Task 1.8 - Wet Air Oxidation

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TASK 1.8 – WET AIR OXIDATION

1.0 INTRODUCTION/OBJECTIVES

A novel aqueous-phase thermal (APT) oxidation apparatus has been designed for the cost-effective treatment of organically contaminated aqueous streams. During the operational period of this task, the specific components will be integrated and tested to evaluate their operability. A determination will also be made as to the ability of the integrated system to adequately remediate an organically contaminated aqueous stream.

The overall objective of this task is to perform a sequentially integrated test of the critical components of the novel APT oxidation apparatus to evaluate the ability of this system to remediate an organically contaminated aqueous stream. Steps required to meet this objective are as follows:

- Selection of an appropriate aqueous waste stream
- Operation of the integrated system using an actual aqueous waste stream
- Analysis of all feeds and products
- Calculation of mass and material balances for the tests
- Interpretation of the data and determination of the viability of using this type of system for contaminated aqueous streams

An appropriate real-world contaminated aqueous stream was chosen for testing. Selection was based upon the ability of the stream to represent a large-volume waste stream such as process water from petroleum-refining activities. Limited testing will be performed using the novel compression system and heat exchanger designed for the APT oxidation system. Analytical workups will be performed on all feed and product materials, and this information will be used to calculate mass material balances for the tests. The data will be interpreted with respect to the viability of the system to remediate organically contaminated waste streams.

2.0 ACCOMPLISHMENTS

The equipment developed and fabricated under separate project funding is being assembled for the operation of the integrated unit. This activity has required the expenditure of 66% for the budget during this reporting period, having 27% to complete the project.

3.0 FUTURE WORK

Operation, Analysis, and Data Reduction remain to be completed.

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