

# Gas Capital Rectifier School

October 5-6, 2021 • SCCC Student Union Building • SW229 C-D



## TUESDAY, OCTOBER 5

- 7:30 a.m. Registration
- 8 a.m. Welcome NACE Gas Capital Section
- 8:30 a.m. Rectifiers and Their Applications, Styles, Types & Features
- 9:30 a.m. Technical Session – Basic Electricity - Ohm’s Law, AC/DC Volts, AC/DC Amps, AC/DC Watts, Resistance, and Power for Cathodic Protection Rectifiers
- 1 p.m. Rectifier Transformer Design and Operation — Single windings, Dual windings, Single phase, Three Phase, AC Secondary windings
- 2:30 p.m. Rectifier Stacks – Typical Failures and Troubleshooting Techniques of Silicon Diode Stacks – How diodes work, Forward diodes, Reverse diodes, SCR diodes, Surge protection, MOVs, Breakers, Fuses
- Selenium Stacks – Selenium configurations
- Bridge Module Stacks
- 2:30 p.m. Special Purpose Rectifiers – Three Phase, Constant Current, Potential Controlled, Multiple Circuit Remote Monitoring
- 3:30 p.m. Wiring Diagrams and Schematics – Typical Rectifier Types
- 4 p.m. Grounding and Safety Issues – Method for Checking Grounding
- 4:30 p.m. End Day One

## WEDNESDAY, OCTOBER 6

- 8 a.m. Review and Discussion – Review of Day One and Questions from Attendees

## WEDNESDAY, OCTOBER 6

- 8:30 a.m. Rectifier Efficiencies – Conventional and Improvements with Filter Chokes
- 9:00 a.m. Rectifier Maintenance and Troubleshooting Presentation and discussion
- 1 p.m. Hands-On Troubleshooting – Analyze Various Problems and Perform Repairs
- 3:00 p.m. General Discussion – Hands-On Review
- 3:00 p.m. Written Test – Basic (Self-graded)
- 4:00 p.m. Certificates and Door-Prize Drawing (Cash Drawing)
- 4:30p.m. End Day Two

*Please bring your multi-meter for the hands-on session*

### QUESTIONS? REGISTER?

Call 620-417-1170 or email [bandi@sccc.edu](mailto:bandi@sccc.edu).

#### SCHOOL INFORMATION

**Lunch:** Lunch will be from 11:30 a.m. to 12:30 p.m. each day. Morning and afternoon refreshments will be provided. NACE Gas Capital Section will sponsor a *social hour/dinner on Tuesday, Oct. 5, 2021*, time and location to be announced.

**Lodging Information:** Hotel/motels in Liberal include: Best Western Plus 620-624-9700; Budget Host LaFonda, 620-624-5601; Comfort Suites, 620-626-5439; Days Inn, 620-626-7377; Fairfield Inn & Suites, 620-624-1200, Hampton Inn, 620-604-0699; Holiday Inn Express & Suites 620-624-2485; Liberal Inn, 620-624-7254; Quality Inn, 620-624-0242; or Super 8 Motel, 620-624-8880; or visit [www.visitliberal.com](http://www.visitliberal.com).

**Emergency Contact Number:** SCCC main switchboard number is 800-373-9951 or the Business & Industry Office is 620-417-1170.

**Next School Date:** The date of the next Gas Capital Rectifier School will be April 5 & 6, 2022.

## REGISTRATION FORM

### TO REGISTER:

- Call 620-417-1170
- Fax 620-417-1179
- Gas Capital Rectifier School  
ATTN: Business & Industry Office  
SCCC  
PO Box 1137  
Liberal, KS 67905-1137

NACE Member:  Yes  No

Do you plan on attending the Tuesday Night Dinner/Social?  Yes  No

Name: \_\_\_\_\_ Date of Birth: \_\_\_\_\_

Title: \_\_\_\_\_

Company: \_\_\_\_\_

Business Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Postal Code: \_\_\_\_\_

Telephone: \_\_\_\_\_ Fax: \_\_\_\_\_

Email: \_\_\_\_\_

### PAYMENT INFORMATION – \$300 REGISTRATION FEE:

Check Enclosed – Check #: \_\_\_\_\_

Bill my company – Attn: \_\_\_\_\_

Charge my credit card:

AMEX  Discover  MasterCard  VISA

Name on Card: \_\_\_\_\_

Card #: \_\_\_\_\_ CW #: \_\_\_\_\_

Exp. Date: \_\_\_\_\_

Signature: \_\_\_\_\_

**CANCELLATION AND REFUND POLICY:** Request for cancellation must be submitted in writing by *Tuesday, September 21, 2021*. No refunds will be issued after this date.

**ABOUT THE INSTRUCTOR:**

**Mike Llamas** has worked side by side with RM (Bob) Speck in each product that is manufactured through Universal. He has taught many trouble shooting hands on classes for NACE throughout the years. He was on the cutting-edge team which introduced the first stages of remote monitoring for Cathodic Protection. Mike Llamas along with Mike Speck are the trouble shooting specialist available at Universal Rectifiers to take calls when you need help. "Our main purpose here at Universal is to continue to manufacture a product that you can rely on as well as giving the best technical support in trouble shooting, we can to keep you from any down time. With our large inventory of parts, we are able to get you what you need as quickly as you need it."



**RECTIFIER SCHOOL COMMITTEE:**

Lonnie Broce, Fanisher Corrosion Service; Autry Coleman, SCCC; Kevin Dewell, ANR Pipeline Co.; Tommy Duncan, Geo Chemical; Ray Fankhouser, DCP Midstream; Francis Forbes, Retired; Adrian Garcia, Northern Natural Gas Co.; Mel Fry, Jr., WTG Hugoton LP; Dale Hayse, Hayse Management Services; Billy Higgins, Enterprise Pipeline, LLC.; Mike Hoskinson, Scout Energy; Jim Kirkland, Kirtland Air Force Base; Alan Leclear, Northern Natural Gas Co.; Butch McPhail, Black Hills Energy; Joshua Messenger, Energy Transfer Partners; Curt Near; Aaron Noblitt, Northern Natural Gas; Curtis Patrick; Energy Transfer; Ted Patton, Black Hills Energy; Rick Preisner, Northern Natural Gas Co.; Jay Salmans, Retired; Saul Sanchez, ONEOK; Bob Speck, Retired; Chris Stahlecker, Energy Transfer; Robert Tacha, Black Hills Energy; Norma Jean Dodge, SCCC; and Jennifer Farmer, SCCC.



*Wednesday – Hands-on Training on 12 stations*

Business & Industry Office  
SCCC  
1801 N. Kansas  
PO Box 1137  
Liberal, KS 67905-1137



31<sup>ST</sup> ANNUAL  
GAS CAPITAL  
RECTIFIER SCHOOL

October 5-6, 2021

Seward County Community College  
Student Union  
1801 N. Kansas Ave.  
Liberal, KS

*Sponsored by*  
NACE Gas Capital Rectifier School



*in partnership with*  
Seward County Community College