

BRAD STEPHEN CARLBERG, P.E.

P.O. Box 1150 RICHLAND, WA 99352 • P.O. Box 1219 HOODSPORT, WA 98548

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PROFESSIONAL SUMMARY

Registered Professional Control Systems Engineer with over thirty-five years' experience in Process Control Engineering specifically with Distributed Control Systems, Programmable Logic Controllers, and Human Machine Interfaces combining extensive experience with both Hardware and Software Design, Programming, Implementation and Startup, including Advanced Continuous and Batch Control Programming.

TECHNICAL EXPERTISE

- Provided Engineering Consulting Services including: Design, Configuration, & Implementation of Distributed Control Systems (DCS), Programmable Logic Controllers (PLC), & Human Machine Interface (HMI)
- Created P&ID's, Instrument Loop Sheets, Data Sheets, Instrument Index, I/O List, IJB Termination, Layout, & Wiring Drawings, Cause and Effect Charts, Alarm/Interlock Lists, & Maintenance Work Orders, and specification & requisitioning of Hardware.
- Completed Factory Checkout, Loop Check, and Tuning.
- Training of Operators, Maintenance, And Instrument Personnel
- Created Process Functional Specifications, Software Integration Plan, Software Requirements Specifications, Software Design Description, and Software Requirements Traceability, and Software Configuration Management Plans per IEEE & NRC guidelines
- Experience with NFPA 70/70E National Electrical Code® / Electrical Safety in the Workplace & NFPA 72 National Fire Alarm and Signaling Code for Facility Fire Detection and Evacuation Alarm System
- Familiar with Software Quality Assurance, specifically NQA-1 2008/2009 requirements & configuration management to ensure regulatory, code and safety basis compliance. Previously certified Hanford General Employee Training (HGET)
- Provide daily interface and technical direction to Facility Operations and Maintenance organizations Prepare and maintain operating and maintenance procedures and data sheets. Prepare design changes for system improvements. Procure replacement and spare parts within the quality program.

EQUIPMENT & SOFTWARE EXPERIENCE:

Distributed Control System (DCS)	Programmable Logic Controllers (PLC)	Human Machine Interface (HMI)	Software Tools	Miscellaneous Software
1. Honeywell TDC3000/TPS/Experion Process Manager (PM/APM/HPM) Honeywell Logic Manager (LM) Personal Computer Network Manager (PCNM) communicating with Millwide Computer (MIS) like IBM AIX and VAX 11/780 Honeywell AM/PM Control Language (CL) Honeywell Picture Editor	1. Rockwell Allen-Bradley RSLogix 5/500/5000 Series 2. Siemens S5 Simatic w/APT and TISoft Siemens S7-1200 with TIA Portal 3. Gould Modicon 584/984 Modicon Quantum PLC using PROWORX, Concept, & UnityPro programming software 4. Honeywell IPC620 5. Tyco Simplex 4100U PLC 6. Triconex 1131 TriStation SIS 7. Yokogawa ProSafe-RS SIS	1. Rockwell Software RSView32, FactoryTalk, PanelBuilder900/1200/1400, and RSBatch 2. CiTect SCADA, MMI/HMI version 5.4 3. WonderWare FactorySuite including InTouch 7.1 4. Schneider Automation Monitor Pro (Factorylink) HMI 5. INDELEC PLANT-VIEW 6. Siemens TP1900 Touch Panel with WinCC 6. ClearView HMI	1. Microsoft SQL Server 2. Wonderware InSQL 3. Allen-Bradley DriveTools™ software 4. ABB ACS550 Drive software 5. Allen-Bradley PowerFlex, 1336+, 1336 Force variable-frequency AC drives 6. Bently-Nevada 3500 Vibration Monitoring System	1. Microsoft Office; Word, Excel, Powerpoint, Access, and Project; VISIO 2. Visual Basic 3. AUTOCAD 4. Intergraph INTTools 5. DBASE 6. Datatrieve 7. Northwest Analytical Quality Analyst 5.1
2. Bailey Net/Infi 90 Multifunction Processors/Controllers (MFP/MFC) Fiber-Optic Central Communication Ring Bailey (CADEWS) Bailey (SODG)				
3. Emerson DeltaV (Westinghouse) Ovation				
4. Metso DNA				
5. Yokogawa CS3000				

PULP & PAPER EXPERIENCE:

- Greenfield Paper Mills
- Bleached & Unbleached Kraft Mills
- Sulphite Pulp Mills including Paper Machines
- 450 TPD Secondary Fiber Mill w/ Automatic Control of Pulpers
- Stock Preparation including Starch Cooker
- Multiple-Effect Black Liquor Evaporators
- Brown Stock Screening
- 500 TPD Brown Stock Washers
- 600 TPD Multiple-Stage D/C-Eo-D-E-D Bleach Plant
- 8 TPD R-3 & 30 TPD R-8 Chlorine Dioxide (CLO2) Generator
- Power & Recovery Boilers
- Causticizing and Lime Kiln & Lime Kiln Safety Systems
- Extruder Machine "Flying Splice".

- Application Module-Based Bleach Plant
- Brown Stock Washing
- Recycle Advanced Control Packages.

OTHER PROCESS INDUSTRY EXPERIENCE:

- Variable-Frequency AC Drive for Hog Fuel Boiler Fuel Feeders
- Manufacturing Bulk Chemical Handling Facility
- 250 GPM Hazardous Industrial Waste Treatment Facility
- Gas Desulfurization Plant
- High Fructose Corn Syrup Batch Plant
- Cogeneration Plant Fuel Handling System
- Taconite Pelletizing Plant including Furnace Grate Speed Control, Concentrator, Precipitators, Limestone Addition
- Resin Batch Reactors

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EDUCATION

Bachelor of Science / Mechanical Engineering; February, 1984 **WA State University; Pullman, WA**
Ci Technologies CiCode & Advanced CiTect Course; Charlotte, North Carolina *June, 2002*
WonderWare Basic InTouch Course; Mobile, AL *July, 2000*
Registered Professional Control Systems Engineer; License No. 43988, State of WA Issued October 18, 2007 Expires August 9, 2022
Registered Professional Engineer; License No. 23362, State of AL Issued January 21, 2000 Expires December 31, 2021
Rockwell Software Basic RSView Course; Birmingham, AL *September, 1998*
The Dale Carnegie Course; Mobile, AL *September, 1993*
Bailey Configuration (CADEWS) & Graphics (SODG) Courses; Vancouver, BC Canada; *April & December, 1990*

PUBLICATIONS

"Implementing a Cellular Router & Controller with Embedded Webserver in a Rural Water Company Pumphouse"; November, 2017; ISA Process Control & Safety Symposium; Houston, TX
"Optimizing Your Process Through Lignin Management"; November, 2015; ISA Process Control & Safety Symposium; Houston, TX
"Manage your KPIs over the Web and Smartphones" *November, 2013*; **ISA Automation Week 2013** Nashville, Tennessee
"Ethernet I/O" *October, 2010*; **ISA Automation Week 2010** Houston, Texas
"Optimization in the Pulp & Paper Mill" *October, 2008*; **ISA 2008** Houston, Texas
"Configure Your Ethernet I/O System: A "Hands-On Tutorial" *October, 2003*; **ISA 2003** Houston, Texas
"Ethernet PLC's Reduce Oxygen Consumption (Tutorial)" *September, 2001*; **ISA 2001** Houston, Texas
"Automated Recovery Boiler Sootblowing Control System" *March, 2001* **TAPPI PCE&/ISA PUPID Joint Symposium**; San Antonio, TX
"Recycled Advanced Control Package" *March, 1996* **TAPPI Recycling Symposium**; New Orleans, Louisiana

PROFESSIONAL MEMBERSHIPS

INTERNATIONAL SOCIETY OF AUTOMATION (ISA); Industries & Sciences Department Vice President (2020 - 2021); Industries & Sciences Department Vice President - Elect (2018 - 2019); Richland Section President; Geographic Assembly Chairman (2016 - 2017); Society Executive Board Member & District 9 Vice President (DVP) for WA, OR, ID, MT, WY, UT, & AK (2014 - 2015); Pulp & Paper Industry Division (2001 - Present); Technical Conference Committees (1997 - 2018) ; CSE PE Review Course Instructor (2015) ; FE/EIT Review Course Instructor (2020 - 2021). Member of ISA18, Instrument Signals and Alarms, ISA99, Industrial Automation and Control Systems Security, and ISA101, Human-Machine Interface Standards Committees

PROFESSIONAL RECORD

- Katmai Health Services**; Richland, WA; Consultant- ORP Startup and Commissioning Electrical Systems at; Startup & Commissioning Oversight May, 2020
October, 2020
- BSC Engineering**; Hoodspport, WA; Consulting Control Systems Engineer to **Andritz APO**; Alpharetta, GA; providing Site Process Control May, 2019
Engineering services for confidential pulp mill in Oregon. September, 2019.
- Artech Information Systems**; Morristown, NJ. Contract Equipment & Tool Engineer 4 to **Boeing Commercial Airplane Division**; Everett, WA for the Panel Bonding Assembly of the 777X Composite Wing Center & Fuselage Automated Upright Build (FAUB). September, 2018
March, 2019.
- BSC Engineering**; Hoodspport, WA; Consulting Control Systems Engineer to **Port Townsend Paper Corporation**; Port Townsend, WA providing Control Systems (Metso DNA, ABB Bailey, & Emerson DeltaV DCS's) expertise to Maintenance Electrical & Instrumentation Department. January, 2017
April, 2018.
- BSC Engineering**; Hoodspport, WA; Consulting Control Systems Engineer to **Andritz Automation**; Alpharetta, GA; providing Honeywell Experion expertise for Checkout and Startup of new Recovery Boiler, Evaps, Demineralizer and STG at **Georgia-Pacific** in **Brewton, AL**. August, 2016.
- BSC Engineering**; Hoodspport, WA; Consulting Control Systems Engineer providing Honeywell TDC3000 expertise for mill DCS system and process support including Logic Manager (LM) and Process Manager (HPM) configuration, Logic Blocks, and PM- & AM-CL code) to **Weyerhaeuser (now I-P)** in **Port Wentworth, GA** May
July, 2016.
- BSC Engineering**; Hoodspport, WA; Consulting Control Systems Engineer to **Andritz Automation**; Alpharetta, GA providing Honeywell TDC3000 expertise to create SAMA diagrams to document existing configuration (including Basic Controller & HPM configuration, Logic Blocks & AM-CL code) for upcoming migration from TDC3000 to Experion for **International Paper** in **Bogalusa, LA**. March
April, 2016.
- Worley Parsons**; Lead Distributed Control System (DCS) Commissioning Engineer for **Pasadena Water & Power** in Pasadena, CA for the Glenarm Repowering Project providing DCS expertise for the Gas Turbine, Steam Turbine, & Balance of Plant (BOP) areas utilizing Emerson (Westinghouse) Ovation DCS. December, 2015
February, 2016.
- BSC Engineering**; Hoodspport, WA; Consulting Control Systems Engineer to **Dana Engineering** for the **Hanford Mission Support Alliance (a Lockheed Martin/Jacobs/WSI company)** at the **Volpentest Hammer Federal Training Center** providing **Siemens TP1900 Touch Panel & WinCC HMI & S7-1200 PLC** expertise (in a Totally Integrated Automation (TIA) Portal environment) to modify the Operator & Instructor HMIs. September, 2015
October, 2015.
- BSC Engineering**; Hoodspport, WA; Consulting Control Systems Engineer providing Honeywell TDC3000 expertise (including native window, Picture Editor graphics & AM- & PM-CL code modifications & troubleshooting) to commission recovery boiler upgrades including 74% solids upgade, new Precipitator transformer/rectifier, & new sootblowers for **Weyerhaeuser (now I-P)** in **Oglethorpe, GA**. April, 2015
May, 2015.
- MPC (Modern Process Control) Consulting, Ltd.**; Sydney, BC; Consulting Control Systems Engineer for Education City project in Doha, Qatar. June, 2014
October, 2014.
- BSC Engineering**; Hoodspport, WA; Consulting Control Systems Engineer to **Potlatch Mutual Water Company** responsible for designing, programming & commissioning Pumphouse Alarming Modernization project in Potlatch, WA. October, 2013
Present.
- Hyundai Engineering & Construction – Process Plant Division**; Seoul, South Korea; Technical Advisor for the Controls & Instrumentation Department working on the **LUKOIL Kandym Collections Facility** project near Karakul, Uzbekistan and the **Refineria Batalla de Santa Inés** refinery project in Venezuela. November, 2012
July, 2013.
- US Army Corps of Engineers**; Contract Control Systems Engineer commissioning Rockwell ControlLogix PLC and Rockwell FactoryTalk SE/ME for the **Gulf Intercoastal Waterway West Closure Project** near **Belle Chasse, LA**. August, 2012
September, 2012.
- BSC Engineering**; Richland, WA; Independent Contracting Consultant to **Maverick Technologies**; Charlotte, NC for the recommissioning of the **International Paper** mill in **Franklin, VA** providing ABB (Bailey) Infi-90 Distributed Control System (DCS) expertise to mill startup team in the evaporators and power & recovery areas. May, 2012
June, 2012.
- Invensys-Triconex**; Lake Forest, CA; Contract Applications Engineer for creating Software Integration Plan, Software Requirements Specifications, Software Design Description, and Software Requirements Traceability Matrix per IEEE & NRC guidelines for submittal to **Pacific Gas & Electric (PG&E)** and Nuclear Regulatory Commission (NRC) as part of relicensing procedure for the **Diablo Canyon Nuclear Power Plant** Safety System Replacement Project. February, 2011
April, 2012.

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- 17 **BSC Engineering**; Richland, WA; Consulting Process Control Engineer to **Energy Solutions** provide Rockwell expertise for ControlLogix PLC and Rockwell FactoryTalk ME HMI controlling Foundation Fieldbus transmitters and ABB ACS550 drives via DeviceNet for **WA River Protection Solutions** Small Scale Mixing Demonstration. May, 2010
June, 2010.
- 18 **Schweitzer Engineering Laboratories, Inc.**; Pullman, WA; Senior Project Engineer - Automation to Engineering Services for substation automation **Aha Macav Power services** implementing the SEL-2032 Communications Processor to communicate between protective relays and the **ClearView HMI**. September, 2009
April, 2010.
- 19 **Bechtel International Inc.**; Asab, United Arab Emirates; Startup Engineer for the **Asab Gas Development Project Phase 2** providing control system expertise for commissioning of Yokogawa ProSafe-RS SIS and Tyco Simplex 4100U PLC for Fire and Gas control system at Liquefied Natural Gas (LNG) plant. Responsible for Lockout-Tagout (LOTO) permits. May, 2009
August, 2009.
- 20 **Bechtel National Inc.**; Richland, WA; Senior C & I Engineer in Richland, WA for the **Waste Treatment Plant/River Protection (WTP)** Project at the Hanford Nuclear Reservation site. Created Software Functional Specification (SFS) for Balance of Facilities (BOF) area and Software Lifecycle Documents for Low Activity Waste (LAW) and High Level Waste (HLW) areas. Certified in Software Quality Assurance, specifically NQA-1 2008/2009 requirements February, 2007
April, 2009.
- 21 **Noramtec Consultants Inc.**; Edmonton, Alberta Canada. Contract Control Systems Engineer to **Honeywell Canada Ltd.** in Fort McMurray for the **Syncrude Canada Ltd** UE-1 project utilizing expertise with Honeywell TDC 3000, Wonderware InTouch, Modicon Quantum PLCs, Triconex 1131 TriStation Burner Management Systems, and Bently-Nevada 3500 Vibration Monitoring System performing Site Acceptance Tests (SATs) & commissioning of the Coker Off-Gas Boilers & Ash Handling Systems. July, 2005
May, 2006.
- 22 **Air Liquide Process & Construction**; Houston, TX; Contract Control Systems Engineer to corporate control systems group for the following projects: January, 2004
May, 2005.
- configuring ABB Bailey Infi-90 Harmony DCS Controller & Graphics for the **POSCO Iron & Steel** project
 - configuring **Wonderware InTouch** and **Modicon Quantum** PLC for the **Irving Oil** project.
- 23 **BSC Engineering**; Daphne, AL. Consulting Process Control Engineer for projects including: **Escambia County Utilities Authority** Main Street Wastewater treatment plant in Pensacola, FL for the Anoxic/Oxic PLC Alarm project utilizing Moore Industries Net Concentrator System and Wonderware InTouch 7.1 HMI and Modicon Quantum PLCs. June, 2003
December, 2003.
- 24 **BSC Engineering**; Daphne, AL. Consulting Process Control Engineer to **ABB Instrumentation** for the Water Pollution & Control Project Hypochlorite Modernization utilizing **Ci Technologies** CiTect SCADA HMI 5.40 Human Machine Interface (HMI) and Modicon Quantum PLCs for the Northeast Philadelphia Water treatment plant. February, 2003
July, 2004.
- 25 **American Electric Power**; Houston, TX. Contract Process Control Engineer for the **Houston Pipeline/Louisiana Interstate Gas** pipelines SCADA system utilizing Wonderware InTouch 7.1 Human Machine Interface (HMI), Standard Automation EFM Manager, and various Remote Terminal Units (RTU) including, Fisher ROC, Flow Automation Automate/AutoPilot, and Daniel FloBoss.. July, 2002
August, 2002.
- 26 **BSC Engineering**; Daphne, AL. Consulting Process Control Engineer to **Process Control Associates, Inc.** in Houston, TX. for the **Ultramar Diamond Shamrock** Three Rivers Refinery Diesel Hydrotreater project converting ABB Multifunction Processor (MFP03) to Honeywell High-Performance Process Manager (HPM). December, 2001
February, 2002.
- 27 **Orion CEM, Inc.**; Alpharetta, GA. Contract Engineer to **Mead Coated Board Inc** in Phenix City, AL Provided ABB Bailey Infi-90 DCS expertise configuring ABB LAN-90 and Multifunction Processor (MFP03) for their CyberBoiler™ Recovery boiler process optimization project. September, 2001
November, 2001.
- 28 **BSC Engineering**; Daphne, AL. Consulting Process Control Engineer to **ABB Instrumentation** for the Anoxic/Oxic and Secondary Clarifier process modifications Responsible for designing, configuring, & commissioning Wonderware InTouch 7.1 Human Machine Interface (HMI) and Modicon Quantum PLCs for the **Escambia County Utilities Authority** Main Street Wastewater treatment plant in Pensacola, Florida. April, 2000
August, 2001.
- 29 **Ford, Bacon & Davis**; Mobile, AL. Contract Process Control Engineer to: September, 2000
April, 2001.
- **Riverwood International**, West Monroe, LA Configuring Honeywell TDC3000 for their #4 Recovery Boiler Sootblower & TRS
 - **Inland Container** in Rome, GA for their Hot Stock Refiner & Screens projects utilizing Honeywell TDC3000 Control language (CL) programming and Allen-Bradley PLC/5 via the Honeywell EPLCG.
- 30 **GE Industrial Systems**; Pensacola, FL Contract Senior Systems Engineer responsible for the commissioning of the Fortrel polyester Bale line Control System utilizing Rockwell Automation RSView and PanelBuilder 900/1200/1400 Human Machine Interface (HMI) and Allen-Bradley 5/PLCs for the **Wellman Chemical** plant in Bay St. Louis, Mississippi. November, 1999
April, 2000.
- 31 **BSC Engineering**; Daphne, AL Consulting Process Control Engineer contracted to **Hargrove & Associates** in Mobile, AL responsible for: April, 1999
May, 1999.
- the upgrade of the Pelletizer Control System with Monitor Pro (Factorylink) HMI and Quantum PLC using Concepts programming software for **Kerr McGee** Synthetic Rutile processing plant in Theodore, AL.
 - Provide engineering support for Honeywell TDC3000 Distributed Control System (DCS) in the North & South Powerhouses to **Mobile Energy Services Corporation** in Mobile, AL.
 - Provide engineering support for Wonderware FactorySuite including InTouch 7.0 (HMI) to **GAF Building Products** in Mobile, AL.
- 32 **Raytheon Engineers & Constructors**; Birmingham, AL; Contract Process Control Engineer responsible for assessment & remediation of the Distributed Control Systems at 63 Kraft Foods plants in North America as part of Year 2000 compliance. April, 1998
March, 1999.
- 33 **Elsag Bailey Process Automation**; Hong Kong; Contract Engineer ABB Bailey DCS expertise to commission the Principal Collection & Treatment System for the Hong Kong Government Strategic Drainage Department. November, 1997
December, 1997.
- 34 **Beloit Corporation**; Jacksonville, FL Contract Engineer to for Greenfield mill for Indah Kiat Pulp & Paper in Parawang, Indonesia. August, 1997
September, 1997.
- 35 **Weyerhaeuser Paper Company**; Oglethorpe, GA Contract Engineer implementing Brown Stock Washer & Bleach Plant Advanced Control Packages. March, 1997
May, 1997.
- 36 **Manpower**; Phoenix, AZ; Contract Pulp & Paper Applications Engineer to **Honeywell IAC**; Phoenix, AZ; Completing Projects for: May, 1995
December, 1996.
- **Wisconsin Tissue Mills, Inc.**; Menasha, WI: Recycle/Bleach Plant Packages
 - **Potlatch Corporation**; McGehee, AR: Winder/Unwinder PLC Replacement
- 37 **NESC Staffing**; Walnut Creek, CA. Contract Engineer to **VECO**; Bellingham, WA for **British Petroleum**; **Milne Point**; Prudhoe Bay, Alaska. January, 1994
April, 1995.
- 38 **SELF-EMPLOYED**; Daphne, AL. Contract Engineer to **Fransen-Engineers**; Richmond, BC Canada. September, 1994
December, 1994.
- **Westcoast Energy, Inc.**; Fort Nelson, British Columbia Canada;
 - **Rainy River Forest Products, Inc.**; Fort Frances & Kenora, Ontario Canada
- 39 **SELF-EMPLOYED**; Daphne, AL Consulting Engineer to January, 1994
July, 1994.
- Commissioned ethanol plant for **Minnesota Corn Processors**; Columbus, Nebraska;
 - Commissioned cogeneration plant fuel handling system for **Boise-Cascade Corporation**; Emmett, Idaho

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- 40 INSTRUMENT CONTROL SERVICES;** Pensacola, FL; Systems Engineer Completing Projects for: December, 1991
August, 1993.
- Commissioned NC5 paper machine upgrade for **Weyerhaeuser Company**; Plymouth, North Carolina
 - Commissioned evaporator upgrade for **Mead Paper Company**; Chillicothe, Ohio
 - Commissioned bleach plant upgrade for **Boise-Cascade Corporation**; Jackson, AL
- 41 H.A. SIMONS LTD.;** Vancouver, BC Canada; Control Systems Engineer Completing Projects for: July, 1989
November, 1991.
- Responsible for Programming and Configuring the ABB Bailey Infi-90 DCS for **Boise-Cascade Corporation**; St.Helens, OR for the Dioxin Action Program for the 600 TPD Multiple-Stage D/C-Eo-D-E-D Bleach Plant and 30 TPD R-8 Chlorine Dioxide (CLO₂) Generator. Completed the Factory Acceptance Test (FAT) at the ABB – Bailey Regional Process Control Center in Seattle. Verified instrumentation in the mill.
 - Designed, programmed, and configured the ABB Bailey DCS for the greenfield mill for **Celulosa Del Pacifico, S.A.**; Mininco, Chile. Responsible for the Bleach Plant including Chlorine Dioxide Generator, Lime Kiln & Reausticizing, and Recovery Boiler areas. Completed the Factory Acceptance Test (FAT) at ABB – Bailey in Burlington, ON;
 - Recommissioned the Honeywell TDC3000 DCS for the Taconite (iron ore) pelletizing facility including the pellet calcination Furnace Grate Speed Control, Concentrator, Precipitators, Limestone addition process, and bin storage using expertise with Advanced Multifunction Controller (aMC) & IPC-620 PLC including Application Module (AM) and Multifunction Controller (MC) Control Language (CL) for **Cypress Northshore Mining**; Silver Bay, MN.
 - Design of greenfield pulp & paper mill for **Daishowa Canada Ltd.**; Peace River Pulp Division Peace River, Alberta. Responsible for programming & configuring the Recovery Boilers and Lime Kiln Safety Systems interface to the Honeywell communicating with the GE Series Six PLC through Honeywell PLC Gateway.
 - Responsible for the front end engineering design of the Honeywell TDC3000 DCS including the design of the instrument index for the greenfield mill project for **Alberta-Pacific Forest Industries Inc.**; Athabasca, AB
- 42 CS TECHNOLOGIES;** Poughkeepsie, NY; Instrument Engineer Completing Projects for: February, 1987
July, 1989.
- Implemented advanced chemical dosing control in the Bleach Plant including 8 TPD R-3 Chlorine Dioxide Generator in the Honeywell TDC3000 DCS in the Multifunction Controller (aMC) & IPC-620 PLC including Application Module (AM) and Multifunction Controller (MC) Control Language (CL) for **Potlatch Corporation**; McGehee, Arkansas;
 - Installed & commissioned Honeywell TDC3000 DCS including Advanced Multifunction Controller (aMC) & IPC-620 PLC including Application Module (AM) and Multifunction Controller (MC) Control Language (CL) to control 450 TPD Secondary Fiber (Recycle) Mill with Automatic Control of Pulpers & Stock Preparation Screening & Cleaning for **Federal Paper Corporation (now I-P)**; Versailles, CT
 - Installed TDC3000 in batch resin plant for **Insulating Materials Inc.**; (Formerly **G-E Resins**) Schenectady, New York;
 - Converted Hot Stock Refiners & 500 TPD Brown Stock Washers from standalone panel to Honeywell TDC3000 DCS in the Multifunction Controller (aMC) & IPC-620 PLC including Application Module (AM) and Multifunction Controller (MC) Control Language (CL). Implemented advanced refiner Energy (in HP-Days per Ton) control in Hot stock Refiners and Dilution Factor in Brown Stock Washers for **Interstate Paper Corporation**; Riceboro, GA;
 - Designed, configured, and commissioned Honeywell TDC3000 DCS in the Advanced Multifunction Controller (aMC) & IPC-620 PLC including Application Module (AM) and Multifunction Controller (MC) Control Language (CL) for multiple buildings across the manufacturing site including Building 020 (Powerhouse), Building 450 (250 GPM Hazardous Industrial Waste Treatment Facility), Building 003 (Cyanide Scrubbing, Condensate Polishing & Reverse Osmosis), and Manufacturing Bulk Chemical Handling Facility. Connected these individual buildings' Honeywell Local Control Network (LCN) via fiberoptic cable with Honeywell LCN Extender. Implemented Remote Boiler control including automatic feedwater treatment (demineralizer) regeneration and advanced Chiller control in the IPC-620 PLC in Building 020. Replaced the pre-existing Bristol Babcock control system with the Honeywell TDC3000 in Building 450. Replaced the pre-existing TI5 PLCs with the Honeywell IPC-620 PLC in Building 003. Programmed & configured Indelec PlantView HMI controlled by Modicon 584 for Manufacturing Bulk Chemical Handling Facility for **IBM Corporation**; Poughkeepsie, New York
- 43 WRIGHT SCHUCHART HARBOR;** Tacoma, WA; Instrument Engineer for the 1986 Sealift construction of five 2500 Ton modules for **ARCO EXPLORATION's** Central Production Facility (CPF-3) in Kuparek Prudhoe Bay, AK. February, 1986
July, 1986.
- 44 ATLANTIC GULF;** Woodinville, WA; Field Engineer completing greenfield cogeneration construction project for **Fairhaven Power**; Samoa, CA. Was second person to site with Project Superintendent. Solicited local vendor quotes for site clearing equipment, concrete suppliers, etc. Provided liaison to engineering design to resolve conflicts on drawings for site construction crews. Performed rebar takeoffs. August, 1985
December, 1985.
- 45 AMERICAN TECHNICAL SERVICES;** Eugene, OR; Junior Controls Engineer Completing Projects for February, 1985
May, 1985.
- Walked down Paper Machine and Vapor Recompression Evaporator and created P&IDs & Mechanical Layout drawings in preparation for rebuild project for **Weyerhaeuser Company**; Springfield, Oregon
 - Performed field instrument audit for Fisher Controls and created Instrument Index in preparation for mill modernization project for **Georgia-Pacific**; Monticello, MS
- 46 WEYERHAEUSER COMPANY;** Technical Summer Intern Completing Projects for Plant Engineering in Cosmopolis, WA Sulphite mill including: May, 1984
October, 1984.
- "Hogged Fuel" Boiler pneumatic ash handling system
 - Create Appropriation Requisition (AR) for Corporate Capital Project fund allocation
 - Designed Variable Frequency drive as replacement for existing mechanical drive controlling "Hogged Fuel" Boiler fuel feed screw conveyors.
- 47 WEYERHAEUSER COMPANY;** Summer Relief Laborer in Power & Recovery Department in Springfield, OR Kraft mill Summers 77-81