DOSR/RN/2021-03 – Lightening Protection System Testing for OME Facilities - ESTC Standard 6 Part 1

Date: 30 Sep 2021

References:

A. ESTC Standard 6 Part 1 2013 Edition - Requirements for the Commissioning, Inspection, Testing and Maintenance of Works for Explosives Facilities.

Purpose

1. The purpose of a Defence Ordnance, Munitions and Explosives Safety Regulator (DOSR) Notice (Explosives) is to provide a swift method of circulating an update to the requirements and/or guidance.

2. This notice is intended to:

   a. Recommend checks of a MOD Form 2209 (Lightning Protection Systems) **before** accepting and signing the associated MOD Form 2203 (Periodic Installation Condition Report) to avoid explosives safety risk from incorrect certification.

Background

3. Further to DOSR Regulatory Notice 2021-01[1], scrutiny of the documentation required by Ref A for LPS testing often identifies resistance figures that are above the maximum limit set by Ref A despite MOD Forms 2203 and 2209 being issued stating **satisfactory**.

4. If identified during an inspection by the TLB's Inspector of Explosives[2] (IE) or Defence OME Safety Regulator (DOSR) this could result in explosives licences being withdrawn and licensees having to cease ammunition related activity unless the Duty Holder chooses to formally accept an increased risk due to operating a non-complaint facility.

5. Licensees/ESRs are not trained in LPS testing requirements nor is Quality Assurance their responsibility, however there are some simple checks that can be made on receipt of the MOD Form 2209. These checks are a comparison of the figures recorded by the tester with the maximum limit and don't require a detailed understanding of the LPS or the science behind it.

Action

6. MOD Form 2209 has sections for recording the resistance (in Ohms) for different parts of the LPS. The maximum limits[3] for these tests are as follows:

   a. Inaccessible Bonds & Joints 0.2Ω

   b. Rebar Continuity 0.2Ω

   c. System Testing 10Ω

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1 Electrical Testing for OME Facilities ESTC Standard 6 Part 1.

2 Including relevant ammunition inspectorates.

3 See Ref A Job 12 Part 3.

d. Isolated Electrode Reading 10Ω multiplied by the number of electrodes[4].

7. Prior to accepting and signing the relevant MOD Form 2203 it is recommended the above readings are checked.

8. If readings have been certified as SATISFACTORY but are identified as above the maximum set limits, the Unit's Chain of Command should request clarification from the activity provider and inform their IE (or relevant Ammunition Inspectorate).

Aim

9. This DRN is aimed at explosives licensees, explosives licensed facilities – building custodians, explosives safety representatives and 1st, 2nd and 3rd party assurance personnel.

Implementation

10. Effective 30 Sep 2021.

Queries

11. Any observations or requests for further guidance on the content of this DRN should be submitted by email to dsa-dosr-prg@mod.gov.uk.

Stephen A. Gillstroem McLean, MIEXPE, PIEMA
DOSR TL

Annex:

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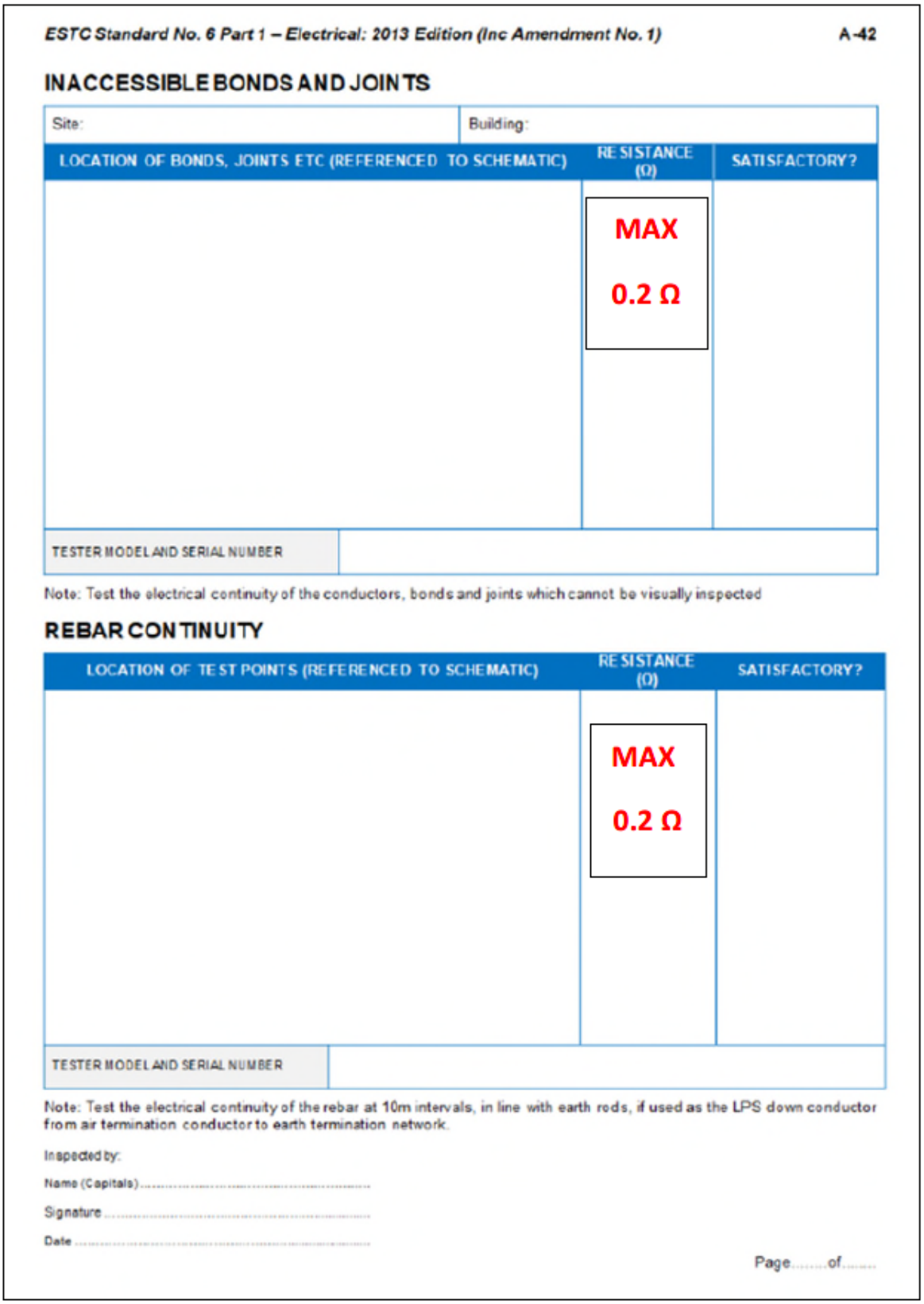
A. Images to show relevant pages of MOD Form 2209 with maximum limits illustrated.

4 The number of electrodes should be shown on the first page of the MOD Form 2209.

Annex A – Images of MOD Form 2209



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INACCESSIBLE BONDS AND JOINTS

Site:	Building:	
LOCATION OF BONDS, JOINTS ETC (REFERENCED TO SCHEMATIC)	RESISTANCE (Ω)	SATISFACTORY?
	MAX 0.2 Ω	
TESTER MODEL AND SERIAL NUMBER		

Note: Test the electrical continuity of the conductors, bonds and joints which cannot be visually inspected

REBAR CONTINUITY

LOCATION OF TEST POINTS (REFERENCED TO SCHEMATIC)	RESISTANCE (Ω)	SATISFACTORY?
	MAX 0.2 Ω	
TESTER MODEL AND SERIAL NUMBER		

Note: Test the electrical continuity of the rebar at 10m intervals, in line with earth rods, if used as the LPS down conductor from air termination conductor to earth termination network.

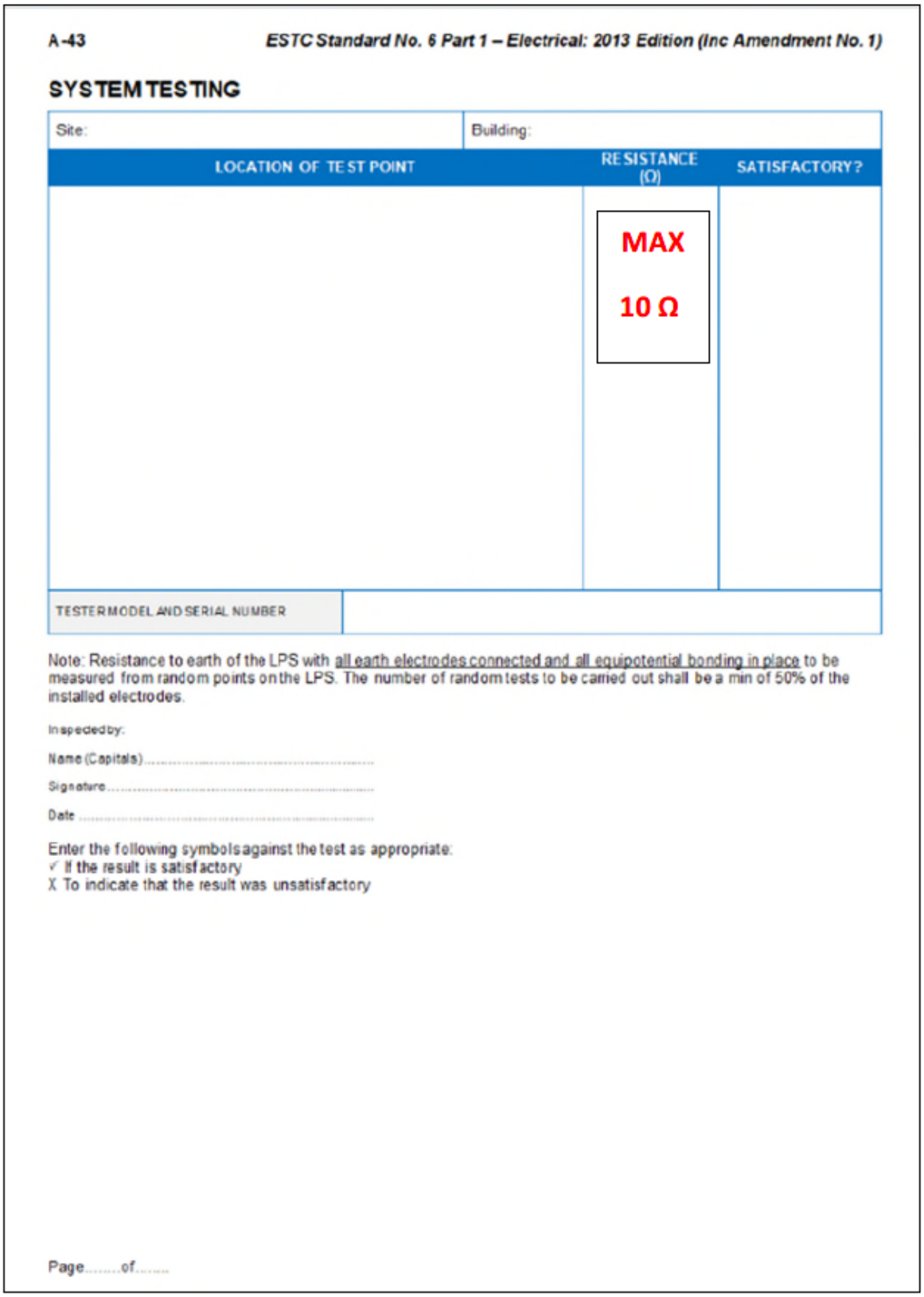
Inspected by:

Name (Capitals).....

Signature.....

Date.....

Page.....of.....



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SYSTEM TESTING

Site:	Building:	
LOCATION OF TEST POINT	**RESISTANCE (Ω)**	**SATISFACTORY?**
	MAX 10 Ω	
TESTER MODEL AND SERIAL NUMBER		

Note: Resistance to earth of the LPS with all earth electrodes connected and all equipotential bonding in place to be measured from random points on the LPS. The number of random tests to be carried out shall be a min of 50% of the installed electrodes.

Inspected by:

Name (Capitals).....

Signature.....

Date .....

Enter the following symbols against the test as appropriate:
✓ If the result is satisfactory
X To indicate that the result was unsatisfactory

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ISOLATED ELECTRODE READING

Site:										Building:									
EARTH ELECTRODE TESTING[1]																			
Soil Condition (✓box) ☐ Wet ☐ Moist ☐ Dry			Number of Earth Electrodes or Groups of Electrodes ..... **A**																
Earth Electrode Designation																			
Measured Resistance to earth of Each Electrode with all connections to LPS removed (Ω)			**MAX: 10 Ω x A**																
Earth Electrode Designation																			
Measured Resistance to earth of Each Electrode with all connections to LPS removed (Ω)																			
Earth Electrode Designation																			
Measured Resistance to earth of Each Electrode with all connections to LPS removed (Ω)																			
Earth Electrode Designation																			
Measured Resistance to earth of Each Electrode with all connections to LPS removed (Ω)																			
Tester Model and Serial Number	.....																		

Note: For earth electrode testing of explosives buildings, only the Fall of Potential method is to be used. Where this is not practical, DOSG ST3a is to be contacted for further guidance.

Inspected by:

Name (Capitals).....

Signature.....

Date .....

[1] For earth networks incorporating both vertical earth rods and a partial or full ring earth electrode, disconnection and testing should be performed at the earth inspection pit. If such inspection is difficult to perform, routine test should be completed by high frequency or impulse tests.

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Document Reference Number
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