COMMISSION
AGENDA MEMORANDUM   **Item No.**   8d

ACTION ITEM   **Date of Meeting**   February 13, 2018

DATE: January 25, 2018

TO: Stephen Metruck, Executive Director

FROM: Mike Ehl, Managing Director Airport Operations
Wayne Grotheer, Director, Aviation Project Management

SUBJECT: Safedock Upgrade and Expansion Project (CIP #C800779)

Amount of this request:	$4,466,000
Total estimated project cost:	$29,200,000

ACTION REQUESTED

Request Commission authorization for the Executive Director to: (1) design and prepare construction documents for the installation of Advanced Visual Docking Guidance Systems (A-VDGS) for gates on Concourses A, B, C, and D and the South Satellite; (2) procure software/vendor services to configure a Gate Operating System (GOS); and (3) transfer $981,750 to the International Arrivals Facility program for the purchase of approximately 17 A-VDGS units for Concourse A, for a total of $4,466,000 out of the total budget for this project of $29,200,000.

EXECUTIVE SUMMARY

This project improves safety on the airfield by installing Safedock A-VDGS at all gates that otherwise would not have A-VDGS units. A-VDGS units improve ramp safety by scanning the gate area and alerting pilots to obstacles in their docking path. These units will improve gate efficiency and reduce taxi-lane congestion. A-VDGS units will provide real-time docking video, actual gate usage data, and statistics to Port and airline partners that will provide for additional efficiencies. These units may also reduce small amounts of fuel consumption and CO_2 emissions.

This project will install Safedock A-VDGS in accordance with the Port's established competition waiver at gates on Concourses B, C, D, and South Satellite completing the airfield installation of Safedock units. Additionally, a centralized GOS will be procured that connects all A-VDGS units and other Port systems and provides data for Port and airline use. Also, the International Arrivals Facility (IAF) project planned to relocate the existing, outdated Video Docking Guidance Systems (VDGS) on Concourse A to align with the new aircraft parking positions. Instead of

relocating those units, the Safedock Project will transfer $981,750 in funds to the IAF program to purchase A-VDGS units to replace the older units.

This project has been endorsed by major airlines including Delta, and the international airlines. This project has yet to be voted on by the airlines but they have been briefed and staff received a favorable response.

<u>**JUSTIFICATION**</u>

Safedock units improve ramp safety, increase efficient aircraft docking, and provide real-time and actual gate usage data to Port business units and airline partners. This project supports the 2017 Aviation Division Priority #1- Safety. Safedock systems scan the ramp prior to aircraft pulling into the gate. This provides a safety measure by making sure that equipment is not in the way of arriving aircraft. There have been at least twelve (12) gate area incidents in the past twelve (12) years that could have been prevented with a modern Safedock automated docking system. Three (3) recent examples of where Safedock would have helped occurred in 2014, 2015 and 2017. In the first example, a marshaller directed a B-737 aircraft to the wrong nose stop, causing the aircraft to contact the jet bridge. Safedock's laser-guided system stops aircraft on the correct nose stop. In the second example, an aircraft was marshalled into the gate and struck a fuel cart that was parked in the ramp area. Safedock's ramp scan feature would have halted the docking process until the fuel cart was moved to a safe location. In the third example, a B-747 struck a catering truck that was parked in the wrong area while taxiing into the gate. Again, Safedock's ramp scan feature would have halted the docking process until the catering truck moved to a safe location. While airlines generally don't share damage costs with the Port, the B-747 incident cost the airline on the order of $5,000,000 in damages.

This system also assists aircraft in efficient docking which may save fuel and can reduce taxi-lane congestion. With limited gate capacity, deploying technology to leverage gate usage is critical to managing the expanded number of flights Seattle-Tacoma International Airport (STIA) is currently anticipating. Efficient docking can reduce taxi-lane congestion and improve gate utilization by preventing gate area accidents and assisting pilots in docking accurately.

Safedock will provide the Port and airlines with real on-gate and off-gate information to better utilize the limited gate facilities as well as providing real-time video for gate scheduling and airline asset tracking. Furthermore, the advanced Safedock units, connected to the Gate Operating System (GOS), provide automatic ramp information display (RIDS) capability that allows airlines to display critical flight information to ramp workers. Delta, American and Alaska desire this capability.

Safedock has received unsolicited airline support. Both Delta and Emirates approached airport staff requesting Safedock at their respective gates. Emirates subsequently sent an email which included support from Icelandair, Virgin Atlantic, British Airways, Lufthansa, and ANA. Delta management met with Aviation Division management in 2017 and voiced their support for the program.

DETAILS

Currently, STIA has Safedock VDGS units installed on the ramp at 21 gates. However, none of the existing units have video cameras or apron scanning, 20 units cannot be connected to a centralized system without significant updates, 17 cannot effectively display ramp information and they are no longer sold by the vendor. Other STIA projects are expanding Safedock saturation by installing A-VDGS units at all gates at the North Satellite (Northstar) as well as expanding installation on Concourse A as part of the IAF project. However, that leaves gates without A-VDGS units. Having A-VDGS units at some, but not all gates, results in inconsistent docking operations and procedures within and among airlines. This project addresses deployment inconsistencies by installing A-VDGS units at all remaining gates and upgrading outdated units. The Port approved a sole source competition waiver in 2016 authorizing the procurement of Safedock Advanced Visual Docking Guidance Systems and SafeControl Apron Management (the centralized gate operating system) from the Safegate Group.

Scope of Work

This project will procure Safedock A-VDGS units with video cameras and apron scanning, configure a centralized GOS, connect all A-VDGS units to the GOS, provide access to stakeholders, and interface to various Port systems. Specifically, this project will include the following:

1. Procure and install approximately 73 A-VDGS units with video cameras and apron scanning for the following locations: B, C, and D Concourses and South Satellite.

2. Transfer $981,750 to the IAF program for their inclusion of A-VDGS units with cameras and apron scanning for A Concourse.

3. Install and configure a centralized GOS with connections to all A-VDGS units and ability to automatically display ramp information.

4. Interface the GOS to/from Port systems including the Port's airport operations database, the Port's airline activity system (if possible), and the Port's reporting system, and integrate video with the Port's video management system.

5. Provide user access for Port staff including ACC, Safety Mgmt. Systems, Airline Scheduling Systems, Ramp Tower, and airlines (minimally Delta, Alaska, American).

6. Decommission existing, outdated units (approximately 20).

7. Remove mounting hardware as needed.

When possible, existing network cabling to local communication rooms will be re-routed to the newly installed micro-distribution cabinets (Wi-Fi project). This will be determined on a case by case basis.

Schedule

The schedule has been developed in coordination with the IAF project as well as the SSAT Renovation group to ensure that the schedules for these projects is coordinated and that the Safedock plan considers all schedule possibilities. It is anticipated that construction will only shut down one gate at a time with a total of two gates being completed per week in order to minimize disruption to airport operations.

Activity

Design start	Q1 - 2018
Commission construction authorization	Q1 - 2019
Construction start	Q2 - 2019
In-use date	Q1 - 2020

Cost Breakdown

	This Request	Total Project
Design	$3,484,250	$5,948,000
Construction	$981,750	$23,252,000
Total	$4,466,000	$29,200,000

ALTERNATIVES AND IMPLICATIONS CONSIDERED

Alternative 1 – Procure three (3) A-VDGS units, significantly upgrade 20 older existing VDGS units (not advanced), link all units to a centralized gate operating system accessible by Port stakeholders, and interface information to various other Port systems including the Airport Operations Database among others. This was the original project scope.

Cost Implications: $1,999,000

Pros:
   (1)   Relatively low cost.
   (2)   This project bridges the gap in VDGS deployments at Concourse A and completes the American Airlines "like for like" relocation.
   (3)   Port business units benefit from a centralized gate operating system by being able to access aircraft docking information including (1) actual docking information for gate usage; (2) real time and archived video footage of aircraft docking for incident review (however, limited to the 3 gates where A-VDGS is deployed). Airlines also benefit from a centralized system by no longer being required to manually enter ramp display information out on the airfield/ramp area.
   (4)   Future installations of A-VDGS units planned for Concourse A and North Satellite would be seamlessly added to the centralized system when they come online.

Cons:
   (1)   This is a piecemeal solution that results in inconsistent gate operations.
   (2)   This alternative does not meet airlines' requests.

    (3)   Limited safety improvements are provided by this alternative.

    (4)   Older Safedock units would remain that do not have video cameras nor obstacle scanning capability, and have limited or no ramp information display ability.

This is not the recommended alternative.

Alternative 2 – Procure and install approximately 90 A-VDGS units over a phased, 5 year program (designing, procuring and installing approximately 18 units per year). Procure 1 camera to upgrade an existing unit. The initial project would include design costs for the first phase, transfer funds to IAF to procure units for A concourse, and would procure software and vendor services to deploy a centralized system that interfaces to various Port systems and is accessible by Port and airline stakeholders including Airport Communications Center (ACC), Safety management Systems, Airline Scheduling Systems, Ramp Tower.

Cost Implications: $33,000,000.

Pros:
    (1)   Project costs would be spread over multiple years.
    (2)   This project deploys Safedock units at Concourses A, B, C, D and the South Satellite.
    (3)   The alternative leverages the IAF project to install units as part of gate modification on Concourse A and takes advantage of the vendor's volume discount.
    (4)   Port business units and airlines' stakeholders benefit from a centralized system by being able to access docking information including (1) actual docking information for gate usage; (2) real time and archival video footage of aircraft docking for incident review; (3) automated ramp information for display.

   (5)   Future Safedock installations planned for the North Satellite (as part of NSTAR) will be seamlessly added to the central system when they are installed.

Cons:

   (1) This alternative is the most expensive.
   (2) The phased approach prolongs inconsistent ramp operations for a longer period of time and delays airport-wide gains in safety, docking efficiency, and savings in fuel consumption and emissions.
   (3) Data for making operational decisions will be incomplete.
   (4) Some airlines supporting the full installation do not receive early benefit.
   (5) This approach is inefficient.

Alternative 3 – Procure approximately 90 A-VDGS units, add a camera to an existing unit, deploy a centralized system and interface information to various other Port systems (such as the Airport Operations Database) for automated ramp information and reporting and to Genetec video management system) that is accessible by Port and airline stakeholders including Airport Communications Center (ACC), Safety management Systems, Airline Scheduling Systems, Ramp Tower.

Cost Implications: $29,200,000.

Pros:

   (1)   Airport-wide deployment creates consistency in operations.
   (2)   This alternative leverages the efficiencies inherit in mobilizing once.
   (3)   This alternative results in functioning A-VDGS units airport-wide providing safety, efficiency and data sharing to stakeholders sooner than the other alternatives.
   (4)   This project deploys Safedock units at Concourses A, B, C, D and the South Satellite.
   (5)   The alternative leverages the IAF project to install units as part of gate modification on Concourse A and takes advantage of the vendor's volume discount.
   (6)   Port business units and airlines stakeholders benefit from a centralized system by being able to access docking information including (1) actual docking information for gate usage; (2) real time and archival video footage of aircraft docking for incident review; (3) automated ramp information for display.
   (7)   Future Safedock installations planned for the North Satellite (as part of NSTAR) will be seamlessly added to the central system when they are installed.

Cons:
   (1)   The alternative requires earlier expenditures.

This is the recommended alternative.

FINANCIAL IMPLICATIONS

Cost Estimate/Authorization Summary	Capital	Expense	Total
COST ESTIMATE			

Original estimate	$3,872,000	$0	$3,872,000
Current change	$25,082,000	$246,000	$246,000
Revised estimate	$28,954,000	$246,000	$29,200,000
AUTHORIZATION			
Previous authorizations	$80,000	$0	$80,000
Current request for authorization	$4,466,000	$0	$4,466,000
Total authorizations, including this request	$4,546,000	$0	$4,546,000
Remaining amount to be authorized	$24,408,000	$246,000	$24,654,000

Annual Budget Status and Source of Funds

This project was included in the 2018 – 2022 capital budget and plan of finance with a budget of $3,872,000 million. The cost increase was due to the expanded scope with widespread support among major airlines. The budget increase will be transferred from the Aeronautical Allowance CIP (C800753) resulting in no net change to the Aviation capital budget. The funding source will be the Airport Development Fund and future short-term revenue bonds. This project was presented at the Airline Airport Affairs Committee on December 7, 2017, with Majority-in-Interest vote to follow.

Financial Analysis and Summary

Project cost for analysis	$29,200,000
Business Unit (BU)	Gates
Effect on business performance (NOI after depreciation)	NOI after depreciation will increase
IRR/NPV (if relevant)	N/A
CPE Impact	$0.12 in 2020

Future Revenues and Expenses (Total cost of ownership)

The following recurring costs are anticipated: Annual hardware maintenance by Aviation Maintenance: $138,000. The basis of this cost is the maintenance of 90 units. The incremental maintenance cost is expected to be $155,000 at 5 years. Software licenses for Safedock Gate Operating System (GOS) and Genetec Video Management: $18,205. The basis of this cost is an estimated GOS license cost of $12,000 and $50/camera (91 cameras) for Genetec video management. The incremental cost is expected to be $18,500 at 5 years. The software is expected to require the normal upgrade at year 5 for an estimated cost of $200,000.

ADDITIONAL BACKGROUND

STIA was the first airport in the United States to install Safedock. Below is the history of Safedock VDGS units at STIA:

- 2005-2007:   Concourse A (minus A6) for Delta Airlines realignment.
- 2007:   D1-D4 Alaska Airlines trial.
- 2012:   D7-D9 American Airlines realignment.
- 2015:   C3 Alaska Airlines safety measure for tight gate space.

- 2016:   Plan to upgrade old and expand.
- 2017:   NSTAR includes Safedock at all gates.

The following are new/expanding Safedock initiatives at other North American airports:

- Miami: 18
- Atlanta (Delta gates)   155
- Toronto   152
- LaGuardia   41
- San Francisco   41+
- Chicago   10+
- Los Angeles   28+

ATTACHMENTS TO THIS REQUEST

(1)   Presentation slides

PREVIOUS COMMISSION ACTIONS OR BRIEFINGS