

HIGH VOLTAGE LABORATORY
TEST REPORT HV 383

TEST REPORT No HV 383

Comparative wet power frequency electrical performance test
between standard 33kV post insulators
and the same insulators after
Voltshield treatment
(Allied drawing FB 2513-P11126 .)

HVL Tamworth
High Voltage Laboratory
Two gates
Tamworth Staffs
B77 5AG

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TEST ITEMS: 33kV Post Insulator
3 standard and 3 Voltshield treated

DRAWING NO: FB 2513 P11126

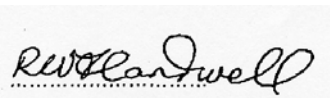
TESTS: Wet power frequency electrical tests.

PLACE OF TESTS:
HVL tamworth~ High Voltage Laboratory, Tamworth,
Staffordshire.

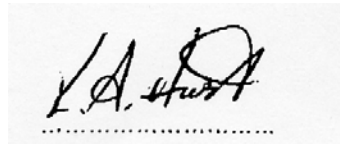
DATE OF TESTS: 3rd April 2003.

TESTS WITNESSED BY:
Mr. R Davidson- Western Power Distribution
Mr A King- Western Power Distribution
Mr A Neal- Ritec International Ltd
Mr L Gidman – Allied Insulators Group Ltd

DECLARATION:
We hereby certify that the Type Tests described herein
and the test results reported are a true record.



R.W.Hartwell.
Senior Test Engineer.



K. A. Hurst
HV Laboratory Manager

issued 11 04 2003

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1. INTRODUCTION

This test report details wet power frequency electrical tests performed on the post insulator as detailed on Drawing FB 2513 porcelain ref. P11126.

Three insulators were provided for the comparison tests by Allied insulators, these were randomly selected from stock from their production line. The three insulators were then subjected to a wet power frequency voltage test as described in IEC60383 using methods as defined in IEC 60060.

The three insulators were then treated by Ritec international with the Voltshield product process, allowed to dry and tested later the same day.

2. TEST SPECIFICATIONS

The tests were carried out according to the following specifications: -

IEC 60383-1 Insulators for overhead electric lines with nominal voltage
above 1kV part 1

IEC 60060-1 High voltage test techniques -part 1 General definitions
and test requirements

3. TESTS CARRIED OUT

The following tests were carried out :-

Wet power frequency flashover voltage test

Wet power frequency withstand voltage test

Before the tests commenced each insulator was in a clean dry condition and in thermal equilibrium with the ambient laboratory atmosphere.

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4. TEST RESULTS

Three insulators were supplied for the tests and each insulator was verified dimensionally with drawing no FB2513 .P11126

4.1. Wet Power Frequency Voltage Tests.

The power frequency flashover and withstand voltage tests were carried out under wet (artificial rain) conditions in accordance with IEC 60060-1

The following test results were obtained: -

1. Standard insulators. (a.m.)

Insulator ref.	1	2	3	Mean
Flashover voltage kV	107.5	116.5	110.9	116.3
Withstand voltage kV	95.7	95.7	95.7	95.7

2. After Voltshield product treatment on same insulators.(p.m)

Insulator ref.	1	2	3	Mean
Flashover voltage kV	130.0	131.4	128.8	130.0
Withstand voltage kV	108.5	113.7	113.7	112.0

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4.2. Wet Test Procedure

Throughout the wet tests each insulator was sprayed with artificial rain in accordance with IEC 60060. The precipitation rate on the insulators under test was recorded in mm / min as : -

	a.m.	p.m.
Horizontal component	1.20	1.30
Vertical component	1.70	1.90
Resistivity - ohm.m @ 20°C.	109.9	106.7

4.3. Correction of Test Voltages for Atmospheric Conditions

The atmospheric conditions were recorded at the time of test and all correction factors applied to the test voltages were as follows:

	a.m.	p.m.
Pressure mm Hg.	764.4	764.6
Dry Bulb Temperature °C.	18.75	19.5
k ₁ untreated	1.003	-----
K _{1t} Voltshield treated	-----	1.003

5. OBSERVATIONS

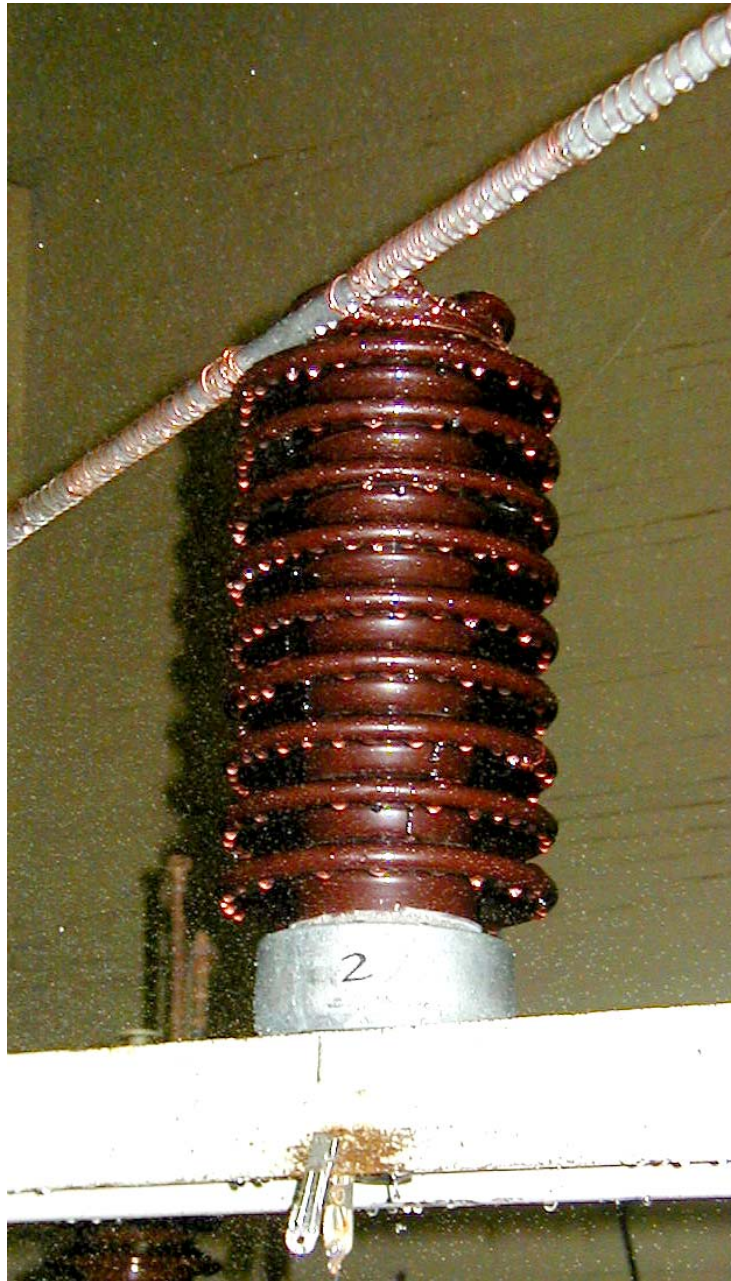
The 3 treated insulators gave a mean increased wet flashover performance of 130.0kV against 116.3kV for the standard untreated insulator. This represents an average increase in the wet flashover voltage performance of around 12%.

The corona activity immediately prior to flashover on the Voltshield treated insulators was much reduced due to the smaller droplet size of the rain as it dispersed across the Voltshield treated surface of those insulators.

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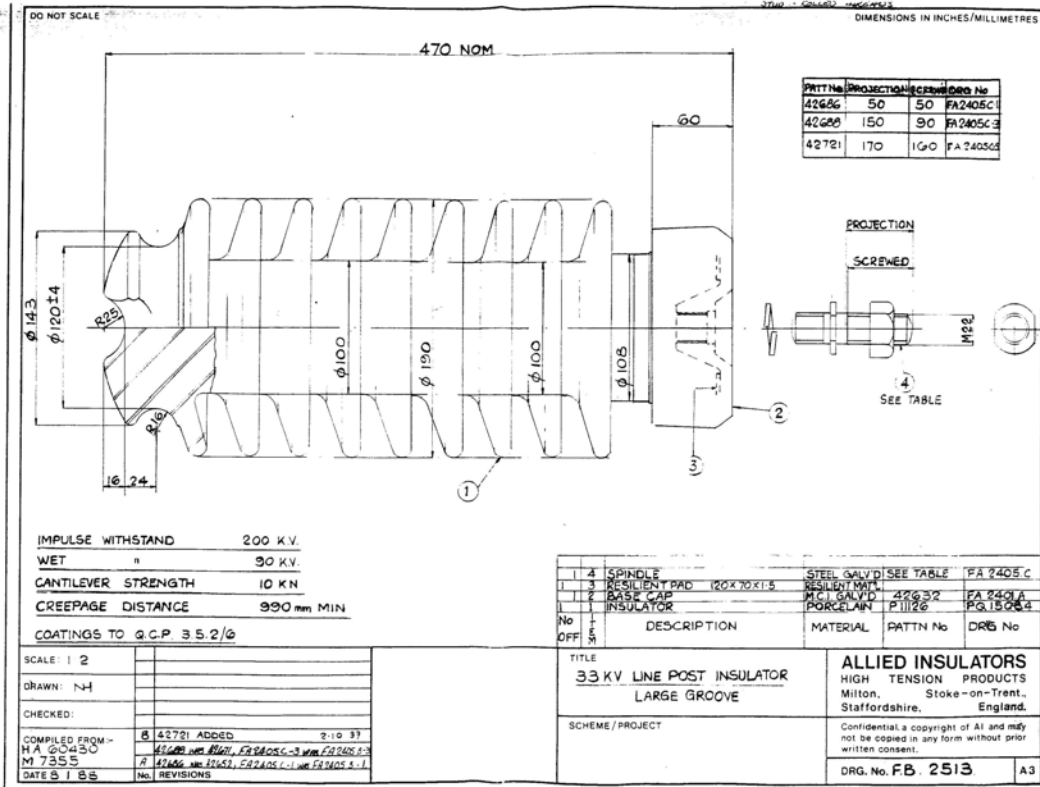
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Photograph of test assembly



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33kV Line post insulator drawing