ASSESSMENT OF HIGH VOLTAGE UNDERGROUND XLPE CABLES AT TENAGA NASIONAL BERHAD DISTRIBUTION DIVISION (TNBD) KANGAR

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ABSTRACT

This paper illustrate the case study on condition assessment of high voltage underground XLPE cables atTenagaNasionalBerhad Distribution Division (TNBD)Kangar. The study is focusing on possible relationship between three routine maintenance tests and the performance of underground high voltage XLPE cables. The tests are insulation resistance (IR) test, dielectric absorption ratio (DAR) test and also partial discharge (PD) test. The aim of this project is to make an assessment on the condition of existing high voltage underground XLPE cables that are used by TNBD Kangar in Perlis. TNB is in the process on eliminating and changing the PILC cables that have been used since long time ago into XLPE cables. Recently, there are several theories on the relationship between partial discharges and degradation of cables has been published. This is because of the rapid development, particularly in urban areas that causes the electricitytransmission by using the overhead linesystem approachisless appropriate. As an alternative,the undergroundsystemis becoming more necessary toreplace some of the overhead line for power transmission and distribution. It is known that partial discharges are able to degrade cable system.At the end of this paper, we can see the data of the performances of XLPE cables that had been used at TNBDKangar from the tests that are used as a part of routine maintenance at TNBD Kangar. Finally, based on the assessed results from the tests the condition of the high voltage underground XLPE cables can be observed in order to make decision for the maintenance of the high voltage underground XLPE cables.

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CHAPTER 1

INTRODUCTION

1.1 BACKGROUND OF STUDY

Tenaga Nasional Berhad (TNB) is a giant electricity utility in Malaysia and one of the leading profitable companies in Asia. TNB is listed on the Main Board of Bursa Malaysia, where it implies that TNB is one of established companies as this board has more rigid listing standard than the other boards. It owns nearly RM87 billion assets. This huge company holds more than 33.5 thousands employees that serve an approximate number of 8.3 million consumers in not only Peninsular Malaysia, but also Sabah and Labuan.

In line with TNB's mandate which is 'Keeping the Lights On', it has served Malaysia ever since it was structured as the Central Electricity Board in 1949. It is sparking national development via the provision of well founded and competent electricity. This corporation deals with three core areas of businesses which are generation and transmission, also including distribution of electricity. Besides those three areas, TNB has expanded its business into a number of sectors which are production of transformers, high voltage cables and switch gears; the supply of white-collar advisor assistance; and civil, architectural, electrical engineering labour and services, rehabilitation and preservation. This organisation is definitely advancing into the surface of markets, concentrating on three regions, Asia-Pacific, North Africa and last but not least Middle East. One of the corporation's core business areas, the distribution section is assigned to supervise two value bonding business movements for the sake of the company [1].