Installation and commissioning of Patuxent River Crossing (HDD, 1.4km) Project in US

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ABSTRACT
Southern Maryland Electric Cooperative (SMECO) planned and designed the Holland Cliff to Hewitt Road 230 kV transmission line project which is part of SMECO’s overall Southern Maryland Reliability Project (SMRP). The SMRP includes a segment of underground transmission line crossing the Patuxent River using 230 kV high voltage solid dielectric (XLPE) cables. This river crossing was done by using HDD method and this is one of the longest HDD crossings in the US. This paper presents methods of installation and techniques to enhance the system integrity.

KEYWORDS
HV cable installation, HDD, River crossing, Cable pulling

INTRODUCTION
Underground cables are installed in many areas and sometimes crossing of river, lake or sea are required. In this case the section length is much longer than usual but the long length of cable gives us some challenges that this paper will introduce.

High cable pulling tension should be checked to know whether the maximum allowable pulling tension is acceptable or not.

Racking system to prevent the cables from moving is also one of the points to be checked.

Moreover system engineering part should check the limitation of induced voltage by using special bonding method.

These kind of check points that we’ve done during the project are presented in this paper.

PROJECT OVERVIEW
As a part of Southern Maryland Reliability Project(SMRP), 4600ft (=1.4km) the HDD Patuxent river crossing was required. When it was discussed by the customer as a feasibility study stage, submarine cable installation was one of the possible solutions. However this area is turbulent, with high tidal current. Furthermore, as there are natural oyster bars located on both shorelines, a permit for the installation of a submarine cable would not have been accepted easily. Therefore HDD was the only installation method possible by using underground cables.