3M™ Aluminum Conductor Composite Reinforced

3M™ Gridlines©

Updates on 3M ACCR **Spring 2008**

The Show Must Go On!

The 3M High Capacity Conductor Team will be sponsoring booth number 226 at the 2008 IEEE PES Transmission and Distribution Conference and Exposition, **Powering Toward The Future**, April 21st through the 24th at McCormick Place in Chicago, Illinois.

Join us at **Booth 226** to see how 3M ACCR, 3M 69kV Cold Shrink Termination and a new 3M PILC splice are installed and used. Enter a drawing to win a prize.

Visit www.ieeet-d.org to register.

Stop by and learn how 3M™ ACCR can help you solve your most challenging transmission upgrade problems: getting large capacity increases without rebuilding existing lines; dealing with sensitive environments; crossing long spans across rivers or canyons; avoiding outages or disruptions of under-built or parallel lines, facilities or populations; matching your capacity, clearance and tension requirements.

(continued on page 4).

3M ACCR Springs Ahead

Price Changes Make Spring 2008 Unprecedented for New Applications

Citing the fact that the price of 3M ACCR has decreased by almost 50% over the last 3 years, 3M ACCR National Sales Manager, Pat Ferguson, states, “Although always a good value in appropriate applications, 3M’s recent productivity investments have significantly impacted the price of the conductor, allowing utilities to use it on their systems at a broader level.” As a result, this spring is seeing a large increase in the number of 3M ACCR installations.

This issue of **3M Gridlines** highlights four of these installations, Platte River and Aha Macav in the West and Allegheny Power and Alabama Power in the East. “Each installation illustrates a unique feature of 3M ACCR’s value proposition,” said Ferguson.

Coming yet this spring:

- A major river crossing
- Two important installations outside the U.S.

Return to top

Staying in Service

Allegheny Power keeps under-built lines running with 3M ACCR

What do you do when an upgrade using a conventional solution means other lines have to be taken out of service? Allegheny Power eliminated the problem by upgrading with 3M ACCR.

Allegheny Power, a division of Allegheny Energy Inc, serves 1.7 million customers in four states, Pennsylvania, Maryland, West Virginia and Virginia, and owns approximately 9,760 megawatts of generating capacity.

In spring 2008, Allegheny needed to upgrade the Bedington-Nipetown 138 kV line, which serves growing communities in West Virginia. The line runs along Interstate-81, some 50 miles northwest of Washington, D.C.

The problem was that the line shares structures with three other lines for most of its length, including two under-built 12 kV lines.

(continued on page 5).

Something to Rely On

Tribal utility, Aha Macav, depends on 3M ACCR for reliability

Keeping a community's economy healthy requires a reliable and adequate supply of power. But, in Needles, California, parts of the town were subject to power loss when lines serving the community were buffeted by weather conditions that included extreme temperatures and high winds.

To resolve the problem, Aha Macav became the first Native American utility to deploy 3M ACCR.

(continued on page 6).

Standing the Test of Time

Alabama Power balances growth with environmental responsibility

Birmingham's population is now approximately 1.08 million, making it the largest metropolitan area in the state of Alabama. Keeping up with fast-growing areas like Birmingham in an environmentally responsible way is a daunting challenge. Alabama Power, a subsidiary of Southern Company,

(continued on page 6).

Return to top

Preserving Harmony

PRPA increases capacity with less time and impact

Platte River Power Authority (PRPA), a utility owned by and serving Fort Collins, Loveland, Estes Park and Longmont in Colorado, recently energized 954 kcmil 3M ACCR on a three mile stretch of line linking the Timberline substation in Fort Collins with the Harmony substation in Loveland. Platte River's facilities are located along the Front Range and northwestern Colorado and near Medicine Bow, Wyoming.

The Timberline-Harmony line was upgraded to help ensure adequate transmission capacity during summer peak-demand hours. According to Mike Dahl, Division Manager, Electric Operations at Platte River, “This is an important part of the grid between Denver and Cheyenne, and adding 3M ACCR is a way to safeguard against overloading when demand is high.”

The conventional solution would have required taller towers to achieve the same capacity increase provided by 3M ACCR on the existing structures. This saved time by eliminating the need for extensive permitting and other requirements that would otherwise have had to be met. In addition, the line runs along areas that would have been disrupted by tower construction, including railroad tracks and a bike path, and installing taller towers would have impacted the view from area homes.

According to Tim Koenig, Director of 3M’s High Capacity Conductor program, 3M ACCR is a good option for areas with sensitive environments because it is designed to be a drop-in replacement for either ACSR or ACSS. “Its low sag means it can be installed on shorter towers while maintaining clearances,” Koenig stated. “Capacity is increased significantly, but the tensions and mechanical loads of the existing conductor are maintained. This relieves many the costs, risks and environmental concerns, including disruptions to people and facilities near the line.”

Return to top

The line was installed and energized in December, 2007.

Platte River Power installation with 3M ACCR suspension assembly, bike path on left and railroad track on right.

3M sponsors booth (from page 1)

Register at www.ieeet-d.org/ for the 2008 IEEE PES T&D Conference and

The booth will feature samples of the conductor, as well as the complete line of fully-tested compression and preformed accessories by ACA Conductor Accessories and PREFORMED Line Products.

Join the demonstrations to see how installing the conductor compares with installing ACSR or ACSS. We will also feature 3M's 69kV Cold Shrink Termination and a new 3M PILC splice.

Bring your toughest projects, and our experts will help you decide if 3M ACCR is right for you.

Fill out a short information card and receive a free gift.

See you at the show!

What makes a reliable, proven solution?

IEEE task force on high-temp conductor standards

Over the past few years, the growing use of so-called "High-Temp/Low Sag" conductors in the marketplace has created something of a dilemma for potential users of these technologies -- that is the lack of standardized, objective means for evaluating them.

The problem lies in the fact that these conductors may use a variety of different materials, particularly in the core, which makes it difficult even for experienced transmission line designers and engineers to know what questions to ask about measuring their properties, performance and cost-of-ownership.

To plug this "knowledge gap," the IEEE and CIGRE formed a joint task force in 2006, comprised of experts drawn both from power utilities and from manufacturers of conductor materials. The group is charged with the task of identifying standardized methodologies for

Return to top

evaluating high temperature conductors across a wide range of considerations, from core wires and accessories to field-testing and performance monitoring.

Herve Deve and Colin McCullough of 3M, co-chairs of the task force, are participating because of the extensive work 3M has done to develop test methodologies and standards for its own high temperature conductor, 3M™ ACCR.

A new draft was developed this winter based on the input of various reviewers of the first draft. Ultimately, the group hopes to see their efforts incorporated into the official IEEE standards.

Alleghany Power (from page 2)

Richard Hoch, engineer for Allegheny Power, said: “The 3M ACCR we chose for this project gave us the ability to leave the under-built 12 kV circuits in service during installation and to avoid structure replacement. It also sags neatly with an adjacent 954 ACSR conductor on the same structure.”

According to Anton Jachim, Lead Application Engineer for the High Capacity Conductor Program, 3M ACCR has been installed in major metropolitan areas in the U.S. and China, often because in these areas there are other lines or facilities that would be impacted by a major rebuild project. “Not only can 3M ACCR be installed on existing structures, leaving under-built lines undisturbed, it can also increase capacity significantly while matching the sag and tension of the conductor it is replacing and maintaining the existing mechanical safety factors.”

Time was also a crucial part of this project. Hoch added, “By using 3M ACCR, the money and time saved was invaluable on this fast-paced project. And, because of 3M’s sales and technical staff, the design and ordering process was a simple task, which demonstrates a service culture of which 3M should be proud.” Return to page 2.

Speak to one of the 3M High Capacity Conductor account managers or application experts. Click on

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We’ll be happy to work with you.

Return to top

Aha Macav (from page 2)

The tribal utility linked a new substation in Arizona to a switchyard in Needles, a city on the western bank of the Colorado River. The new line is linked to Western Area Power Administration's Topock-Davis line along the Colorado River, which was also recently upgraded with 3M ACCR.

"This has been an eagerly anticipated event, one of the most important to occur here in many years," said Robert Walker, utility manager for the city of Needles. "It opens the door to a much greater level of sound development and growth."

William Cyr, general manager of Aha Macav Power Services, said his utility is "very pleased to be the first tribal power company to apply this technological advance in electricity transmission to the economic growth and physical well-being of the community it serves."

3M ACCR is well-suited to high wind regions because of its low sag, stretch and weight, compared to steel core conductors. Said Herve Deve, technical manager for 3M's High Capacity Conductor Program, "The performance and reliability of 3M's high-performance conductor have been established through several years of field tests and commercial applications under harsh environmental and operating conditions."

In fact, Western previously installed 3M ACCR on a field test line near Fargo, North Dakota, where it has been buffeted by gale force winds across the prairie and heavy ice loading events, as well as extreme hot and cold ambient temperatures with no failures, damage to the conductor, or unexpected changes in sag. The conductor has performed as predicted over the years since its installation. Return to page 2.

More information on the Fargo test, as well as other field tests, is available at

www.3m.com/accr

Alabama Power (from page 2).

whose utilities also provide power and other services in Georgia, Mississippi and the Florida panhandle, supplies electricity to 1.4 million residential and commercial customers including those in Birmingham.

Return to top

Alabama Power needed to upgrade its transmission capacity on a 1.7 mile, 230 kV line that goes through and loops around the Miller Steam Plant. The plant is located in Jefferson County, Alabama, approximately 25 miles northwest of Birmingham. The upgrade is part of Alabama Power's ongoing, multibillion-dollar environmental initiative, designed to reduce emissions from the company's power plants while continuing to meet the growing demand for power.

"The characteristics of the 3M conductor provided the ideal solution for the particular challenges faced with the line reconductor at the Miller Steam Plant," said Howard Samms, a senior engineer at Alabama Power. "The existing line crosses below three 500KV line and above one 230KV line and is supported on five existing lattice steel structures. The 3M conductor allowed us to obtain the required capacity, while utilizing the existing structures and maintaining or improving the existing clearances to ground and other obstacles. As a result, significant savings were achieved in both time and cost by eliminating the need for the design, supply and construction of new towers."

Testing at Oak Ridge National Laboratory (ORNL) in Tennessee demonstrated that the 3M conductor retains its integrity after exposure to temperatures even higher than the rated continuous operating temperature of 210° C and the emergency operating temperature of 240° C. It has the durability and longevity of traditional steel core conductors, even when operated continuously at high temperatures. These properties make 3M ACCR a good fit for capacity upgrades that must stand the test of time. Return to page 2.

Return to top

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Return to top