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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Secondary organic aerosol formation from reaction of tertiary amines with nitrate radical" *by* M. E. Erupe et al.

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1) (a&b) This reviewer also brings up the valid point that the tertiary amines are reacting upon interaction with ozone and thus the reaction of NO3 when NO is introduced may be with an amine-O3 reaction product and not the amine itself. This was an oversight on our part; the new manuscript focuses on direct nitrate reactions with the parent amines. It appears that NO3 also reacts with some of the products of the amine with ozone to also produce aerosol. Please see our responses to reviewer one for more information and our interpretation of the data. a) The reviewer is correct that in our original data it appears that TMA reaction products with ozone are reacting with NO3 rather than TMA itself. Again, we have run the direct reaction with NO3 as well and the bottom line is that NO3 reacts with both TMA and with the 1st generation products of

TMA. The revised manuscript focuses on experimental data from the direct reaction of each amine with NO3. b) The reviewer is correct that the same issue is also happening with TEA.

2) The reviewer suggests using a cleaner method for NO3 production. We have finished conducting these experiments. We have generated NO3 directly from N2O5 and reacted this with TMA. (Silva, ES&T, 2008) We have since used N2O5 to react with TEA and TBA. The TEA and TBA data are in the revised manuscript to show unequivocally that NO3 does react directly and produce large aerosol yield.

3) The reviewer is correct that we would need to subtract the spectra to get an adequate picture of the amine/ozone/NOx system. However, since the revised manuscript focuses on direct amine/NO3 reaction, we no longer need to subtract the spectra.

Interactive comment on Atmos. Chem. Phys. Discuss., 8, 16585, 2008.

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Interactive Comment