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QUARTERLY STATUS REPORT

**FAST-RESPONSE ISOTOPIC ALPHA
CONTINUOUS AIR MONITOR (CAM)**

CONTRACT NO. DE-AR26-98FT40365

**First Quarterly Status Report
For the Period
October 4, 1998 - January 2, 1999**

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Project objective

The objective of this effort is to develop and test a novel Continuous Air Monitor (CAM) instrument for monitoring alpha-emitting radionuclides, using a technology that can be applied to Continuous Emission Monitoring (CEM) of thermal treatment system off gas streams. The CAM instrument will have very high alpha spectral resolution and provide real-time, on-line monitoring suitable for alerting workers of high concentrations of alpha-emitting radionuclides in the ambient air and for improved control of decontamination, dismantlement, and air emission control equipment.

Base Phase I involves the design, development, and preliminary testing of a laboratory-scale instrument. Testing will initially be conducted using naturally-occurring radon progeny in ambient air. In the Optional Phase II, the Base Phase I instrument will be critically evaluated at the Lovelace Respiratory Research Institute (LRRI) with characterized plutonium aerosols; then an improved instrument will be built and field-tested at a suitable DOE site.

Major milestones

- Design criteria and specifications defined
- Prototype unit operational
- Performance of prototype unit demonstrated

Accomplishments and technical progressOctober 1998

The Base Phase I contract was officially signed. The National Environmental Policy Act (NEPA) documentation for the Phase I activity was developed and submitted to DOE-FETC. The Optional Phase II NEPA approval will be sought just before the go-ahead to Phase II, if approved.

The design criteria and instrument specifications are being formulated.

November 1998

The National Environmental Policy Act (NEPA) documentation for the Phase I activity by subcontractor Lovelace Respiratory Research Institute (LRRI) was begun, and is scheduled to be submitted to DOE-FETC next month (December). The Optional Phase II NEPA approval for both Thermo Power and LRRI will be sought just before the go-ahead to Phase II, if approved.

The Management Plan was drafted, and will be submitted to DOE-FETC next month (December).

A project kickoff meeting with subcontractor LRRI is scheduled for next month (December).

A project kickoff meeting with DOE-FETC is scheduled for next month (December).

The design criteria and instrument specifications are being formulated through in-house conversations, literature review, and conversations with LRRI.

December 1998

A project kickoff meeting was conducted with subcontractor LRRI last month (December). In addition to verifying the requirement of building an improved CAM that operates for weeks on end without filter changes, the kickoff meeting confirmed the importance and the desirability of designing a CAM that allows for archiving of the collected particulates. Consequently, the design was modified to include the use of an archivable "film", that would allow for automatic storage of weeks of collected particles. Other required design criteria and instrument specifications were confirmed at this meeting.

Further work on the prototype instrument design and specifications resulted in the following features for a future commercial CAM:

- 18" wide X 12" deep X 10" high (approximately)
- 4 scfm airflow (approximately)
- 30 days (minimum) unattended operation between scheduled film changes .

Such a design was seen as attractive to existing CAM users, as it would simultaneously improve the detection sensitivity of the system while eliminating the use of filter media. Preliminary drawings were made of this prototype design.

The National Environmental Policy Act (NEPA) documentation for the Phase I activity by subcontractor Lovelace Respiratory Research Institute (LRRI) was completed, and is scheduled to be submitted to DOE-FETC next month (January). The Optional Phase II NEPA approval for both Thermo Power and LRRI will be sought just before the go-ahead to Phase II, if approved.

The Management Plan was drafted, and will be presented and submitted to DOE-FETC next month (January) at the project kickoff meeting .

Assessment of current status

There are no variances.

Plans for the next two months

The Management Plan will be submitted to DOE-FETC.

The kickoff meeting at DOE-FETC is scheduled for January, 1999.

The design criteria and specifications will be completed.

The Phase I NEPA approval will be received for Phase I activity by Thermo Power.

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