DTCR 4.1

Deliverable Type: Software **Delivery Date:** 12/31/2007
Product ID#: 1013761
Intended End Users: Research and Development; Science/Assessment; T&D Operations Staff

Description/Impact:
DTCR is a powerful software tool that enables users to perform dynamic ratings on transmission equipment including overhead lines, power transformers, and underground cables, as well as, switches, line traps and other substation equipment. The software helps users optimize the circuit capacity, by providing a solid, transparent basis for power equipment ratings, based upon sophisticated, but widely accepted thermal models, for a variety of equipment and lines.

DTCR is updated every 2-3 years (dependent on user's needs and membership funding). Enhancements typically include the development of new modules within the software that support ratings for additional equipment on the power system. DTCR 4.1 is about to be released in 2007. This new version addresses needs identified during the most recent field trials. A new software product, called the DTCR Data Analysis Program (DAP), is being developed to work in conjunction with the DTCR software, and will facilitate the implementation of DTCR and allow for sophisticated data analysis to help the user identify optimized approaches to circuit ratings.

Implementation Resources Required

Resources and Other Costs:	
Staff Time (hours)	1 hour to install; 150 hours to operate the software regularly
Consultant	$5k – $100k – if a user needs assistance
Hardware	$20k – $200k – includes weather stations and Video Sagometers
Software	Prepaid with membership; Acrobat Reader to view user's manual
Licensing Fee	$0 if member of EPRI development program
Training	$5k (If needed)
Maintenance and Support	No additional fee
Travel	0

Delivered Through: Workshop or Training Course
Service Provider: Bernie Clairmont, EPRI. 413-499-5708. bclairmo@epri.com

Application Instructions:
DTCR – Dynamic Thermal Circuit Rating – should be used by any owner or operator of a Transmission system, who would like to calculate the critical temperatures and thermal ratings of power equipment and transmission circuits, using real-time measured weather conditions, circuit load and measurements of the power equipment's thermal state (e.g., sag of an overhead line, top oil temperature of a power transformer). DTCR calculates a continuous rating, limited-time ratings, and a "time-to-overload" for each item of equipment and for every circuit modeled in the program. With dynamic ratings, users can more fully utilize the capacity of existing power equipment without reducing system reliability.

DTCR is provided as a download from EPRI.com. The download process is accessible for users who have an EPRIweb ID and password, and are funders of the DTCR development. User's need only search on EPRIweb for

DTCR 4.1, and then click the "download" button.

Downloading enables users to install the software on workstation(s). Once downloaded, files are unzipped and extracted, and the "Read Me First" instructions are followed. A user's manual is downloaded along with the software and assists users with installing and running EPRI's DTCR software product. Where appropriate, instructions are provided for using the program. This includes a complete tutorial showing how to set up and run the program, as well as sample cases. More detailed information is also available in the on-line help system.

DTCR runs on an IBM compatible PC under the Windows 2000 or XP operating systems. It is designed to read real-time data from volatile input files created and updated by the utility SCADA system or to run in simulated mode with data taken from "static" input files during setup and verification of the software and data entry. Based on the real-time input data and user-defined equipment parameters, DTCR calculates equipment temperatures and thermal ratings which are displayed to the PC screen and written to certain output files. These output files may be ready into the utility SCADA system for operator displays.

By using DTCR, the operator has available more accurate circuit ratings and can therefore make smart decisions when contingencies arise or when there are pending economic energy transfers. In addition, since real-time ratings are usually above the static ratings, DTCR reduces the burden on the operator by allowing the avoidance of operator actions during periods of high loading. Typically SCADA/EMS displays to the system operators only those circuits which are close to or above their static rating and those circuits which may need attention. By having DTCR calculate the actual rating, the operator will not need to intervene as frequently. This increases the reliability of serving the load.

It is important to note, that DTCR is a software tool that requires a user to have some expertise on DTCR. For those organizations with no in-house expertise, EPRI can provide consultation, DTCR set-up, and training on the use and application of the software. If you are interested in becoming more familiar with the DTCR product, and are not yet ready for an implementation, EPRI suggests you attend a DTCR Technology Workshop. These workshops are given regularly, and the next one will be held at the EPRI center in Lenox, Massachusetts, on November 15-16, 2007.

Contacts:

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