

Brubaker Biography

Kenneth J. Brubaker is currently NRECA's Manager of Safety Programs for the National Rural Electric Cooperative Association. Safety Programs is now part of the CEO's Consulting Group under NRECA VP, Monica Schmidt.

Mr. Brubaker is a Certified Utility Safety Associate, CUSA, with the National Safety Council and a Certified Loss Control Professional, CLCP, with NRECA. Kenneth holds a degree in Business Management and Safety from Columbus State Community College since 1991.

Brubaker's Cooperative career began in May of 1972 in Northwest Ohio at Tricounty REC. Brubaker has served as a Safety Instructor with the Ohio Rural Electric Cooperatives and as the Compliance and Safety Coordinator with Butler Rural Electric Cooperative.

Kenneth and his spouse, Carol, currently live and work from their home in northwestern Ohio. The Brubakers are 2006 new members of Tricounty Rural Electric Cooperative and participate in water heater load control program and the cooperative's geothermal heating and cooling incentive program.

Favorite Airports include Toledo, Ohio and Washington DC, Dulles Airport. Travel pet peeve examples are separate security lines for first class passengers and travelers who block the moving walkways. Favorite travel destinations for return trips are Ireland and Yellowstone Park. Favorite foods are Carol's wild rice soup, chicken soup, pot of chili, potato salad, and Carol's homemade lasagna. Safety Pet peeve examples are management compliance panic after an accident, making heroes out of those who violated safety rules, or safety programs built entirely on minimum compliance standards. Favorite entertainment samples are Les Miserables, Mama Mia, and Ken Burns PBS specials. Favorite occupational reading, the Washington Post, RE Magazine, Country Living, and 29 CFR 1910.269.

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Rural Electric Safety Accreditation Program (RESAP)

Kenneth J. Brubaker, NRECA
Mgr. Safety Programs

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Topics

- RESAP Foundation
- RESAP Today
- Delegate Recognition
- NESC – Industry Standard for FR
- Safety Concerns



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May 23 -25, 1966

- “The Insurance and Employee Welfare Committee, a Standing Committee of NRECA, held a special meeting in Atlanta, GA... to discuss the possibility of developing a Rural Electric System Safety Accreditation Program to further the cause of accident prevention in rural electrification.”
 - John Butler, Rural Electrification, July 1966



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Original RESAP Discussions Involved

- Advisors selected by the National Assn. of RE Job Training and Safety Instructors
- State Safety Advisory Committees
- Statewide Organizations
- Reps from Employers Mutual of Wausau
- Reps from NRECA
- Reps from NRECA
- Reps from REA

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Fall 1966 – Spring 1967

- “Recognition of Safety Accreditation Program”
 - At each of the 1966 regional meetings, a resolution favoring the Safety Accreditation Program was adopted.
 - At the 1967 NRECA Annual Meeting, a final resolution was adopted by the national membership.
 - John Butler, Rural Electrification, April 1967

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First RE Safety Accreditation

- August 1967 RESAP Field Inspection
- Carroll Electric Membership Corp.
 - Carrollton, GA
 - General Mgr. Russell O’Neal
- First Accreditation Inspection Team
 - Earl Wright, REA Field Rep.
 - Bill Lightfoot, REA Safety Engineer
 - J. W. McCart, GA Mgrs. Assn. Pres.
 - H. L. Custer, NRECA’s RS&I Dept. Dir.



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RESAP Today

2008



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RESAP Mission

Protect Employees, Members, Margins, and System

- To preserve life and to prevent injury
- To establish highest quality safety and loss control standards and promote concepts that enhance system operation
- To inform and educate management about these safety and loss control concepts
- To recognize accredited systems and management that meet these standards



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RESAP Delegates

- NRECA Board's Education Research and Technology Committee... **Mark Hofer**, Central EC, SD
- NRECA's Management Issues Committee... **Meera Kohler**, AK Villages EC, AK
- RUS... **Harvey Bowles**, USDA Rural Utilities Service, DC
- Distribution Manager... **Randy Crenshaw**, Irwin REC, GA
- RESMA... **Dennis Hill**, NDREA, ND
- G&T Managers Assn... **Garry Christopherson**, Dairyland Power Coop, WI
- Insurance Carrier... **Michael Bird**, Federated RE Insurance Exchange, KS
- NRECA... **Monica Schmidt**, National Consulting Group, VA
- NUTSEA Appointed... **Michael Finerfrock**, Northern Neck EC, VA
- NUTSEA Appointed... **Dennis Corcoran**, Iowa Association of Electric Co-ops, IA (Vice Chair/Sectry 2008 + 2009)
- NUTSEA G&T Rep... **Robert Richhart**, Hoosier Energy, IN (Chair 2008 + 2009)

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Thank You - Harvey Bowles, P. E.

- Senior Electrical Engineer, USDA
 - Electrical Staff Division
 - Recently Acting Branch Chief
 - Technical Standards Committee A
- RUS Delegate to RESAP Program
 - On-Site Observer
 - Participated in Training Sessions
 - Past Subcommittee Member for Application Grading



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RESAP Component # 1 of 4

Building a “Safety Culture” foundation

- Each Department should have RESAP goals
- Program becomes measure of department accomplishments
- System is ready for Safety Inspection any day
- Individual Performance Appraisals include safety responsibilities and performance
- Everyone is aware of and contributes to Accreditation Goal
- RESAP builds a 3 year window of safety and loss prevention activity, “review period.”



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RESAP Component # 2 of 4

On-Site Review – “Peer review by region professionals using national standards”

- Performed by outside Observation Team – 3 Trained Observers minimum - one of whom is Team Leader
- Inspection of all Facilities, O/H, U/G, Substations, etc.
- Inspection of work procedures and activities
- Inspection of vehicles, equipment, and tools
- Audit of employee safety awareness
- One or two day observation in 3 year intervals



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RESAP Component # 3 of 4

Documentation audit – “National assessment according to electric utility standards and requirements”

- Recommended documentation is often evidence of safety policy direction, local rules, local procedures, completed safety training, and valuable industry loss prevention measures
- Documentation audit compiled by the system safety coordinator into on-line questionnaire
- Verification process is simulated test of a document request only six of these recommended records
- A random computer generated list is used in this step to gather samples of recommended documents and to confirm answers provided by the system



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RESAP Component # 4 of 4

RESAP Follow Up

- System’s internal “reassessment” based on the recommendations or feedback from the Accreditation process
- “Areas for improvement” highlighted
- “Hazards and non compliance areas” are flagged and should be addressed
- "Smoking gun" without attention



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What RESAP is, does,

- Safety and Loss Prevention standard
- Focus on typical industry hazards
- Educates system management
- Updates system management
- Compliance supportive
- Enhances business goals
- Benchmark for electric utilities
- Internal and external audit
- Prioritizes industry safety issues



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Safety Accredited Now

- 510 systems



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Days of Transfer / Restricted Duty



No of Systems	Year of Report	Systems Accredited	Review Period					
			2001	2002	2003	2004	2005	2006
130	2004	130 *	2914	4276	4325			
164	2005	294 *		6305	4620	5519		
180	2006	474			5385	4532	4245	
179	2007	523						
			Total		14330	5327	5973	5435
			2003 Avg =		30.2	15378		
			2004 Avg =			29.4		

Employee Wins / Employer Wins

* Incomplete

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Days of Lost Time



No of Systems	Year of Report	Systems Accredited	Review Period					
			2001	2002	2003	2004	2005	2006
130	2004	130 *	4013	5204	6769			
164	2005	294 *		9793	7936	7732		
180	2006	474			9213	7920	7316	
179	2007	523						
			Total		23918	7681	7647	7442
			2003 System Avg =		50.5	23333		
			2004 System Avg =			44.6		

* Incomplete
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Fatalities Reported Thru RESAP System = 19



No of Systems	Year of Report	Accred Sys	Review Period					
			2001	2002	2003	2004	2005	2006
130	2004	130 *	3	1	1			
164	2005	294 *		1	3	1		
180	2006	474			1	2	0	
179	2007	523			2003 Tot = 5	2	2	2
					2004 Tot = 5	5		

* Incomplete
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OSHA - Cooperative Network Average Injury / Illness Incident Rates

Rate	Source	Report	Incident Rate 2007	DART Rate 2007
	OSHA	General Industry	Avg = 4.5	2.3
	72	Random Systems	Avg = 7.3	3.3
	179	2007 Applic.	Avg = 8.6	4.0



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Workers Comp - Preliminary Results

- 10 Accredited Systems
 - Avg. WC Experience Modifier .833



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RESAP Battle Plan

- Raise awareness of these indicators
 - Do you know your W/C Exp. Mod?
 - Do you know your system OSHA Incident Rate?
 - Do you know your RESAP Score?
- Benchmarks set by Accredited Systems

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RESAP Pays As Well

- 6% NRECA LTD Insurance Premium Discount for Safety Accredited Systems
- Discount in addition to the 5% discount offered to those who are covered with Federated Insurance or State Self Insured Fund discounts

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NESC 410 A 3 – paragraph 1

- Effective as of January 1, 2009, the employer shall ensure that an assessment is performed to determine potential exposure to an electric arc for employees who work on or near energized parts or equipment. [Position hazard assessment]
- If the assessment determines a potential employee exposure greater than 2 cal/cm² exists (see Neal, Bingham, and Doughty [B59]), the employer shall require employees to wear clothing or a clothing system that has an effective arc rating not less than the anticipated level of arc energy.

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NESC 410 A 3 – paragraph 2 + 3

- When exposed to an electric arc or flame, clothing made from the following materials shall not be worn: acetate, nylon, polyester, or polypropylene.
- The effective arc rating of clothing or a clothing system to be worn at voltages 1000 V and above shall be determined using Tables 410-1 and 410-2 or performing an arc hazard analysis. [Arc energy potential]



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NESC 410 A 3 – paragraph 4

- “When an arc hazard analysis is performed, it shall include a calculation of the estimated arc energy based on the available fault current, the duration of the arc (cycles), and the distance from the arc to the employee.”
- ArcPro – confidence over 1000 v.
- IEEE 1584 – confidence under 1000 v.
 - <http://www.arcadvisor.com/arcflash/ieee1584.html>



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NESC 410 A 3 – Exception 1:

- If the clothing required by this rule has the potential to create additional and greater hazards than the possible exposure to the heat energy of the electric arc, then clothing with an arc rating or arc thermal performance value (ATPV) less than that required by the rule can be worn.



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NESC 410 A 3 – Exception 2:

- For secondary systems below 1000 V, applicable work rules required by this part and engineering controls shall be utilized to limit exposure.
- In lieu of performing an arc hazard analysis, clothing or a clothing system with a minimum effective arc rating of 4 cal/cm² shall be required to limit the likelihood of ignition.



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NESC 410 A 3 – Note 1:

- A clothing system (multiple layers) that includes an outer layer of flame resistant material and an inner layer of non-flame resistant material has been shown to block more heat than a single layer.



- The effect of the combination of these multiple layers can be referred to as the *effective arc rating*.

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410 A 3 – Note 2:

- It is recognized that arc energy levels can be excessive with secondary systems. Applicable work rules required by this part and engineering controls should be utilized.



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Table 410 – 1 [Gloving]

Table 410-1—Clothing and clothing systems—voltage, fault current, and maximum clearing time for voltages 1 to 46 kV (See Rule 410A3.)



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Phase-to-Phase Voltage (kV)	Fault Current (kA)	4-cal System	8-cal System	12-cal System
		Maximum Clearing Time (cycles)	Maximum Clearing Time (cycles)	Maximum Clearing Time (cycles)
1 to 15	5	46.5	93.0	139.5
	10	18.0	36.1	54.1
	15	10.0	20.1	30.1
	20	6.5	13.0	19.5
15.1 to 25	5	27.6	55.2	82.8
	10	11.4	22.7	34.1
	15	6.6	13.2	19.8
	20	4.4	8.8	13.2

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Table 410 – 2 [Sticking]

- **Table 410-2—Live-line tool work clothing and clothing systems—voltage, fault current, and maximum clearing time for voltages 46.1 to 800 kV (See Rule 410A3.)**

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Table 410 – 2 Footnote

- **Footnote 1 ... The use of the table in the selection of clothing is intended to reduce the amount or degree of injury but may not prevent all burns.**

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NESC Subcommittee 8 - Current Working Groups

- Drafting Chart for Under 1000 Volts
 - Calculations from models
 - 1584 most confidence
 - Examples of accidents under 1000 Volts
- Enhance Work Rules for Generation Environments
 - Input from systems
- Upcoming Meetings 06/09/2008 + 09/08/2008



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Change Proposals for NESC

- January 15, 2008 to July 17, 2008

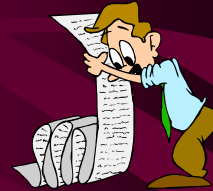


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Safety Concerns Remain in Industry

- Employee
 - Apathy (Indifference) about Safety
 - Understands what is really important
- Supervisor
 - Resistance
 - Emphasis often other than safety
 - Weak safety example
 - Busy
- Messages from Management and Boards
 - Not explicit
 - Not consistent



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Safety Message Consistency

- Random Testing for Drugs Alcohol
 - Round the clock – 7 days a week
- Disqualification for DUI w/o exceptions
- Line clearance procedures w/o shortcuts
- Wearing of PPE required for everyone
- Rubber Glove and Sleeve Rules
 - Rules – Consequences Understood – Consistent Consequences



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In Conclusion

- RESAP Foundation has RUS Roots
- Delegate Recognition – Thank You Mr. Harvey Bowles
- RESAP Today – Leaders are Accredited
- NESC – Recognizing the FR Hazard
- Safety Concerns Can Be Overcome
- Thank You

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Your example continues...

- Accredited Systems



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