



Linemen used a power washer to remove frozen sea-salt spray that coated some power equipment. When asked how he was coping with working in the severe weather conditions, Matt Kruger said, "I'm living the dream!" AVEC's linemen were glad they could help our members and appreciated the numerous "thank yous" received from Savoonga's residents.

# Savoonga's Power Outage

By Amy Murphy

On December 26-27, rapidly plunging temperatures along with increasingly strong winds and a lack of sea ice all combined to form a "perfect storm" that led to a nearly week-long power outage in parts of Savoonga.

Following is an excerpt from a daily update AVEC's President and CEO Meera Kohler issued on January 4, 2011:

"There have been rumors and speculation circulating that AVEC's generation and/or distribution systems have been damaged by the storms and I wish to make it clear that we have been unable to find any substantive damage at this point. Having had no prior experience similar to this in the 42 years that AVEC has been serving rural Alaska, we are trying to understand exactly what happened.

Winter storms are not at all a rare occurrence in village Alaska, especially on St. Lawrence Island. In this particular instance however, a severe winter storm occurred with high wind from the northeast and salt spray was picked up from the ocean that is normally covered with sea ice. The extreme cold caused the salt spray to freeze on electrical equipment. Initial outages were caused by line slap from iced-up conductors, but later problems were caused by electrical arcing through conductive salt. We are concluding that the lack of sea ice was a major contributor to this situation."

Plant operator Stuart Kingeekuk first called in an outage at 1:00 a.m. on December 27 and reported 1/2" to 1" of ice on all the power lines later that morning. AVEC quickly responded with lineman Matt Kruger arriving onsite on the 27th, followed by Brian Gundvaldson and John Davis on the 29th and 30th.

"The village was dark when I landed," said Matt Kruger. "It was overwhelming. I didn't know where to start first."

The linemen had to climb each power pole to switch transformers and wipe ice off of the equipment, clear faults, and re-energize individual sections, trying to isolate and resolve the recurring problems. They noticed ice build-up on the poles and power equipment and blue flashes coming from some of the transformers.

"With temperatures continuing at zero or below and winds blowing at 30 to 45 mph, our linemen worked in wind chills of minus 40 degrees F and lower," said Kohler.



**Linemen Matt Kruger and Brian Gundvaldson and plant operator Stuart Kingeekuk worked in blizzard conditions to restore power.**



**Conductive salt spray caused arcing to burn this transformer and bushing. Burns similar to this occurred on other transformers and bushings, especially those closest to the ocean.**



**A power washer, hooked up to a portable generator and water container, was used to remove frozen salt residue coating the power equipment. A snowmachine towed the heavy sled.**

Photos courtesy of Matt Kruger, John Davis and Sam Lindquist.  
More photos are posted on AVEC's Facebook page.

"Sometimes the winds blew so hard we were reluctant to climb the swaying poles," said Brian Gundvaldson. "When I had to unbuckle my safety harness to get up over lines and transformers, I had to hold on tight during really strong wind gusts."

Service restoration priorities included critical city services, telecommunications systems, lighting for the village's gravel airstrip and the gas station, getting that power restored by December 30. Throughout this period the school generated its own power and opened up its doors to residents who needed a warm place to spend the night. Power was restored to all services on January 3.

AVEC investigated ways to remove the salt spray, including using a power spray-washer delivered by Sam Lindquist on January 6th. Matt and Sam washed hardware, including insulators and transformer bushings, to remove the conductive sea salt spray that had been driven into the equipment.

During AVEC's board meeting on January 7, the board members expressed appreciation for AVEC's prompt response and dedication.

Board chairman Charlie Curtis posted a message on AVEC's Facebook page: "A BIG thank you to the operations department and linemen for their efforts to work on the power outage in Savoonga! We certainly are blessed in having committed and dedicated people who daily ensure AVEC's systems are operational (even through the holidays). Thank you to the plant operators also. On behalf of the AVEC Board, we thank each of you and we certainly are proud of your work towards providing our customers the best services given the environment you have to deal with. AVEC certainly is the best utility in Alaska and it's because of all of you! THANK YOU!"

"AVEC will be consulting with

experts in the electric industry to determine what may need to be done in the future to anticipate and mitigate such events," said Kohler. "We are preparing a presentation documenting this holiday storm and its impacts on our system."

"We are concerned that this extraordinary sequence of events could occur in another Arctic coastal community and are developing a plan to retrofit other systems to prevent recurrence of similar outages. There are many non-AVEC communities that could potentially encounter similar salt-icing events and we hope that our experience will be educational for other utilities. This is not an AVEC-only problem; it's a state problem as there are numerous coastal villages that could be impacted."

AVEC recently installed stainless-steel transformers in our coastal communities to reduce corrosion problems. And thanks in large part to funding received from the Denali Commission, AVEC made major upgrades to its infrastructure in Savoonga, including a new bulk fuel tank farm completed in 2005; a new fuel-efficient, automated diesel power plant commissioned in July 2008; and two 100KW wind turbines commissioned in September 2008.

Major infrastructure upgrades in many communities have improved overall system reliability, resulting in fewer outages. But members should still be prepared for emergencies, especially during winter.

Devon Noongwook of Savoonga posted on Facebook: "I am very applaud [thankful] for wonderful response to restore our power. AVEC's crew went beyond their duty. It was a very cold week, one to remember. We all worked together.... Thanks for the kindness.... and donations."

Visit our Website for power outage and emergency preparedness info: <http://avec.org/energy-information.php>