# SAFETY ALERT

11 kV High Voltage Electricity Distribution Equipment Reyrolle RO (ROKSS, ROK and ROSSS), RM (RMS and RMK) – update of Safety Notice 97/14.

**Number:** SA 03/08

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<th>Property Directorate Sponsor: Peter Meakin</th>
<th>Date of issue: 21 August 2008</th>
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**Contact if different from Property Directorate:**

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**Who Should Read this:** CEstOs, Top Level Budget Holders, Project Sponsors, MOD Project Managers and others within the IPT (for both Prime, PFI/PPP and traditionally procured contracts), Defence Estates Advisors and Property Managers/Site Estate Representatives with responsibility for MOD projects and Property Management Works Services (including the legacy work of EWCs/WSMs) Coordinating Authorising Engineers, Authorising Engineers Electrical, Authorised Persons Electrical, purchasers and installers of final electrical distribution equipment.

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<th>When it takes effect: Immediately</th>
<th>When it is due to expire: No Expiry</th>
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**Document Aim:** To supersede Paragraph 17 of Health and Safety Warning Notice 97/14 and to advise staff of the necessary action to be taken as a result of new information provided by the equipment manufacturer.
Product | Reyrolle RO (ROKSS, ROS, ROK and ROSSS), RM (RMS and RMK) and OKSS
Manufacturer/Supplier | Reyrolle Limited - now Siemens Transmission and Distribution Limited
Problem | Defective Bakelised Paper (BP) inter-switch barriers
Scope | Units manufactured with BP inter-switch barriers between 1984 and 1987
Risk | Catastrophic equipment failure
Action | Identify defective units and where identified apply live operation restriction until remedial action completed.

1. Requirement:

1.1. This Safety Alert notifies of a change to the Serial Numbers specified in Health and Safety Warning Notice (HSWN) 97/14. Paragraph 17 of the HSWN 97/14 is therefore superseded by this Safety Alert.

1.2. **URGENT**: Addressees of this Safety Alert are to bring its contents to the attention of their Authorising Engineers (Electrical) (AE(E)), or equivalent, in order to make them aware of the risks posed by units in service that may not have had defective BP inter-switch barriers checked in accordance with HSWN 97/14.

1.3. AE(E)s are to ensure that action is taken to identify any units that fall in the ranges of Serial Numbers given below:

- 1984 Serial Numbers 3R ROKSS 1 to 3R ROK 1531
- 1985 Serial Numbers 3S ROKSS 1 to 3S ROKSS 1087
- 1986 Serial Numbers 1986 RMS 1 to 1986 ROKSS 779
- 1987 Serial Numbers 1987 RMK 1 to 1987 ROKSS 832

Note: When checking Serial Numbers ignore any suffix X1 or X2 or X2A.

1.4. Any units identified in the above ranges are to have an Operating Restriction applied by the AE(E) immediately to prevent live operation. Records are then to be checked to ascertain whether BP barriers have been tested and replaced if defective. Where units are identified as having had BP barriers replaced the Operating Restriction may be lifted for those particular units.
1.5. Where units are identified as being within the specified ranges and there is no record that the BP barriers have been tested or replaced the Operating Restriction is to remain in place until such time as remedial action has been completed. One of the following courses of action is to be taken:

1.5.1. Replace the BP barriers with GRP type as a matter of course without further test/investigation.

1.5.2. Arrange for a site “megger” test to be performed by Reyrolle (now Siemens Transmission and Distribution Limited) or other competent contractor as per Reyrolle’s instructions at Annex A, on the BP barriers to confirm whether they are defective. If test confirms barrier material is defective they are to be replaced with GRP type. If the cost of the test and replacement indicates that it would be more cost-effective to replace the unit then this is to be programmed (Operating Restriction must remain in force).

1.6. Any action required by this Safety Alert is to be taken at the earliest possible opportunity. The earliest possible opportunity should be established commensurate with operational requirements and the risk to personnel and property; with the highest priority given to heavily used/urgent operational facilities and the lowest to unoccupied, rarely occupied or non essential facilities.

2. Background:

2.1. HSWN 97/14 advised that no work or live operation was to be permitted on units manufactured during 1984 and 1985 (Serial Number prefixed 3R or 3S) and units manufactured with BP inter-switch barriers during 1986/1987 (Serial Numbers prefixed 1986 or 1987. This restriction was to remain in force until either the manufacturer had confirmed that the barriers were satisfactory or suitable replacements had been fitted.

2.2. A recent incident where a ROKSS unit catastrophically failed with buckling of lid, revealed that the fault occurred within the inter-switch barrier. On inspection it became evident that, although the failed unit was manufactured in 1986 (1986 ROKSS 32), the Serial Number was not suffixed with X1. Enquiry with the manufacturers has highlighted that the serial numbers in the range are not suffixed with X1 but the units are of X1 type of construction. This has caused some confusion and it is possible that, when units were first inspected on issue of HSWN 97/14, defective units were missed out as a result of staff only looking for serial numbers including the suffix X1.

3. Introduction:

3.1. COMPLIANCE WITH THE CONTENTS OF THIS ALERT WILL ENABLE COMPLIANCE WITH THE HEALTH & SAFETY AT WORK ETC ACT 1974 AND ITS SUBORDINATE REGULATIONS.
3.2. The appropriate MOD officer shall arrange for the RPC/ Maintenance Management Organisation (MMO) contractor to carry out all actions in accordance with this Alert.

3.3. Any work required as a result of this Alert must be carried out in accordance with JSP 375 Volume 3 – MOD’s Safety Rules & Procedures.

3.4. On MOD Establishments occupied by United States Visiting Forces (USVF) responsibility is jointly held by USVF and DE (USF). At base level this jointly managed organisation is to take appropriate action to implement the contents of this Alert. Where this Alert contains procedures which differ significantly from USVF practice DE (USF) code of practice will be issued.

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ANNEX:

A. Reyrolle Limited Site Test Instructions to Check Integrity of Inter-Section and Phase Barriers.
SITE TEST INSTRUCTIONS TO CHECK INTEGRITY OF INTER-SECTION AND PHASE BARRIERS

WARNING - ENSURE UNIT IS ISOLATED FROM SUPPLY, EARTHED AND ALL RELEVANT SAFETY REGULATIONS COMPLIED WITH, BEFORE CARRYING OUT ANY TESTS.

ASSOCIATED PUBLICATIONS
RO SWITCHGEAR - IOMS 929
RM SWITCHGEAR - IOMS 932

INTRODUCTION

Although a number of electrical characteristics differ between the materials of a standard BP barrier and a defective barrier, the easiest feature to measure on site is the resistance through the thickness of the material.

The "SITE TEST" is therefore a simple "MEGGER" test to measure the resistance of the barrier material.

ACCESS

Barrier access is obtained through the top covers of the unit.

To open the top cover of a feeder switch, fuse switch or transformer switch the associated switch must be at "EARTH ON" (See appropriate IOMS for operational instructions).

Remove the inner top cover by loosening off the M6 screws, care must be taken to prevent screws, lockwashers and plain washers from falling into the tank.

TEST

The minimum acceptable resistance through the thickness of the barrier is 3000 M ohms (3.0 G ohm).

A "MEGGER TEST SET" of 5 kV is preferred. A test set of 1 kV or less may indicate "INFINITY" and not an actual reading when the resistance is greater than 1000 M ohms, therefore if a 500 V / 1 kV test set is used great care must be taken that all connections are secure and the actual resistance is measured. i.e. Not open circuit.

To ensure uniformity of readings, it is recommended that polished electrodes of 20mm dia. approximately are used.
Care should be taken that the electrodes completely cover the material and do not protrude over the edge of the barrier.

It is advisable that the test is performed in two different regions of the barrier.

For each test the voltage should be applied for a minimum period of 30 secs. or until the display reading stabilises.

COMMENTS
In the unlikely event of discovering a barrier with a resistance value of less than 3000 M ohms (3.0 G ohm) this should be replaced with the updated version which is manufactured from Fibre Glass. Replacement articles together with fitting instructions are available. Please contact:

Terry Wood.
Customer Services Manager.
Reyrolle Switchgear.
Tel: 0191 4015453 Fax: 0191 4015353

[Signature]
1/8/97
TEST DEVICE FOR BP.BARRIERS