

Alpha Magnetics S.O. \_\_\_\_\_

Revision \_\_\_\_\_

Date \_\_\_\_\_

**ALPHA MAGNETICS, INC.**

**KTeV ANALYSIS MAGNET TRAVELER  
FOR THE 10-LAYER COIL**

**Coil No. 1 Upper 10-Layer Coil 3832.252-ME-267045 Rev. C**

**Coil No. 2 Upper 10-Layer Coil 3832.252-ME-267045 Rev. C**

**Coil No. 3 Lower 10-Layer Coil 3832.252-ME-267046 Rev. C**

**Coil No. 4 Lower 10-Layer Coil 3832.252-ME-267046 Rev. C**

**Prepared by Don Klein/Dennis Klein**

**KTeV Analysis Magnet Traveler for 10-Layer Coil**

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Check applicable drawing below, insure that the drawing is legible.

\_\_\_\_\_ Coil No. 1 Upper 10-layer coil - 3832.252-ME-267045 Rev. C

\_\_\_\_\_ Coil No. 2 Upper 10-layer coil - 3832.252-ME-267045 Rev. C

Coil No. 3 Lower 10-layer coil - 3832.252-ME-267046 Rev. C

\_\_\_\_\_ Coil No. 4 Lower 10-layer coil - 3832.252-ME-267046 Rev. C

## 1.0 Use Same As In Other Travelers

- 1.1 White (lint free) gloves or surgical latex gloves shall be worn by all personnel when handling all product parts after the parts have been prepared/cleaned.
- 1.2 All steps that require a sign-off shall include the Technician/Inspector's first initial and full last name. All entries in the Traveler are to be in black ink.
- 1.3 No erasures or white-out will be permitted to any documentation. All incorrectly entered data shall be corrected by placing a single line through the error, initial and date the error before adding the correct data.
- 1.4 Any and all data, signatures or written notes shall be legible by others.
- 1.5 Half-lap = 40% to 50% coverage (overlap).
- 1.6 If damage or a deviation from the specifications are found a Discrepancy Report Form must be completed and attached behind the page in which the discrepancy occurred before production can proceed. All Discrepancy Reports issued shall be recorded in the left margin next to the applicable step.
- 1.7 If coil is not being worked on it shall be protected from the elements and dust by wrapping it in an anti-static sheeting (such as Herculite).

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- 1.8 Attach to the appropriate traveler any requests for a variance from previously accepted procedures and the Fermilab approval.
- 1.9 Attach to the traveler a copy of that portion of the coil fabrication and testing plan which is relevant to the work covered by the traveler.

## 2.0 10-Layer Coil Assembly

- 2.1 Stack the five (5) appropriate double layers to form the 10-layer coil assembly.
- 2.2 As the double layers are being stacked, insulate between each double layer with .033" type 1003 Scotchply in accordance with drawing 3832.252-MC-267034.
- 2.3 Fill all void areas with Scotchply cloth or Res-i-flex tape.
- 2.4 Apply .033" Scotchply cloth and Res-i-flex tape ground wrap to 10-layer coil assembly per drawing 3832.252-MC-267034.
- 2.5 Make four (4) welded joints connecting all double layers as per drawing 3832.252-ME-267045B/267046B and 3832.252-MC-267072.
- 2.6 Perform dye penetrant test of welds.

### Dye Penetrant Test -

Cracks longer than 1/16" shall be filed out and rewelded. Attach results.

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Tested By JOEY SAKURAI

Organization ALPHA MAGNETICS

Test Date \_\_\_\_\_

\_\_\_\_\_  
Insulation Technician

\_\_\_\_\_  
Date

\_\_\_\_\_  
Welding Technician

\_\_\_\_\_  
Date

*Dennis Allen*

QA/QC Inspector

12-14-94

Date

### 3.0 Post Ground Wrap Electrical Test Procedure of 10-Layer Coil

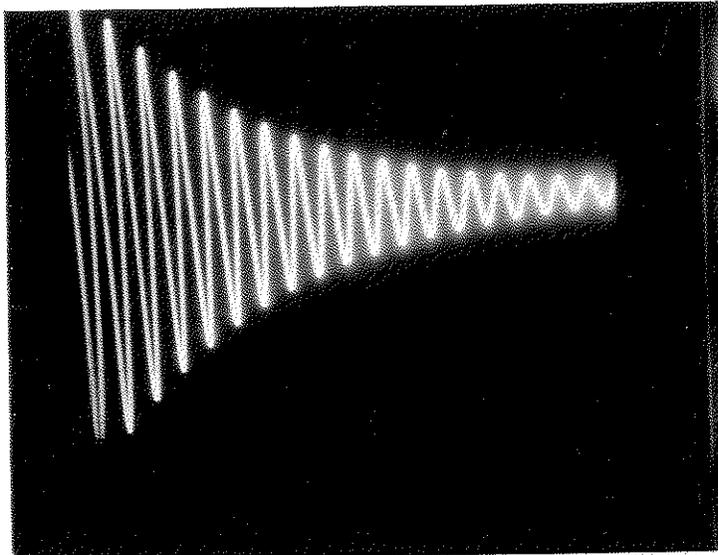
3.1 Repeat electrical test as in section 10.1 and 10.2. Use 400 volts for the ring test in 10.2

#### D.C. Resistance Test:

Bridge S/N or Model \_\_\_\_\_  
Resistance 32.0 m $\Omega$   
Coil Temp 70°  
Relative Humidity 60°

#### Ring Test:

Voltage 400 D.C.  
Volts/Div .5  
Sweep Rate 1



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Date \_\_\_\_\_

*[Signature]*  
Test Technician

9-22-94  
Date

*[Signature]*  
QA/QC Inspector

9-22-94  
Date

3.2 D.C. Hipot test (section 10.3) to be performed after 10-layer coil is in mold.

3.3 Install 10-layer coil in coil curing fixture. Prior to installing in fixture, coil shall be wrapped 1/4 lap with .002" by 1-1/2" Tedlar tape.

3.4 D.C. - Hipot Test:

Apply 200 volts D.C. between coil leads and coil curing fixture.

Instrument S/N or Model \_\_\_\_\_

Voltage 200 D.C.

Leakage Current 50  $\mu$ A

Temperature 65° Degrees F

Relative Humidity 70%

*[Signature]*  
Test Technician

9-28-94  
Date

*[Signature]*  
QA/QC Inspector

9-28-94  
Date

#### 4.0 10-Layer Coil Curing

##### 4.1 Coil Curing Cycle.

- a) Heat coil and mold at rate of 2 to 10 degrees F/min. to temperature of 325 degrees F.
- b) Hold coil and mold at 325 degrees F for one (1) hour.
- c) Cool coil and mold to 150 degrees F in no less than three (3) hours.

##### 4.2 Attach hard copy of oven curing cycle to shop traveler.

N/A ↑

5.0 Final Testing and Inspection

- 5.1 Perform D.C. Hipot test after curing as in section 3.4 using 2,000 volts D.C. before removing coil from mold.

Instrument S/N or Model \_\_\_\_\_

Voltage 2000

Leakage Current 64A

Temperature 65°

Relative Humidity 60%

*Dennissen*

Test Technician

12-5-94

Date

*Dennissen*

QA/QC Inspector

12-5-94

Date

- 5.2 Remove coil from mold, remove Tedlar tape and clean coil as required.
- 5.3 Verify dimensional compliance of 10-layer coil using appropriate drawings. Attach dimensional record to traveler.

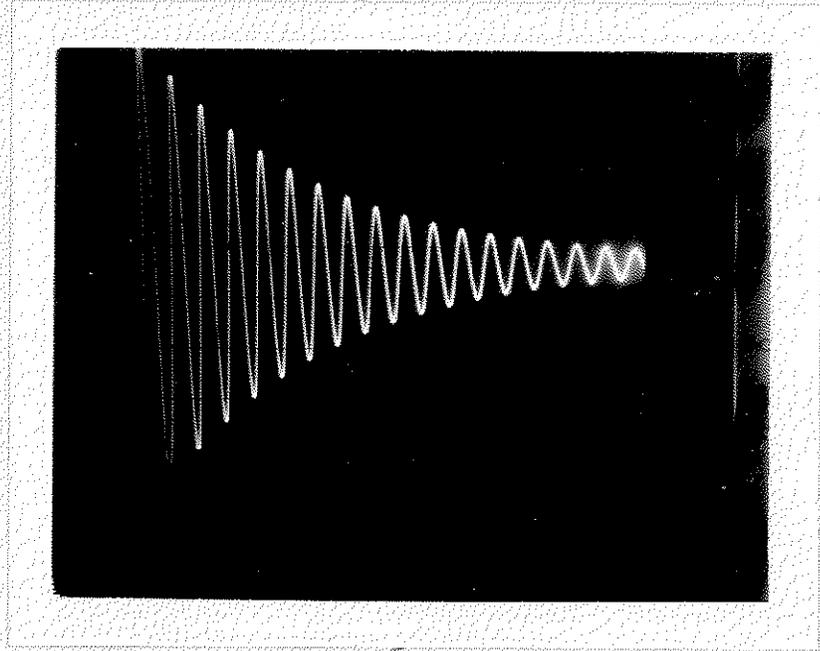
5.4 Perform final electrical tests as in section 9.1 and 9.2 of coil fabrication plan. Apply 400 volts for ring test.

D.C. Resistance:

Instrument S/N or Model \_\_\_\_\_  
Resistance 0.0332  
Coil Temperature 60.5  
Relative Humidity 65%

Ring Test:

Voltage 400  
Volts/Div. .5  
Sweep Rate 1 ms



Dennis Ma  
Test Technician

12-14-94  
Date

Dennis Ma  
QA/QC Inspector

12-14-94  
Date

6.0 10-Layer Coil Production Complete

6.1 QA/QC Inspector verify that sections 1 through 5 are accurate and complete and that all Discrepancy Reports have had disposition made.

Comments:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

*Dennis Allen*

QA/QC Inspector

1-23-94

Date

6.2 Production Supervisor verify that section 1 through 5 are accurate and complete.

Comments:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

*Dennis Allen*

Production Manager

1-23-94

Date

6.3 Fermilab representative verify that section 1 through 5 are accurate and correct.

\_\_\_\_\_  
Fermilab Representative

\_\_\_\_\_  
Date

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5.5 Examine coil for surface defects.

Tracy Fathen  
Technician

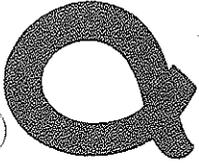
1-23-94  
Date

Dan Miller  
QA/QC Inspector

1-23-94  
Date







**alpha** magnetics, inc.

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## PROPOSED PROCEDURE TO REPAIR SHORT IN FERMILAB KTEV LOWER INNER 10-LAYER COIL

DECEMBER 21, 1994

1. CUT GROUND WRAP INSULATION AND PULL OUT TURN TO CLEAR SHORT.
2. CHECK TURN UNDERNEATH FOR ANY BURRS OR SHARP CORNERS.
3. COAT AREA WITH EPOXY AND INSERT G-10 BETWEEN LAYERS IN AREA OF SHORT.
4. PUSH TURN DOWN AND CLAMP IN PLACE.
5. GROUND WRAP AREA WITH 2 LAYERS OF .007 X 2" FIBERGLASS TAPE IN WET LAY-UP FASHION.
6. WRAP WET AREA WITH A LAYER OF HEAT SHRINK MYLAR TO CONTAIN EPOXY.
7. CURE EPOXY USING HEAT LAMPS.
8. AFTER CURE, REMOVE MYLAR AND RETEST COIL.

