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COGENERATION EMPLOYING THE CAREM MODULAR REACTOR FOR THE PYROLYSIS TREATMENT OF CUTTINGS DERIVED FROM THE OIL AND GAS INDUSTRY IN THE NEUQUÉN BASIN.

The Physicochemical and Quality Control Department of the Argentina National Atomic Energy Commission has been actively researching the application of the modular CAREM nuclear reactor for cogeneration, specifically for the treatment of oil-based drill cuttings (OBDC) generated from oil and gas extraction in the Neuquén basin, located in the province of Neuquén, Argentina. These cuttings are classified as hazardous waste under National Law 24051. The objective is to utilize cogeneration to supply heat for the pyrolysis process of the cuttings. This process aims to produce a residue suitable for safe disposal and, concurrently, liquid and gaseous fuels that enhance the intrinsic value of the initial waste.
In the initial phase of the study, samples of OBDC from the Neuquén Basin were employed, collected at depths of 800 m (OBDC-1), 1100 m (OBDC-2), and 1300 m (OBDC-3). The oil content within the cuttings was quantified using Soxhlet extraction (EPA9071B), while the water content was determined through azeotropic distillation using the Dean-Stark method (ASTM-D95). To investigate the thermal decomposition process and the associated energy, a simultaneous thermal analyzer (DTA-TG, STA-409, NETZSCH) was utilized. Furthermore, the mineralogical composition of the remaining residues was scrutinized employing X-ray diffraction.

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