

Pipeline Damage Prevention Radar (PDPR) 2nd Quarterly Report

March 31, 2016

Agreement/Contract Number: *DTPH5615T00017*

Prepared for: *DOT, PHMSA*

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

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For quarterly period ending: *March 31, 2016*

1. Technical Status

The second quarter of the Pipeline Damage Prevention Radar (PDPR) project focused on development of the SAR algorithm (Task 3) and preparing for the first flight tests (Task 4). The following sections detail the status of these two project areas.

1.1 SAR Algorithm Development (Task 3)

The algorithms for SAR processing, including both Magnitude Change Detection (MCD) for foliage penetration and Coherent Change Detection (CCD) for detection of changes in the surface profile, were implemented. The CCD and MCD functions were verified through Ball's independent processing and found to function as expected.

Ball also worked on capabilities for frequency filtering, spatial filtering to improve MCD and CCD, and analyst workflow development. Frequency filtering is used to detect point-like reflectors (PLRs) in the scene, such as cars, air conditioners, signs, and other human-made objects. Combining PLR detection with MCD detection should provide high confidence of a real human-made change. Spatial filtering development explores methods to perform false alarm rejection based on the size and shape characteristics of the MCD results. Creating an effective analyst workflow will be critical to transitioning to a commercial SAR capability.

1.2 ImSAR Flight Testing (Task 4)

A plan for ImSAR flight testing was completed. The plan will be matured over the next two months as the testing approaches. We plan to write a procedure over the next month to implement the test plan.

2. Payable Milestones

As described in Sections 1 and 2 above, the Project Deliverable and Payment Milestones 4 and 6 from Attachments #2 and #3 of the Agreement were completed. Payable Milestone 5 was extended to the 3rd Quarter. **Table 1** provides a status summary.

Table 1. Status of the Payment Milestones for Quarter 2 of the PDPR project.			
Item	Milestone	Status	Comments
4	2 nd Quarterly status report	Complete	This document
5	SAR Algorithm Development	In Progress	Extended to Q3
6	ImSAR Flight Testing Plan	Complete	See Section 1.2