# ERIE COUNTY WATER AUTHORITY
## AUTHORIZATION FORM
### For Approval/Execution of Documents
### (check which apply)

**Contract:** _____ **Project No.:** _____

**Project Description:** Travel Request – Scott Aiple

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**Item Description:**

- [ ] Agreement
- [ ] Professional Service Contract
- [ ] Amendment
- [ ] Change Order
- [ ] BCD
- [ ] NYSDOT Agreement
- [ ] Contract Documents
- [ ] Addendum
- [ ] Recommendation for Award of Contract
- [ ] Recommendation to Reject Bids
- [ ] Request for Proposals
- [X] Other   Approve Travel

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**Action Requested:**

- [ ] Board Authorization to Execute
- [X] Legal Approval
- [ ] Board Authorization to Award
- [X] Execution by the Chairman
- [ ] Board Authorization to Advertise for Bids
- [ ] Execution by the Secretary to the Authority
- [ ] Board Authorization to Solicit Request for Proposals
- [X] Other   Approve Travel

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**Approvals Needed:**

**APPROVED AS TO CONTENT:**

- [X] Department Head       _(signature)_       Date: 7/17/2019
- [ ] Risk Manager          _____     Date: _____
- [X] Chief Financial Officer  _(signature)_    Date: 7/18/19
- [ ] Executive Engineer    _____     Date: _____

**APPROVED AS TO FORM:**

- [ ] Legal                 _____     Date: _____

**APPROVED FOR BOARD RESOLUTION:**

- [X] Secretary to the Authority  _(signature)_  Date: 7/26/19

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**Remarks:** _____

_____

**Resolution Date:** _____    **Item No:** _____

# TRAVEL REQUEST

Name____Scott Aiple_____Today's Date___7/2/19___

Job Title_____Electrical Engineer_____

Department_____Instrumentation_____

Destination(s)_____Niagara on the Lake, Ontario_____

**Reason for Travel / (check one)**: Training ☒    Authority Business ☐

Is this training needed to meet professional licensing requirements?_____NO_____

Description of training or business, and reasons and benefits of attendance

___Hands-on instructional seminar utilizing Schweitzer Engineering Laboratories (SEL) Electrical

Protective Relay and Communications Devices_____

**Dates of Travel**

From:  Day (M T W T  F S S), Date_10/8/2019__To:  Day(M T W T F S S), Date_10/9/2019__

Total number of business days: ___2_____

**Estimated Cost**   Transportation costs can be obtained from Trish Fabozzi X8456.

Transportation $_____    Hotel Accommodations $___300_____    Meals $_____

**TOTAL ESTIMATED COST $__300_____ W/ REGISTRATION FEE $___565_____**
Balance in the travel budget prior to this trip $__2,500_____    G/L Number___661012___
                                                                 Unit #_1025 Primary #_401000__
**Comments** (i.e. spouse traveling, preferences):_____

_____

_____

**Approvals:**

Department Head_____Date__7/4/19____

Executive Director_____Date__7/15/19___

Secretary_____Date__7/12/19___

Date of Resolution_____Item No._____

Rev. 4/07

| | |
|---|---|
| **From:** | Schweitzer Engineering Laboratories <email@m.selinc.com> |
| **Sent:** | Wednesday, June 19, 2019 7:15 PM |
| **To:** | Scott A. Aiple |
| **Subject:** | Join SEL at the Golden Horseshoe Interactive Seminar |

**SEL** SCHWEITZER ENGINEERING LABORATORIES

# Join SEL at the Golden Horseshoe Interactive Seminar

October 8–9, 2019
Niagara-on-the-Lake, Ontario

Receive one-on-one instruction from application engineers, use real equipment, and network with other industry professionals. This interactive seminar will help you keep up with the latest functionalities in our products while letting you focus on the specific training you want. When you register for the seminar, you can customize a learning track based on your experience level, needs, and interests. View the agenda and register today.

Attendees will receive 16 Professional Development Hours (PDHs).

Topics

Advanced Transformer Protection With the SEL-487E

Distribution Feeder Coordination

Ethernet Fundamentals

Generator Protection

Introduction to SEL Relays for New Users

RTAC Training

Arc-Flash Protection Application

Directional Elements

Bus Protection

Communications-Assisted Tripping Schemes

Distribution: SEL-651R Advanced Recloser Control, SEL-FT50 and SEL-FR12, and SEL-FLT and SEL-FLR

Protection Troubleshooting Lab

RTAC Practical Application and Logic Programming

Software-Defined Networking for IEC 61850 Process and Station Bus Networks

SEL-411L Line Differential

Transformer Protection Troubleshooting and Lessons Learned

Register Today

For questions about your registration or the seminar, please contact register@selinc.com. We look forward to seeing you in Niagara-on-the-Lake!

SEL

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SEL
VIDEO

Schweitzer Engineering Laboratories
2350 NE Hopkins Court
Pullman, WA 99163

Unsubscribe from all emails. To specify the type of mail and email that interests you, please log in to your SEL website account and update your mail preferences. If you do not have an account, you may register here.

# GOLDEN HORSESHOE INTERACTIVE SEMINAR

## AGENDA

### TUESDAY, OCTOBER 8, 2019

7:00 am - 8:00 am    Breakfast and Seminar Check-In

8:00 am - 12:00 pm   Distribution Feeder Coordination

INTERMEDIATE
In this session, participants will:
- Review basic coordination for an example system.
- Learn the differences between trip saving and fuse saving.
- Review a cold-load pickup scheme.
- Learn why there may be a need for directional protection on a radial system.
- Use ACSELERATOR QuickSet SEL-5030 Software to develop settings based on the example system.
REQUIREMENTS: Each participant should bring a laptop with the latest version of QuickSet installed prior to the seminar.

8:00 am - 12:00 pm   Generator Protection

INTERMEDIATE
In this session, participants will:
- Review aspects of generator design, connections to the power system, and grounding methods.
- Learn how to interpret generator capability and "V" curves.
- Review generator fault protection concepts.
- Review generator abnormal operation protection concepts.

8:00 am - 5:00 pm    Advanced Transformer Protection With the SEL-487E

ADVANCED
Transformer protection presents many challenges to utilities. Most faults transformers are exposed to are external to the differential zone. Therefore, one challenge is to ensure that differential protection remains secure during external faults. Other challenges include phase shifts across the transformer, zero-sequence compensation, poor CT performance, and different current magnitudes on the primary and secondary windings. In this session, participants will:
- Review transformer differential protection (phase- and negative-sequence).
- Discuss how current magnitude mismatch, phase angle correction, poor CT performance, transformer energization, and zero-sequence current filtering are handled in microprocessor-based relays.
- Determine correct winding compensation settings for several examples.
- Discuss methods to test the restrained and unrestrained phase differential elements.
- Learn how to securely set, test, and commission an SEL-487E Transformer Protection Relay based on an example transformer nameplate.
REQUIREMENTS: Each participant should bring a laptop with ACSELERATOR QuickSet SEL-5030 Software (including SEL-487E drivers) and SEL-5601-2 SYNCHROWAVE Event Software installed prior to the seminar.

8:00 am - 5:00 pm    Ethernet Fundamentals

BEGINNER
This session focuses on the practical aspects of implementing Ethernet-based local-area networks (LANs) within the substation. Topics will include the following:
- OSI model
- Ethernet media and topologies commonly used within substations
- Ethernet hub operation and CSMA/CD
- Switch learning and operation
- SEL-2730M Managed 24-Port Ethernet Switch hardware overview and ordering options
- Hands-on lab exercises using the SEL-2730M Switches, including:
  - Login and account management
  - SEL intelligent electronic device (IED) Ethernet port failover operation using the SEL-351 Protection System
  - Configuration and testing of VLANs
  - Priority
  - Configuration and testing of the Rapid Spanning Tree Protocol (RSTP)
  - Port mirroring
- Multicast filtering
- Port-based rate limiting
- SEL-2730M security features, including:
  - SNMPv3
  - MAC-based port security
  - Syslog
- Saving and loading settings
- Exporting and importing files
- Firmware update procedure

8:00 am - 5:00 pm    Introduction to SEL Relays for New Users

BEGINNER
This session will introduce new users to SEL relays. Participants will learn how to program an SEL relay and how to retrieve and analyze event records. We will go over basic testing and have an exercise for electromechanical relay replacement. Participants will:
- Use the SEL-751 Feeder Protection Relay to learn the basics of AcSELERATOR QuickSet SEL-5030 Software.
- Learn how to write SELOGIC control equations.
- Perform basic testing with a variety of relay elements.
- Learn the basics of event analysis and how to decipher the data.
- Learn how to use the large color screen on the SEL-751 to visualize system information.
REQUIREMENTS: Each participant should bring a laptop with QuickSet (including SEL-751 drivers), SEL-5601-2 SYNCHROWAVE Event Software, and the SEL-C662 USB-to-serial cable driver installed prior to the seminar.

8:00 am - 5:00 pm    RTAC Training

BEGINNER
This session offers valuable hands-on training with the SEL Real-Time Automation Controller (RTAC), a fast and powerful integration tool for advanced data concentration and control, web-based HMI visualization, and protocol conversion. Participants will:
- Receive an overview of the RTAC and its applications, including new features added in the past year.
- Learn about the RTAC web interface and AcSELERATOR RTAC SEL-5033 Software.
- Configure an RTAC SEL protocol client connection to a relay, including event report collection.
- Learn about the various methodologies to configure the RTAC to establish secure engineering access to relays.
- Establish transparent connections through the RTAC to a relay.
- Receive an overview of the DNP3 protocol, and configure an RTAC DNP3 protocol client connection to a relay.

- Configure an RTAC DNP3 protocol server, and test the configuration with a client.
- Configure custom control logic in the RTAC using the IEC 61131-1 standard and ACSELERATOR RTAC.

REQUIREMENTS: Each participant should bring a laptop with ACSELERATOR QuickSet SEL-5030 Software and ACSELERATOR RTAC installed prior to the seminar.

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| 12:00 pm - 1:00 pm | Lunch |

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| 1:00 pm - 5:00 pm | **Arc-Flash Protection Application** |

INTERMEDIATE

This session will review arc-flash protection methods and the SEL-751 Feeder Protection Relay arc-flash detection system and logic. In this session, participants will:

- Learn how to reduce arc-flash hazards using protective relays.
- Add a maintenance mode to the relay settings to reduce arc-flash hazards using existing equipment.
- Learn how SEL arc-flash detection technology works and about its benefits over traditional methods.
- Explore various arc-flash protection applications and installation ideas.
- Discuss how to wire up example switchgear with arc-flash sensors.
- Discover how to configure and test SEL fiber-optic point and loop sensors.

REQUIREMENTS: Each participant should bring a laptop with SEL-5601-2 SYNCHROWAVE Event Software and ACSELERATOR QuickSet SEL-5030 Software installed prior to the session. Attendees should also bring a scientific calculator that is capable of phasor math and polar/rectangular components.

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| 1:00 pm - 5:00 pm | **Directional Elements** |

INTERMEDIATE

Topics will include the following:

- Directional element fundamentals
- Improvements in directional elements
- Directional element logic in SEL relays
- Setting directional elements in modern relays and AUTO2 settings
- Testing procedures for directional elements
- Considerations in nonline and transformer applications

REQUIREMENTS: Each participant should bring a laptop with ACSELERATOR QuickSet SEL-5030 Software installed prior to class as well as a scientific calculator.

## WEDNESDAY, OCTOBER 9, 2019

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| 7:00 am - 8:00 am | Breakfast |

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| 8:00 am - 12:00 pm | Bus Protection |

INTERMEDIATE

Topics will include the following:

- Bus protection basics
- Various schemes used for bus protection
- Issues with paralleling CTs
- CT saturation concerns and solutions

REQUIREMENTS: Each participant should bring a laptop with ACSELERATOR QuickSet SEL-5030 Software and SEL-5601-2 SYNCHROWAVE Event Software installed prior to the seminar.

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| 8:00 am - 12:00 pm | Communications-Assisted Tripping Schemes |

INTERMEDIATE

This session will include valuable hands-on training with the SEL-411L Advanced Line

Differential Protection, Automation, and Control System. We will cover the basic application of the SEL-411L Relay's communications-assisted tripping schemes. Attendees will learn about basic theory on permissive overreaching transfer trip (POTT), directional comparison unblocking (DCUB), and directional comparison blocking (DCB) schemes. In this session, participants will:

- Learn the logic behind the three communications-assisted tripping schemes available in the SEL-411L and SEL-421 Relays.
- Set each scheme in the relay by applying MIRRORED BITS communications as the communications channel.
- Test and commission the three communications-assisted tripping schemes.
- Learn how to apply the SEL-T400L Time-Domain Line Protection in a POTT scheme.

REQUIREMENTS: Each participant should bring a laptop with ACSELERATOR QuickSet SEL-5030 Software (including SEL-411L drivers) and SEL-5601-2 SYNCHROWAVE Event Software installed prior to the seminar.

| 8:00 am - 5:00 pm | Distribution: SEL-651R Advanced Recloser Control, SEL-FT50 and SEL-FR12, and SEL-FLT and SEL-FLR |

INTERMEDIATE

This session will focus on the SEL-651R Advanced Recloser Control and related topics, including QuickSet Designer Templates, settings management, and distribution coordination improvements. Participants will use a QuickSet Designer Template to set the recloser control to typical feeder settings. We will cover how to combine the SEL-651R with new SEL fault transmitter and fault receiver technology to enhance distribution protection and coordination. We will also set up an SEL-FLT and SEL-FLR Fault and Load Transmitter and Receiver System. Participants will:

- Learn to set the SEL-651R out of the box by applying ACSELERATOR QuickSet SEL-5030 Software design templates.
- Practice common tasks associated with the operation of the recloser control.
- Commission-test and troubleshoot the recloser control with Sequential Events Recorder (SER) data and event reports.
- Learn how to use the SEL-FT50 Fault Transmitter and SEL-FR12 Fault Receivers with SEL recloser controls for faster tripping and better coordination.
- Learn how to activate an SEL-FLT and SEL-FLR System.

REQUIREMENTS: Each participant should bring a laptop with QuickSet (including SEL-651R-2 drivers) installed prior to the seminar.

| 8:00 am - 5:00 pm | Protection Troubleshooting Lab |

INTERMEDIATE

Topics will focus on troubleshooting the following:

- Distribution relay issues, such as reclosing problems, setting misapplications, and arc-flash protection scheme issues. The relays discussed will include the SEL-751A, SEL-351S, and SEL-651R.
- Transformer protection relay issues, such as winding compensation setting issues. The relays discussed will include the SEL-787, SEL-387E, and SEL-487E.

REQUIREMENTS: Each participant should bring a laptop with ACSELERATOR QuickSet SEL-5030 Software and SEL-5601-2 SYNCHROWAVE Event Software installed prior to the seminar.

| 8:00 am - 5:00 pm | RTAC Practical Applications and Logic Programming |

INTERMEDIATE

Morning: RTAC Practical Applications

This session is for intermediate and advanced SEL Real-Time Automation Controller (RTAC) users who are ready to expand their skills. We will cover practical applications with the SEL RTAC beyond the typical data acquisition and mapping points to SCADA. Participants will:

- Face real-world situations in which a list of tasks to complete will be provided in a memorandum from management.

- Use their knowledge and experience of the RTAC platform to complete tasks, with hints and solutions provided as needed.
- Learn powerful features within RTAC projects and the web interface to enable advanced applications.

Afternoon: RTAC Logic Programming

This session serves as an introduction to logic programming in ACSELERATOR RTAC SEL-5033 Software. Ideally, attendees will have a background in Boolean logic and object-oriented programming. Participants will:

- Receive an introduction to IEC 61131-3 logic, including data types, structures, functions, function blocks, libraries, and custom logic.
- Test their knowledge and skills in two unique logic challenge prompts that introduce the most commonly used programming conventions.
- Learn an overall approach to logic creation, and see several different ways to approach the same problem.

REQUIREMENTS: Each participant should bring a laptop with ACSELERATOR QuickSet SEL-5030 Software and the latest version of ACSELERATOR RTAC installed prior to the seminar.

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| 8:00 am - 5:00 pm | **Software-Defined Networking for IEC 61850 Process and Station Bus Networks** |

INTERMEDIATE

This session will introduce attendees to software-defined networking (SDN) and its use in secure IEC 61850 station and process bus applications. Participants will learn the basic theory of SDN and its advantages over traditional networks that use the Rapid Spanning Tree Protocol. Participants will also learn to create secure and reliable communications networks for substation protection and automation. Topics will include the following:

- Overview of the SEL SDN solution, including the SEL-5056 Software-Defined Network Flow Controller and SEL-2740S Software-Defined Network Switch
- Configuration of switches and devices on a typical substation network
- Manual flow creation for Telnet and secure SCADA access via DNP3
- Automated flow creation for DNP3 and Telnet communications
- Implementing the Precision Time Protocol (PTP)
- IEC 61850 station bus concepts and protocols, including GOOSE and MMS configurations
- IEC 61850 process bus, including fast failover configurations for IEC 61850-9-2 LE Sampled Values data streams

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| 12:00 pm - 1:00 pm | Lunch |

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| 1:00 pm - 5:00 pm | **SEL-411L Line Differential** |

INTERMEDIATE

This session will include valuable hands-on training with the SEL-411L Advanced Line Current Differential, Protection, Automation, and Control System. Participants will go over the basic application of the SEL-411L Relay's protection capabilities. This session will provide basic theory to operate and test the line differential elements. Participants will:

- Develop line current differential (87L) settings for a sample two-terminal transmission line.
- Learn how to establish a back-to-back connection between relays using fiber-optic cable and how to verify the 87L communications channel.
- Test and commission the 87L protective elements.

REQUIREMENTS: Each participant should bring a laptop with ACSELERATOR QuickSet SEL-5030 Software (including SEL-411L drivers) and SEL-5601-2 SYNCHROWAVE Event Software installed prior to the seminar.

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| 1:00 pm - 5:00 pm | **Transformer Protection Troubleshooting and Lessons Learned** |

INTERMEDIATE

This session will use real-world cases to teach key application principles of transformer differential and restricted earth fault (REF) protection. Participants will analyze event

report data from these real-world cases to determine the cause of each operation and learn important lessons. Attendees will be able to apply these lessons to setting and troubleshooting transformer differential relay applications in their jobs. Topics will include the following:

- Transformer differential and REF principles
- Transformer troubleshooting techniques
- Real-world transformer operation analysis

REQUIREMENTS: Each participant should bring a laptop with SEL-5601-2 SYNCHROWAVE Event Software installed prior to the seminar as well as a scientific calculator.

# GOLDEN HORSESHOE INTERACTIVE SEMINAR

## ORDERS

### Scott Aiple

*Agenda Items*

| Name | Price | Total |
|------|------:|------:|
| Seminar | $250.00 | $250.00 |

*Sessions*

| Name | Price | Total |
|------|------:|------:|
| RTAC Training | $0.00 | $0.00 |
| RTAC Practical Applications and Logic Programming | $0.00 | $0.00 |

Order Subtotal:  $250.00

Total:  $250.00

## Payment Method

All fees are in USD. Registrations cancelled after September 24 will be charged a $50 cancellation fee. Registrants who fail to attend will be charged the full fee.

○ Credit Card - Enter your information in the section below.

○ Purchase Order