puget Sound Pilots (PSP) to conduct a study (PSP Study) to evaluate PSP dispatch records to identify potential areas of concern regarding pilot fatigue, to recommend to the PSP work hour changes based on any issues identified, and to

determine how many pilots should be licensed in order to continue board-on-arrival service, while also minimizing the impact of fatigue.

The common researchers for the BOPC Study and the PSP Study were Dr. Flynn-Evans, Kevin Gregory, and Nicholas Brathurst. Dr. Hobbs, the primary researcher for the BOPC Study did not participate in the PSP Study. The PSP Study also included Dr. Cassie Hilditch, who did not participate in the BOPC Study.

The Executive Director of the Washington State Board of Pilotage Commission (BPC) confirmed that Dr. Flynn-Evans and Kevin Gregory spoke to the BCP's Fatigue Management Committee about the PSP study and answered questions from committee members on February 22, 2019. From public records, it was determined that the PSP submitted the PSP Study to the BPC on May 6, 2019. The PSP Study included several recommendations, including a recommendation on the number of pilots needed to cover assignments.

Dr. Flynn-Evans subsequently testified before the BCP on July 18, 2019, in an official hearing on setting the number of pilots in the Puget Sound Pilotage District. Approved minutes from the July 18, 2019, BCP meeting include the following statements, "Commissioner Scragg inquired if, as a research scientist, Dr. Flynn-Evans was able to advocate for an organization like Puget Sound Pilots. She answered no, followed by a short explanation of how her sleep lab worked." Further comments by Dr. Flynn-Evans in the meeting minutes include, "They were a research laboratory. Their work was neutral. They did not advocate for one specific group or another." The BCP subsequently increased the official maximum number of pilots at that meeting.

Prior to the PSP Study, the BCP contracted with Dr. Charles Czeisler, the director of Harvard Medical School Division of Sleep Medicine and co-researchers Dr. Laura Barger and Jason P. Sullivan for a study that included a critique of the PSP's current pilot rest rules and a summary and critique of the internal rest rules of the PSP. This study was presented to the BCP on December 7, 2017, and included ten policy recommendations to the BCP, none of which involved setting the number of pilots.

## **RECOMMENDATION**

**Option 1:** Do not complete Study Phases 3 and 4, as these phases were at the election of the Board.

**Option 2:** Take no action and complete as much as possible of the Agreement Phase 3 regulation development up to the Agreement expiration date of June 30, 2020, and not expend more than the available Agreement funding. It is not certain how much work the Pilot Fitness Committee can accomplish drafting fatigue management regulations before June 30, 2020.

**Option 3:** Complete Option 2 and issue a Request for Proposal to contract with a new research entity to complete the remainder of the Phase 3 tasks and all of Phase 4 tasks.

**Option 4:** Issue a Request for Proposal to contract with a new research entity to complete Phases 3 and 4.

**Option 5:** Proceed with the Agreement Phases 3 and 4, amend the Agreement to extend the term and augment the Agreement budget. If this option is selected, Board staff recommend the following:

1. Increase the Agreement amount from \$416,000 to \$491,000, and make related changes to the Agreement budget.
2. Extend the Agreement term from June 30, 2020 to June 30, 2023.
3. Make technical amendments to the Agreement for changes in SJSURF staff.
4. Authorize the Executive Director to execute an amendment to the Agreement consistent with the above recommendations.