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ERA Technology Limited
Cleeve Road, Leatherhead
Surrey, KT22 7SA, England
T: +44 (0) 1372 367350
F: +44 (0) 1372 367359

Report Title:	Hot-set tests on Cable Samples from National Cable Industry
Author:	M W Coates
Client:	British Power International
Client Reference:	204329
Report Number:	2012-0598
Project Number:	EDP2090001
Report Version:	Final Report
Document Control:	Commercial-in-Confidence

Report Checked by:

Mr P Shepherd
Engineer

Approved by:

Dr R Houlgate
Transmission Consultant

November 2012

Ref. K:\Projects (Focal Point)\EDP Projects\EDP2090001 - BPI\Report 2090 V1.docx

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ERA Technology Limited
Cleeve Road
Leatherhead
Surrey KT22 7SA, England
Tel : +44 (0) 1372 367350
Fax: +44 (0) 1372 367359

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Summary

This report gives the results of the hot set tests carried out by ERA on 7 November 2012 on samples of XLPE insulation taken from 25 mm² and 240 mm² low voltage cable samples supplied by National Cables Industry.

All of the test samples met the requirements of IEC 60502-1:2004 for hot set. There was a very good margin between the results obtained and the pass/fail limit given in IEC 60502-1.

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1. Introduction

In April 2012 ERA carried out a series of tests for British Power International as part of a contract BPI had with the Electricity and Water Authority in the Kingdom of Bahrain relating to the evaluation of manufacturers of LV cables. Following these tests ERA was asked to conduct further hot set tests for National Cables Industry on the cable samples previously supplied for the initial BPI tests.

This report gives the results of the hot set tests carried out by ERA on 7 November 2012 on low voltage cable samples supplied by National Cables Industry.

The tests were witnessed by Mr Altaf Ahmed of National Cable Industries, Mr Tony Evans of BPI and Mr Graham O'Geran of BASEC.

2. Test samples and method

The cable samples were a 240 mm², 4-core, XLPE insulated, armoured, PVC sheathed cable and a 25 mm², 4-core, XLPE insulated armoured, PVC sheathed cable.

The hot set test is called up in the cable standard IEC 60502-1:2004. This standard gives the test conditions and pass fail limits. IEC60502-1 calls up IEC 60811-2-1:1998, Clause 9 for the method conditions. The tests were carried out in accordance with the requirements of these standards.

It was noted that the test method also complied with the method described in IEC 60811-507:2012.

3. Results

The hot set test was carried out on two samples of insulation from each core of each cable sample. The test results are given in Table 1. The test requirements are that the elongation at temperature shall not exceed 175% and the elongation at room temperature after recovery shall not exceed 15%.

Table 1 Hot set test results

Sample	Elongation under load at temp (%)	Elongation after recovery (%)	Pass/Fail at temperature	Pass/Fail after recovery
240 mm² Cable				
Red core, sample 1	50	0	Pass	Pass
Red core, sample 2	50	0	Pass	Pass
Blue core, sample 1	50	0	Pass	Pass
Blue core, sample 2	55	7.5	Pass	Pass
Yellow core, sample 1	60	2.5	Pass	Pass
Yellow core, sample 2	60	2.5	Pass	Pass
Black core, sample 1	60	8.75	Pass	Pass
Black core, sample 2	60	5	Pass	Pass
25 mm² Cable				
Red core, sample 1	40	0	Pass	Pass
Red core, sample 2	40	0	Pass	Pass
Blue core, sample 1	35	-2.5	Pass	Pass
Blue core, sample 2	35	-5	Pass	Pass
Yellow core, sample 1	35	-2.5	Pass	Pass
Yellow core, sample 2	35	-5	Pass	Pass
Black core, sample 1	40	0	Pass	Pass
Black core, sample 2	40	0	Pass	Pass
IEC 60502-1 limits	<175	<15		

4. Conclusions.

All of the test samples met the requirements of IEC 60502-1:2004 for hot set. There was a very good margin between the results obtained and the pass/fail limit given in IEC 60502-1.

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