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# uPDate

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## *Exercise of ERP*

Borrowers of RUS funds are required to annually update their Emergency Restoration Plan (ERP) beginning no later than January 12, 2007. RUS is not prescriptive in how the annual exercise should be completed but their objective is to ensure operability and employee familiarity with the document. Bulletin 1730B-2 states that the exercise can be done either by 1) reviewing the document after a natural event, 2) participating in a joint exercise with other utilities or agencies, or 3) performing a tabletop exercise using a hypothetical emergency response scenario.

Some utilities are planning to do a review at a staff meeting or an off site retreat where they discuss the ERP in light of their most recent natural event. However you choose to address this exercise, be sure that you accomplish the following items:

not occurred but could happen

- ✓ Identify lessons learned to be better prepared next time
- ✓ Update the VRA if new substations and major facilities have been added or if additional scenarios have been identified
- ✓ Assure that someone gathers all the changes and new input, and updates the document
- ✓ Sign off on the form at the front of your document
- ✓ Include at the end of the ERP any meeting minutes or other information related to this exercise process
- ✓ Distribute updated copies to the appropriate individuals

P&D has not offered any specific service for the exercise but we have been offering individual advice and assistance to coops as they desire. If you need assistance with updating the VRA to reflect facility changes, desire to evaluate additional scenarios, or assistance with any part of the ERP, please contact us at 770-453-1410.

***If you wish to receive P&D's quarterly newsletter, uPDate, by e-mail, please let us know. Send an e-mail to sales@pd-engineers.com***

- ✓ Designate someone to review each part of the document for accuracy and completeness; especially phone numbers which continually change
- ✓ Discuss the most recent severe event or a new scenario that has

# *Power System Studies*

## **Why request utility fault contribution and utility protection information for Power System Studies?**

Engineers conducting power system studies for facilities on the customer's side of the utility meter often request data from the serving utility. These requests, which are increasing in frequency and detail, are often a query for accurate utility fault contribution data and upstream utility protective device information. Why are there suddenly more

of these requests and why is this information needed?

Numerous facility engineers are proceeding with arc flash studies of their facility. Study engineers can no longer use the old stand-by assumption of unlimited fault contribution from the utility as these studies require the use of very accurate data to model the facility's power distribution system. Small differences in the level of calculated bolted three phase fault current can result in a significant difference in protective device

tripping time, greatly affecting the calculated incident energy level and corresponding required personnel protection equipment.

Upstream utility protective device information is requested to ensure the facility's main device coordinates with the utility's upstream protective device. The objective is to prevent tripping of the utility protective device for faults within the customer's facility. The upstream protective device information is also used to

determine incident energy levels for the line side of the facility's main device. These incident energy levels are used to determine corresponding required personnel protection equipment.

As power system analysis tools improve, more accurate system information will be required to provide customers with the best analysis possible. Accurate data from utility providers is an important part of the process of providing useful power system analysis to facility engineers.

# *Integration & Futura Systems, Inc.*

We are proud to announce the formation of **Futura Systems, Inc.** through the partnership developed between Patterson & Dewar Engineers (PD) and Southeastern Data Cooperative (SEDC). The alliance and its collective resources provide for a stronger, more viable GIS software company than would likely exist without the partnership. The PD product suite continues to be enhanced but will be re-branded as FuturaMap, FuturaView, and FuturaStake.

Although Futura will be a separate company with its own management team and offices, PD's engineering

expertise will continue to have an influential role in Futura as we strive to constantly improve & update our products for the utility industry. In an effort to create a fully integrated software solution, Futura will also continue to market and support its products and services to other non-SEDC utilities.

## **SEDC Integration**

The new partnership is soon to release unprecedented integration between the SEDC Utility Power Net

(UPN) system and FuturaMap and FuturaStake. Current and future Mapping clients interested in the integration can obtain a demonstration by contacting Doug Malinowski at 770-453-1410. The software is scheduled to be released first quarter of 2007. The integration is a configurable "real time" web services interface which allows edits to be saved in both database systems whenever a change is made on either system. It also provides users the ability to navigate from one system to the other seamlessly, for example a UPN user looking at a customer

location record in UPN can click a button and "zoom" to that location on a map.

## **ESRI ArcGIS 9.2 Release**

Futura will release updates for all 3 products soon after the official release from ESRI of the 9.2 software expected in December 2006.

# *P&D Staking Schools*

Once again, Patterson & Dewar Engineers will be conducting a staking school. The schools will be held in the Florida panhandle with **Intro-to-Staking** being held in March and April 2007 and **Advanced Staking** being offered some time in late summer or early fall of 2007. Unlike other staking courses, our schools cater to the beginner as well as the advanced Staker. Although the Intro-to-Staking School was originally developed for individuals new to staking, even experienced stakers that have attended find the information educational and informative. The coursework is divided into hands-on field demonstrations as well as classroom work.

The Advanced Staking School was developed for the more experienced staker as well as the engineer interested in the mechanics of staking, which is solely classroom work. Although it is called an advanced school, the beginning staker would benefit greatly by attending. Information will be out in the near future, so keep an eye on our website for this series as well as future P&D and HP&D seminars and training sections. ([www.pd-engineers.com](http://www.pd-engineers.com)). If you have questions, please contact Robert Penna, Senior Engineering Assistant, or Charlene Gates, Marketing Director at 770-453-1410.



## *What is it?*



**The new logo for the partnership between P&D and Southeastern Data Cooperative to support our GIS software, formerly known as PDMaP**

## *P&D People*

We are pleased to welcome Mark Holland who recently joined Patterson & Dewar. Mark has more than 20 years of experience in the utility consulting industry with expertise in providing mechanical and electrical design of substations, distribution lines and transmission lines. He has managed surveying and below grade investigation, permit application and ROW acquisition. He also has provided construction management and final inspection.

A Moultrie, Georgia native, Mark and his wife Shelly have two children, 10-year-old Ryan and 8-year-old Caleigh. In Mark's spare time, he enjoys restoring a 25-year-old Dodge pickup.

# Coordination Philosophies

## Fuse Savings vs. Fuse Sacrificing

by Gary Grubbs, PE

One of the ongoing debates between many utility engineers in today's service and reliability centered environment is which "tap" fusing philosophy should be used; fuse saving or sacrificing.

### Fuse Saving:

- Fast operations of recloser should protect entire downstream line (as far as possible) from temporary faults.
- Fuse link should not be damaged by fast recloser operation.

Permanent fault should cause fuse to blow on first delayed operation.

### Fuse Sacrificing:

Fuse link should blow before operation of any upstream over-current device.

### Reclosing operations:

- Typical sequence is two fast (instantaneous) operations followed by two delayed operations (2A2B.... see Figure 1).
- Other sequences may be used, such as one fast, two delayed (1A2B); no fast, three delayed (3B)

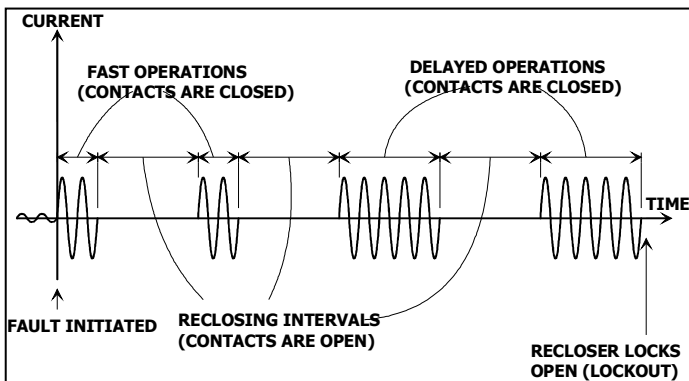


Figure 1

Fuse savings normally requires at least one fast operation so that an "open" and "close" of the recloser is possible prior to the fuse link melting or being damaged. All parameters such as fuse size and type, recloser operating curves, reclosing intervals and fault magnitudes must be reviewed to limit fuse link damage during occurrences that do not end with a blown fuse link (see Figure 2).

Each utility must develop its own coordination philosophy for the various substations, circuits and areas served. It is often a detriment to overall system reliability to make use of the same sectionalizing scheme uniformly across the system.

One scheme that has found favor at many utilities is to "zone" each circuit

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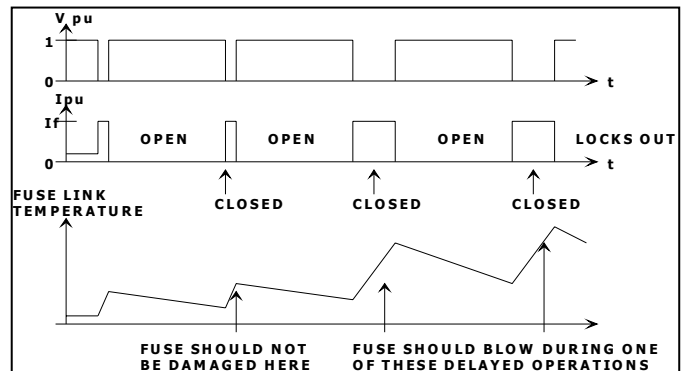


Figure 2

by the type of reclosing device in place (see Figure 3). The basic premise is to fuse all "side" taps emanating from lines served by devices that trip three-phase for single phase faults (sub breakers, WVEs, etc). Said fuses would be selected such that they operate in a "fuse-sacrificing" mode.

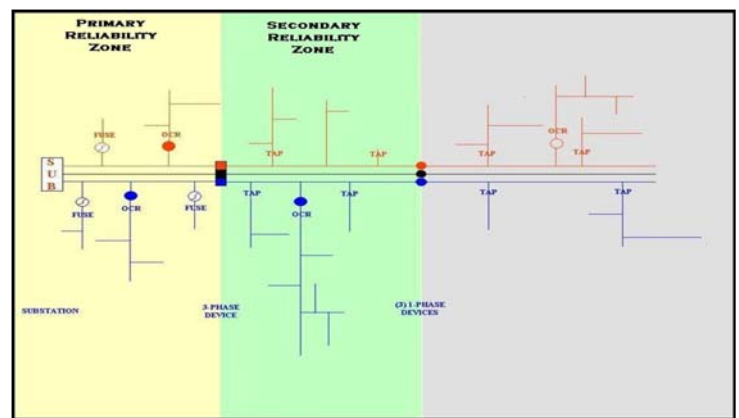


Figure 3

Side taps along the portion of the circuit that is protected by single-phase operating devices (Triple-Single, 50L, etc) are then fused to allow for "fuse-savings" in most cases.

By using such a "zone" sectionalizing setup you are able to strike a balance between the philosophies of *Fuse-Savings* (fewer blown fuses incurred down-line from single-phase devices) and *Fuse-Sacrificing* (fewer customers are subjected to the additional blinks of tripping a three-phase device).