

Pipeline Damage Prevention Radar (PDPR) 1st Quarterly Report

December 30, 2015

Contract Number: *DTPH5615T00017*

Prepared for: *DOT, PHMSA*

Project Title: *Pipeline Damage Prevention Radar (PDPR)*

Prepared by: *Ball Aerospace & Technologies Corp.*

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For quarterly period ending: *December 31, 2015*

1. Technical Status

The first quarter of the Pipeline Damage Prevention Radar (PDPR) project focused on Project Planning and SAR System Procurement (Task 1) and Requirements Generation (Task 2). The following sections detail the status of these two project areas.

1.1 Project Planning & SAR System Procurement

The tasks involved with this project area have been completed. The tasks and associated status are as follows:

1. Project plan and work authorizations – Complete
 - a. The detailed project schedule, work plan, and authorizations are complete
 - b. A team kick-off meeting was held on Oct. 1, 2015 with all Ball Boulder and Ball Dayton (SES) team members
 - c. A kick-off meeting was held on Oct. 7th, 2015 with radar system provider, ImSAR
 - d. Ball Hosted a kick-off meeting on Nov. 9th, 2015 with DoT PHMSA and the PDPR team
2. Synthetic Aperture Radar (SAR) System Requirements - Complete
 - a. SAR system performance requirements for ImSAR were developed and reviewed with ImSAR.
 - b. The requirements are included in ImSAR's statement of work
3. Training and flight demo at ImSAR - Complete
 - a. Ball Aerospace technical team (Todd Pett, David Draper, Chuck Wamsley and Glenn Stumpff) attended training and flight demo at ImSAR Dec. 2nd – 4th, 2015.
 - b. The training included information on SAR theory, ImSAR's SAR system, Imagery viewing software, flight planning, flight execution and data analysis
 - c. The flight demo included multiple passes of their SAR system over open and vegetated areas, with and without vehicles present.
 - d. Measurements were taken using ImSAR's Ultra-wide-band, X-band, and Ku-Band systems.

4. SAR equipment procured – Complete
 - a. ImSAR was placed on contract for lease of the SAR equipment and support of SAR training, planning, demos, and testing.
 - b. The contract applies to the flight Demo (December 2015), Flight test at ImSAR (currently planned for April 2016), and for end-user flight testing (currently planned for August 2016).

1.2 Requirements Generation

1. SAR system Operational, Hardware and Software requirements - Complete
 - a. Top level requirements were generated and documented in Ball System Engineering Report (SER) No. 2459748.
2. Data processing algorithm & interface requirements - Complete
 - a. Top-level data processing algorithm and interference requirements were generated and documented in Ball SER No. 2459748.
3. Aircraft Installation Requirements – In Progress
 - a. ImSAR is supplying information on what is required to install their system on a potential end-user aircraft for future flight tests. Requirements will be defined ahead of the next flight test.
 - b. Requested aircraft installation requirements/interfaces from a potential end user for their aircraft. Requirements will be defined ahead of the next flight test.
 - c. Working to understand the FAA approval process for the potential end user aircraft configuration.
4. FCC License Requirements - Complete
 - a. Ownership of FCC approval has been delegated to ImSAR.
 - b. ImSAR has worked through the FCC approval process in the past and has a working knowledge of all requirements for FCC approval.
 - c. Based on the past FCC licensing experience, ImSAR has a completed list of all requirements for FCC licensing.
5. Requirements Released
 - a. See released document Ball System Engineering Report No. 2459748.

1.3 Milestones Complete

Item	Milestone	Status	Comments
1	1 st Quarterly status report	Complete	This document
2	SAR equipment contract	Complete	First test flight completed
3	Requirements development	Complete	Ball SER 2459748