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PNNL-33696

Simultaneous flow of zero-carbon and conventional fuel liquids through Trans-Alaska Pipeline System (Abstract)

CRADA 573 (PNNL 77050)

November 2022

Carlos A Fernandez

Mighty Pipeline, Inc.

U.S. DEPARTMENT OF ENERGY

Prepared for the U.S. Department of Energy
under Contract DE-AC05-76RL01830

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Abstract

The purpose of this CRADA is to address key technical challenges specific to the transport of ammonia, a promising carbon-free fuel and hydrogen-carrier, through crude oil pipelines. Specifically, the project seeks to develop novel technologies for preparing liquid ammonia/ hydrocarbon mixtures for the dual purpose of (i) pipeline transport, and (ii) developing advanced marine fuel blends. By demonstrating compatibility with the Trans-Alaskan Pipeline System (TAPS) ammonia/oil blends may improve access to stranded natural gas and help overcome low-flow issues associated with declining oil productivity. In Alaska, this technology enhances the capabilities of TAPS allowing it to function as a statewide “Hydrogen Highway” for exporting green or blue ammonia. This is strategically important for Alaska which lacks statewide electrical transmission infrastructure but contains vast renewable and fossil resources located in remote regions with few local markets. Nationally, Alaska-sourced green (hydropower) or blue ammonia has the potential to improve reliability of a Pacific Northwest hydrogen storage hub as a hydrogen-carrier by helping to overcome seasonality of green hydrogen produced from solar or wind energy. Globally, this technology project has significant potential to improve the safety and efficacy of ammonia-rich fuel compositions for use in maritime propulsion and other mid-sized engines.

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