PACKAGE ID - 000786IB48600 PCS

KWIC TITLE - Power Control System

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LIMITATION CODE -UNL **AUDIENCE CODE -** UNL

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DESCRIPTION - Power Control System (PCS) is used as a real time control software package for Supervisory Control and Data Acquistion (SCADA) in an electric utility control center environment.

PACKAGE CONTENTS - Media Directory; Software Abstract; Media Includes Source Code, Object Module, Documentation;

SOURCE CODE INCLUDED? - Yes

MEDIA QUANTITY - 7 3.5 Diskettes

METHOD OF SOLUTION - SCADA methods used in PCS are developed from past practices at Western's Watertown Operations Office.

COMPUTER - IBM PC 486

OPERATING SYSTEMS - Novell Netware for a network operating system, Btrieve for a database engine, MS DOS 6.2/Microsoft Windows 3.11 on all workstations.

PROGRAMMING LANGUAGES - Microsoft Visual C++ 2.0 (97%), Watcom C++ 9.5 (3%)

SOFTWARE LIMITATIONS - At the time of writing the system was limited to 25 network nodes. Other database limitations include: Maximum number of Control Area assignments 8, Maximum number of communications channels per each Data Acquistion (DAQ) PC 64, Maximum number of database point priority levels 256, Maximum number of polled remote terminal units 65,536, Maximum number of

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SOFTWARE LIMITATIONS -(CONT) database points in each point class 65,536, Maximum number of database point classes 65,536.

SOURCE CODE AVAILABLE (Y/N) - Y

UNIQUE FEATURES - The unique feature of PCS is its adaptation of the standard PC to the electrical utility control center environment. The traditional computer application in control centers has been the large mainframe or Unix workstation products. With the application of the PC the control center operator is provided with a familiar interface that is relatively inexpensive as compared to the traditional approach.

RELATED SOFTWARE - The following related packages are used in WAPA's Watertown control center operation and are included with this package. A. Database and Display Builder (DBB/DSP) is used to generate the PCS displays and database points that present SCADA information for the remote terminal units. B. Operations Database (OPD) is used by the control center operator to record and track power system outages. C. Automatic Generation Control (AGC) is used by the control center operator to control and monitor electric power generation in conjunction with internal loads and interchanges with other utilities.

OTHER PROG/OPER SYS INFO - Commercially available software necessary for the operation of PCS include: Netware 4.0 by Novell, Btrieve by Btrieve Technologies INC., Windows for Workgroups and MS DOS 6.2 by Microsoft, and Fontgrapher by Altsys. The following are file extensions used in PCS: bat Batch files for Btrieve database creation, btr Btrieve database file, c C source code file, clw Microsoft Visual C++, cpp C++ source code file, def definition file, dlg Dialog box source code file, doc WAPA documentation in ASCII format, dsc Btrieve database descriptor file, fon Bitmap font file, fot True Type font definition file, h C++ include file, hlp Windows help file for PCS, hpp C++ include file, ico icons, ini WDC INI file, lnk Link definition file for Watcom compiler, mak Microsoft Visual C++ make file, rc resource file, res resource file, ttf True Type font file, txt WAPA documentation in ASCII format, vcw Microsoft Visual C++ project file, wpd WAPA documentation in Word Perfect format, wri WAPA documentation in Windows Write format, and wsp Microsoft Visual C++ project file.

HARDWARE REQS - Minimum hardware requirements for any node on PCS is that necessary to run Microsoft Windows for Workgroups. Beyond that, it would be a function of the number of data points in the system, and the historical data requirements. In the Data Acquistion PC (DAQ) an intelligent communications interface is used to communicate to the Remote Terminal Units. The system currently uses one 16 port synchronous/asynchronous serial interface per DAQ PC. This board is a Hostess si from Comtrol. This type of interface is available from a number of suppliers. The PCS software is

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HARDWARE REQS -(CONT) written to utilize a Microsoft compatible sound card in the operator console for operator audible alarming purposes. The PCS software will operate with single CRT operator consoles. However, Western currently utilizes three CRTs per PC by using an optional video card that provides multiple VGA ports for one PC. This is done with two MVP2X boards from STB in each PC, replacing the standard video card. This type of board is available from a number of suppliers. Standard Ethernet network interface cards are used at each node. This type of interface is available from numerous suppliers.

TIME REQUIREMENTS - The PCS uses a WWV time reference for the purposes of time tagging of systems occurrences and time synchroniztion of the Remote Terminal Units. No other special time requirements are necessary.

REFERENCES - Documentation on media.

ABSTRACT STATUS - Submitted February 27, 1995. Released AS-IS 3/3/95.

SUBJECT CLASS CODE - T

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COMPUTER PROGRAM DOCUMENTATION
P CODES
ELECTRIC UTILITIES
COMPUTERIZED CONTROL SYSTEMS
DATA ACQUISITION SYSTEMS

EDB SUBJECT CATEGORIES -
990200 420200

SPONSOR - DOE/CE

PACKAGE TYPE - AS - IS