FROM: Rodger Bossert

TO: John Carson, Jim Strait

CC: Imre Gonczy, Ed Chang, Howard Fulton, Wayne Koska, Paul Mantsch, Gale Pewitt.

SUBJECT: 50mm Practice Cable Winding

A few turns of 50mm SSC cable were wound around a pole key on a 50mm mandrel on 5-20-90. Winding was done by Imre Gonczy and Ed Chang. The cable used was the "old" .480 wide SSC inner cable. This cable is considered by Ron Scanlon to be poorer for winding than the real .486 SSC 50mm cable. The pole key was generated by Howard Fulton from an earlier proposed 50mm cross section called the C579. Objectives of the practice winding were:

1.) To see if, qualitatively, the winding is significantly more difficult than it was for the 40mm SSC coils.

2.) To see if there is any significant advantage to winding in either the clockwise or counterclockwise direction.

3.) To determine the approximate amount of winding tension needed for these coils. To see if this level of winding tension causes to cable to unravel.

4.) To determine if winding the wide cable around the pole turn (which presumably causes the most distortion in the cable) causes any damage to the strands.

Three turns were wound in each direction. The degree of difficulty of winding was not perceptibly different in either direction. The cable was not judged by Imre and Ed to be any more difficult to wind than the 40mm SSC coils. Winding tension in both directions was 85 lbs. This is approximately the same as is being used on the short 40mm coils. No unraveling of the cable strands was seen. We did not attempt to wind with a lower tension. This could be done later if desired.

There appeared to be a slight difference between winding directions. In all coils wound on a round mandrel, a "hump" appears in each turn after it is wound around the key. As the cable is coming out of the

turn, it rises slightly off the mandrel for a few inches. This is shown in Figure 1. The cable is then pushed back into position during curing. The hump appeared to be slightly larger when the cable was wound clockwise. It was not considered by Imre to be a problem in either case.

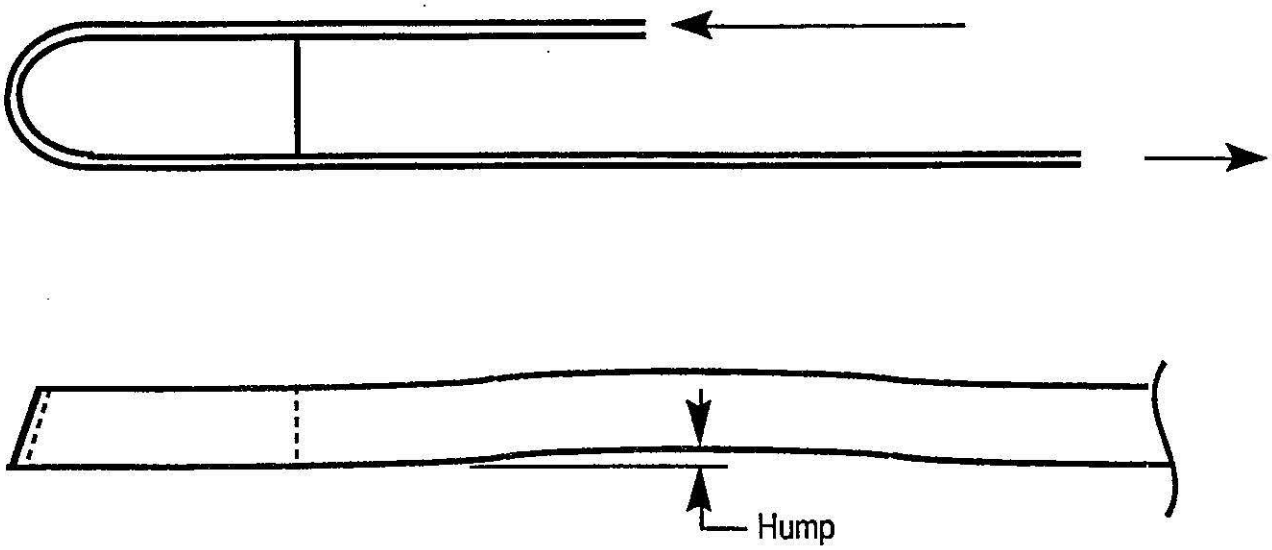

Figure 1.

After winding, the cable area which had come in contact with the key was stripped of it's insulation, visually inspected and photographed. No damage to the strands was apparent in either case. We could send these to Finley Markley to be examined further if necessary.

Conclusions:

We should not have any serious problems winding the 50mm coils. Cable tension is not excessive. Neither unraveling nor strand damage are occuring.

There appears to be a small amount of inconclusive evidence (the hump size) that the counterclockwise direction may be favorable. This is the direction that BNL is winding their inner coils. We had decided to wind ours in the clockwise direction because that makes our outer preform favorable (also based on inconclusive evidence).

I guess I would like to stick with the clockwise direction for the inner coils. I would also like to get a short coil or two of .486 SSC inner cable to do a little more practice winding. This would allow us to wind more turns and get a better feel for the cable. We only had enough cable to wind three turns. We would like to wind something that looks like a parting plane turn. Does anyone have any comments?