

How the Light Returned to Putumayo

- *A chronicle detailing how a special team from Empresa de Energía de Bogotá comprising 22 technicians and professionals worked 24 hours to bring electrical power to over 150.000 inhabitants of the Mocoa, Putumayo and Southern Cauca regions.*
- *Under normal conditions, restoring power would have taken at least a month. However, thanks to the participation of the Colombian Government and of companies such as Electrohuila, electrical power companies from the Putumayo and Southern Putumayo regions, Celsia, Intercolombia and Codensa, the task was accomplished in record time.*
- *The Ministry of Mining and Energy coordinated the process, while Empresa de Energía de Bogotá guided the technical articulation and supplied the equipment for the connection.*
- *The most difficult part was the start-up of a new provisional sub-station to supply power to the region's only other sub-station, 90% of which was destroyed by the avalanche of April 1.*
- *The provisional sub-station implied the assembly of new infrastructure for energy transport and the integration of provisional equipment from different agents to achieve service delivery.*

Bogota, April 21, 2017. On Saturday, April 1, when Colombia awoke to the terrible news of the avalanche that killed hundreds of people in the region of Mocoa, as early as 6:00 a.m., the Chairwoman of Empresa de Energía de Bogotá (EEB), Ms. Astrid Álvarez, launched a technical operation to address one of the biggest problems caused by the tragedy: the reestablishment of the energy supply to the capital of the Putumayo region and to the more than 10 municipalities that were left completely in the dark.

Thanks to a group of operators that arrived at 9:00 a.m. and arrived by road via Pitalito, Huila, the diagnosis of the affected area had been completed by noon. This group assessed the terrain's state and informed the control post in Bogota that the avalanche had destroyed 90% of the Mocoa sub-station.

The news was particularly bad given how this sub-station (built in 1995 and expanded in 2007 for its inclusion in the National Interconnected System) was the only one properly suited to supply that region of Colombia. Worse still, all the mud from the avalanche resulted in the lack of firm land on which to rebuild the sturdy infrastructure.

There was no time to waste. In Bogota, a meeting was convened for 2:00 p.m. of that same Saturday at the headquarters of Empresa de Energía de Bogotá, located at the capital's financial heart. The great issue was how to ensure the reestablishment of electrical power to over 150.000 inhabitants of the Mocoa, Putumayo and Southern Cauca.

After a quick review of the situation, and in a joint effort between the National Dispatch Center and the Ministry of Mining and Energy, it was concluded that there were only two ways to reestablish the service. However, even after assessing each of the alternatives, it would be no easy task.

The first option was through the line in the Mocoa – Jamondino region, transporting energy from Pasto to Putumayo. During the diagnosis, the experts saw that four towers had fallen and three were about to follow suit. In addition, rebuilding the Mocoa sub-station was literally impossible in such short time.

The second and only other option to reengage the system was building a temporary sub-station for Mocoa and making a provisional connection at the affected sub-station to carry electrical power to the municipalities in Southern Putumayo. This implied a connection with the Pitalito – Altamira circuit (of 115 kV) of the Huila Department's Regional Transmission System which was not affected by the avalanche with the Altamira – Mocoa line (of 230 kV) of the National Transmission System in a strategic point at the exit point of the Altamira sub-station in Altamira, Huila.

On Sunday, confirmation was achieved via a flyover with the Colombian Army, and all the information provided by the land team was confirmed.

All of this sounds relatively easy on paper, but the amount of work it entailed was marathon-like, starting with the task of finding all necessary implements to build the new sub-station in record time.

Solidarity, then, was at its peak during this process. Various electric power companies joined the crusade of returning light to Mocoa. First, Electrohuila, which owned the Pitalito-Altamira circuit and played a key role. Second, Celsia contributed with a mobile transformer it had in Yumbo (Valle region) to transform power to the distribution levels set for Mocoa and in the municipalities of Northern Putumayo. Lastly, Intercolombia lent a mobile inlet located in Sabanalarga to connect the mobile transformer with the high tension line coming from Altamira.

The loan of posts and other technical equipment needed by the Empresa de Energía del Putumayo (EEP) was coordinated with Codensa to reestablish the distribution networks. The site for the installation of the provisional sub-station was also agreed with the EEP.

On Monday, April 3, while each of the companies carried out the technical preparations of the elements they would supply, four transmission line maintenance crews arrived to the site to take on the second challenge: recovering some facilities of the Mocoa sub-station

through which energy could be taken to the Orito, Puerto Asís, La Hormiga and Puerto Caicedo municipalities, located in the Southern Putumayo region.

The task implied a very high risk for the operators. They had to work on top of the destroyed sub-station and, because of all the mud, it was very difficult to walk. In addition, they had to go through the towers in order to properly remove all previous connections and replace them.

It took the operators two days to set out 200 meter-long conductors to connect the destroyed connection grids of Empresa de Energía de Bogotá and Empresa de Energía del Putumayo. This way, on Saturday, April 8, they managed to finalize all the necessary connections to allow energy conduction to the Puerto Caicedo Sub-station, the main distribution point of the Southern Putumayo region. Around 3:00 p.m., power returned to the municipalities of Puerto Caicedo, Orito, La Hormiga and Puerto Asís, among others. All activities were carried out in conjunction with Empresa de Energía del Bajo Putumayo (EEBP).

But Mocoa Remained In the Dark

While the technicians connected all the cables and mounted all the towers, crews from the Governor's office from Putumayo, with technical support by EEB, faced a third challenge: preparing the site for the assembly of the provisional mobile sub-station. A large space was necessary to place over 80 tons of equipment that they could not risk losing due to sinking in the unstable terrain. The Governor's office prepared the terrain, and EEB designed the safety infrastructure to avoid electrical risks for people inside and outside the station.

On Wednesday, April 5, the finished equipment started to arrive to the provisional sub-station. And so began the fourth and last great challenge: assembling and integrating the equipment to allow energy transmission from the high tension network to the distribution circuits in Mocoa and Northern Putumayo.

Configuring and starting operations of a provisional mobile sub-station to replace the one that was destroyed was one of the most difficult tasks the work crew had to face. It implied putting together a puzzle made up by very delicate equipment, with coordination among several companies and following strict security protocols. With the technical coordination by EEB and the work carried out by the crews of Electrohuila, Empresa de Energía del Bajo Putumayo, Celsia, Empresa de Energía del Putumayo, Intercolombia, XM, the National Dispatch Center and the Ministry of Mining and Energy, the delicate assembly operation began.

After three days of continued, 24-hour work, at 11:00 a.m. on April 11 the procedures to connect the provisional sub-station started. Around 9:30 p.m., the urban center of Mocoa and the municipalities of Villa Garzón and Puerto Guzmán were receiving electrical power. The goal had finally been achieved.

Under normal conditions, reestablishing the electrical service would have taken over a month. However, thanks to the participation of the Colombian Government and of eight companies of the electrical sector, the task was completed in record time. The Ministry of Mining and Energy coordinated the process while Empresa de Energía de Bogotá guided the technical articulation and supplied the equipment for the connection.

“Our obligation was to do everything we could to reestablish the energy supply in Mocoa and in the region’s municipalities as soon as possible. It was intense work that required a great sense of solidarity and work team between EEB, the Ministry of Mining and Energy and several private companies”, said the chairwoman of Grupo Energía de Bogotá, Ms. Astrid Álvarez Hernández. “There is still a lot of work to be done in order to put the system back to 100% operability, but we are satisfied in knowing we brought power back to Mocoa, as it was a fundamental step to overcome this crisis”.

About Grupo Energía Bogotá

Grupo Energía de Bogotá (GEB), led by Empresa Energía de Bogotá, is a joint stock company listed in the Stock Exchange Market of Colombia, which main corporate purpose is the generation, transmission, distribution and commercialization of energy, gas and liquid fuels in all of their forms.

Today, Grupo Energía de Bogotá is the main Multi-Latin electric energy and natural gas company of the region with presence in Colombia, Perú, Guatemala and Brazil, and acting as a “strategic connector”, focused on three Business Units.

- Urban Energy Solutions, this unit focuses on developing and operating the infrastructure required to meet the electric power and natural gas demand in large cities;
- Interconnection for Market Development, this unit is responsible for connecting power generation sources with large consumption centers and large users; and
- Low Emission Generation, this focuses on seeking new opportunities in renewable energies in countries where the energy matrix is transitioning to this sustainable and low-emission generation source.

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