The monitoring systems of the dams of the Baixo Sabor Hydroelectric Development

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SYNOPSIS The Hydroelectric Development of Baixo Sabor is located in north-east Portugal on the Sabor River, a tributary of Douro River. It comprises two hydroelectric schemes and is part of the Programme of Dams under construction in Portugal. The first filling of both reservoirs will take place during 2014.

Baixo Sabor development contains the first large reservoir in a tributary of the Douro River, allowing the impounded water to feed four hydroelectric power stations at dams downstream. It is also possible, when there is surplus wind energy, to pump water into the upstream reservoir thus optimising the wind energy production. Due to its size the upstream reservoir also provides for flood control.

In addition to the usual monitoring systems, both dams will have a specific detailed seismic monitoring system to take into account a nearby large geological fault. Both dams have also an integrated automatic monitoring system for collecting observed data. For the geodetic control of the horizontal displacement measurements a Global Navigation Satellite System (GNSS) will be installed. The continuous dynamic characteristics of the upstream dam will also be monitored.

This paper presents the main features of the monitoring systems of both dams, referring to the legal regulations they must comply with and including the specific aspects mentioned above.