

**SCADA NETWORKS -
MYSTERIES REVEALED!**

COMMUNICATION IS THE KEY TO SUCCESS



PRESENTED BY



Steve Muther, P.E.
Evan Chambers, P.E.

OVERVIEW

- **Mystery Reveal 1 - SCADA Terms - (starting with)**
 - **Supervisory Control And Data Acquisition**
- **Mystery Reveal 2 - Project Communication**
 - **Who, What, When, Where, Why, How**

MYSTERY REVEAL 1 - TERMS

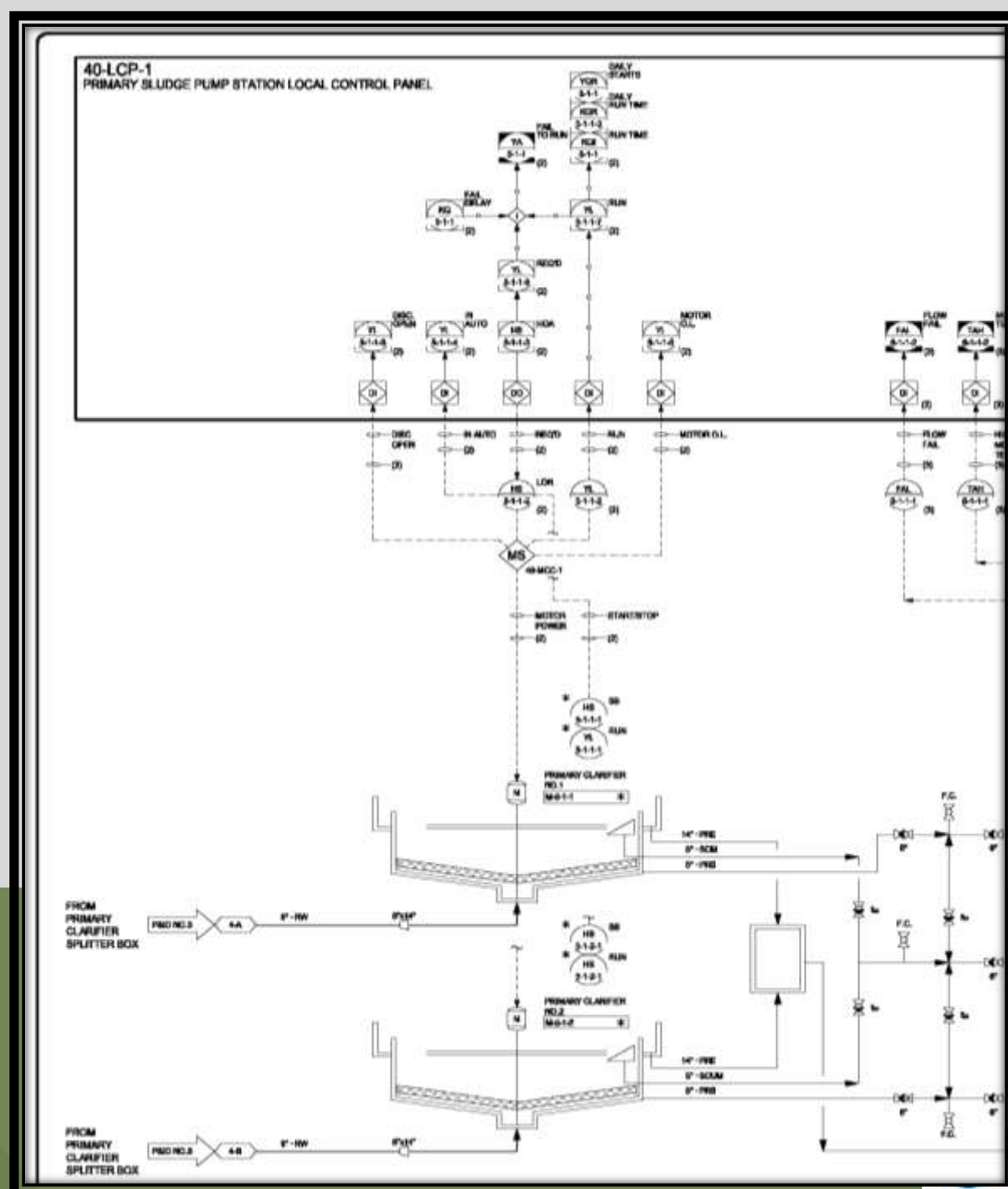
Provide a glossary of terms and specific suggestions for effective communication throughout a SCADA design project to equip operators and supervisors for their participation in the process.

The SCADA system is your interface with a complex and costly system. A well-designed system will make your day-to-day operations most effective.

A Glossary of Terms handout will be available at the end of this presentation.

SCADA TERMS

- P&ID
- Loop
- Process Control
- Inputs/Outputs
- Motor Control
- Instruments
- Process Flow



CONTROL PANEL TERMS

- I/O
- PLC
- UPS
- Surge Suppressor (TVSS)
- HMI
- Ethernet Switch/Router

NETWORK TERMS

- Ethernet
- Network – Business/Office vs. Industrial Control
- DeviceNet
- Fiber Optic
- Radio
- Firewall

PC TERMS

- Hardware
 - Workstation
 - Server
 - Phones/Tablets
- **Software**
 - HMI
 - Operational Reporting
 - Maintenance Management
 - SaaS (Software as a Service)
- **Remote Access**
 - SCADA Access
 - Maintenance Records Access
 - Alarm Management
 - Interactive/Text Messaging



MOTOR CONTROL TERMS



- MCC
- Bucket
- FVNR, FVR
- VFD
- SSRV
- Networked MCCs

POWER DISTRIBUTION TERMS

- Power (Quality) Monitor
- Standby Generator/Automatic Transfer Switch
- Switchgear (Draw-out)
- Switchboard



INSTRUMENTATION TERMS

- 4-20 mA
- Discrete
- Intrinsically Safe
- Networked



INTEGRATION TERMS

- System Integrator
- PLC Programmer
- HMI Designer/Programmer
 - PC and PLC
- “Qualified”

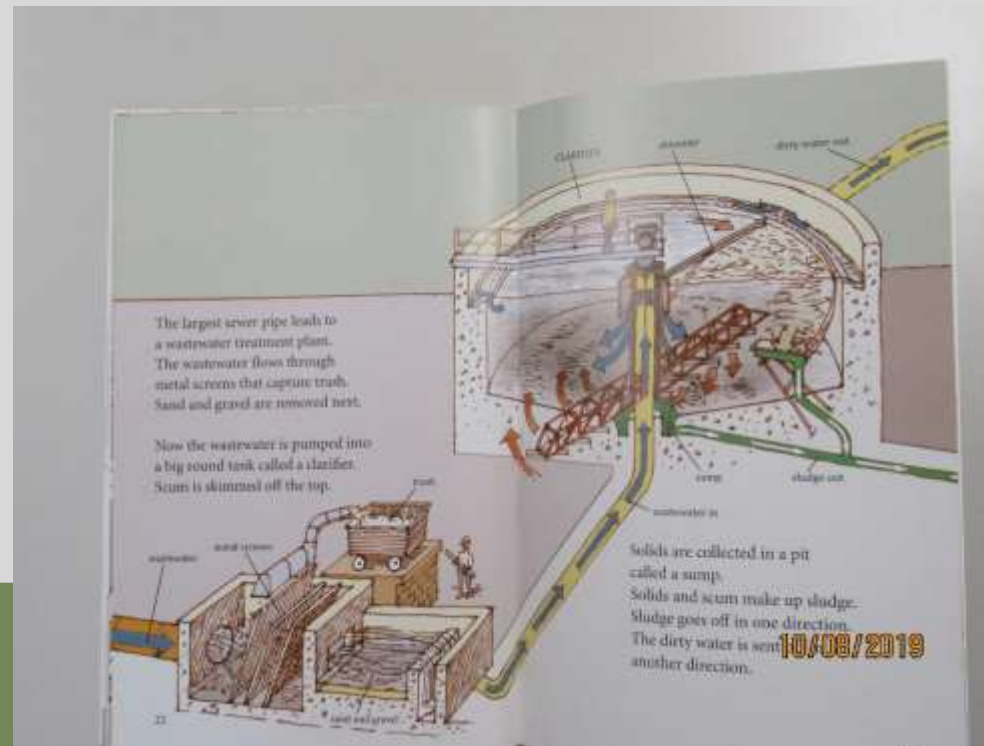
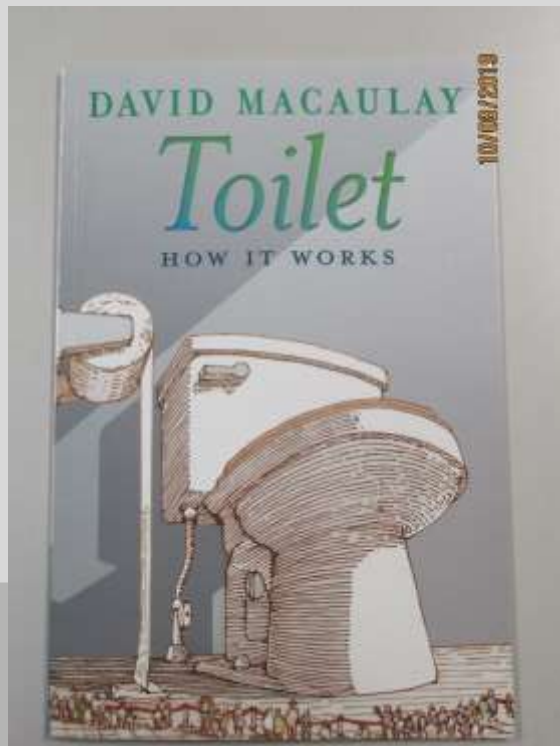
SECURITY TERMS

- Passive Infra-Red (PIR)
- Ultrasonic
- Break Glass
- Door Switch
- Video Monitoring
 - Streaming
 - Event Capture



A BRIEF WORD FOR CHILDREN TOILET!

A BOOK BY DAVID MACAULAY



PROJECT COMMUNICATION

HOW WHO WHAT WHEN WHERE WHY

COMMUNICATION IS THE KEY
Purpose

SCADA ties everything together.

The design process can span several years.

It is especially important that operators and supervisors are involved in the planning.

MYSTERY REVEAL 2 - HOW

- Involve all team members in the project.
- Soliciting input and feedback throughout project design and execution.
- Provide education.
- Encourage involvement.

WHO

- Supervisors
- Operators
- Designers/Vendors

FACILITY PLAN PHASE

WHAT

**Assessment of
Existing System**

WHY

**Needs Analysis and
Recommendations
for Future**

PRELIMINARY DESIGN PHASE

WHAT

**Overall Conceptual
Design**

WHY

**Immediate Needs
Future Needs**

DESIGN PHASE

WHAT

- **Loop Review Meeting**
- **Equipment Selection**
- **System Integrator Interviews**

WHY

- **Capture Critical Input**
- **Select the Right Equipment**
- **Determine the Best Fit for Your Project**

CONSTRUCTION PHASE

WHAT - PRE-INSTALLATION

- **Loop Review/Submittal Conference**
 - Before Programming and Panel Construction Begins.
- **Shop Test**
 - Before Control System is Shipped out for Installation.

CONSTRUCTION PHASE

WHAT - IN THE FIELD

- **Start-up**
- **Training**
 - Control system
 - Software
 - Wastewater Data Management
 - Maintenance/Asset Management
 - Alarm notification
- **Additional Services**
 - Programming tweaks
 - HMI design enhancements

SCADA NETWORKS - MYSTERIES REVEALED!

COMMUNICATION IS THE KEY TO SUCCESS

Steve Muther, P.E.
Evan Chambers, P.E.

608-273-3350
www.tcengineers.net

