

Hands-on Relay School Schedule

SUNDAY, MARCH 13, 2016

3:00-6:00p.m. Facilitator Lab Station Set-up

EE/ME Laboratory Rooms

5:30 - 7:30 p.m. Registration & Reception

University Inn, Moscow, ID

7:00 – 8:00 p.m. Facilitator Meeting

University Inn, Moscow, ID

MONDAY, MARCH 14, 2016

6:45 - Registration & Refreshments

7:30 Smith CUE, Main Atrium

7:30 - Welcome & Announcements

Smith CUE 203

7:40 - Speak Up – Don't Be a Safety Passenger

Smith CUE 203

8:00 TRACK OVERVIEW LECTURES

Distribution Smith CUE 207

Generation Smith CUE 202

Transmission Smith CUE 219

Doble Smith CUE 319

Enoserv RTS Smith CUE 419

Megger AVTS Smith CUE 216

Noram SMC Smith CUE 209

Omicron Smith CUE 119

Theory Smith CUE 202

**Theory Track attend the Generation Overview

Basic Smith CUE 203

**Basic Track attend the Introduction to System Protection Lecture Series

8:00 Series Topic: Introduction to Protection Basics and Terminology

Electromechanical Smith CUE 207, 202, or 219

**Electromechanical Track attend choice of Distribution, Generation or Transmission Overview

9:40 Break - Smith CUE Atrium

9:50 CONCURRENT OPEN LECTURES

• Breaker Failure Protection Smith CUE 202

• End-to-End Testing Smith CUE 119

• Substation Commissioning Smith CUE 419

• Remedial Action Schemes Smith CUE 319

• Symmetrical Components 1 Smith CUE 219

Introduction to System Protection Lecture Series (continued) Smith CUE 203

9:50 Series Topic: Introduction to Phasors including Phasor Math

Hands-on Relay School Schedule

11:00 CONCURRENT OPEN LECTURES

- CT Testing & Theory Smith CUE 202
- Negative Sequence – How to Use it Smith CUE 119
- Fault Analysis for Relay Technicians Smith CUE 419
- Generator Auxillary Smith CUE 319
- Symmetrical Components 2 Smith CUE 219
- Mho Testing Techniques & Math Smith CUE 209

12:00 Lunch on your own

Following lunch, all students will move to the EE/ME, Sloan Hall, and Carpenter Hall for the remainder of the day.

1:00

- **Basic - Introduction to System Protection Lecture** Sloan 175

Series (continued)

Basic students attend:

1:00 Series Topic: Print Reading and Lessons Learned from the Field

Basic Lab Facilitators report to EE/ME B54

HANDS-ON EXPERIENCE IN THE LAB

- **Distribution:** Basler: BE1-11F EE/ME 56
- **Generation:** Beckwith: 3425A Sloan 169
- **Transmission:** ABB: KD10 EE/ME 34
- **Electromechanical:** GE: GCX51 Sloan 150
- **Doble Advanced:** GE: BDD Sloan 5
- **Doble Beginning:** GE: IAC77 Sloan 7
- **Enoserv Advanced:** GE: BDD Sloan 9
- **Enoserv Beginning:** GE: IAC77 Sloan 46
- **Megger:** ABB: CO11 Sloan 38
- **Noram SMC:** ABB: CO11 Sloan 32
- **Omicron Advanced:** GE: BDD Sloan 161
- **Omicron Beginning:** GE: IAC77 Sloan 163
- **Theory:** Generator Protection Carpenter 101/102

3:00 **Break** - EE/ME Building outside Room 26 & B54, Automated Tracks near Sloan 7 & 169

3:10 CONTINUE LABORATORY TESTING

- **Basic:** ABB: CO EE/ME B54

5:00 Adjourn

Dinner on your own

Optional Social Get Together at Birch & Barley

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TUESDAY, MARCH 15, 2016

7:30 CONCURRENT OPEN LECTURES

- Breaker Failure Protection Smith CUE 202
- End-to-End Testing Smith CUE 203
- Substation Commissioning Smith CUE 419
- Remedial Action Schemes Smith CUE 319
- Symmetrical Components 1 Smith CUE 219
- Phasors Smith CUE 119

8:40 CONCURRENT OPEN LECTURES

- CT Testing & Theory Smith CUE 202
- Negative Sequence – How to Use it Smith CUE 203
- Fault Analysis for Relay Technicians Smith CUE 419
- Generator Auxillary Smith CUE 319
- Symmetrical Components 2 Smith CUE 219
- Mho Testing Techniques & Math Smith CUE 119

9:40 Break - Smith CUE Atrium

9:50 CONCURRENT OPEN LECTURES

- Breaker Failure Protection Smith CUE 202
- End-to-End Testing Smith CUE 203
- Substation Commissioning Smith CUE 419
- Remedial Action Schemes Smith CUE 319
- Symmetrical Components 1 Smith CUE 219
- Phasors Smith CUE 119

11:00 CONCURRENT OPEN LECTURES

- CT Testing & Theory Smith CUE 202
- Negative Sequence – How to Use it Smith CUE 203
- Fault Analysis for Relay Technicians Smith CUE 419
- Generator Auxillary Smith CUE 319
- Symmetrical Components 2 Smith CUE 219
- Mho Testing Techniques & Math Smith CUE 119

12:00 Lunch on your own

Following lunch, all students will move to the EE/ME & Sloan Halls for the remainder of the day.

1:00 HANDS-ON EXPERIENCE IN THE LAB

- **Basic:** Basler: BE1-79A EE/ME B54
- **Distribution:** Cooper: Form 6 EE/ME 56
- **Generation:** Beckwith: 3425A Sloan 169
- **Transmission:** ABB: IRD9 EE/ME 34
- **Electromechanical:** GE: BDD Sloan 150
- **Doble Advanced:** SEL: 421 Sloan 5
- **Doble Beginning:** ABB: IRD Sloan 7
- **Enoserv Advanced:** SEL: 421 Sloan 9
- **Enoserv Beginning:** ABB: IRD Sloan 46
- **Megger:** ABB: IRD Sloan 38
- **Noram SMC:** ABB: IRD Sloan 32
- **Omicron Advanced:** SEL: 421 Sloan 161

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- **Omicron Beginning:** ABB: IRD Sloan 163
 - **Theory:** Generator Auxiliaries Carpenter 101/102
- 3:00 Break** - EE/ME Building outside Room 26 & B54, Automated Tracks near Sloan 7 & 169
- 3:10 CONTINUE LABORATORY TESTING**
- **Basic:** Basler: BE1-81O/U EE/ME B54
 - **Generation:** SEL: 700G Sloan 169
 - **Transmission:** RFL: GARD 8K EE/ME 34
 - **Theory:** Power Quality Carpenter 101/102
- 5:00 Adjourn**
Dinner on your own
- 6:30 - 9:00 SUPPLIER'S SHOWCASE**
University Inn, Moscow

WEDNESDAY, MARCH 16, 2016

- 7:30 HANDS-ON EXPERIENCE IN THE LAB**
- **Basic:** GE: JBCG EE/ME B54
 - **Distribution:** ABB: REF615 EE/ME 56
 - **Generation:** SEL: 700G Sloan 169
 - **Transmission:** GE: L90 EE/ME 34
 - **Electromechanical:** ABB: KLF Sloan 150
 - **Doble Advanced:** SEL: 421 Sloan 5
 - **Doble Beginning:** Basler: BE1-81O/U Sloan 7
 - **Enoserv Advanced:** SEL: 421 Sloan 9
 - **Enoserv Beginning:** Basler: BE1-81O/U Sloan 46
 - **Megger:** GE: BDD Sloan 38
 - **Noram SMC:** GE: BDD Sloan 32
 - **Omicron Advanced:** SEL: 421 Sloan 161
 - **Omicron Beginning:** Basler: BE1-81O/U Sloan 163
 - **Theory:** Generator Protection Theory Carpenter 101/102
- 10:00 Break** - EE/ME Building outside Room 26 & B54, Automated Tracks near Sloan 7 & 169
- 10:10 CONTINUE LABORATORY TESTING**
- 12:00 Lunch on your own**
- 1:00 HANDS-ON EXPERIENCE IN THE LAB**
- **Basic:** GE: CEY51 EE/ME B54
 - **Distribution:** SEL: 751A EE/ME 56
 - **Generation:** ABB: KLF Sloan 169
 - **Transmission:** SEL: 487E EE/ME 34
 - **Electromechanical:** GE: PVD Sloan 150
 - **Doble Advanced:** SEL: 421 Sloan 5
 - **Doble Beginning:** GE: BDD Sloan 7
 - **Enoserv Advanced:** SEL: 421 Sloan 9
 - **Enoserv Beginning:** GE: BDD Sloan 46

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- **Megger:** SEL: 311C Sloan 38
- **Noram SMC:** SEL: 311C Sloan 32
- **Omicron Advanced:** SEL: 421 Sloan 161
- **Omicron Beginning:** GE: BDD Sloan 163
- **Theory:** Generator Protection Theory Carpenter 101/102

3:00 Break - EE/ME Building outside Room 26 & B54, Automated Tracks near Sloan 7 & 169

3:10 CONTINUE LABORATORY TESTING

- **Electromechanical:** GE: INC77 Sloan 150

5:00 Adjourn

6:00 Social, No-host Bar

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6:30 - 9:00 BANQUET AND ENTERTAINMENT

University Inn, Moscow, ID

THURSDAY, MARCH 17, 2016

7:30 HANDS-ON EXPERIENCE IN THE LAB

- **Basic:** ABB: HU EE/ME B54
- **Distribution:** Beckwith: M3311A EE/ME 56
- **Generation:** Siemens: 7UM621 Sloan 169
- **Transmission:** SEL: 411L EE/ME 34
- **Electromechanical:** GE: CEB52 Sloan 150
- **Doble Advanced:** SEL: 421 Sloan 5
- **Doble Beginning:** SEL: 311C Sloan 7
- **Enoserv Advanced:** SEL: 421 Sloan 9
- **Enoserv Beginning:** SEL: 311C Sloan 46
- **Megger:** SEL: 311C Sloan 38
- **Noram SMC:** SEL: 311C Sloan 32
- **Omicron Advanced:** SEL: 421 Sloan 161
- **Omicron Beginning:** SEL: 311C Sloan 163
- **Theory:** Prime Movers, Synchronous Generator Construction and Protection Carpenter 101/102

10:00 Break - EE/ME Building outside Room 26 & B54, Automated Tracks near Sloan 7 & 169

10:10 CONTINUE LABORATORY TESTING

12:00 Lunch on your own

1:00 HANDS-ON EXPERIENCE IN THE LAB

- **Basic:** SEL: 587 EE/ME B54
- **Distribution:** SEL: 787 EE/ME 56
- **Generation:** GE: CEX57/GSY51 Sloan 169
- **Transmission:** SEL: 411L EE/ME 34
- **Electromechanical:** ABB: IRD9 Sloan 150
- **Doble Advanced:** SEL: 421 Sloan 5

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- **Doble Beginning:** SEL: 311C Sloan 7
- **Enoserv Advanced:** SEL: 421 Sloan 9
- **Enoserv Beginning:** SEL: 311C Sloan 46
- **Megger:** SEL: 311C Sloan 38
- **Noram SMC:** SEL: 311C Sloan 32
- **Omicron Advanced:** SEL: 421 Sloan 161
- **Omicron Beginning:** SEL: 311C Sloan 163
- **Theory:** Prime Movers, Synchronous Generator Construction and Protection Carpenter 101/102

3:00 Break - EE/ME Building outside Room 26 & B54, Automated Tracks near Sloan 7 & 169

3:10 CONTINUE LABORATORY TESTING

5:00 Adjourn
Dinner on your own

FRIDAY, MARCH 18, 2016

*All tracks will convene in
Smith CUE 203 for this day*

7:30 REVIEW OF THE WEEK

7:45 FEATURE PRESENTATION
Power System Operations – Rich Hydzik, Avista Utilities

9:00 Break

9:15 FEATURE PRESENTATION
Traveling Waves for Fault Location and Protection – Venkat Mynam, Schweitzer Engineering Laboratories Inc

10:30 ADJOURN

**PLEASE TURN IN YOUR EVALUATIONS!
THANK YOU!**