



# In Service Dielectric Stick Testing

Standard  
Operating  
Procedure

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## 1.0 Purpose

This SOP provides:

- This SOP is intended to provide a reference for the in-service inspection and dielectric testing of insulating fiberglass reinforced plastic (FRP) sticks used for electrical work.

## 2.0 Roles and Prerequisites

Role(s)	Quantity Required	Prerequisites
Competent Tester(s)	1 or more	<ol style="list-style-type: none"> <li>1. Hot Stick Inspection Training</li> <li>2. Clear understanding of the information contained within this SOP</li> </ol>

## 3.0 Tools and Equipment

### Minimum Tools and Equipment Required:

- AB Chance or Hastings Portable Test set
- 6 meter extension cord
- Two saw horses
- Distilled Water Spray Bottle
- Clean rags and paper towels
- Silicone Wipes
- Hot Stick, Boom and Bucket Wax (for Hastings Sticks ONLY)
- Field Due for Test Stickers
- Blank Field Test Sheets to record stick information and test results



## 4.0 Procedure

### The Procedure

NOTE: The following requirements shall be met prior to the start of the procedure:

- Complete Hazard, Aspect and Risk Assessment (HARA)
- Applicable Personal Protective Equipment (PPE) is available and in good condition (See definitions section)
- Consider Environmental Best Management Practices

**Note:** If a stick does not have a SaskPower Serial number or it is due for shop test, abort the inspection and testing of that stick and send to Apparatus Tool Repair.

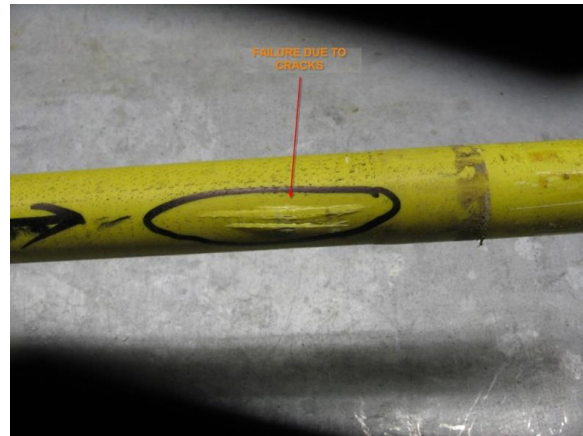
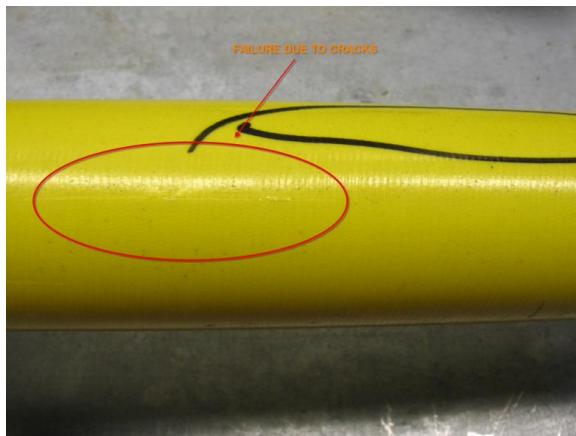
## 1.0 Visual and Mechanical Inspection

### 1.1 Visual and Mechanical Inspection by Competent Tester

**NOTE:** If a hotstick fails any of the inspection criteria listed below (with the exception of cleanliness), abort the rest of the inspection and send to Apparatus Tool Repair with a note explaining the failure.

If cleanliness is unsatisfactory, perform the cleaning steps as stated in Section 2.0 prior to testing.

- The competent tester(s) conducting the test shall fully extend the stick and carefully inspect for:
  - *Electrical damage (burn marks, corona damage)*
  - *Cracks in the fiberglass (See Figure#1)*
  - *Broken fiberglass (See Figure#2)*
  - *Damaged fiberglass (See Figure #3)*
  - *Damaged locking hole (See Figure#4)*
  - *Cleanliness. Watch for dust, grease, etc. (See Figure#5) Clean as per section 2.0*



Figure#1 - Cracks in the Fiberglass



*Figure#2 - Broken Fiberglass*



*Figure#3 - Damaged Fiberglass (Deep Rub Marks)*



Figure#4 - Damaged Locking Hole



Figure#5 - Dirt and Contamination on Stick

## 2.0 Clean the Stick

### 2.1 The Competent Tester(s) Cleaning the Stick

**Important** - Any wiping of the stick is to be done in a circular motion around the stick. Never wipe up and down the length of the stick as it may cause electrical tracking down the stick to the worker

- The competent tester conducting the test shall wipe the stick dry with a clean rag. This will ensure there is no foreign debris on the outside stick surface that may degrade the insulating value of the stick.
- For more information, see the stick cleaning video job aid attached to this SOP

## 3.0 Dry Test

### 3.1 The reason for the dry test

- The dry test will give the competent tester(s) conducting the test an indication of the internal condition of the stick.

#### 3.1.1 The competent tester(s) conducting the test shall follow the steps to complete a dry stick test:

- Set the stick to be tested on the prepositioned sawhorses
- Turn the Portable Tester on
- Switch the Portable Tester to DRY TEST
- Calibrate the Portable Tester to ZERO
- Use the Test Bar to indicate Full Scale reading

- *Place the Portable Tester directly on the stick starting from one end of the stick*
- *Move the Portable Tester in a step by step fashion all the way down the stick, overlapping each step (ensure to lift the tester off the stick with each step so that the tester is not dragged along the stick)*
- *Rotate the stick by 90° and repeat the step above*
- *Rotate the stick by 90° and repeat the step above*
- *Rotate the stick by 90° and repeat the step above*

**NOTE:** The two different Portable Testers indicate a Pass or Fail in differing ways. If using the Hastings Portable Tester the Acceptable/Passing readings are in the GREEN range of the Full Scale reading. If using the AB Chance Portable Tester the Acceptable/Passing readings are 0-20  $\mu\text{A}$  (micro-amps)

### 4.0 Wet Test

#### 4.1 Reason for the wet test

- *The wet test will give the competent tester(s) conducting the test an indication of the surface condition of the stick.*

4.1.1 The competent tester(s) conducting the test shall follow these steps to complete a wet stick test:

- *Set the stick to be tested on the prepositioned sawhorses*
- *Turn the Portable Tester on*
- *Switch the Portable Tester to WET TEST*
- *Calibrate the Portable Tester to ZERO*
- *Use the Test Bar to indicate Full Scale reading*
- *Use distilled water spray bottle to mist the entire stick*
- *Place the Portable Tester directly on the stick starting from one end of the stick*
- *Move the Portable Tester in a step by step fashion all the way down the stick, overlapping each step (ensure to lift the tester off the stick with each step so that the tester is not dragged along the stick)*
- *Rotate the stick by 90° and repeat the step above*
- *Rotate the stick by 90° and repeat the step above*
- *Rotate the stick by 90° and repeat the step above*

**NOTE:** The two different Portable Testers indicate a Pass or Fail in differing ways. If using the Hastings Portable Tester the Acceptable/Passing readings are in the GREEN range of the Full Scale reading. If using the AB Chance Portable Tester the Acceptable/Passing readings are 0-80  $\mu\text{A}$  (micro-amps).

**Note:** If stick fails and of the above tests, abort the remainder of tests and send to Apparatus Tool Repair with notes explaining the nature of the failure.

### 5.0 Recording of Test Results and Marking

#### 5.1 Record Test Results

- 5.1.1 The competent tester shall record the individual stick number and test results on the test form

(See Figure#6 below for picture of the decal)



Figure#6 - Individual Stick Identification Number Decal (Serial #)

#### 5.2 Apply Field "Due for Test" sticker

- *Testing cycles are every two years for the field test and on the 6th year it is to be sent to apparatus repair for testing*
- *Ensure the field "Due for Test" sticker is securely applied to the stick to provide indication of future testing requirements (See Figure #7 below)*





Figure#7 - Due For Test Decal

## 6.0 Post Dielectric Testing Conditioning

### 6.1 Waxing and Wiping with Silicone Wipe

**Important** - Any wiping of the stick is to be done in a circular motion around the stick. Never wipe up and down the length of the stick as it may cause electrical tracking down the stick to the worker

#### 6.1.1 For Hastings Sticks the competent tester(s) shall complete the following:

- Wipe the stick with a dry cloth ensuring the stick is completely dry
- Saturate the foam applicator provided in the waxing kit with Hastings Boom Wax
- Apply wax to the stick
- Wipe the stick with clean and dry cloth
- Wipe the stick with Silicone Wipe

#### 6.1.2 For AB Chance Sticks the competent tester(s) shall complete the following:

- Wipe the stick with a dry cloth ensuring the stick is completely dry
- Wipe the stick with Silicone Wipe

## 7.0 Record Keeping

### 7.1 Complete the Notifications in SAP for each stick

The competent tester(s) shall complete the notification in SAP and ensure the activity codes, and dates are entered for each stick that has been tested

## 5.0 Components

The following is a list of components for this SOP which can be accessed through the SOP System:



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Component Name	Component Type	Component Description	Location of Component
Stick Cleaning Video Job Aid	Job Aid	A video job aid explaining the proper method to clean a live line tool	SOP Online - SOP Bundle: In Service Dielectric Stick Testing

## 6.0 Acronyms, Definitions and Symbols

### Acronyms and Abbreviations

**HARA** - Hazard/Aspect and Risk Assessment

**PPE** - Personal Protective Equipment

### Definitions

**Personal Protective Equipment** – All workers shall ensure the following **Mandatory PPE** is used and in good condition

- **Head Protection** - CSA approved head protection shall be worn by all personnel at the job site, work areas and in posted areas on site
- **Eye Protection** - Approved safety glasses with side shields shall be worn by all personnel at the job site
- **Clothing** - Minimum Class 2 FR/Class 2 High Visibility Clothing shall be worn by all personnel at the job site
- **Footwear** - CSA approved, electric shock resistant footwear with minimum six inch (6") leather uppers for ankle support and a steel or composite toe

**Additional PPE Requirements** - *To be determined according to the requirements of the task being performed. (Face Shield, rubber gloves, additional FR as determined using the SaskPower Arc Flash Tables) Review the procedure above for additional PPE requirements*

**Competent Worker** - *Worker trained in the proper testing and visual inspection techniques to correctly assess the integrity of the hotstick being tested*

### Symbols

N/A

## 7.0 Policies and Regulatory Requirements

This SOP is a result of the following regulations, policies, industry standards, and corporate directives and standards:

### Regulatory Requirement(s)

Occupational Health and Safety Regulations Section 2(l):

- **Competent** - means possessing knowledge, experience and training to perform a specific duty



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## Policies

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- Hazard/Aspect and Risk Assessment Policy
- Personal Protective Equipment Policy
- Working Alone Policy

## Standards

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- Hazard/Aspect and Risk Assessment Standard
- Deviation from Safe Work Procedure Standard
- Personal Protective Equipment Standard

## Other

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- Safety and Environment Rulebook
- Environmental Best Management Practices

## 8.0 References

### References

Field Care for Live Line Tools Standard Operating Procedure

Chance Users Manual (See Job Aid if applicable)

Hastings Users Manual (See Job Aid if applicable)