

Title/Subject: Policy - Cap Lamp Assembly Test Protocol		
EDDS No. : APOL2202	Version Date: 2005-01-25	Signature/Initial: <i>David C. Chirdon</i> /s

1.0 PURPOSE

The purpose of this Policy (POL) is to provide guidance to Electrical Safety Division (ESD) investigators regarding the number of test samples and the order of performing the tests on cap lamp assemblies as required by Title 30 Code of Federal Regulations (30 CFR) Part 19.

2.0 SCOPE

This policy applies to cap lamp assemblies submitted for approval, extension of approval, or other RAMP change acceptance under 30 CFR Part 19.

3.0 REFERENCES

- 3.1 30 CFR Part 19, "Electric Cap Lamps"
- 3.2 ASTP2205, Bulb Life Test (19.9(b) and (c))
- 3.3 ASTP2217, Cord Slitting Test (19.6(a))
- 3.4 ASTP2210, Cap Lamp Headpiece Impact Test (19.7(a))
- 3.5 ASTP2222, Lamp Bulb Safety Test (19.7(a))
- 3.6 ASTP2218, Headpiece Drop Test (19.6(a))
- 3.7 ASTP2225, Battery Drop Test (19.6(a))
- 3.8 ASTP2215, Battery Spill Test (19.8(a))
- 3.9 ASTP2131, Thermal Shock Test of Windows and Lenses ((19.7(a) and 18.66 (b))
- 3.10 ASTP2130, Polycarbonate Surface Temperature Test (19.7(a))
- 3.11 ASTP2221, Light Distribution Test (19.6(b), (c), and (d))
- 3.12 ASTP2213, Performance Test (19.9(a))
- 3.13 ASTP2202, Battery Flash Current Test (19.7(e))

4.0 DEFINITIONS

There are no unique terms in this document.

5.0 PROCEDURE / POLICY

The following tests may be required when processing 30 CFR Part 19 applications:

EDDS No.	Cap Lamp Tests
ASTP2205	Bulb Life Test (19.9(b) and (c))
ASTP2217	Cord Slating Test (19.6(a))
ASTP2210	Cap Lamp Headpiece Impact Test (19.7(a))
ASTP2222	Lamp Bulb Safety Test (19.7(a))
ASTP2218	Headpiece Drop Test (19.6(a))
ASTP2225	Battery Drop Test (19.6(a))
ASTP2215	Battery Spill Test (19.8(a))
ASTP2131	Thermal Shock Test of Windows and Lenses ((19.7(a) and 18.66 (b))
ASTP2130	Polycarbonate Surface Temperature Test (19.7(a))
ASTP2221	Light Distribution Test (19.6(b), (c), and (d))
ASTP2213	Performance Test (with receptacle, if applicable) (19.9(a))
ASTP2202	Battery Flash Current Test (19.7(e))

In order to ensure that the proposed cap lamp assembly is subjected to the most rigorous test procedure possible, but yet maintaining the ability to determine precisely which test caused any resultant failure, the following order of testing is prescribed. The entire group of tests must be conducted on new designs of cap lamp assemblies. However, it is left to the investigator's judgment, in consultation with the supervisor, to determine which tests are necessary for a modified design.

- 5.1 Bulb Life Test (ASTP2205). Fifty bulbs are tested. This test is initiated first due to the duration and because it is not interrelated with any other test.
- 5.2 Battery Flash Current Test (ASTP2202). Three samples of the assembly are subjected to the Battery Flash Current Test. These samples do not need to be samples that are used with other tests; however, if the samples are to be

used for the performance tests noted below, the Battery Flash Current Test should precede the other tests.

- 5.3 Cord Slitting Test (ASTP2217). Five samples are tested. This test is initiated early due to the duration, and because the tested samples will be required for ensuing tests.
- 5.4 As appropriate, one of the two following is performed.
 - 5.4.1 Lamp Bulb Safety Test (ASTP2222). 30 bulbs are tested. The Lamp Bulb Safety Test is performed on those cap lamp assemblies with ejection mechanisms, or
 - 5.4.2 (Alt.) Headpiece Impact Test (ASTP2210). All five cap lamp assemblies which have completed the Cord Slitting Test are subjected to the Headpiece Impact Test. Note: The Headpiece Impact Test is not required for cap lamp assemblies provided with ejection mechanisms, but is intended for testing those designs provided with an alternate means of protecting the bulb from breakage and preventing exposure of the hot filament.
- 5.5 Headpiece Drop Test (ASTP2218). Three of the five samples of the headpiece which completed the Headpiece Impact Test, if applicable, are subjected to the Headpiece Drop Test.
- 5.6 Battery Drop Test (ASTP2225). The three samples of the assembly that have completed the Cord Slitting, Headpiece Impact and Headpiece Drop Tests are subjected to the Battery Drop Test.
- 5.7 Battery Spill Test (ASTP2215). The preceding three samples plus the two samples that had not been subjected to the preceding three tests are next subjected to the Battery Spill Test. The result, for comparative purposes, will be three samples which have completed the Headpiece Impact, Headpiece Drop, Battery Drop and Battery Spill Tests, and two samples which have not been subjected to the two drop tests.
- 5.8 Thermal Shock Test of Glass and Polycarbonate Windows and Lenses (ASTP2131). Four samples of each lens are tested. Note: This test is not required for cap lamp assemblies provided with an ejection mechanism.
- 5.9 Surface Temperature Test of Polycarbonate Material (ASTP2130). Four samples of each lens are tested. Note: This test is not required for cap lamp assemblies provided with an ejection mechanism.

- 5.10 Light Distribution (ASTP2221)/ Performance Test (with Receptacle, if applicable) (ASTP2213). All five samples that have completed the Battery Spill Test are then subjected to the Light Distribution and Performance Tests, which are performed together. If the Battery Spill Test is not indicated, then the samples will be the three samples of the assembly that have completed the Cord Slating, Headpiece Impact, Headpiece Drop, and Battery Drop Tests plus the remaining two samples, for a total of five samples.