Press Release

Fulfilling its commitment to inform the public opinion, in an exercise of transparency, EPM shared the results of the physical root-cause analysis that gave rise to the Ituango Hydroelectric Project's contingency

- **The results determine that the most likely hypothesis is that the obstruction of the Auxiliary Diversion Tunnel (GAD) was due to "progressive erosion of areas of rock weakness", located on the tunnel floor**

- **The areas of rock weakness were not adequately treated, due to a deficiency in the design during the advisory stage, which was the responsibility of the Consorcio Generación Ituango (Integral - Solingral). Moreover, it will be up to the consortium to give the relevant technical explanations**

- **The study was carried out by Skava Consulting, an international Norwegian-Chilean firm with a recognized track record in formulating root-cause analysis**

EPM exercised transparency, and reassured Colombians that it will continue to move forward to start generating new energy needed by Colombia in 2021. As a result, on Friday March 1, EPM presented the results of the study conducted by the Norwegian-Chilean firm Skava, to determine the root cause of the contingency that took place in Ituango Hydroelectric Project in April 2018.

The study carried out, which is based on the scientific method, was aimed solely at analyzing the root cause of a specific and concrete event: the blockage in the auxiliary diversion tunnel (GAD), a structure that had been in operation since September 2017.

The consulting team that participated in the root-cause investigation was composed of 7 German, Swiss and Chilean engineers. Among them are 3 professionals with more than 25 years of experience in this industry, 2 with a doctorate degree and 2 with a master's degree. They are experts in geotechnical engineering with experience in tunnels and dams, and in rock, geology, hydrology and civil engineering for mining projects, subway systems and hydroelectric power plants.

Based on the available documentary and analytical evidence, Skava Consulting conceptualized as the most likely hypothesis that the obstruction of the auxiliary GAD diversion tunnel was due to "progressive erosion in areas of rock weakness", located on the tunnel floor, which were not properly treated due to a deficiency in the design during the advisory stage.

Magnifying glass on GAD designs

The GAD auxiliary diversion tunnel, which would operate on a temporary basis, was conceived from the end of 2013 (when the original diversion tunnels were still under construction) as an alternative to avoid an additional delay of one year or more in the construction of the main works. Reference is made to additional delays, because when EPM took over the project through the BOOMT contract in March 2011, the project schedule already had considerable delays, which could affect the country's energy supply.

EPM has just shared this study with the Consorcio Generación Ituango, made up of the companies Integral Ingeniería de Consulta S.A. and Investigaciones Geotécnicas

Solingral S.A., which is responsible for the design and consultancy of the project, so that it can provide its analysis in this respect.

The results of the study will be available on the following website https://www.epm.com.co/site/estudio-causa-raiz-hidroituango

Track Record of Skava Consulting

Skava is a Norwegian-Chilean company. Its Norwegian owner has more than 150 years of experience and is a company specializing in underground works, with international presence and offices in Austria, United States, Chile and Peru.

Skava Consulting has extensive experience in all stages of design and construction of underground works and works with consultants with extensive experience in the construction and engineering of tunnels. Its team of experts includes international specialists.

The Ituango Project progresses

Despite the magnitude of this contingency, the complexity of the technical problems that were presented and the risks for the communities on this occasion, EPM has attained fundamental milestones to take care of people's lives, mitigate environmental effects and regain control of the project. All actions undertaken by EPM are framed within the provisions established by the ANLA (*Autoridad Nacional de Licencias Ambientales* [National Authority of Environmental Licences]) in Resolution 0820 of 2018, which limits or restricts the advancement of any other activity that is not related to addressing the contingency.

The results of this study do not impact the project recovery process, on which we continue working tirelessly.

The Ituango Hydroelectric Project is progressing in its recovery and reducing the risks for people living downstream of the main works. If everything goes as planned, it will supply its energy from 2021, for the country's development and the progress of Colombians. That is why the future generation plant is the national energy security for the coming decades.