Neurological Diagnostic Accelerometer

Federal Manufacturing & Technologies

J. D. Balls

KCP-613-6341

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Final Report/CRADA Project Accomplishments Summary

CRADA Number 98KCP1060

Approved for public release; distribution is unlimited.

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United States Department of Energy

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Honeywell

Federal Manufacturing
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A prime contractor with the United States

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Honeywell

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Date: May 5, 2000

Revision: 0

A. Parties

The project is a relationship between Honeywell Federal Manufacturing & Technologies (FM&T) and Flint Hills Scientific.

Honeywell FM&T

Flint Hills Scientific

2000 E 95th Street

5020 W. 15th Street, Suite A

PO Box 419159

Lawrence, KS 66049

Kansas City, MO 64141-6159

B. Background

Currently there is no method to reliably predict the onset of an epileptic seizure in a patient. Flint Hills Scientific desired a method for monitoring an individual's movements and being able to perform analysis on the resulting data to determine if a correlation could be developed between the movement data and the onset of a seizure. This project would also be used to determine any relationship that may exist between an individual's movements and the EEG brain waves that are also being monitored for epilepsy seizure correlation. Flint Hills Scientific has done extensive work in the area of epileptic seizure monitoring, and Honeywell FM&T has extensive experience in telemetry and sensor integration. Flint Hills Scientific was interested in remotely monitoring the movement of a patient, and Honeywell FM&T had an interest in expanding its knowledge base for using miniature low level accelerometers.

C. Description

The objective of the project was for Honeywell FM&T to develop a miniature accelerometer-based telemetry that could be mounted on a patient and provide data to a personal computer for analysis. Flint Hills Scientific would utilize this equipment to perform a detailed study of the data from a patient's movements and determine if an algorithm could be developed that would aid in the prediction of the onset of an epileptic seizure. Honeywell FM&T was able to tailor and modify the design of the equipment to meet the participant's specific needs.

D. Expected Economic Impact

The direct impact to the participant was the ability to economically obtain a tailored design monitoring system to use for evaluation of a new concept. If the concept should prove feasible, this could have a significant impact in the medical industry for the treatment of epilepsy.

E. Benefits to DOE

Some Joint Test Assembly Telemetry systems are currently being redesigned to incorporate accelerometers to monitor spin and deceleration. The partnership of this project provides FM&T with the opportunity to research state-of-the-art accelerometers and with valuable design and implementation experience that can be directly applied to these Joint Test Assembly Telemetry redesigns.

F. Industry Area

The industries that may benefit from this project include Electronics – telemetry, accelerometers, and transmitters; Medical – epilepsy research; Software – development of waveform analysis algorithms.

G. Project Status

The project was completed on schedule.

H. Point of Contact for Project Information

Ken Bauer	Jerry D. Balls
US Department of Energy	Honeywell FM&T
Kansas City Area Office	PO Box 419159
PO Box 410202	Kansas City, MO 64141-6159
Kansas City, MO 64141-0202	Telephone: (816) 997-4481
Telephone: (816) 997-3917	Fax: (816) 997-4586
Fax: (816) 997-5059	

- Company Size and Point of Contact

Flint Hills Scientific

Annual sales: N/A, Provides contract research.

Number of employees: 8 Full Time and 3 Part Time

Dr. Ivan Osorio	Mark Frei
University of Kansas Medical Center	Flint Hills Scientific
Department of Neurology	5020 W. 15 th Street, Suite A
3901 Rainbow Blvd.	Lawrence, KS 66049
Kansas City, KS 66160-7314	Telephone & Fax: (785) 838-3715
Telephone: (913) 588-4580	

J. Project Examples

The equipment purchased for this project and assembled into the monitoring system will most likely be procured by the industry partner for use in further research. See attached

photos of the neurological diagnostic accelerometer.

K. Technology Commercialization

It is not expected that this product will be commercialized as a result of this project, unless the extensive medical evaluation provides promising results.

L. Release of Information

I have reviewed the attached Project Accomplishment Summary prepared by Honeywell FM&T and agree that the information about our CRADA may be released for external distribution.

Original signed by 5/22/00

Name: Mark G. Frei Date

Organization: Flint Hills Scientific, LLC

Title: Operating Manager/Technical
Director

Monitor Assembly

Internal View