

Electric Distribution R&D Peer Review 2006

Project Summary

YOUR ORGANIZATION:	Concurrent Technologies Corporation
PROJECT TITLE:	Distribution Systems Fault Analysis
PRESENTERS:	Laurentiu Nastac and Anupam Thatte
FY 2005 FUNDING:	\$ N/A
FY 2006 FUNDING:	\$135,000
START/COMPLETION DATES:	July 1, 2005 - June 30, 2006 (Phase I)

Overall Project Purpose and Objectives:

The goal of this project is to integrate an intelligent, operational, decision-support software tool to predict the location of low impedance, momentary and permanent faults in distribution power systems. The aim is to create a stand alone software tool which can be easily integrated in other network fault analysis software platforms.

The project is divided into two phases. Under phase I- Distribution Systems Fault Analysis, the following milestones have been set.

April 30, 2006: Complete the integration of the fault locator software tool for predicting permanent faults in distribution power systems

May 31, 2006: Validate fault locator using data from stakeholder utility.

June 30, 2006: Submit final report for phase 1.

This project addresses two of the four RD³ activity needs described for the area of Fault Locating, Prediction, and Protection; in the Electric Distribution Multi-Year Plan, namely [1]:

2.3.1.2, Fault Locating, Prediction, and Protection; and

2.2.1.4, Signature Library, Analytical Tools, and Signature Recognition Applications

This project fulfills the following objective in the area of Fault Locating, Prediction, and Protection – to predict, detect, and locate incipient and actual faults on distribution systems.

Specifically, the fault analysis software can provide:

- Improved system analysis (protection, planning and operational)
- Reduced outage time (improved restoration time)
- Increased service and component reliability

[1] Electric Distribution Program, Multi-Year Research, Development, and Deployment, Technology Roadmap Plan (2005-2009), OITD U.S. Department of Energy, p. 44–61, Nov. 2004.

FY 2006 Results and Accomplishments:

The following milestones set for FY 2006 have been reached.

- Integration of the fault locator software tool for predicting permanent faults in distribution power systems is complete.
- Fault locator software tool validated with measured data from DTE.

FY 2007 Plans and Expectations:

Under phase II (Advanced Fault Analysis System or AFAS), the following milestones and deliverables have been set.

July 31, 2006: Communicate with AEP on possible involvement and extension of fault data for longer distribution line applications.

March 26, 2007: Complete integration of AFAS software for predicting permanent faults in distribution power systems.

May 31, 2007: Validate AFAS with additional measured data from DTE.

June 15, 2007: Show the results to DTE and other possible utility stakeholder.

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June 30, 2007: Submit final report for Phase II.

Public/Private Partnerships:

Phase I (FY06):

DTE Energy (Stakeholder): Provided circuit data and measurements and assisted *CTC* with the fault location algorithm integration

Optimal Technologies (AEMPFAST Software)

EDD Inc. (DEW Software)

Carnegie Mellon University: Assessment of modeling and simulation tools for fault analysis in distribution power systems (DMS software).

Phase II (FY07):

DTE Energy (Stakeholder) and AEP (CYMDIST software)

Optimal Technologies (AEMPFAST Software)

EDD Inc. (DEW Software)

Nayak Corporation (PSCAD software) (Subcon)