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DISCUSSION

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The authors are to be commended for their contribution toward the analysis of bearing lubrication. Actual observation of the lubrication mechanisms will aid significantly in optimizing bearing lubrication.

The reduced film thickness caused by a pit on the rolling element surface further confirms work done by Dr. L. D. Wedeven of NASA. Analysis for a point contact showed a modification of the EHD pressure generation while passing through the inlet zone due to a pit resulting in a lower film thickness affecting a larger area than the pit perimeter. The effects of heat generation in the inlet zone as explored by Battelle shows significant effects on resulting film thickness. This work tends to support your findings that the contact area temperature effects are more significant than oil inlet temperature.

We are greatly interested in your investigation methods and would like to know if you have done or have contemplated doing any higher speed work (e.g., 10,000 plus rpm) or whether this is practical with present material coatings and apparatus? Also, have you given consideration to using military specification-type lubricants (e.g., MIL-L-7808 or MIL-L-23699) in your studies?

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Authors' Closure

The authors thank Mr. Gissel for his discussion. As far as we can see that there is no reason why this type of apparatus should not work at 10000 rpm and upwards. It is always difficult to predict how semi-reflecting coatings will stand up to wear but they should be adequate. The laser flash will impose a limitation to the top speed but there are nowadays so many high intensity short duration lasers that this should cause no problem.

