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# Development of a Logging Tool for Muon Radiography

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A research for high level radioactive waste disposal should investigate geological structure and saturation change of rock mass around a disposal cavern. In the $CO_2$ geological storage and the underground storage of crude oil, natural gas or liquefied petroleum gas (LPG), it is necessary to monitor an upward migration of a gaseous fluid which is stored in underground. For an investigation of slope stability, it is effective to evaluate a high saturation area in the ground's pore space as the area should be the same as that of a rainfall infiltration. Since these phenomena could be evaluated by a measurement of a density variation in underground rock, an application of muon radiography is highly prospective. The Central Research Institute of Electric Power Industry (CRIEPI) has a plan to conduct a field experiment to evaluate an applicability of the muon radiography to engineering geology in cooperation with Electric Power Development Co., Ltd. (J-POWER). The field experiment will be performed this year in slope topography. If the applicability will be revealed as a result of the field experiment, CRIEPI will start a research on development of a logging tool which can measure muon in a borehole. We plan to build a prototype of the logging tool in around three years and will put it into practical use in around five years.