

COASTAL ENVIRONMENTAL SYSTEMS

*A division of Coastal Climate Company
Seattle, Washington*

Introduction

✓ **New Sensor Technologies**

✓ **Self-Diagnostics**

- Sensors
- DCP(logger)
- PC Software

✓ **Data Sharing**

✓ **Data Distribution**

✓ **Data Base Options**

✓ **WWW**

New Sensors

✓ Sonic Anemometers

- Handar, Met-One, Climatronics, Metron, IN USA, RMY,

✓ Present Weather

- Precipitation & type
- Visibility

✓ Digital Barometers

✓ Other Serial Sensors

Reasons For Move to Serial Sensors

✓ Eliminates noise in signal

- Problem in long cable runs or noisy areas

✓ More Accurate

✓ Complete Interchangeability

✓ Self-diagnostics

✓ More stable over time

✓ More features

✓ Enables new technologies

Introduces New Data Collection Problems

- ✓ **Timing with Datalogger**
- ✓ **Number of serial channels**
- ✓ **More data coming in**
- ✓ **Different Serial Types**
- ✓ **Multi-drop**
- ✓ **All have different protocols**

How the Zeno Defeats These Problems

- ✓ **Timing: Use a bigger, better brain**
- ✓ **Channels: 5 serial ports; expansion board soon**
- ✓ **More Data: Flexible menu structure**
- ✓ **Serial Types: RS-232, 485, 422, SDI-12, NTCIP-ESS**
- ✓ **Multi-Drop: Zeno has RS-485**
- ✓ **Protocol Confusion: Universal Serial Interface**

Universal Serial Interface

- ✓ Communicate with any serial sensor
- ✓ Menu configuration - NOT firmware change
- ✓ Can Poll, communicate or receive
- ✓ Parses data - select all or some
- ✓ Data can be processed further, run through alarms, etc.
- ✓ All through configuration menus

Self-Diagnostics

✓ ZENO®-3200

- System Reset
- Real-time clock suspect
- Logging memory initialized
- Serial device communication failure
- EEPROM suspect
- 18 bit analog converter suspect
- Clock adjustment made due to temperature compensation

✓ Sensors

- Out of Range suspect
- Rate of Change suspect
- Stale Data warning
- Sensor failure to communicate

ZENO®-3200 Features New/Standard

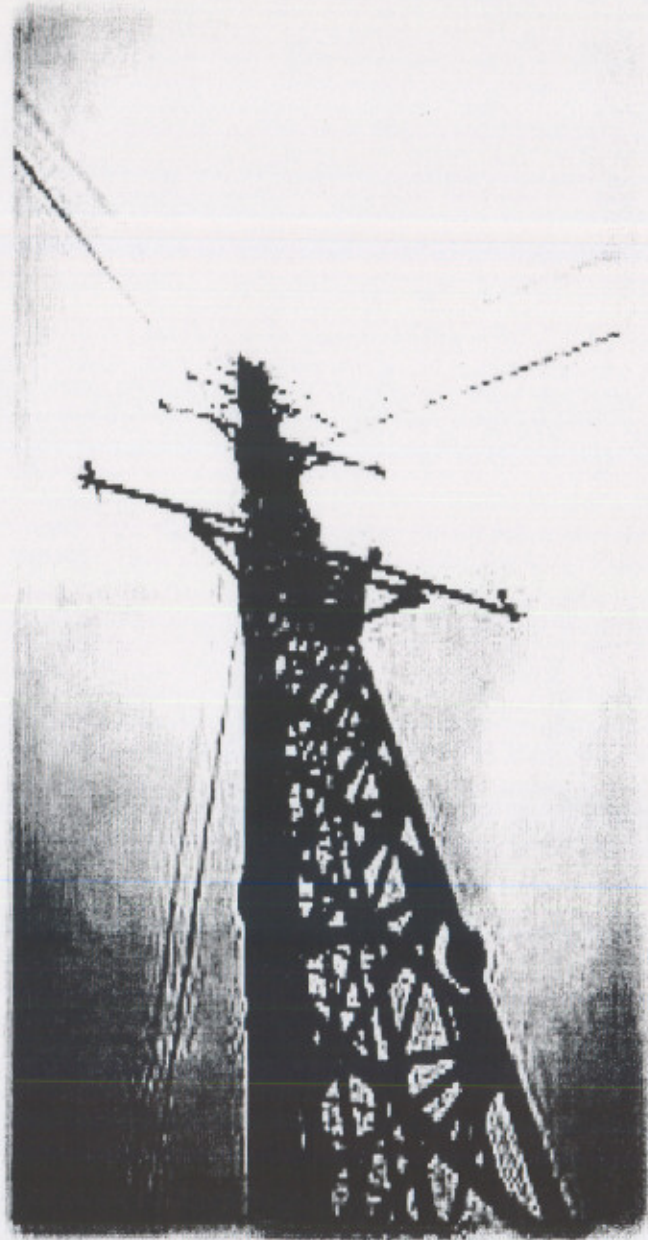
- ✓ **Universal Serial Interface**
- ✓ **18 Bit Analog Resolution**
- ✓ **Watchdog - Hardware & Software**
- ✓ **Lightning Protection (Best there is)**
- ✓ **CE - Industrial**
- ✓ **4 Layer Surface Mount - Very Strong MTBF**

NEW

- ✓ **Voice Response**
- ✓ **8 Mbytes memory**
- ✓ **Video**

Tall Towers

- ✓ Our first 100 meter tower
- ✓ 1988 - NASA, Wallops Island
- ✓ 6 levels of instrumentation
- ✓ Underwater logger
- ✓ Match data output & at one second frequency



CP&L Brunswick, Robinson

✓ Brunswick

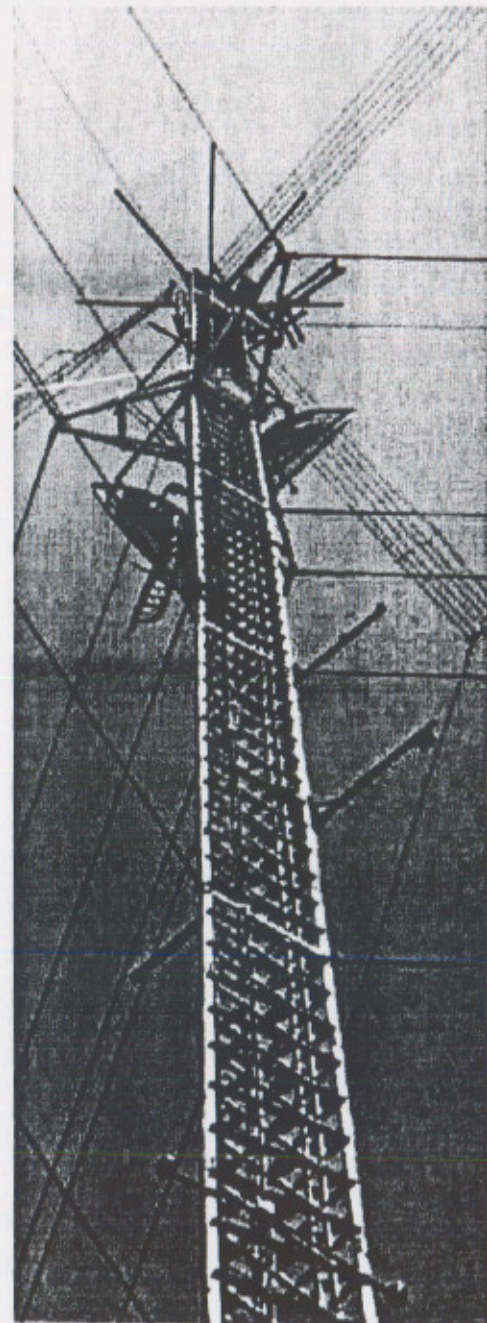
- 100 Meter tower
- Cold "swappable spare"
- Telephone dial in (2 protocols)
- Data out to PC
- Analog data out to Strip Chart
- Battery back up
- All new sensors

✓ Robinson

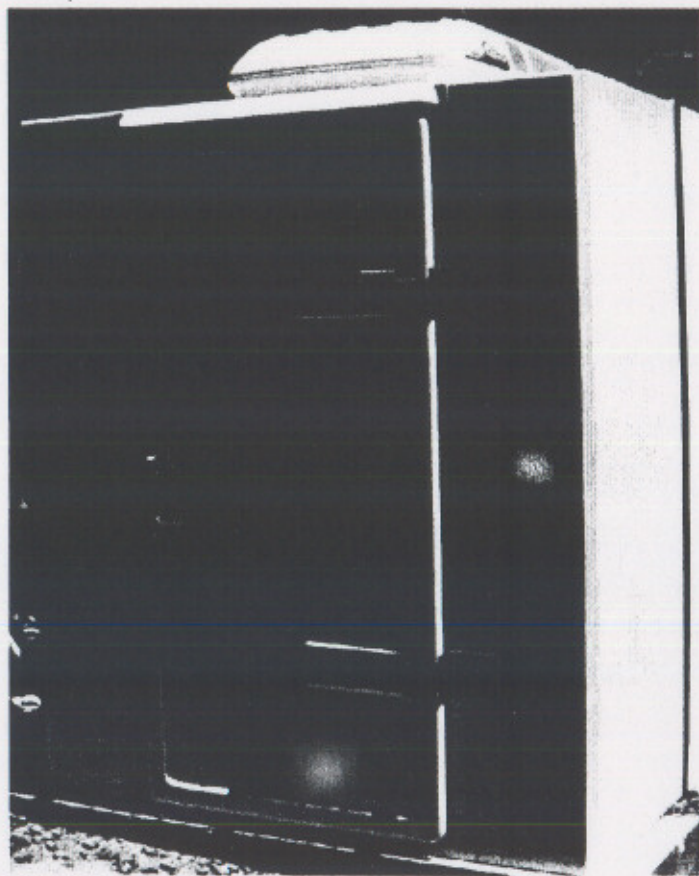
- Same as above, except only about 1/2 new sensors, 1/2 existing
- All these tasks/features in single Zeno box

Tall Towers

- ✓ CP&L Brunswick
- ✓ 2 levels of instrumentation
- ✓ Other obstacles



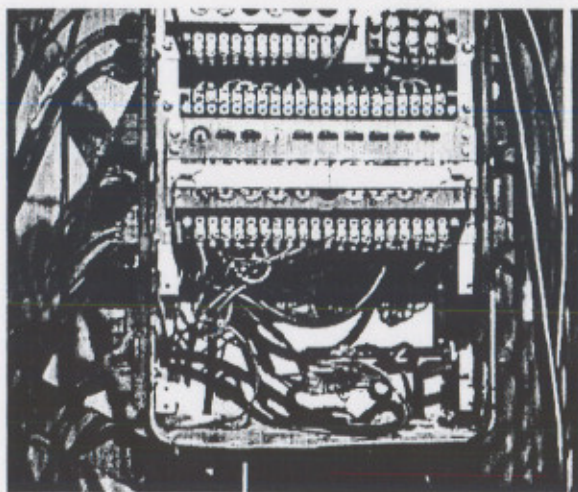
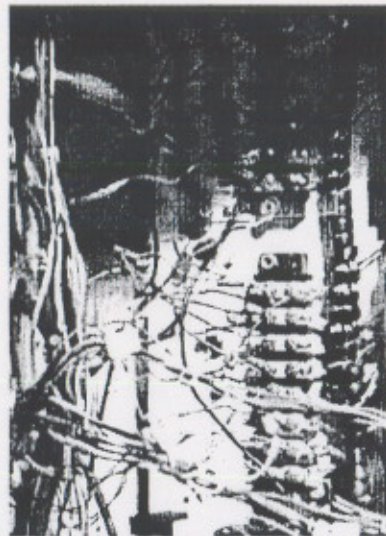
CP&L Brunswick



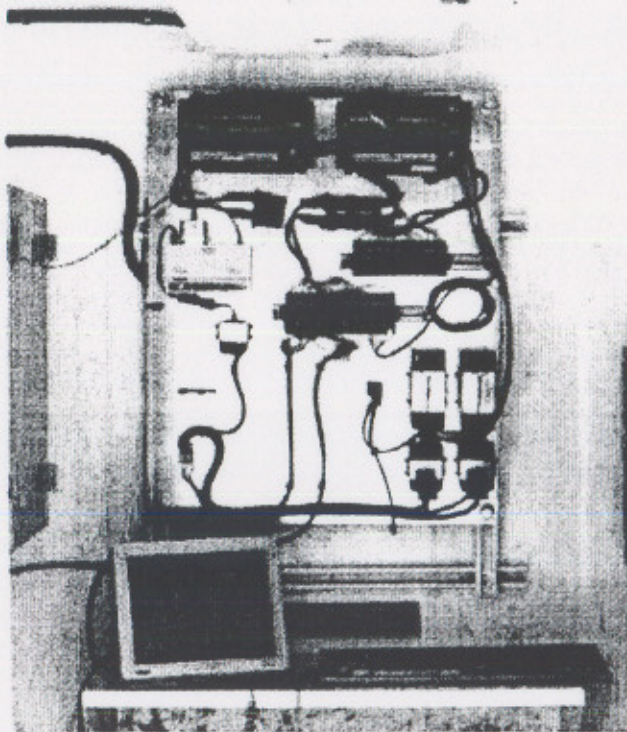
- ✓ **New Shelter**
- ✓ **Customer wanted equipment exposed - so shelter was answer**

CP&L Brunswick

✓ Before

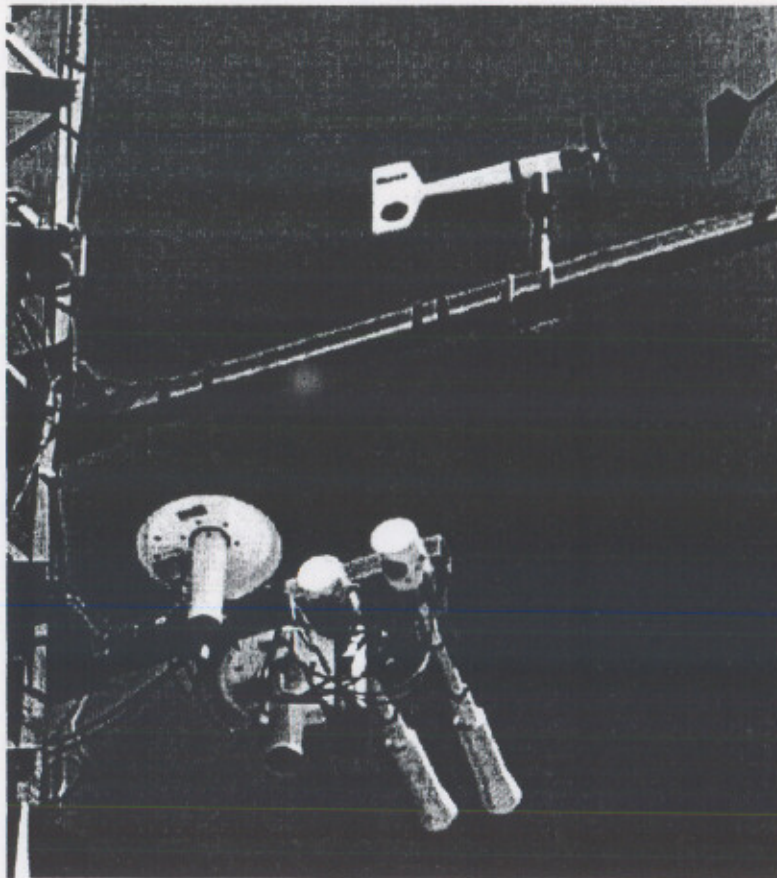


CP&L Brunswick



✓ AFTER

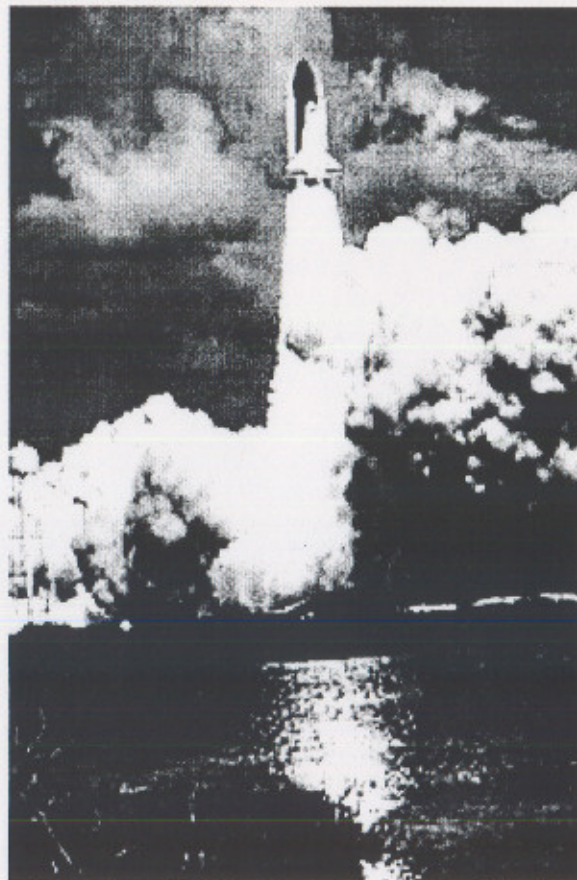
CP&L Brunswick



- ✓ Lower level of instrumentation
- ✓ For burn-in period had both old and new side by side
- ✓ Redundant motor aspirated temperature

Latest Tall Towers

- ✓ 65 towers ranging in height from 60 to 500 feet
- ✓ NASA/Air Force, Cape Canaveral (Eastern Range) and Western Range
- ✓ Modem and Spread Spectrum radios



Niagara Mohawk

✓ 3 Towers

- Replacing PDP 11's (with Zeno's)
- Battery back-up
- INTERCEPT
 - To Oracle Database
- Phase II -- Full Web Accessed Database
- Phase II -- Possibly replace Signal conditioning circuitry and/or some sensors

World Wide WEB

- ✓ **Web Database and Interface**
- ✓ **Access data from anywhere**
 - Password protected
 - Public Internet possible also
- ✓ **Unlimited number of users**
- ✓ **Only software needed for access is commercial browser**
- ✓ **Database is point and click easy, but the power of Oracle**
- ✓ **Open - Cross/System (PC, Mac, UNIX, etc.)**

Data Management - Database

- ✓ **Industrial Strength and Robust-ness (Oracle 8 or 7)**
- ✓ **Designed and Built for Meteorological data**
- ✓ **Web Server is Tightly Integrated With Oracle Database**
- ✓ **Point, Click, Select (Totally Turn-key)**
 - No need to learn special query languages

COASTAL ENVIRONMENTAL SYSTEMS

*A division of Coastal Climate Company
Seattle, Washington*