Contract No:

This document was prepared in conjunction with work accomplished under Contract No. DE-AC09-08SR22470 with the U.S. Department of Energy (DOE) Office of Environmental Management (EM).

Disclaimer:

Robotic Arm Development Platform

SRNL R&DE received funding for a seedling LDRD in late August 2018 to obtain a collaborative robot arm and to design a test bed for simulating DOE Nuclear Facility applications. The robotic arm development platform will provide the tools for SRNL to increase its competency in this area and allow customer demonstrations to be performed so they can visualize how the technology relates to their application. The Universal Robots midsized UR5 robotic arm and two general purpose grippers were identified as key components of the development and demonstration platform and selected for purchase. Collaborative robotics are intended to physically interact with humans in a shared workspace and the associated built-in safety features were an attractive option for our test bed design. The procurement and receipt of the arm and two grippers were completed in FY18.

Fig 1-Colaborative robotic arm with grippers procured and received

Awards and Recognition - N/A

Intellectual Property Review

This report has been reviewed by SRNL Legal Counsel for intellectual property considerations and is approved to be publically published in its current form.

SRNL Legal Signature

Signature **Date**

Robotic Arm Development Platform

Project Team

SRNL: Jean Plummer (PI), William Wells(Co-PI), Rick Minichan

Thrust Area: ES

Project Start: August 2018

Project End: Sept 2018

Budget: FY18 Funding: $50k

Proposed FY19 Funding: $25k

A robotic arm development platform will provide the tools for SRNL to increase its competency in this area and allow customer demonstrations to be performed so they can visualize how the technology relates to their application. The objective is to set up an adaptable development platform that can easily be re-configured for a variety of demonstrations for collecting data that will help engage the customer. Collaborative robots are designed with built in features allowing them to safely operate alongside employees.

FY2018 Objectives

- Identify and procure the foundation components of a robotic arm development and demonstration platform system that can be built upon to incorporate additional technologies either as future research or development of an end product through a funded project.

Introduction

This seedling was funded in late August with proposed scope occurring in both FY18 and FY19. Even with a limited amount of time in FY18 available, much progress was made towards the objectives. A suitable collaborator robotic arm was identified along with two general purpose grippers for the test bed. These items were procured and received in an approximately 4-week window.

FY2018 Accomplishments

- Identification, procurement and receipt of key demonstration platform components, Fig 2.

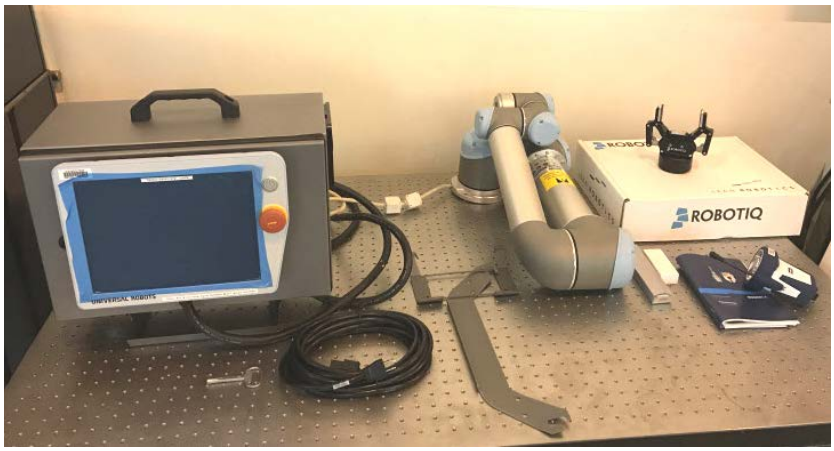

Fig 2 – Procured collaborative robotic arm with grippers shown in R&DE 781-A Lab

Future Directions

- Complete design and risk assessment of adaptable development and demonstration platform
- Assembly of robotic arm demonstration platform
- Development and setup of at least one demonstration relevant to the DOE mission.

Total Number of Post-Doctoral Researchers - 0