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SMALL RADIUS COARSE FIELD CAGE

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ENGINEERING NOTE

P40406

M 5510B

1 of 2

AUTHOR

DEPARTMENT

LOCATION

DATE

Fred Perry

Mechanical Engineering

Berkeley

14 April 1980

PROGRAM - PROJECT - JOB

PEP-4

FIELD CAGE

TITLE

SMALL RADIUS COARSE FIELD CAGE

A rev. 2/11/81

B rev. 2/12/81

SUBJECT: Test to determine if possible through heat and pressure to consolidate mylar laminate on small radius coarse field cage.

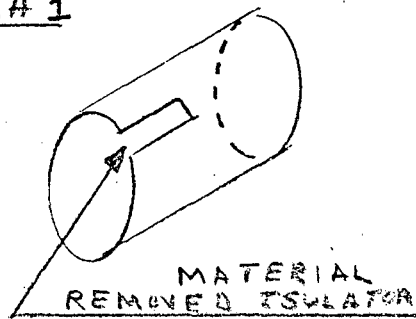
TEST PROCEDURE Date 4/10/1980

A piece of nema G-10 supplied by Larry Brown and a piece of mylar insulator material which was cut from a prototype insulator. See Dimensions in Sketch 1 & 2. The pieces were both cut axially from the cylinder. The pieces were then glued together one end only approx. 1.5 inches using five minute epoxy and allowed to cure. The ends of pieces were then machined as a single unit and subsequently measured and recorded.

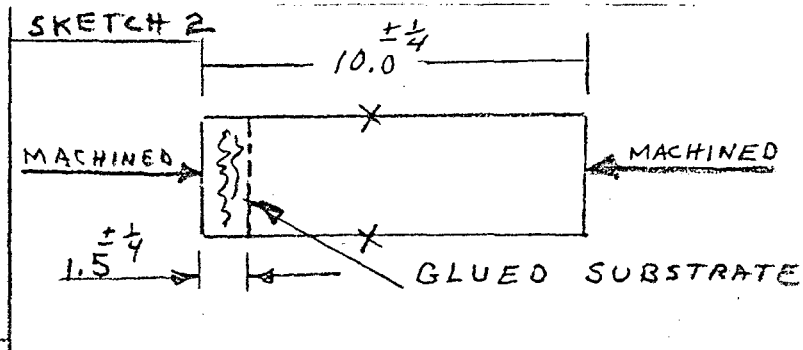
The test piece was then placed in a oven at 120°C - 248°F and removed. Time in oven, and linear expansion of the mylar and nema were measured and recorded. This was done four times. (HEAT DISSIPATION) DUE TO TIME LAG REQUIRED TO REMOVE TEST PIECE FROM OVEN AND MEASURE.

A final measurement was taken of test piece after it had cooled down to ambient temperature. Linear measurements and time in oven are given in tabular form on page 2

SKETCH # 1



SKETCH # 2



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PAGE

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1 Machined Dimension @ ambient temperature

10.090

2. When cooled to ambient temperature

Nema - 10.098

Mylar- 10.113

3. From oven temperature = 120°C

<u>N</u>	<u>NEMA</u>	<u>MYLAR</u>	<u>TIME IN OVEN MIN.</u>
1	10.093	10.106	5
2	10.097	10.108	5
3	10.101	10.133	15
4	10.103	10.128	5

CONCLUSION

A It appears from this test data given. That it would not be possible to consolidate the mylar insulator using heat. The differences in linear expansion is to large between the materials. Note the final dimension when cooled to ambient temperature 2. This is probably due to stresses built up at manufacture and released during heat cycle.

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