

# Impact of Technical, Human, and Organizational Risks on Reliability of Fire Safety Systems in High-Rise Residential Buildings – Applications of an Integrated Probabilistic Risk Assessment Model

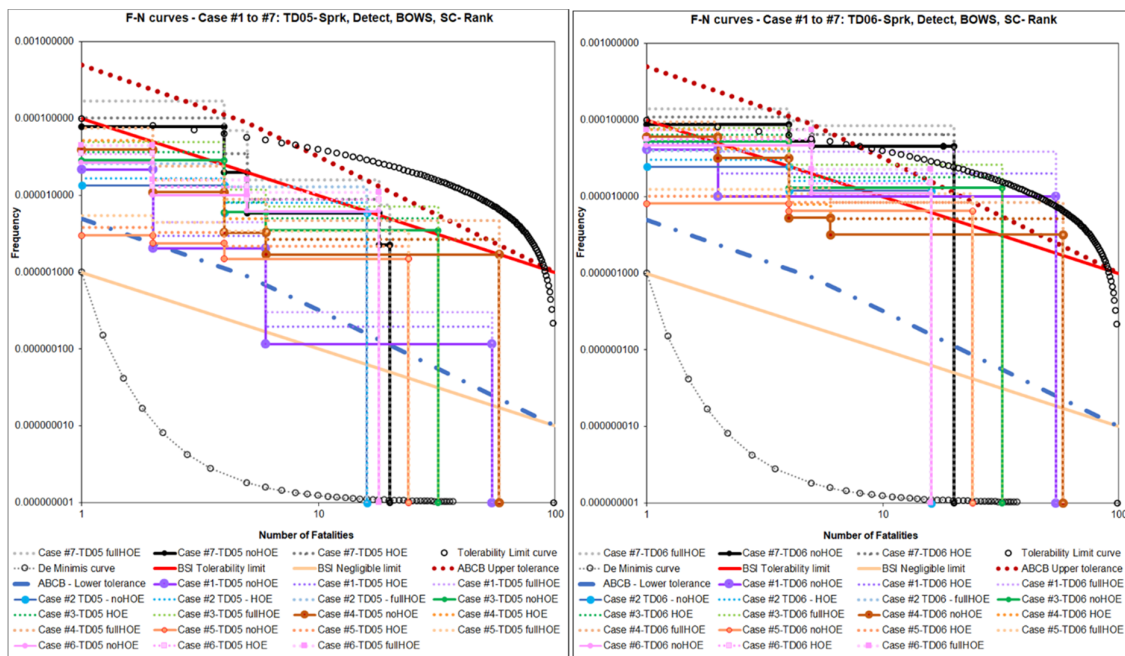
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## Supplementary Material

### 1. Figures S1-S3-F-N Curves for TD05-TD16, Case #1 to #7



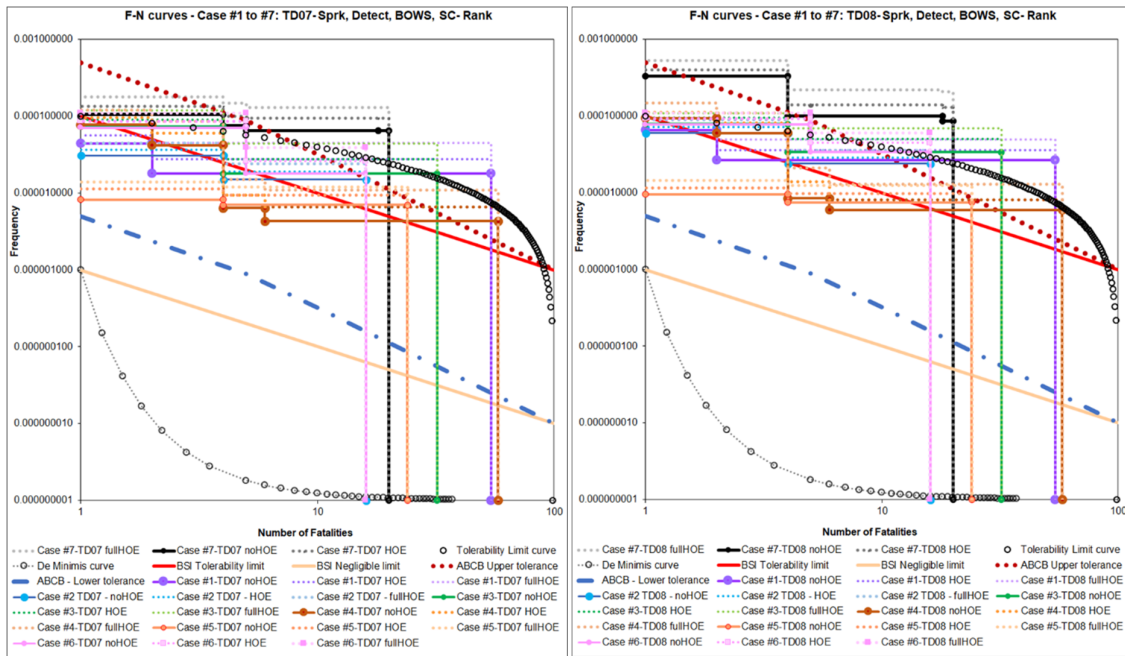


Figure S1. TD05 to TD08.

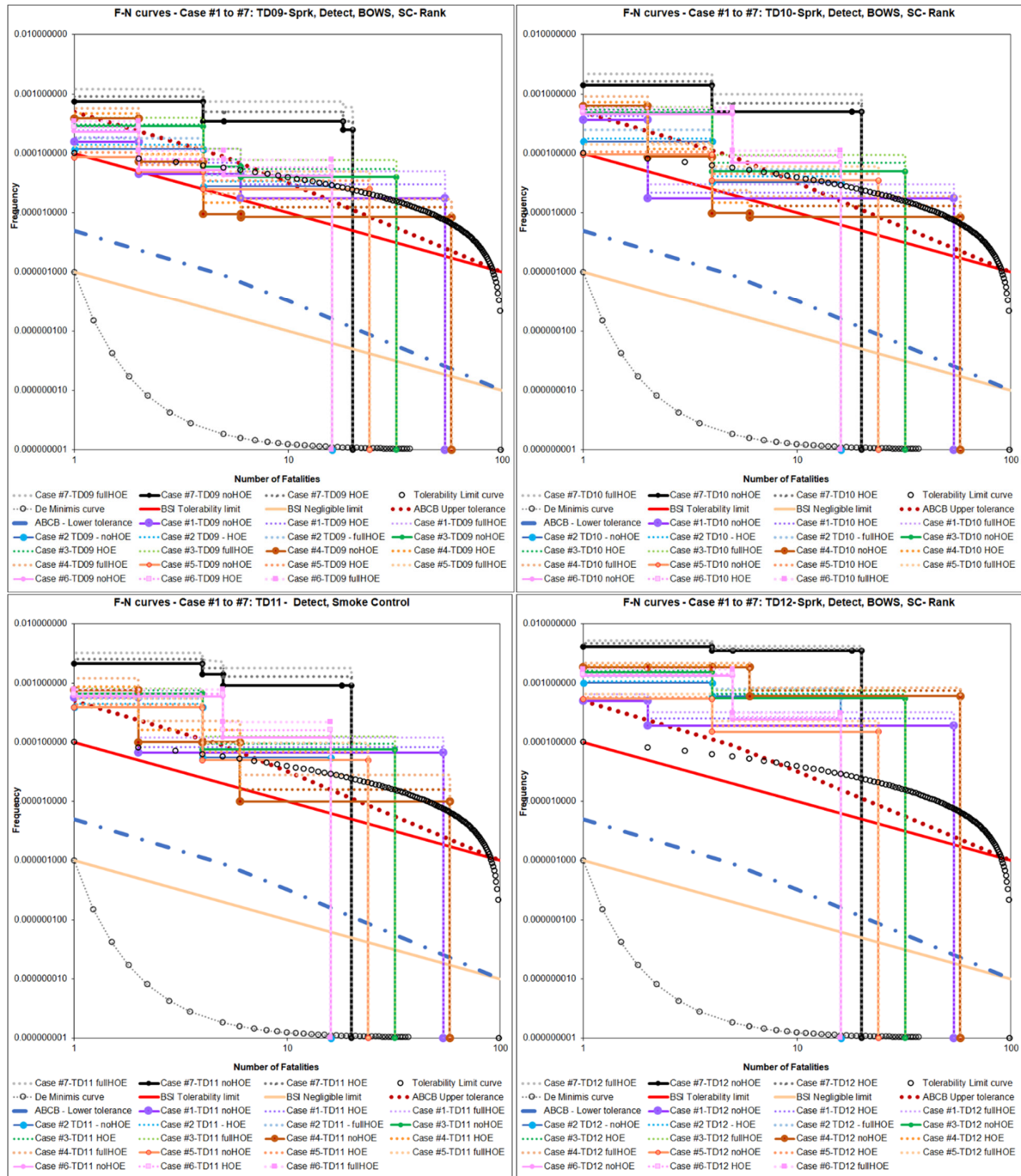


Figure S2. TD09 to TD12.

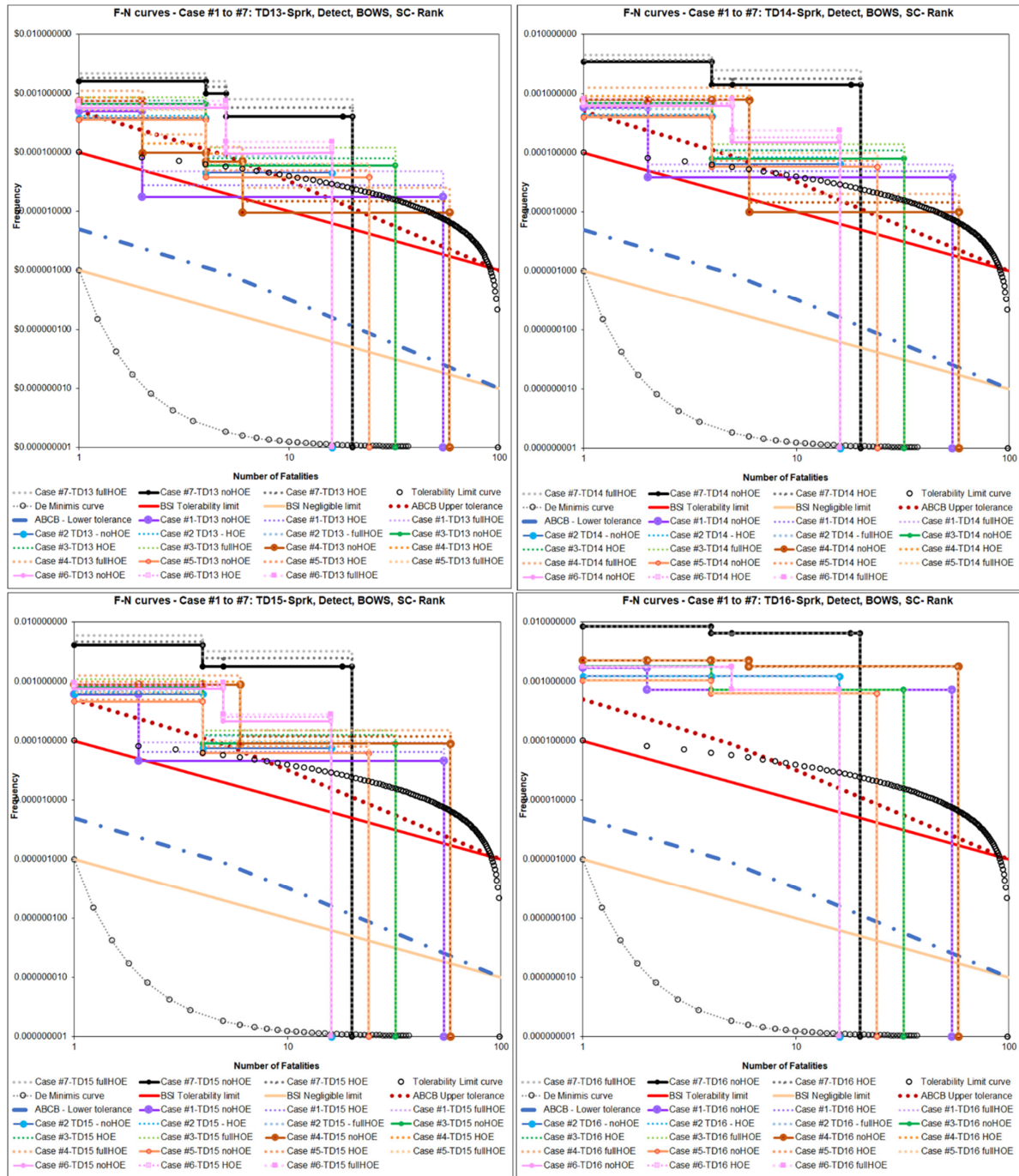
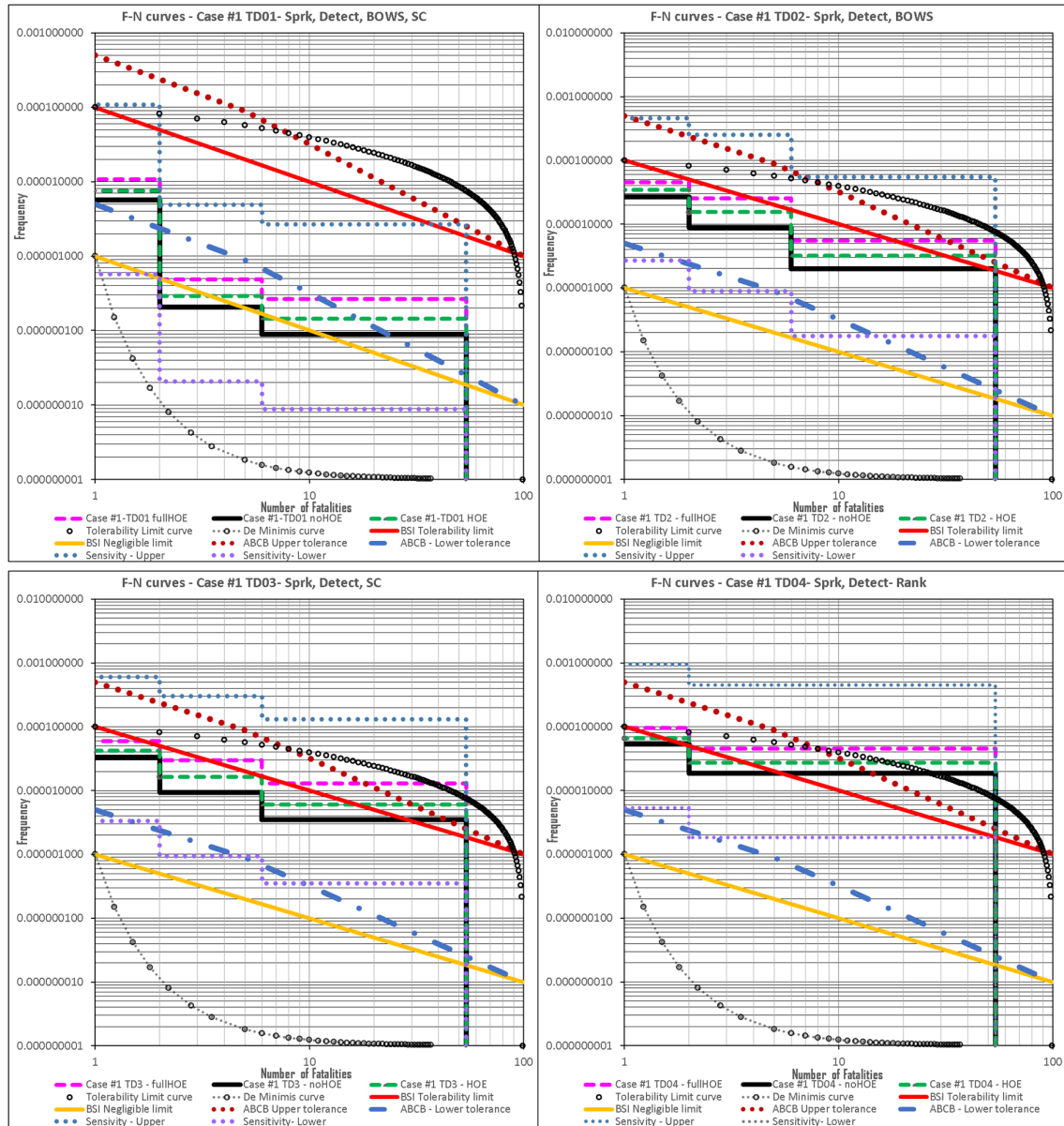
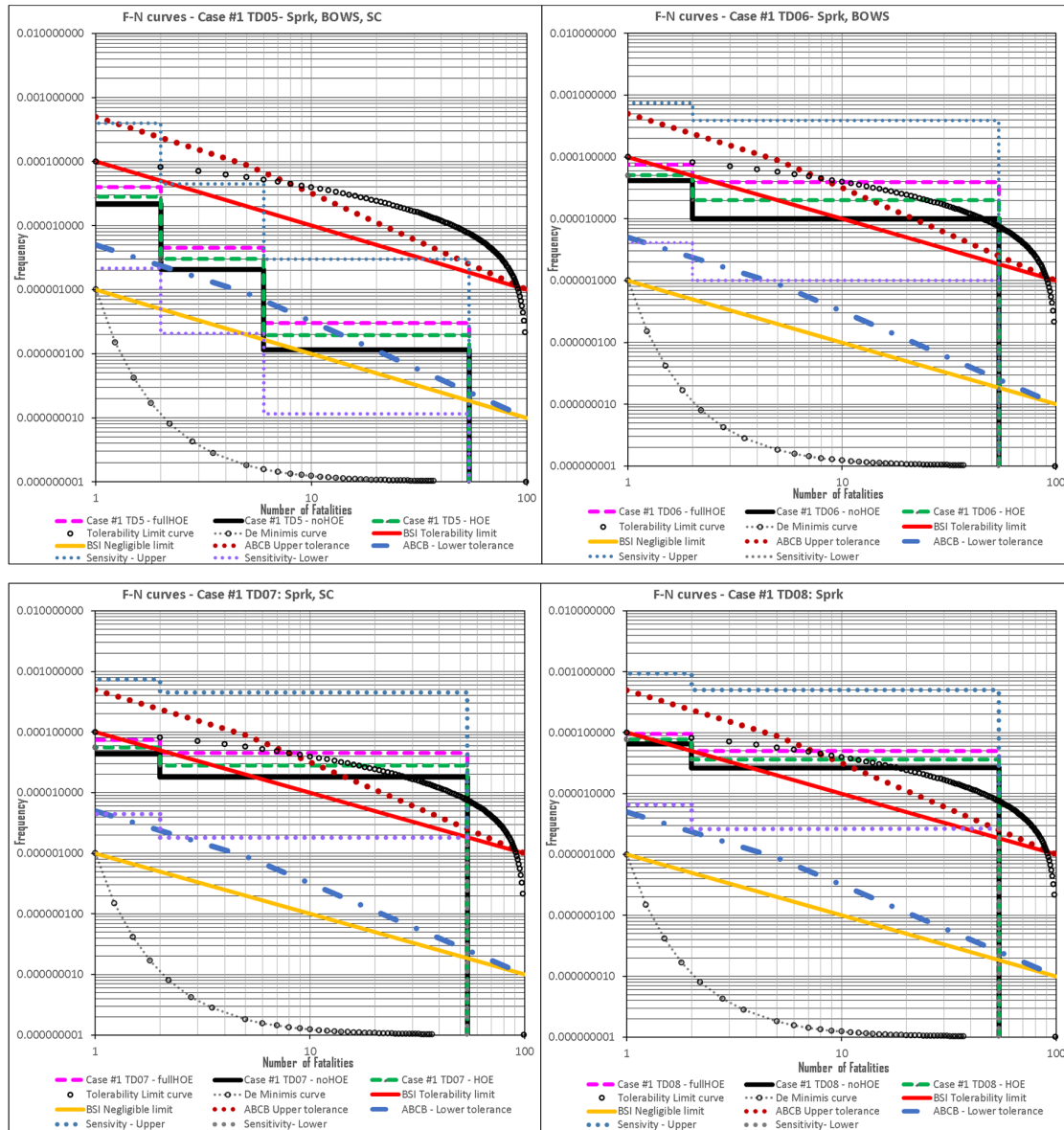


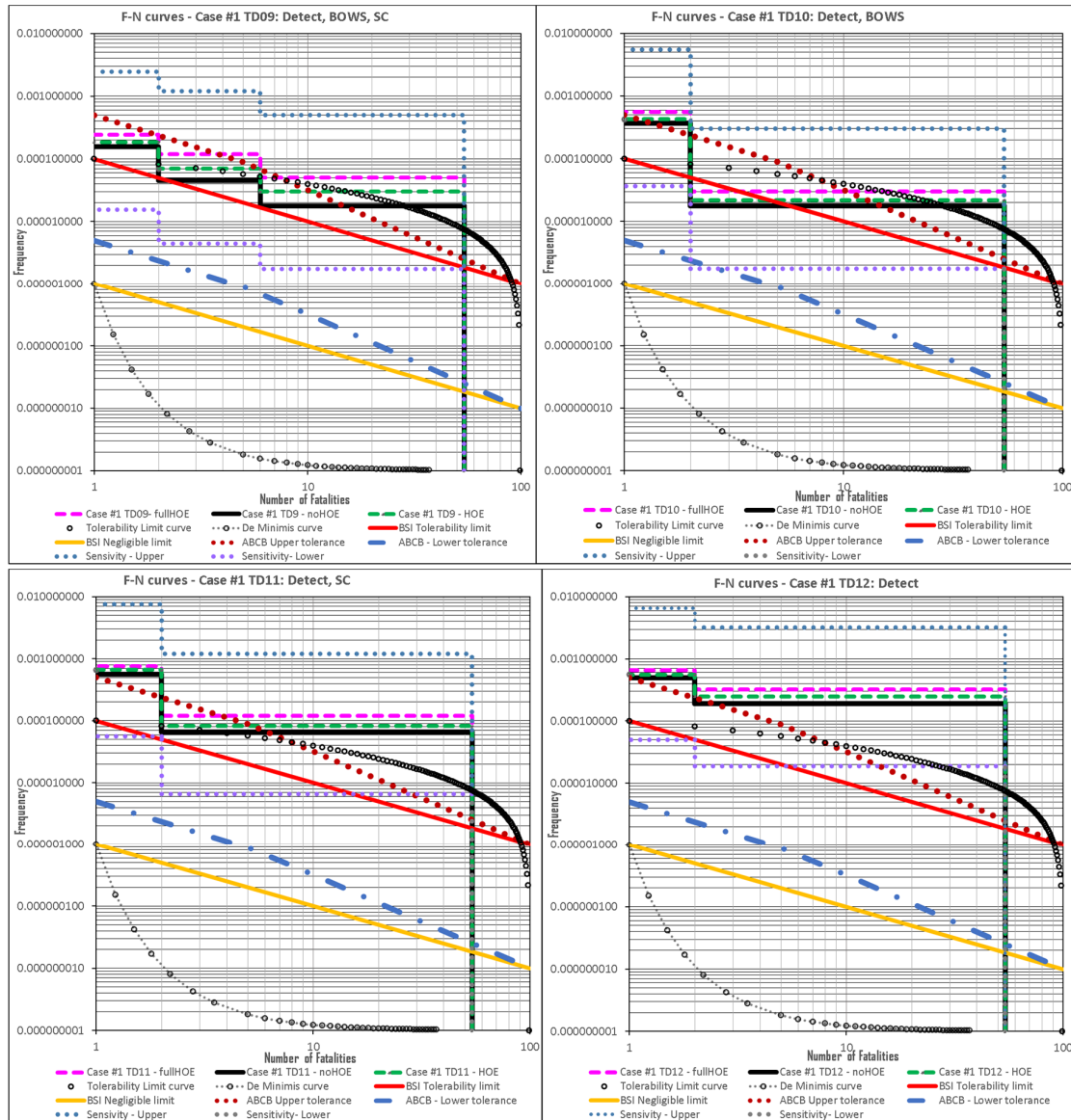
Figure S3. TD13 to TD16.

2. Figures S4-S10: Individual F-N Curves for TD01-16, Case #1 - #7

For all the Trial Designs 1-16 in the case studies, the upper HOE sensitivity in the F-N curves is indicated by a black dotted curve one order of magnitude ( $\times 101$ ) increased frequency of fire (applicable for all plots) and the lower sensitivity (blue dotted line) of F-N curve is one order of magnitude ( $\times 10^{-1}$ ) decreased frequency of fire. If any part of the sensitivity curve is at the upper criterion, it indicates that more detailed analysis is needed to reduce risk to ALARP zone.







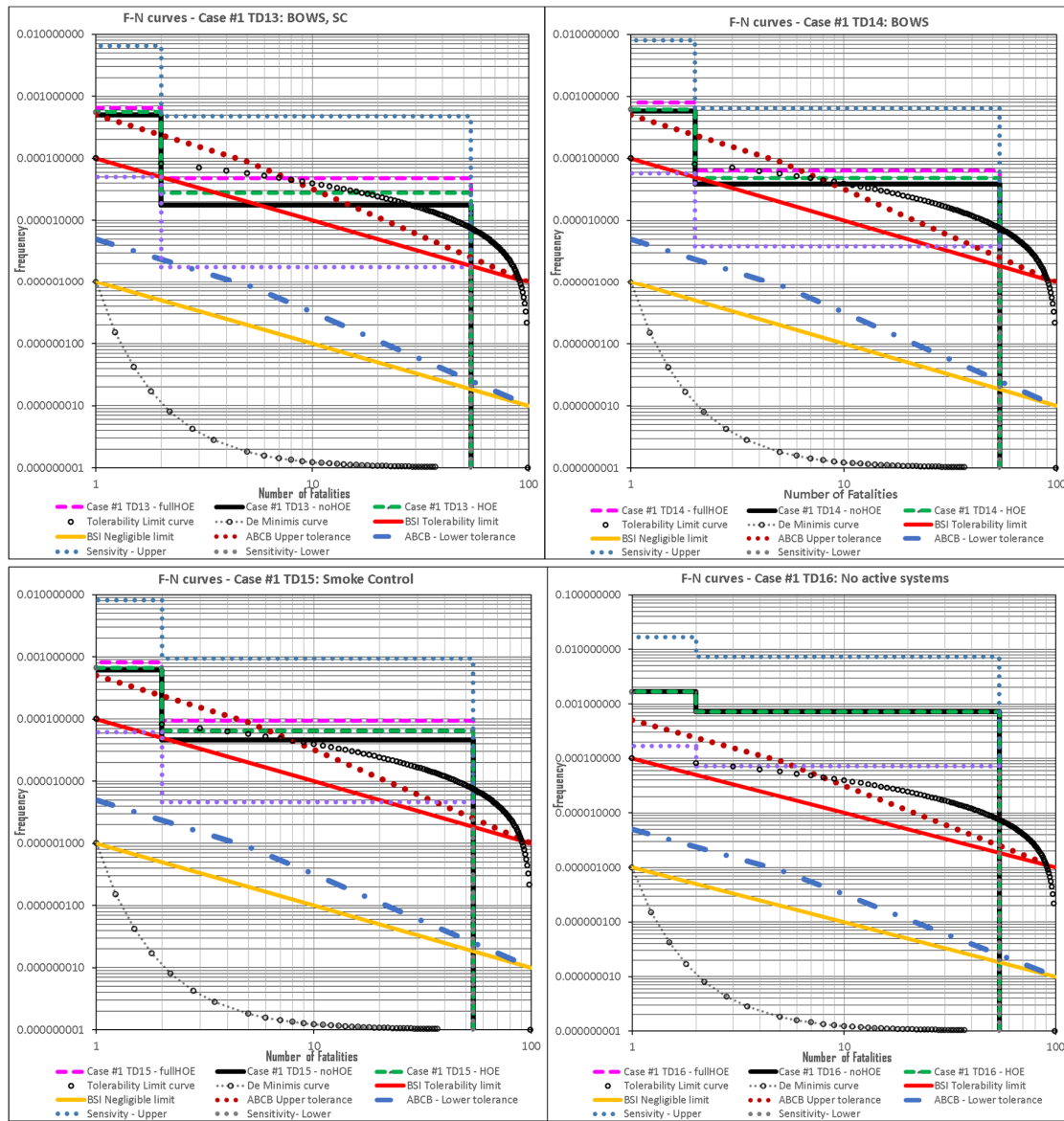
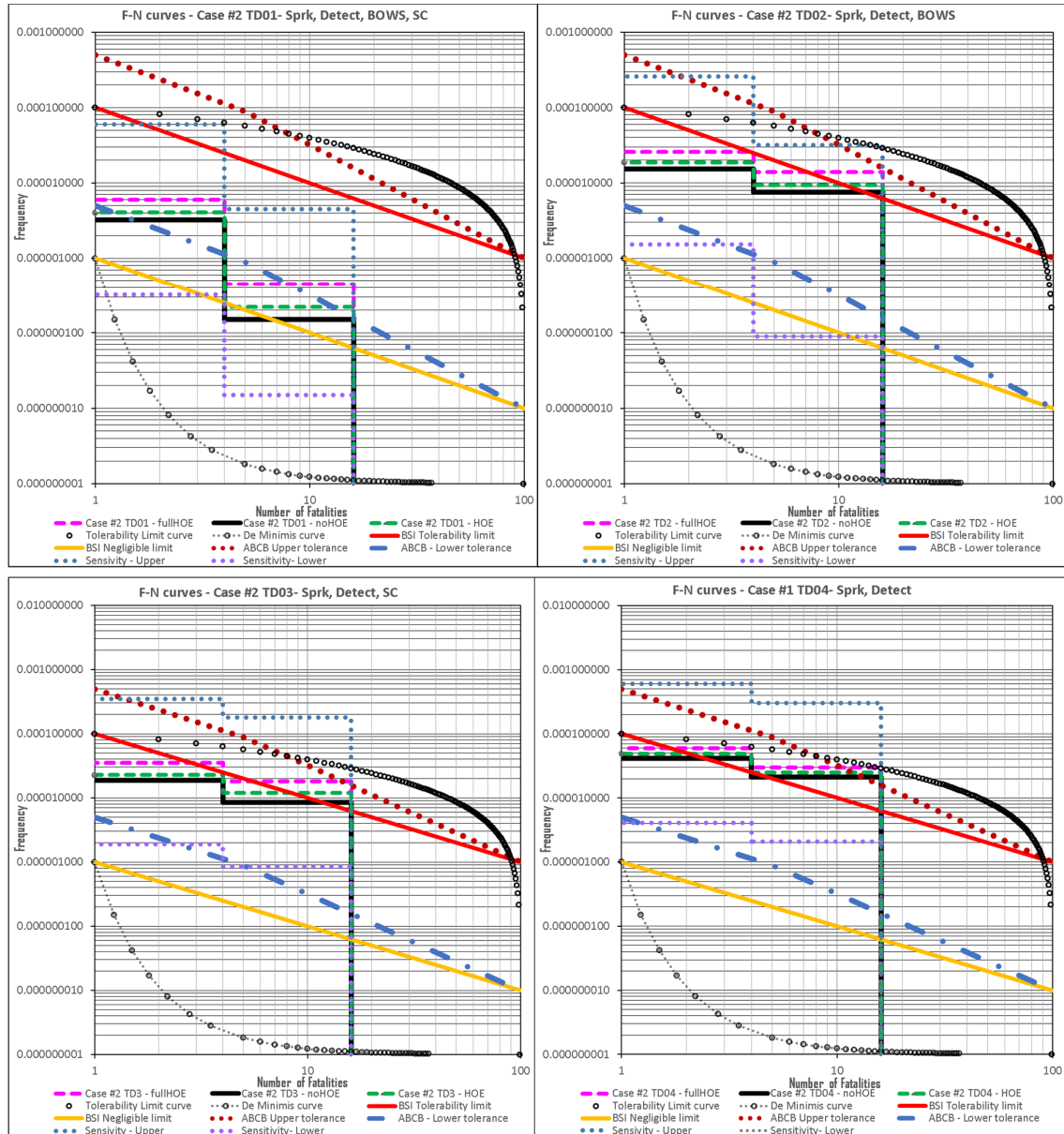
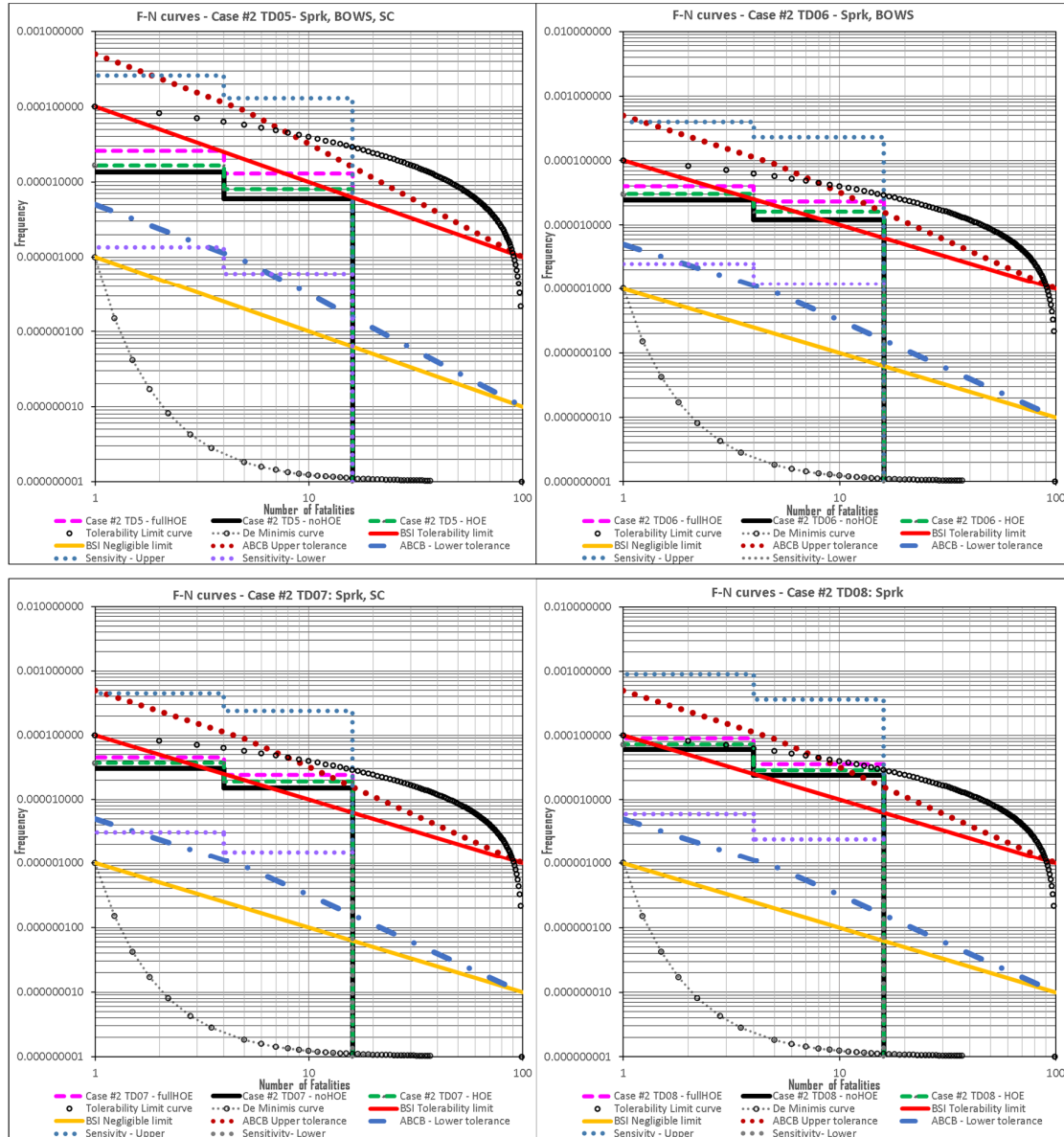
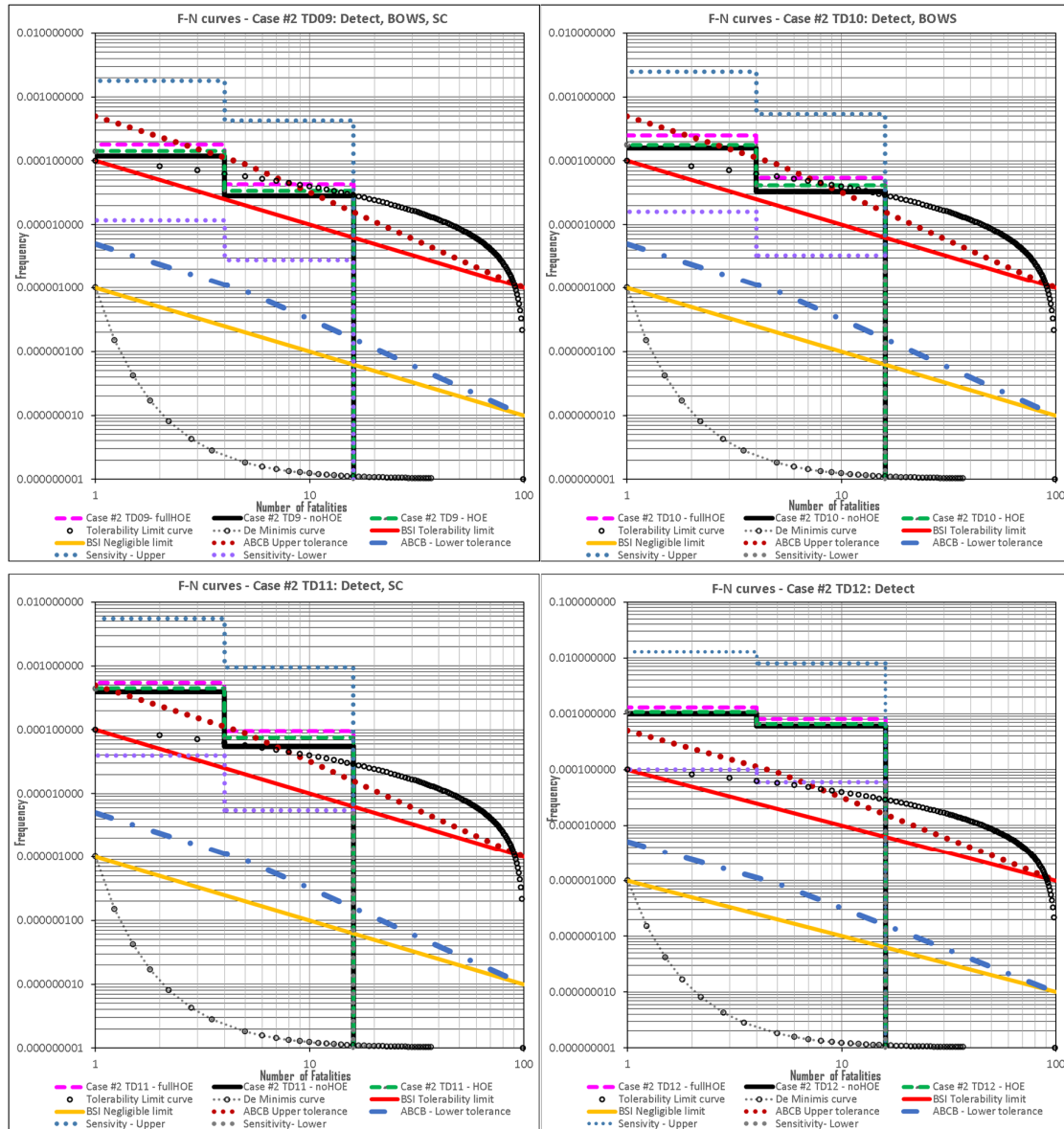


Figure S4. Case #1 TD01 to TD16.









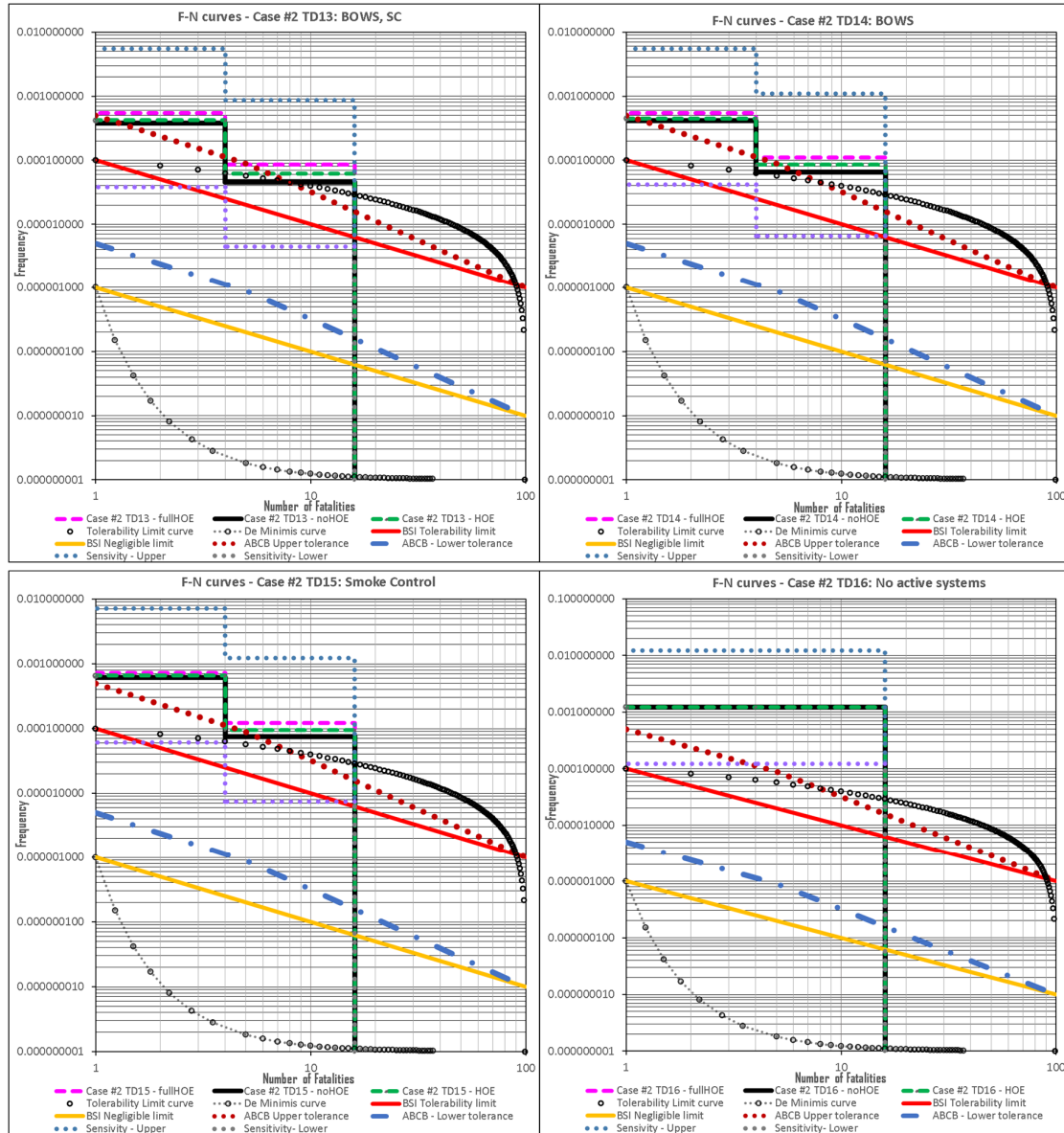
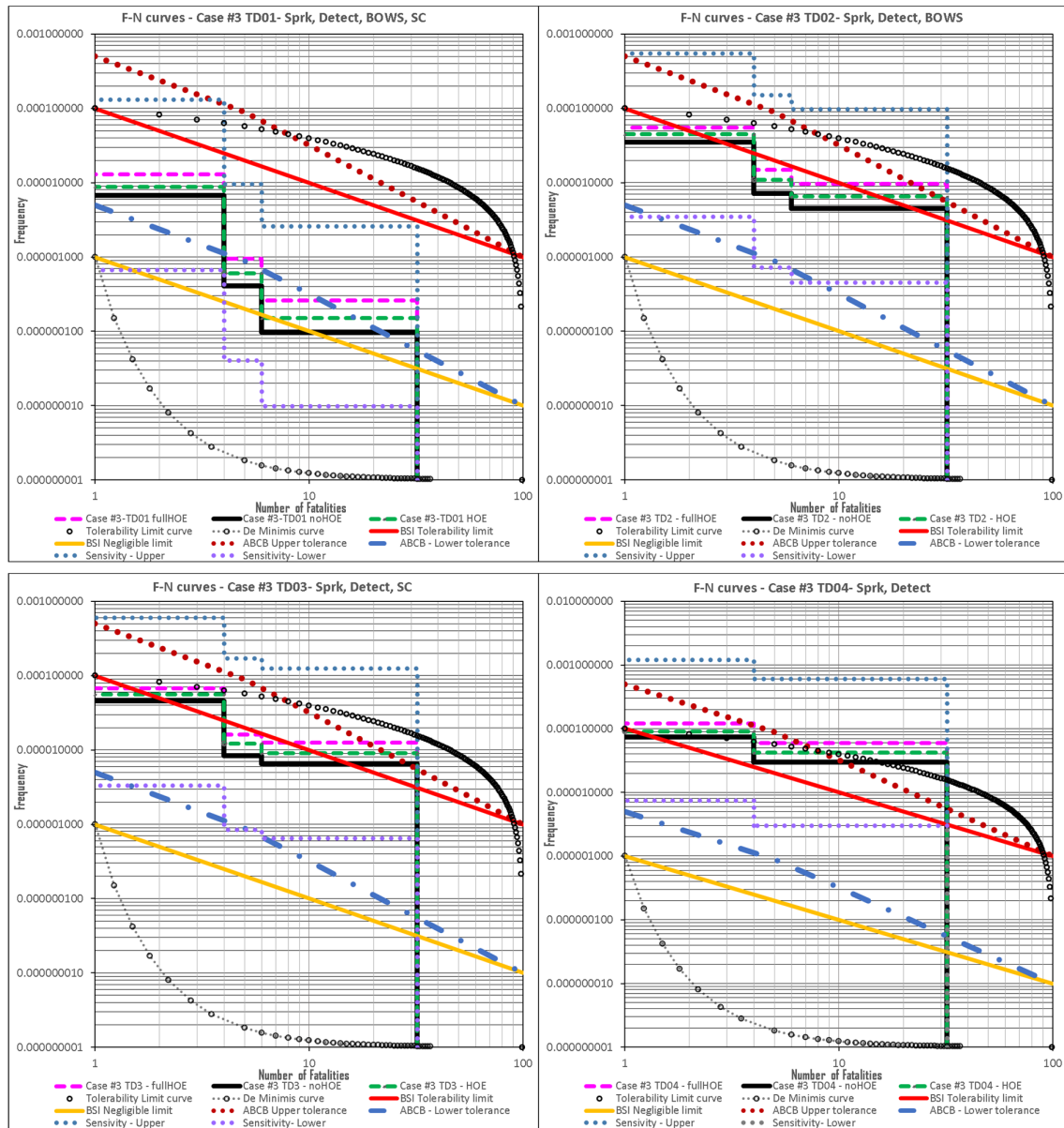
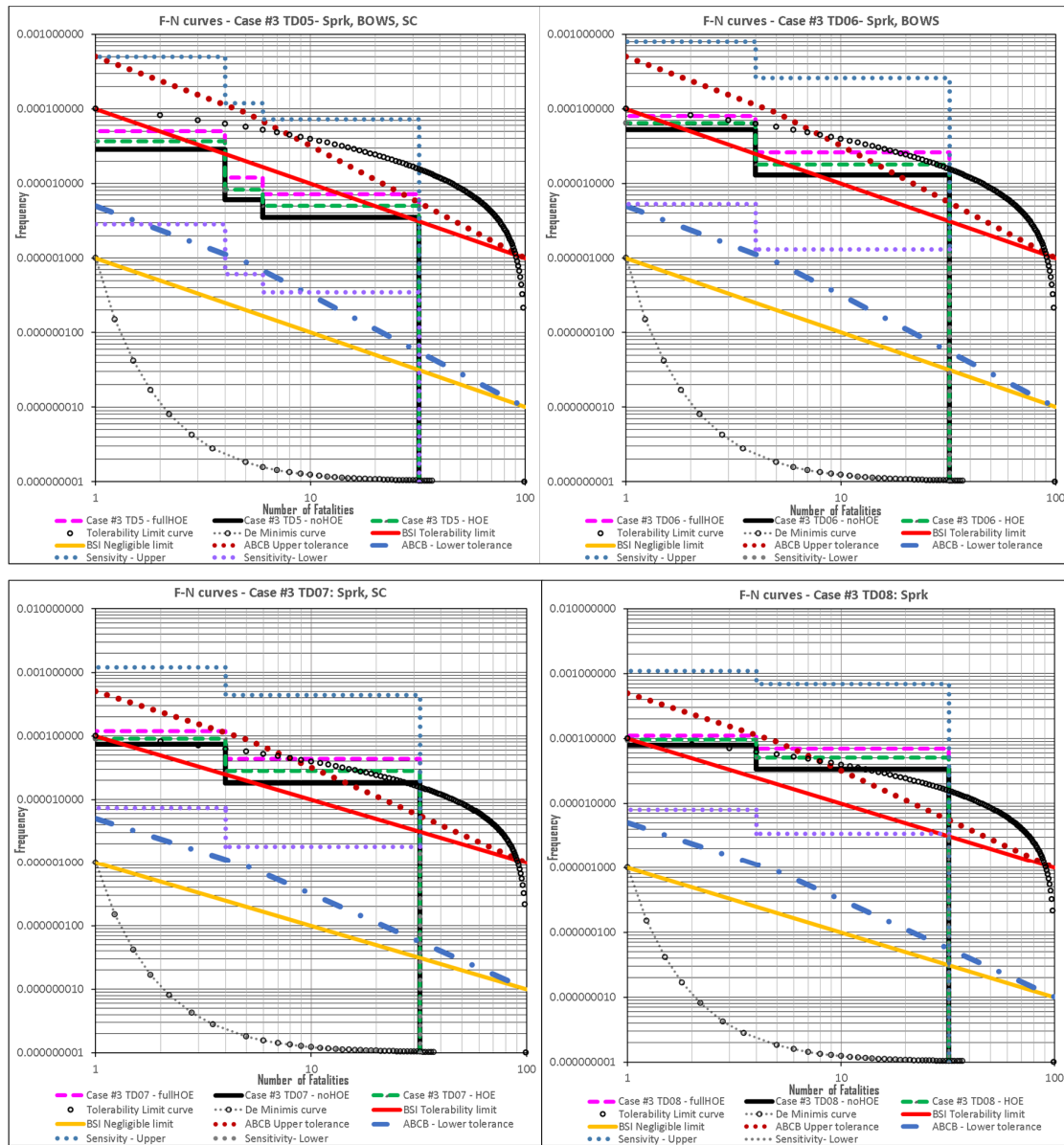
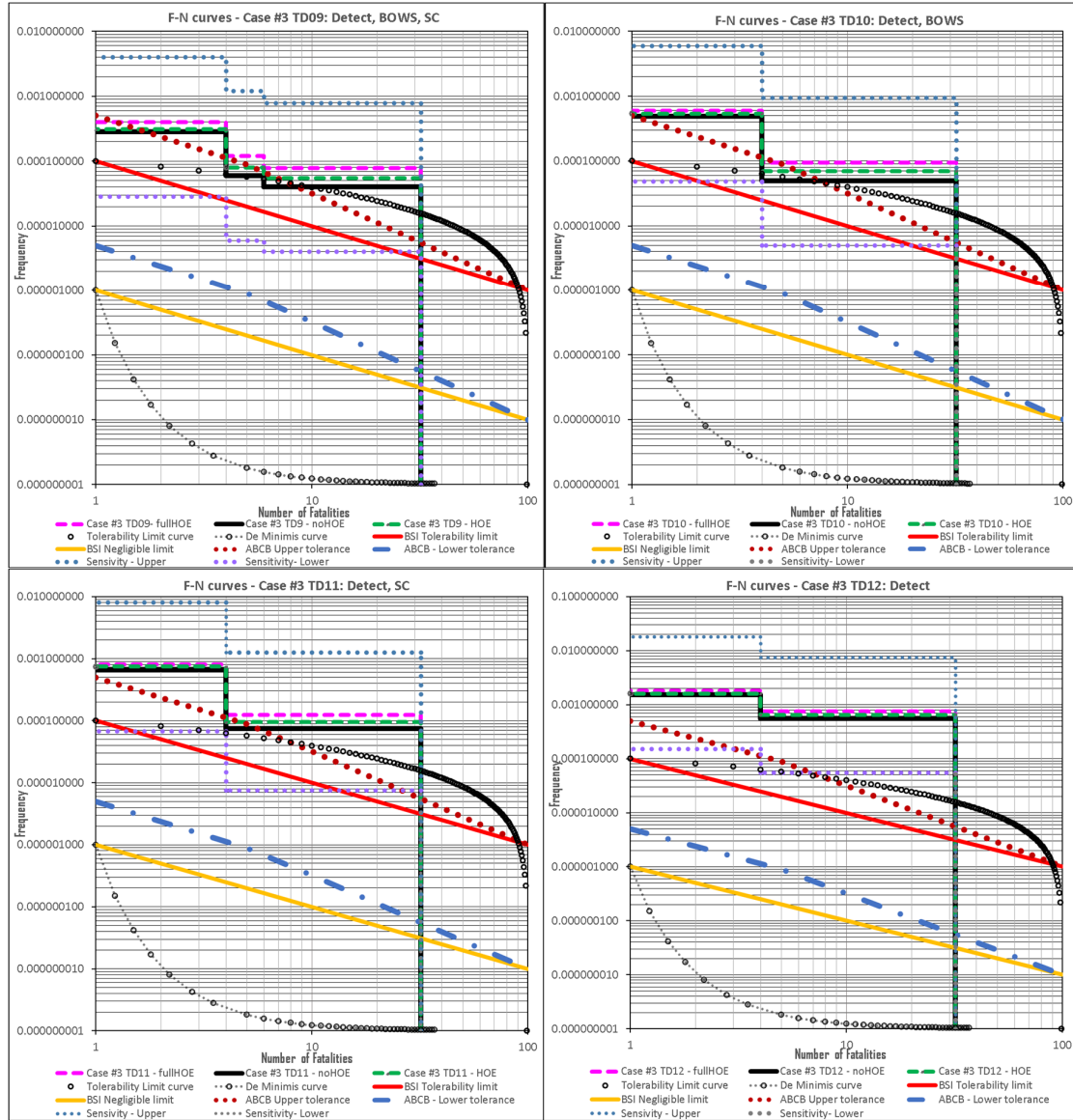


Figure S5. Case #2 TD01 to TD16.







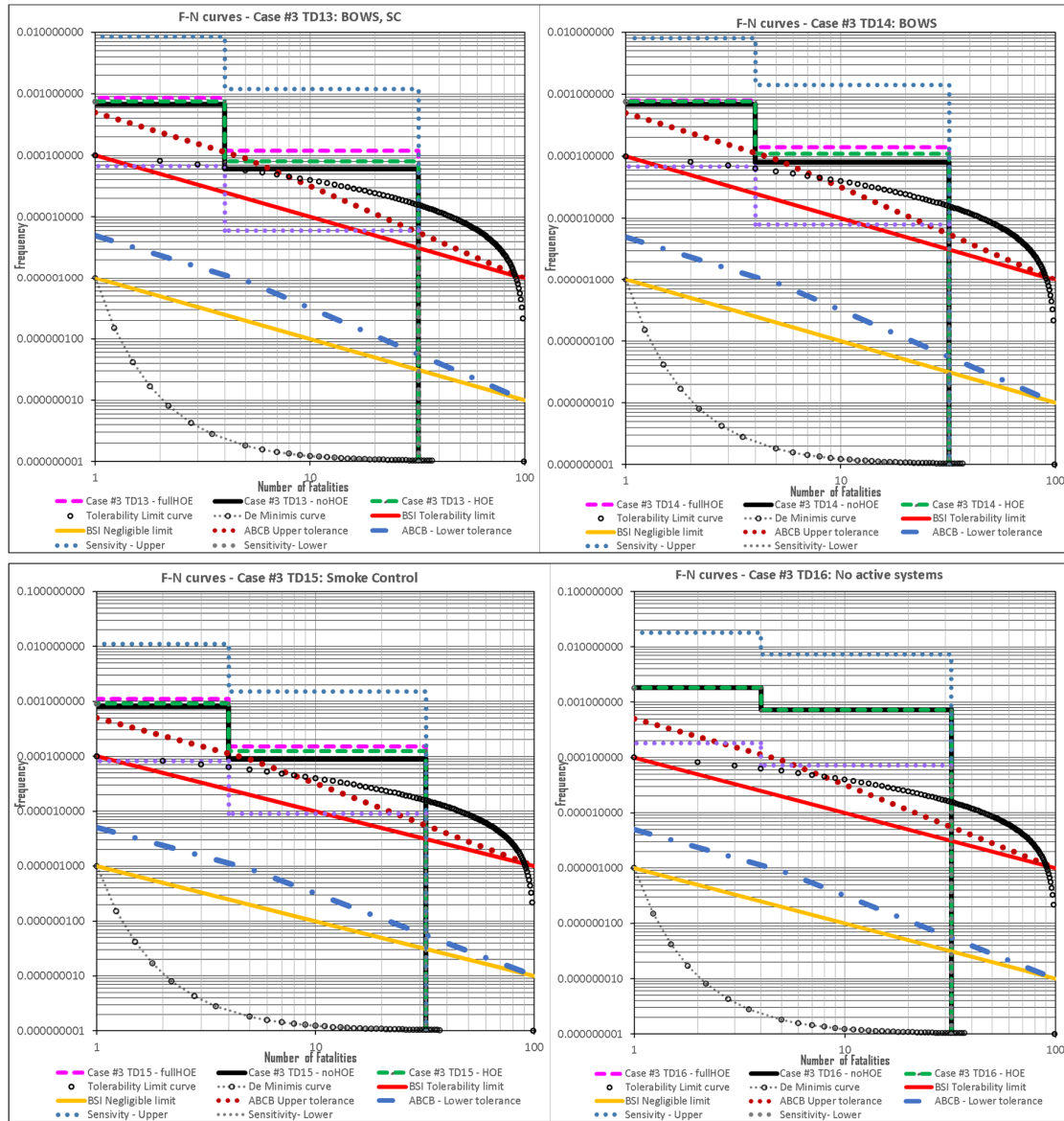
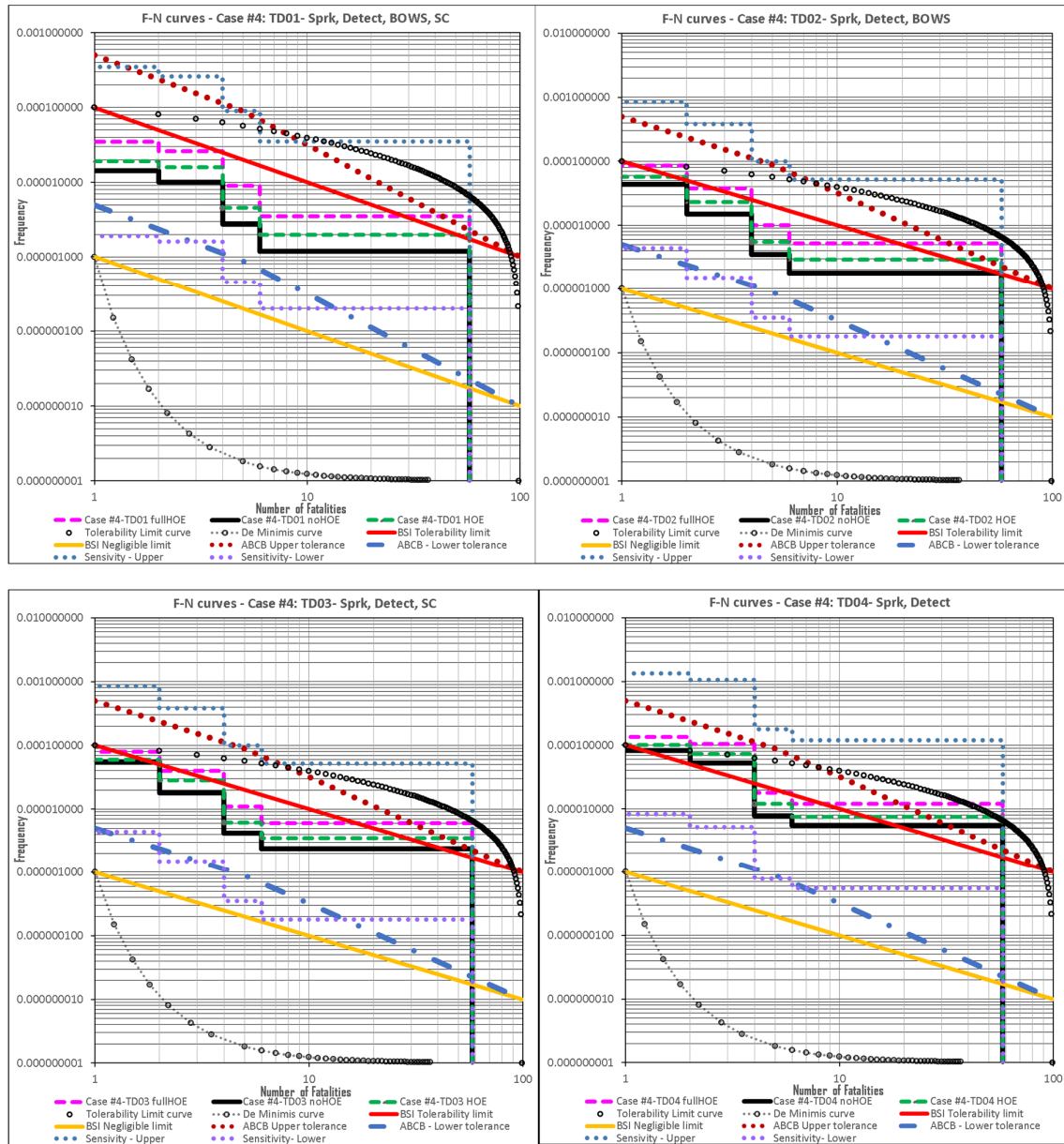
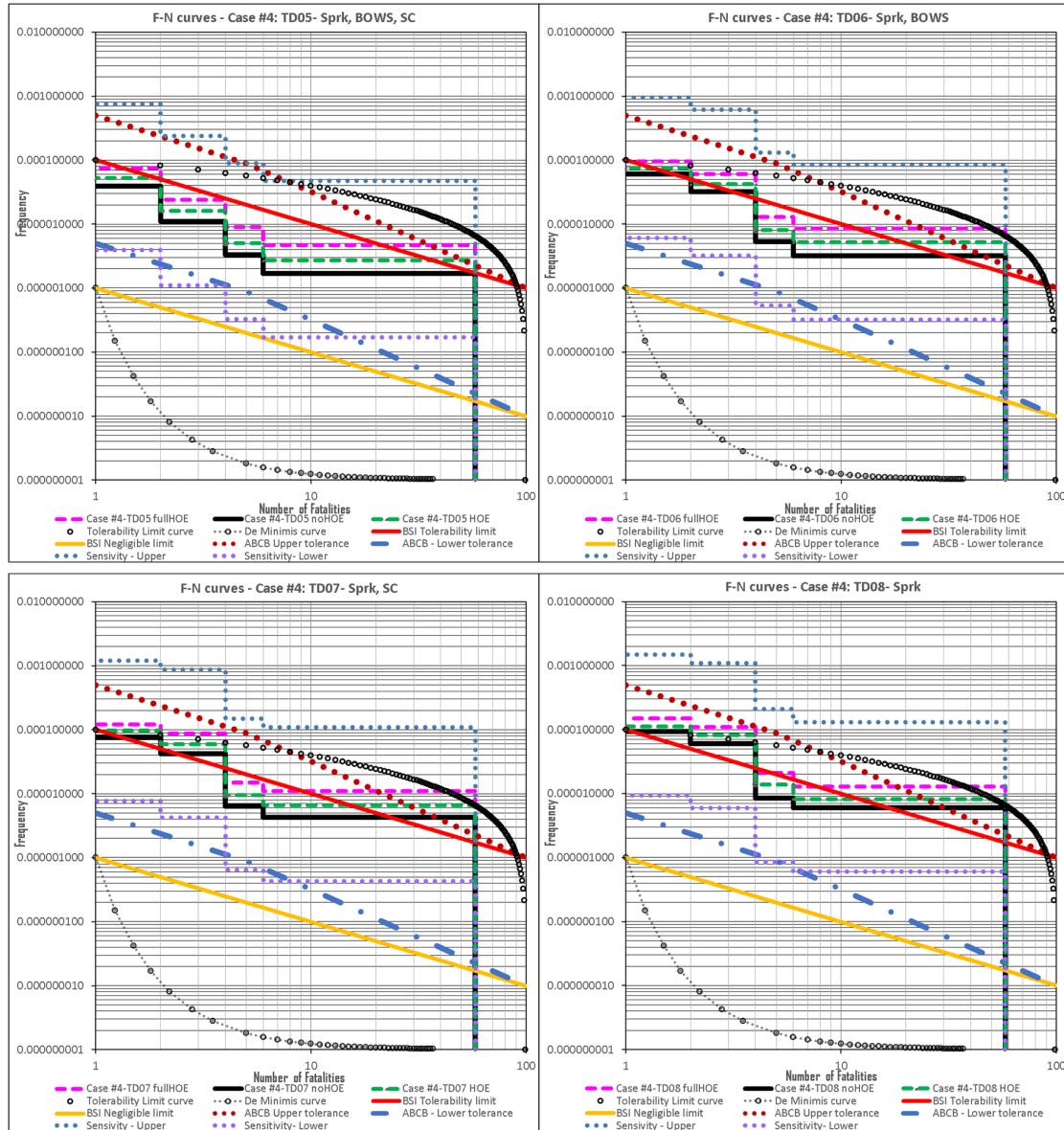
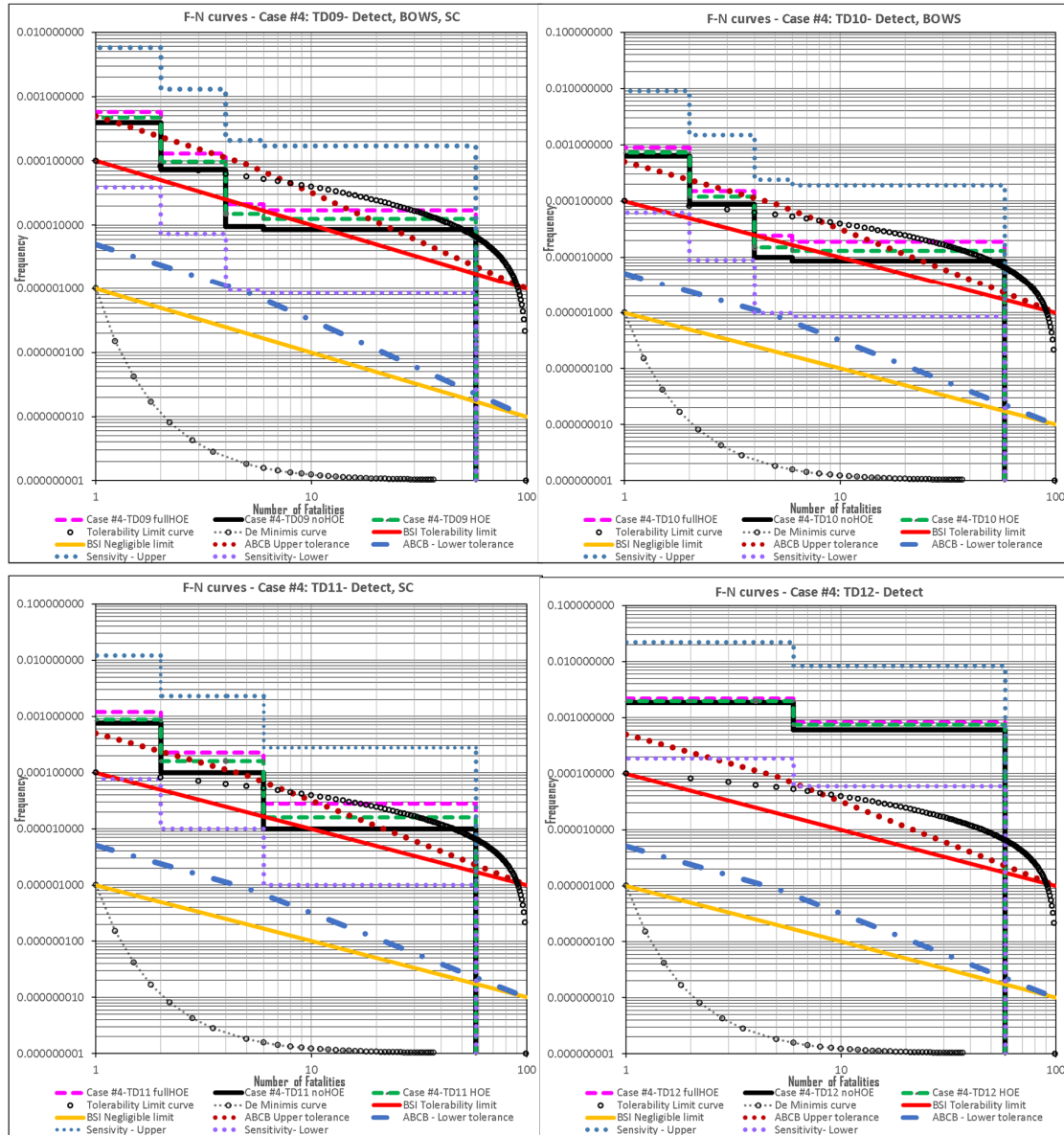


Figure S6. Case #3 TD01 to TD16.









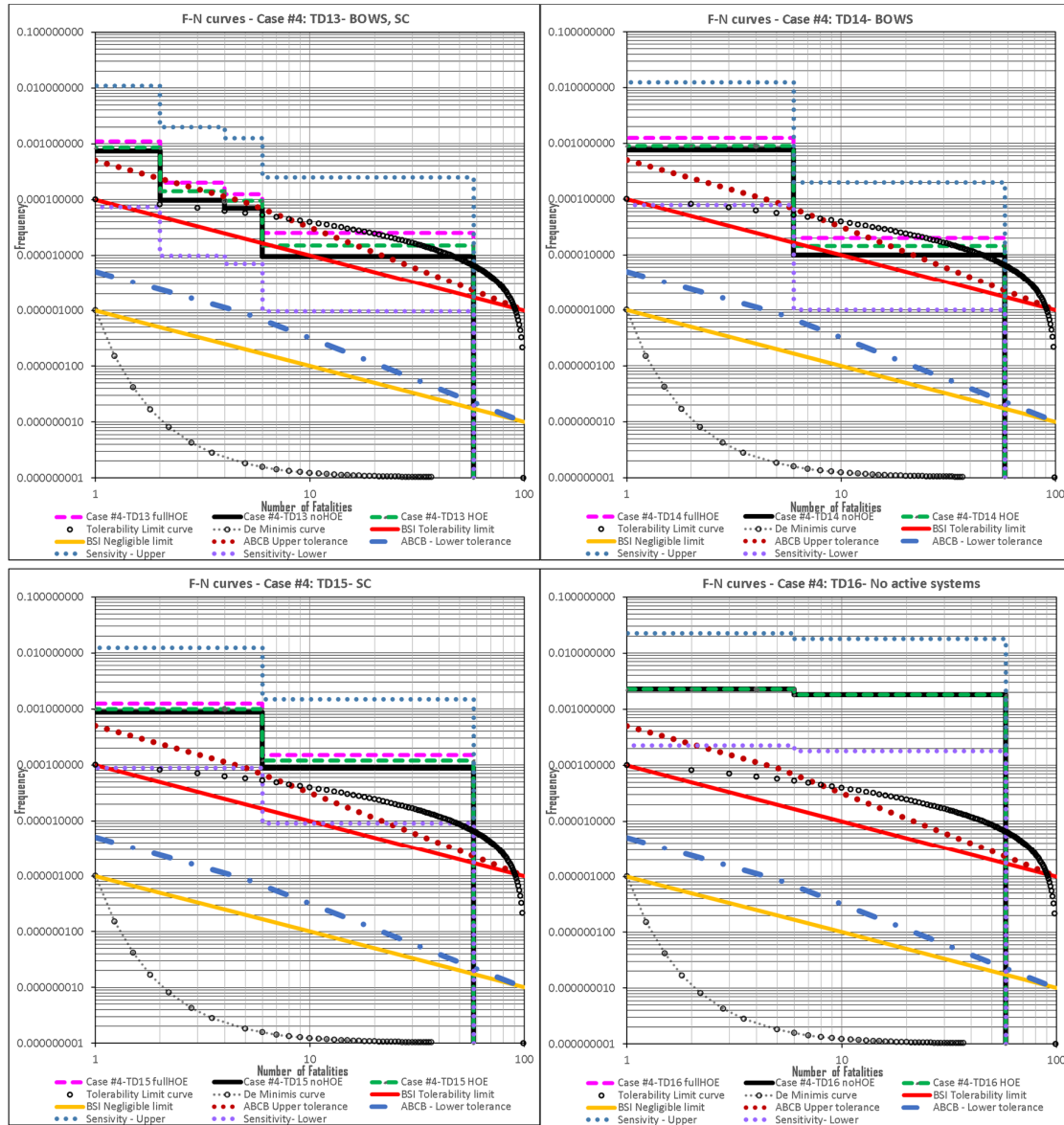
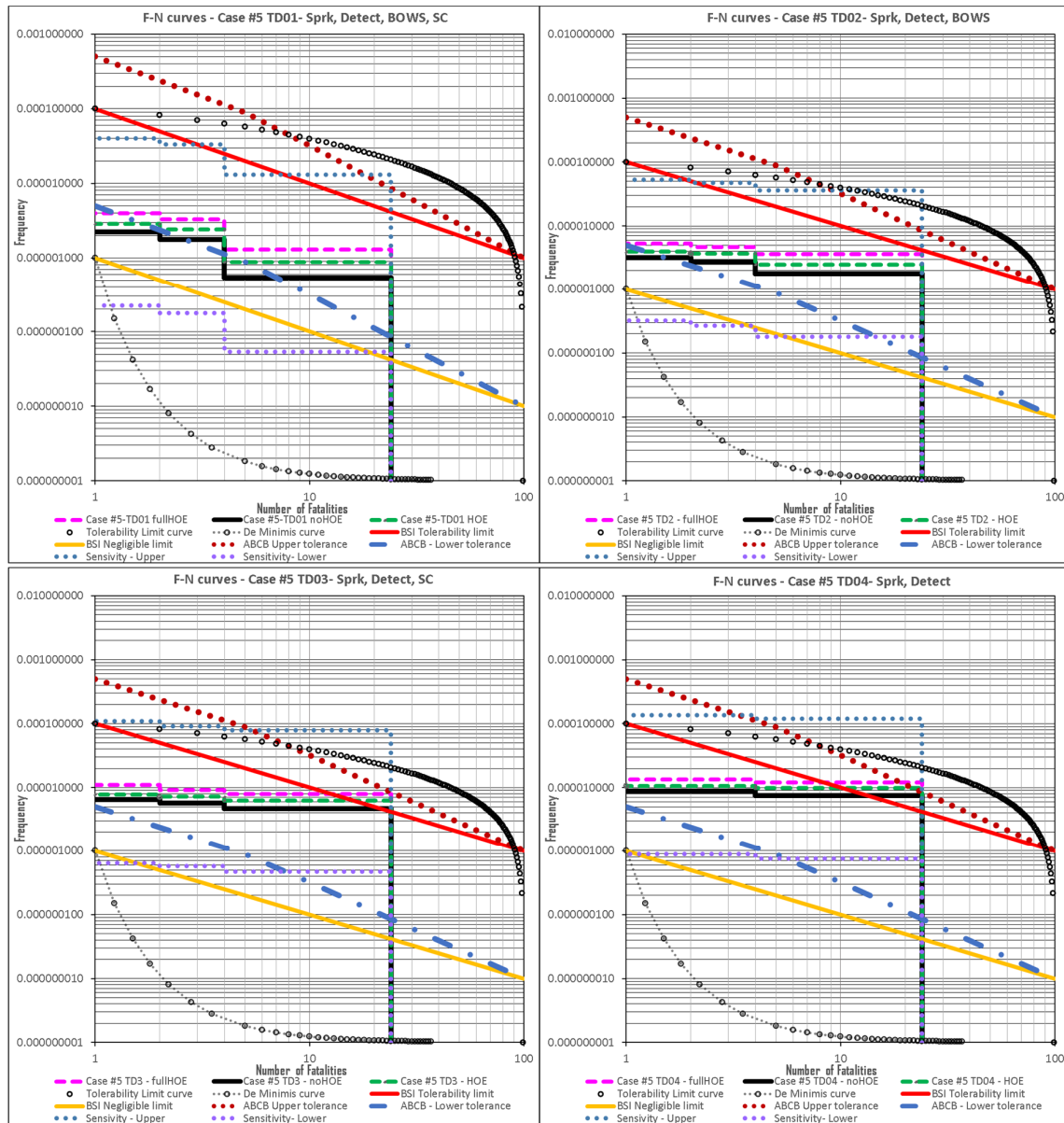
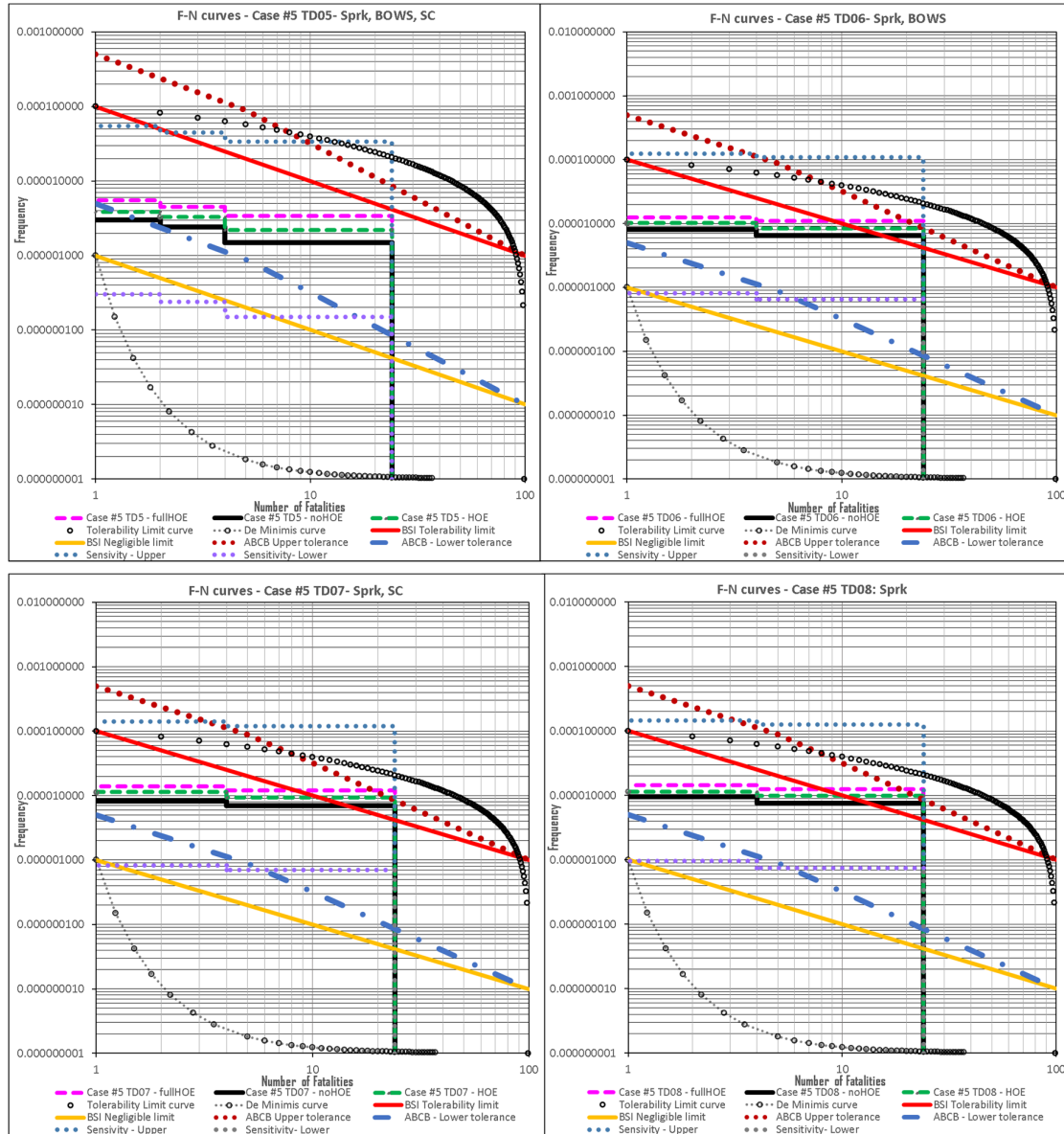
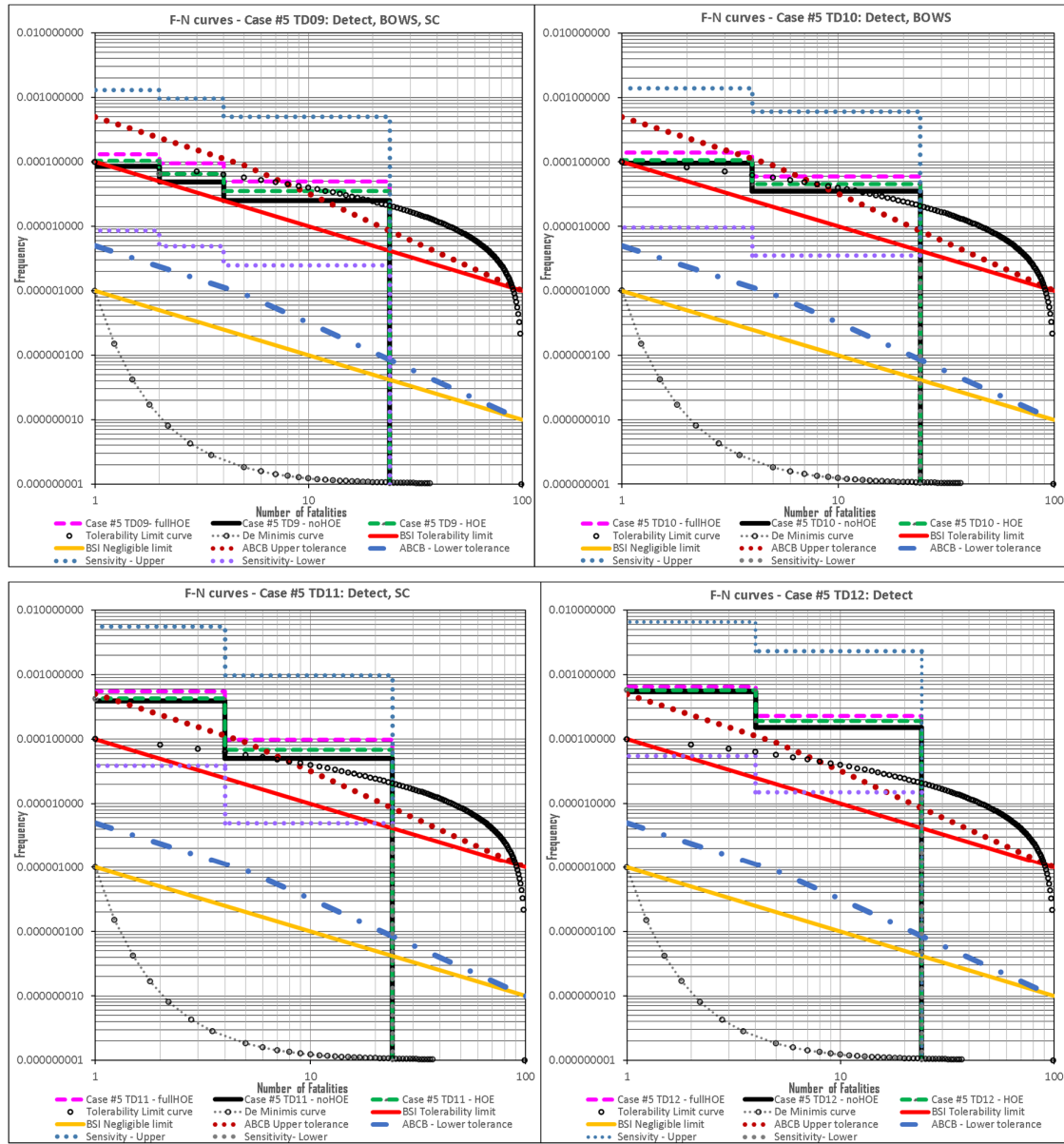


Figure S7. Case #4 TD01 to TD16.







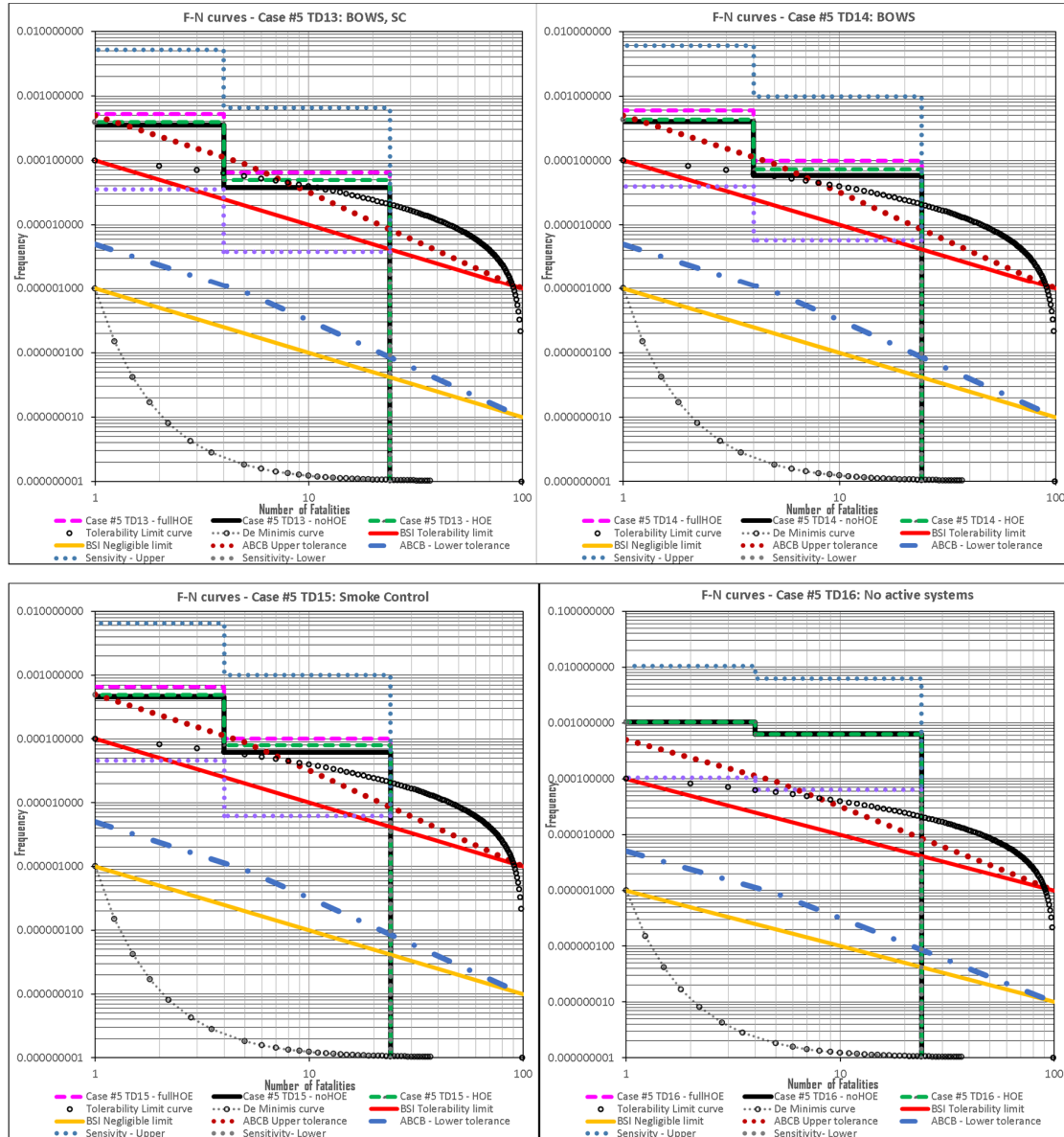
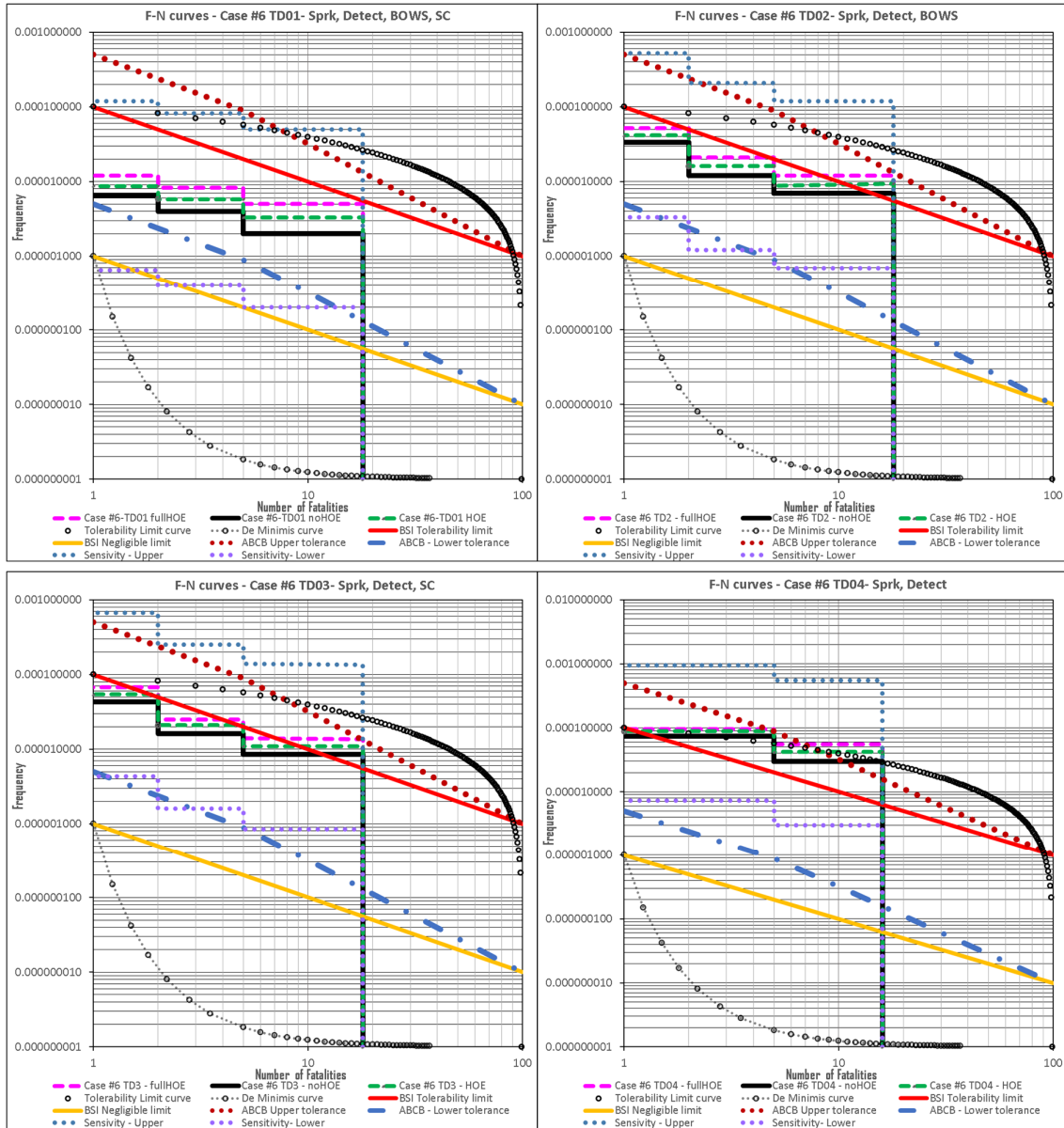
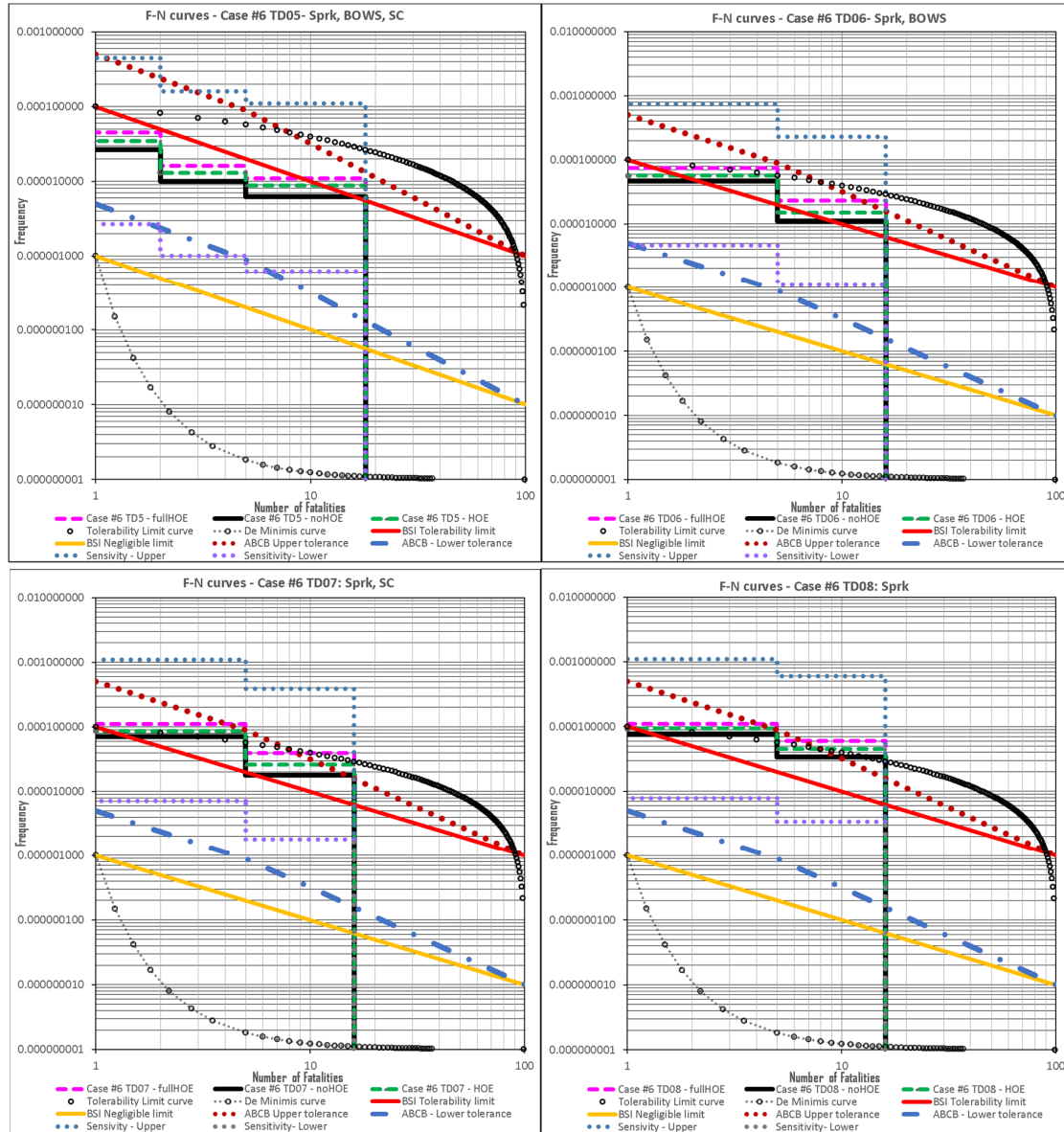
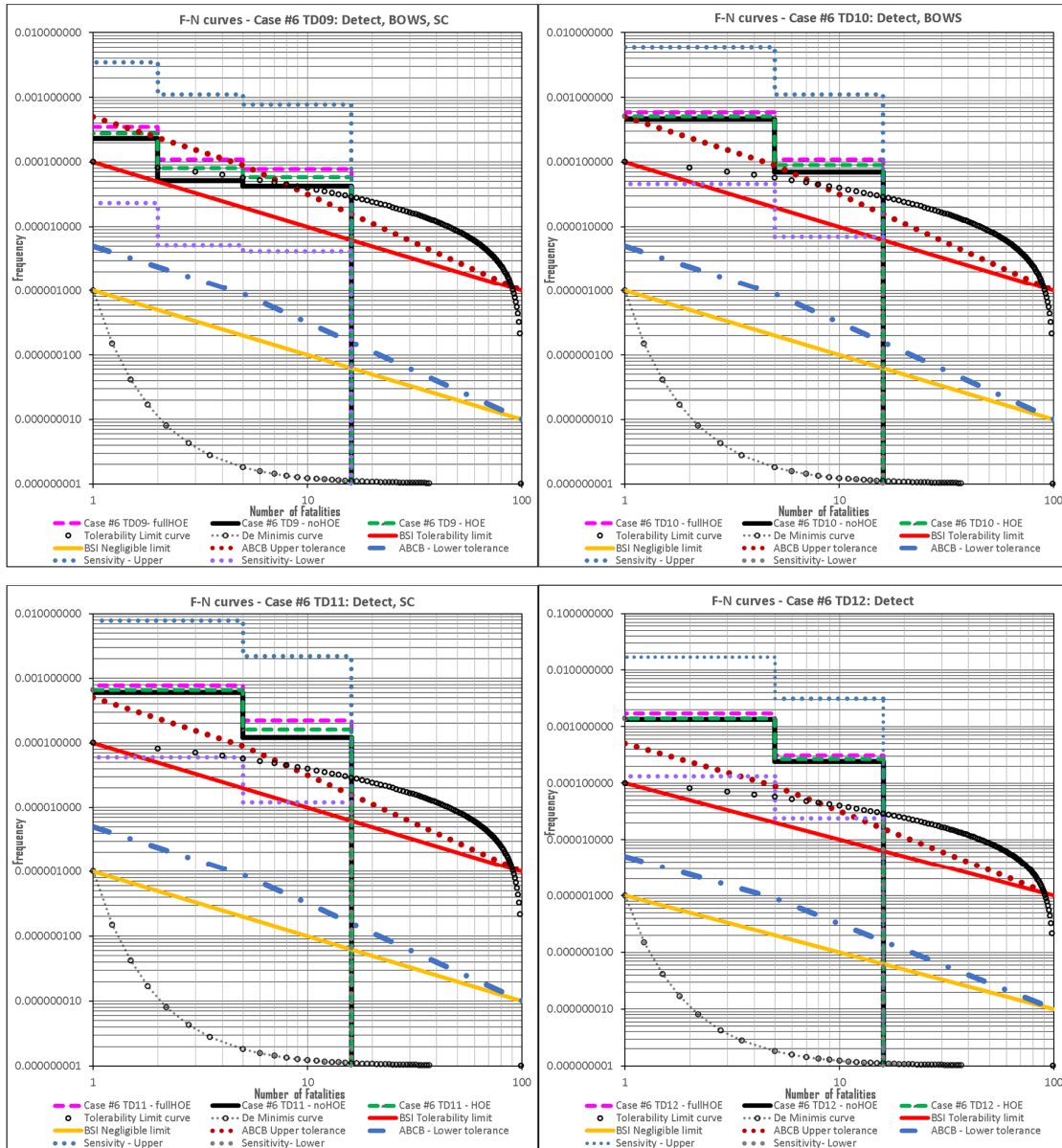


Figure S8. Case #5 TD01 to TD16.









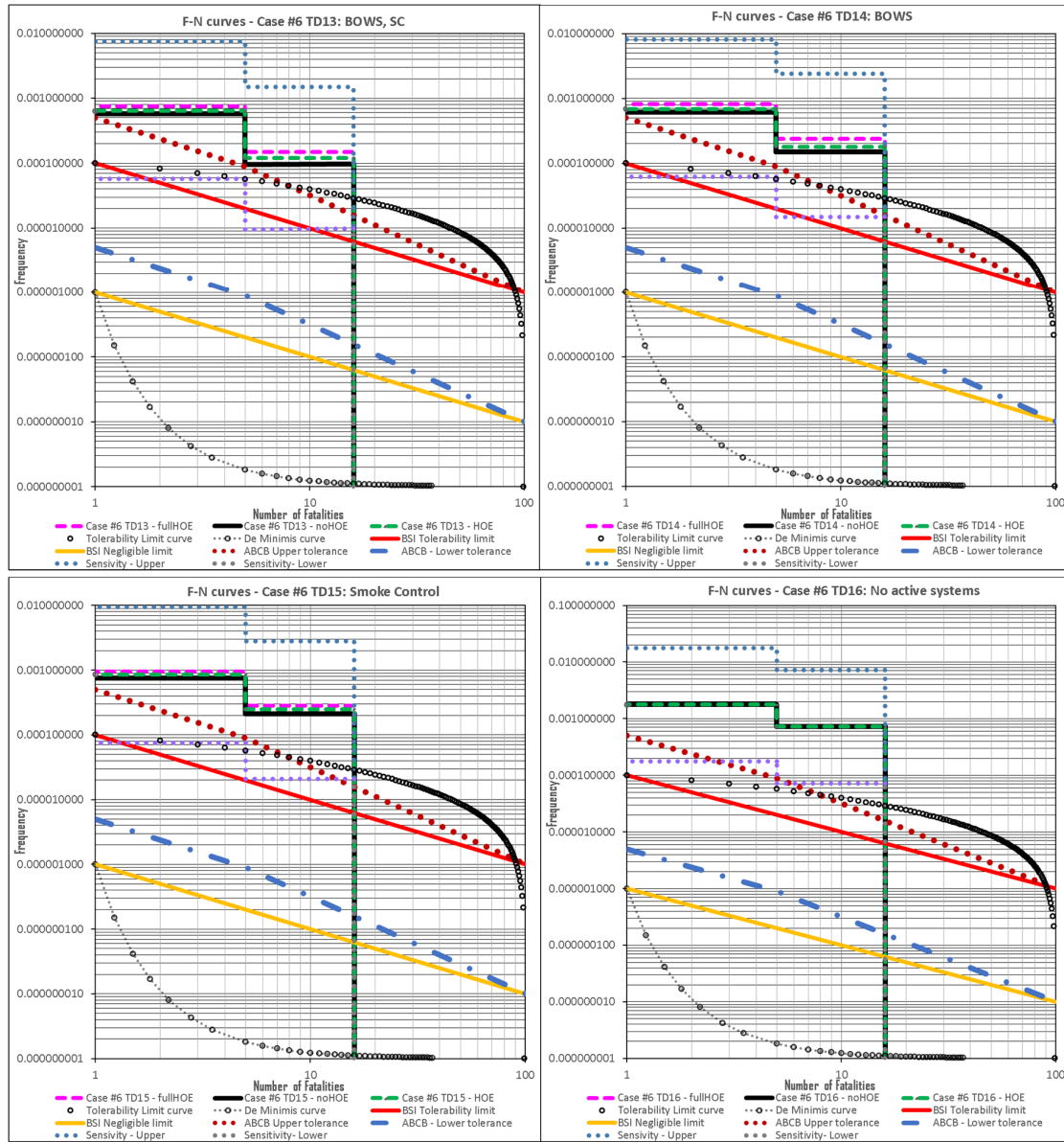
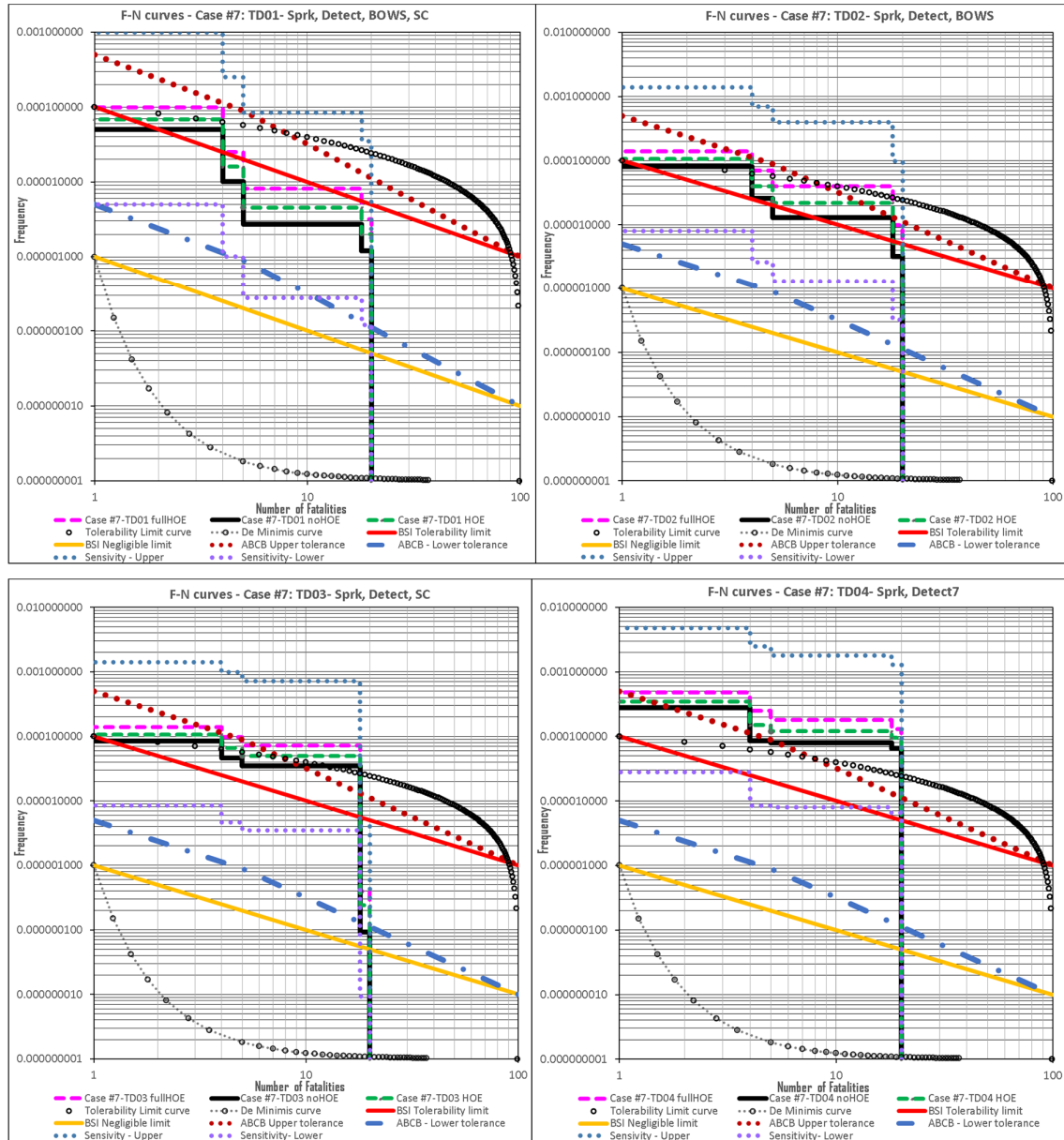
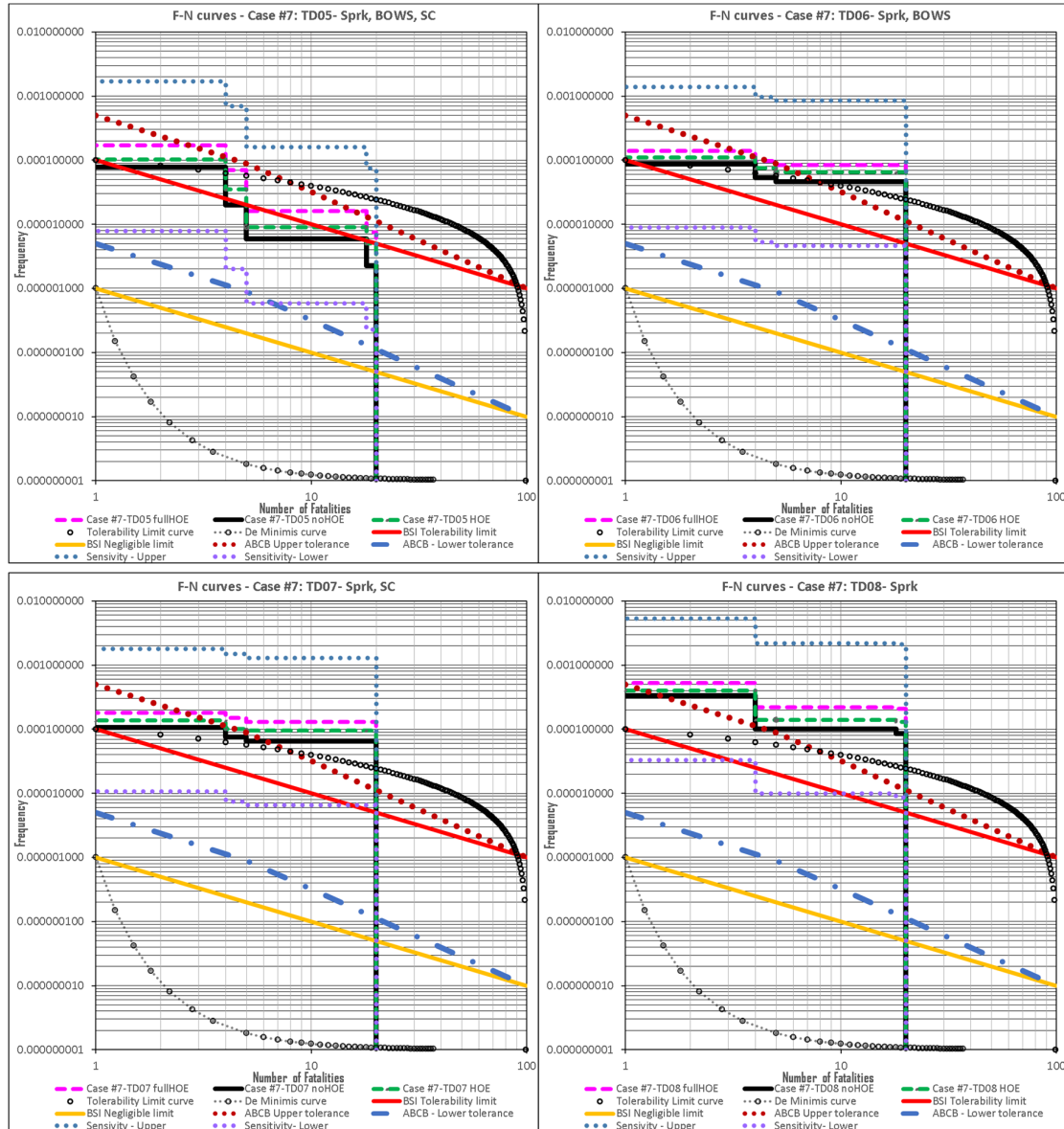
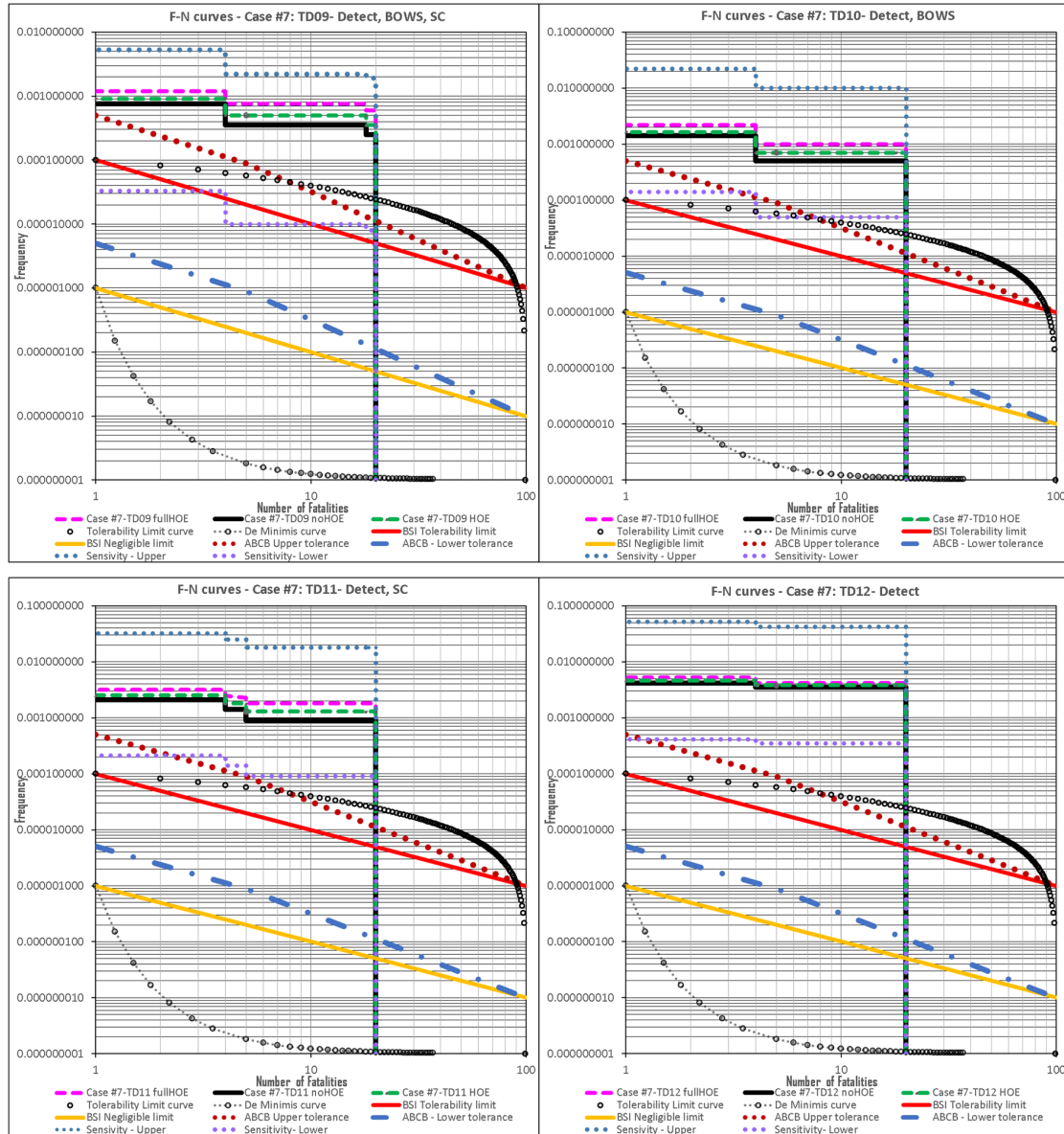


Figure S9. Case #6 TD01 to TD16.







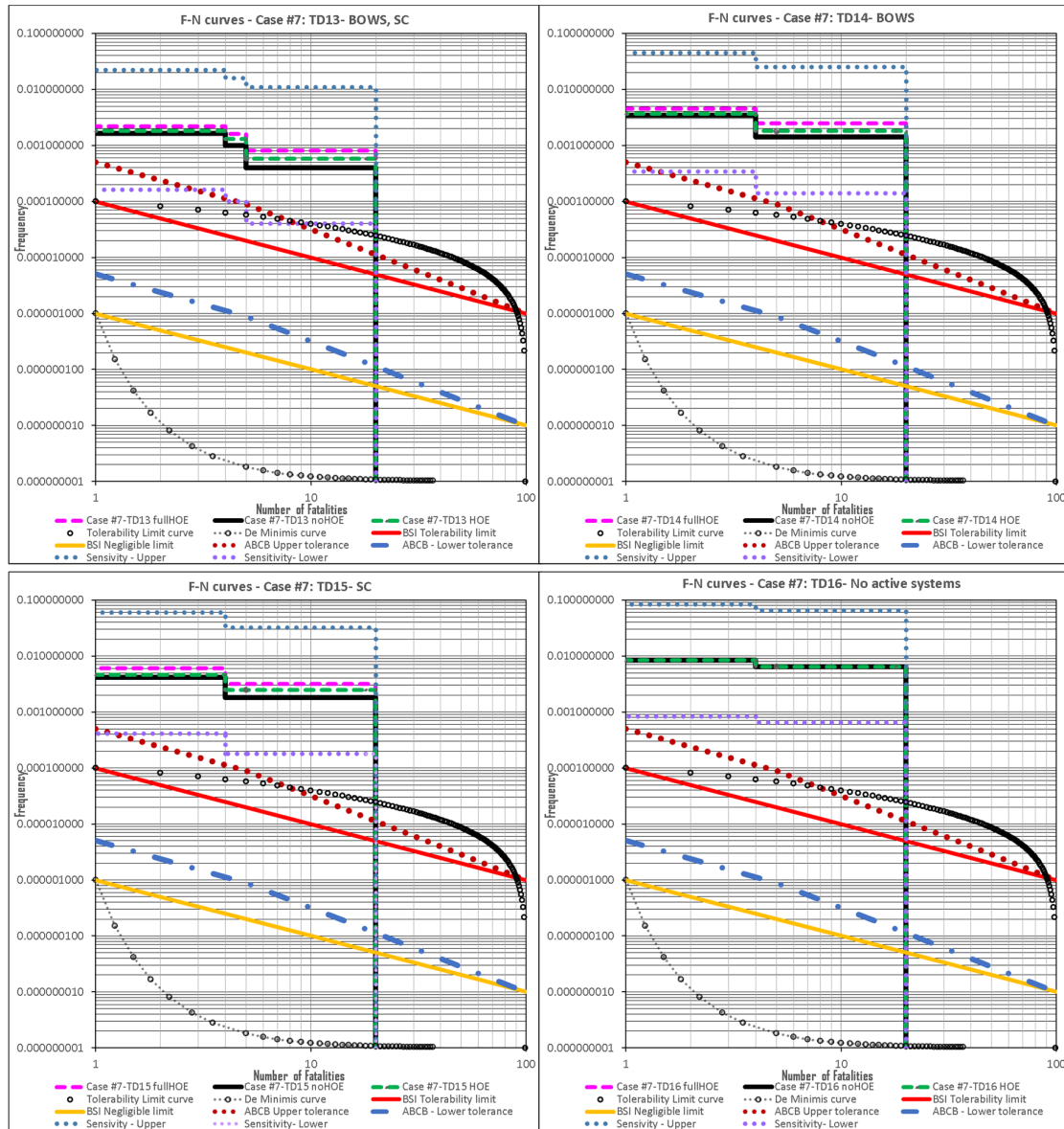


Figure S10. Case #7 TD01 to TD16.



3. Figures S11-S24: SD Individual ERL plots for all Trial Designs TD01-16, Case #1-#7

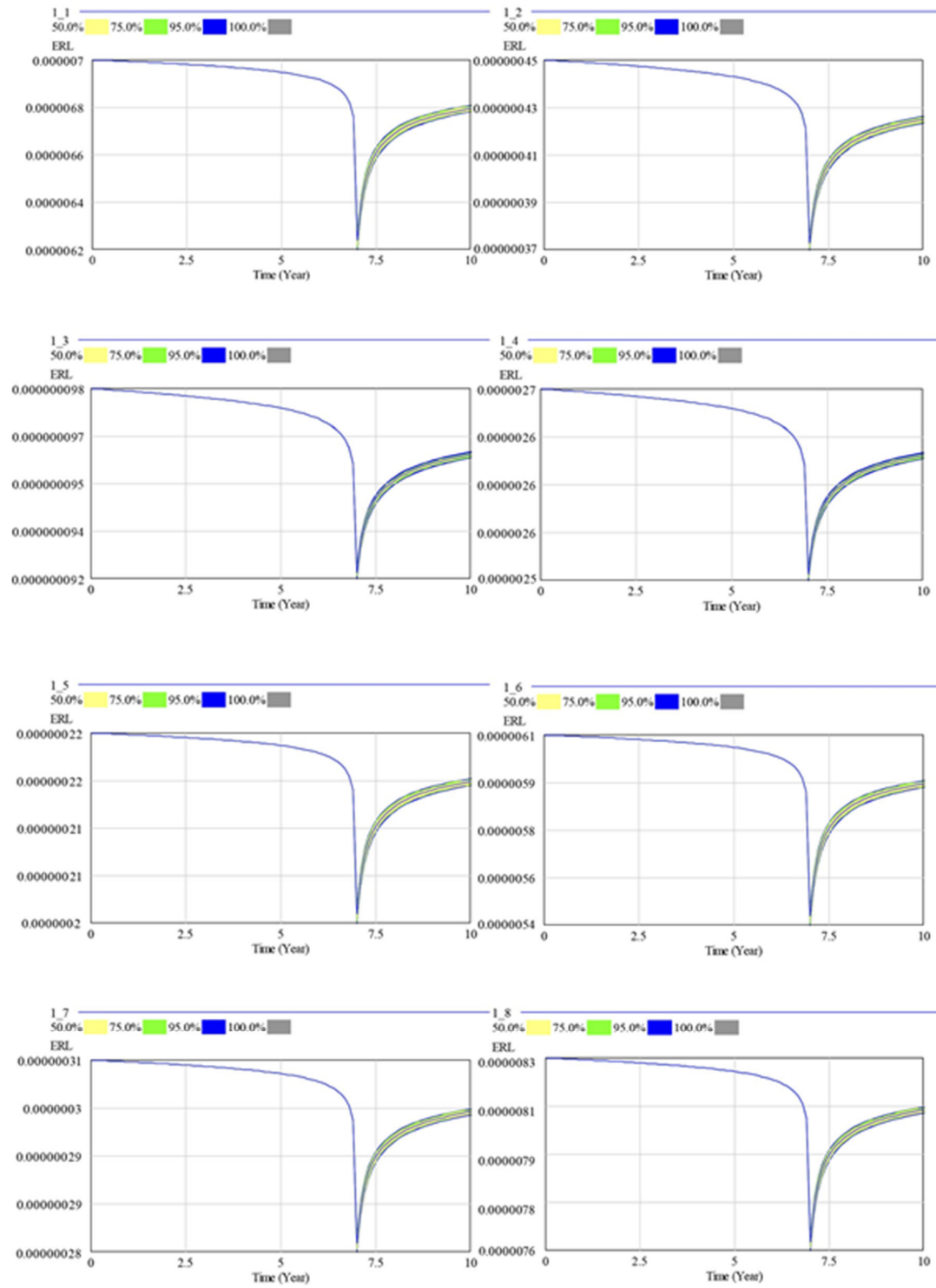


Figure S11. SD Individual ERL plots-Trial Designs 01-08, Case #1.

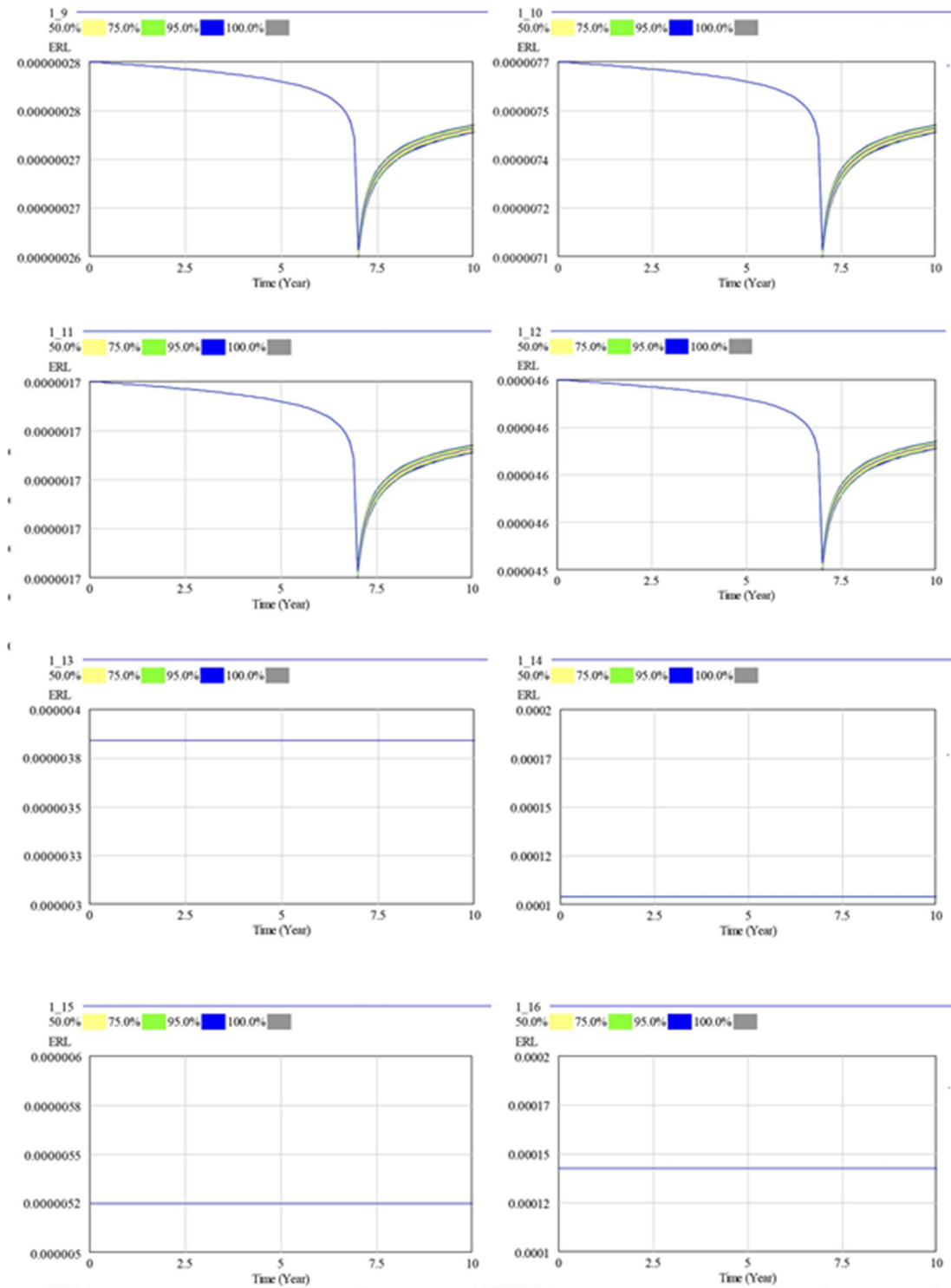


Figure S12. SD Individual ERL plots-Trial Design 9-16, Case #1.

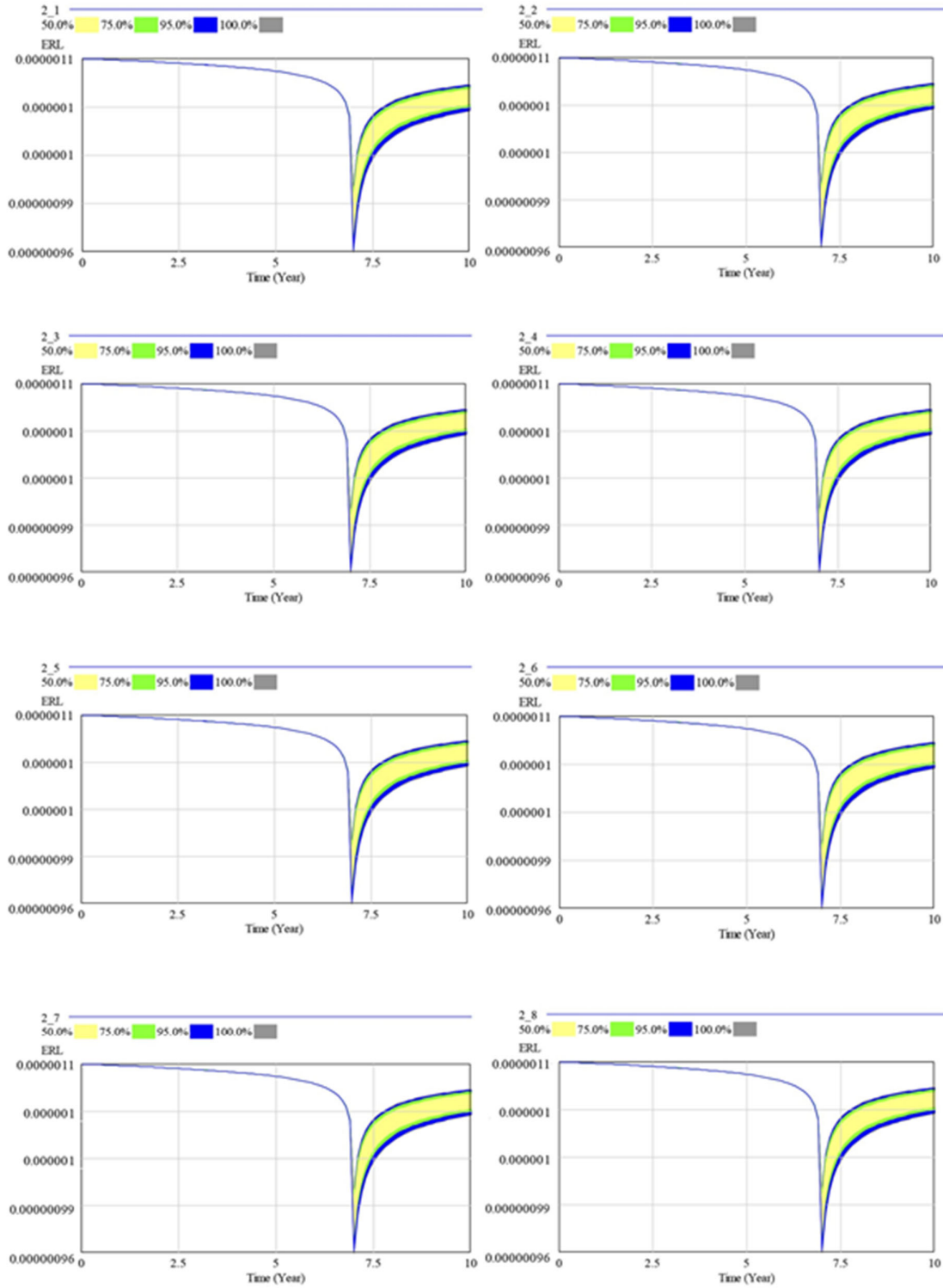


Figure S13. SD Individual ERL plots-Trial Designs 01-08, Case #2.

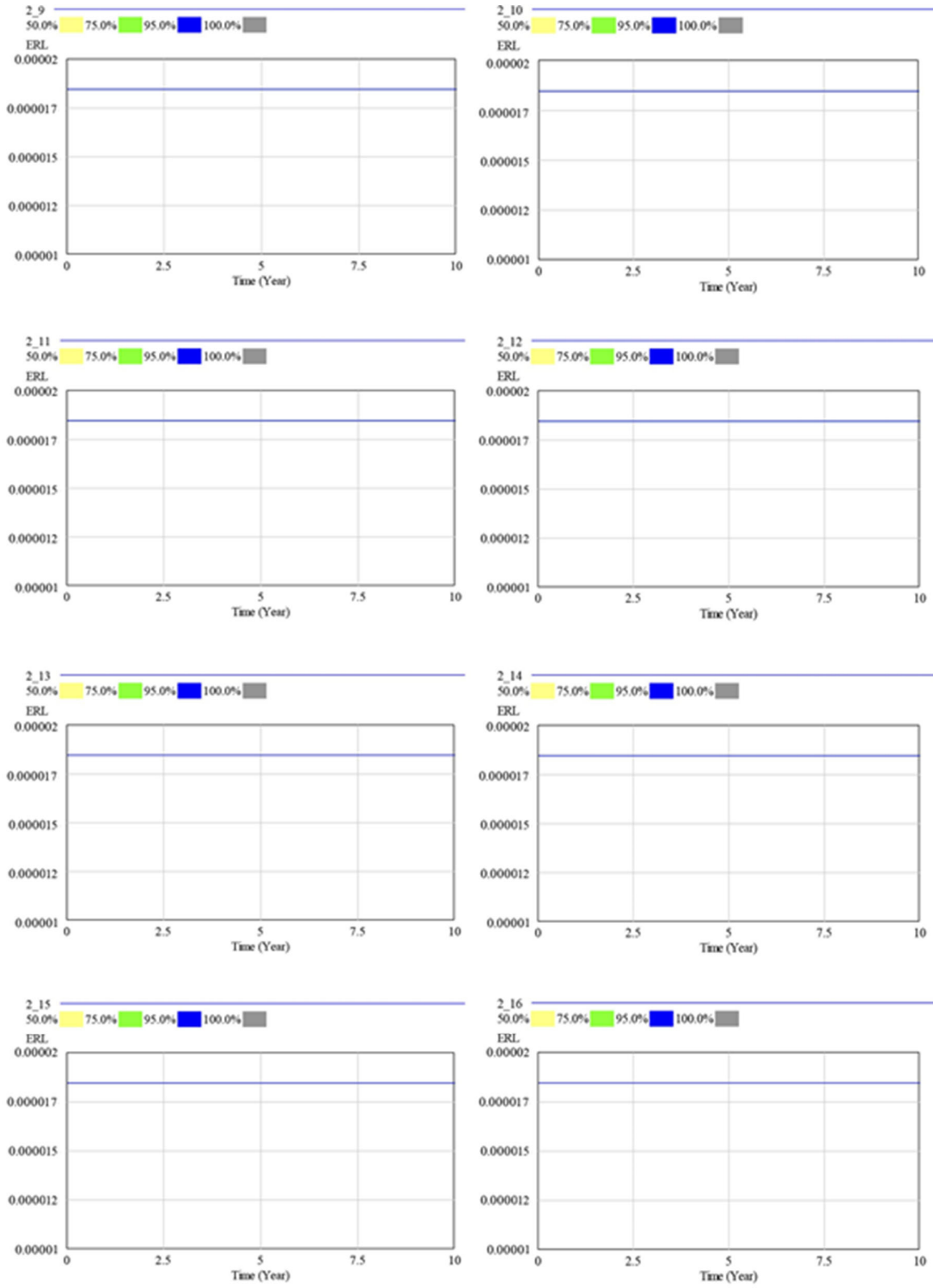


Figure S14. SD Individual ERL plots-Trial Design 9-16, Case #2.

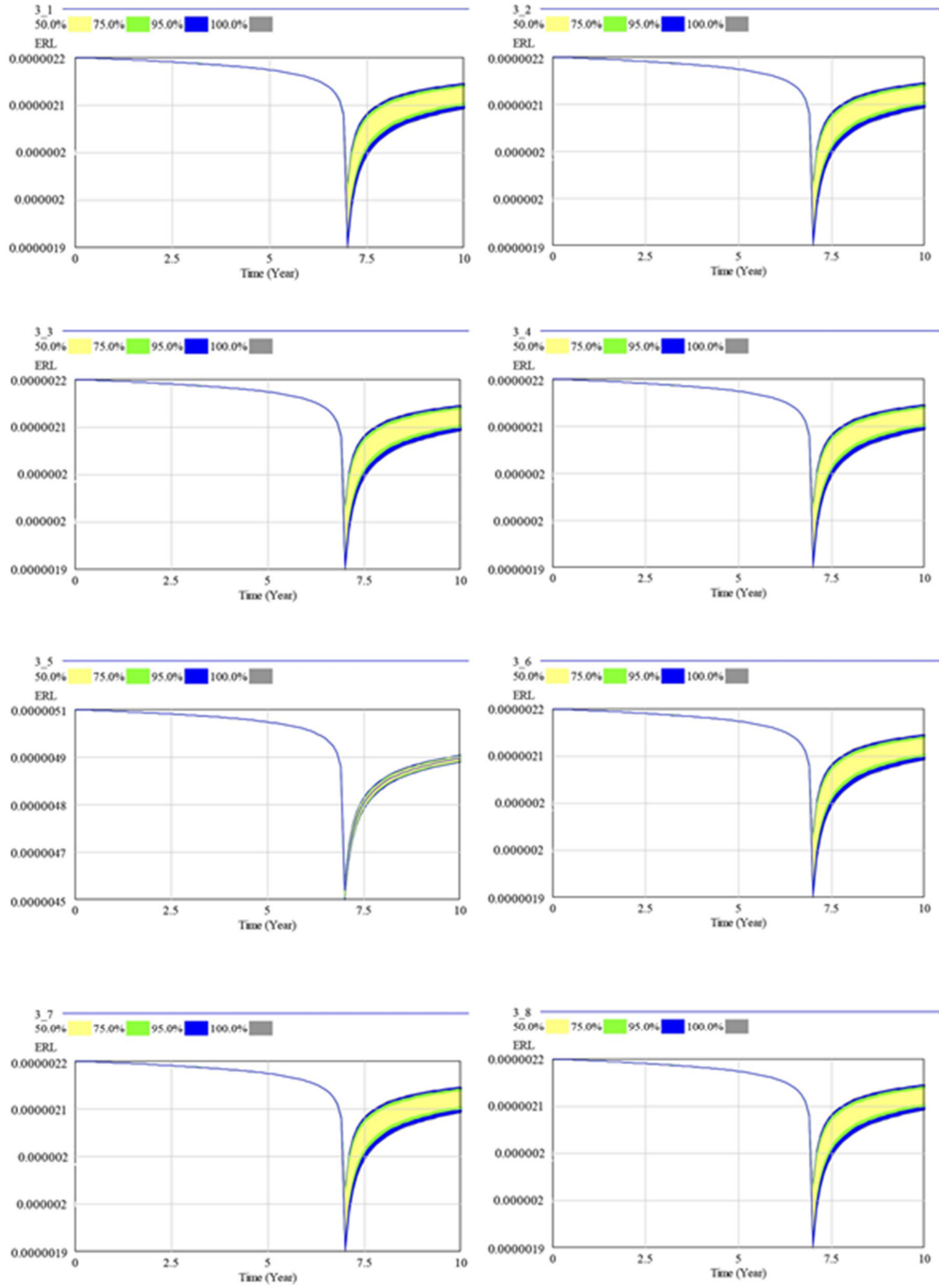


Figure S15. SD Individual ERL plots-Trial Designs 01-08, Case #3.

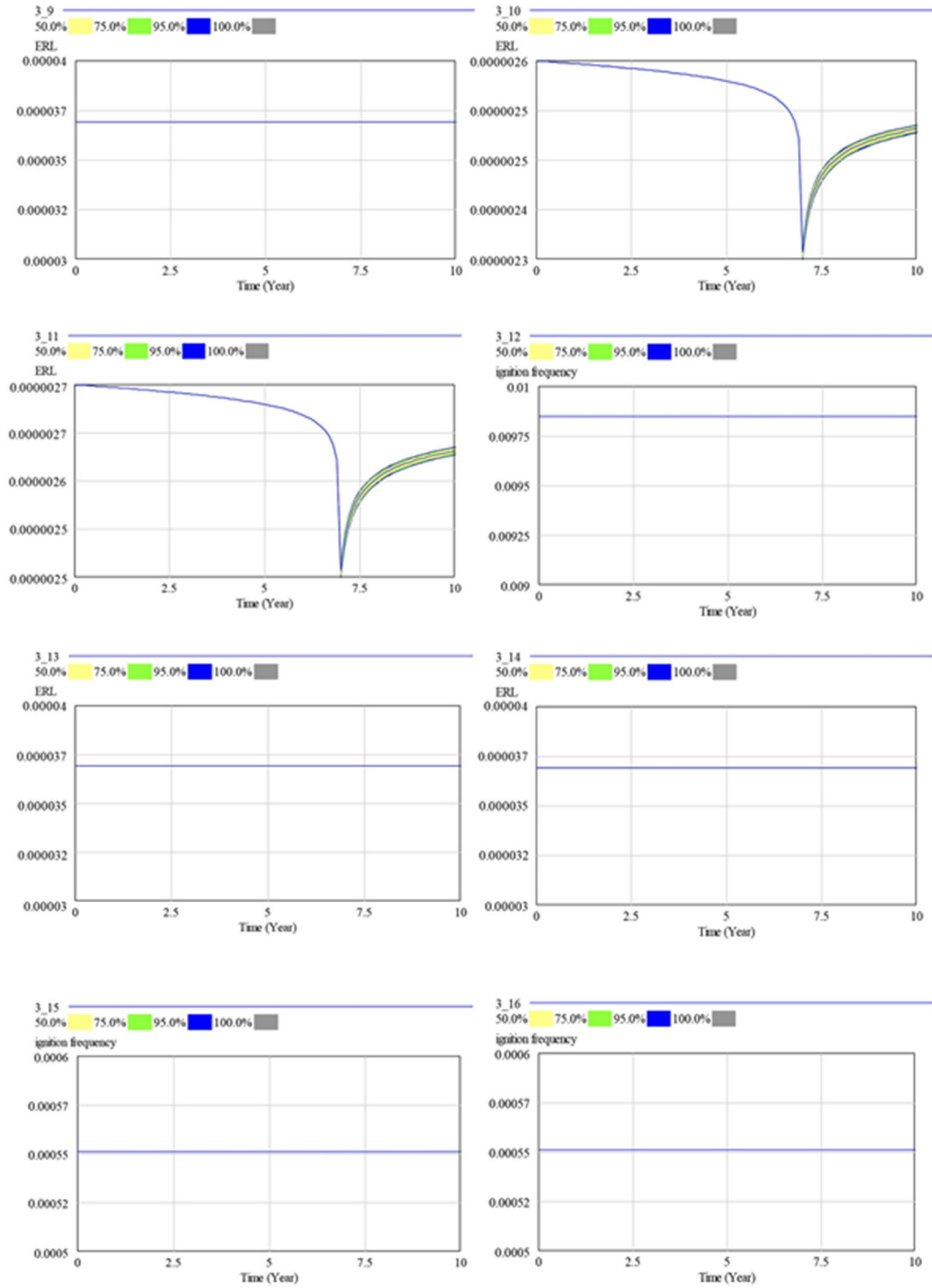


Figure S16. SD Individual ERL plots-Trial Design 9-16, Case #3.

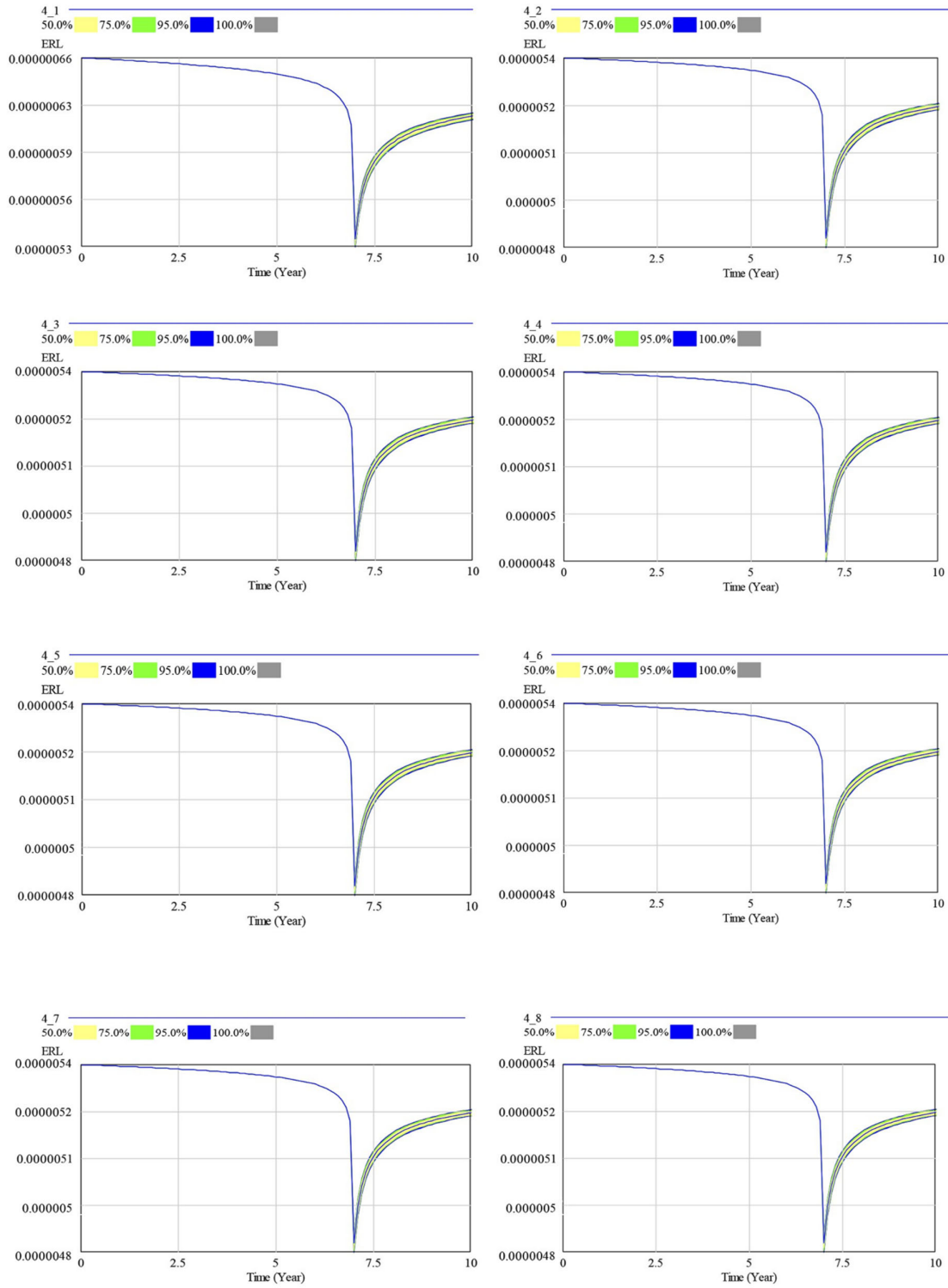


Figure S17. SD Individual ERL plots-Trial Designs 01-08, Case #4.

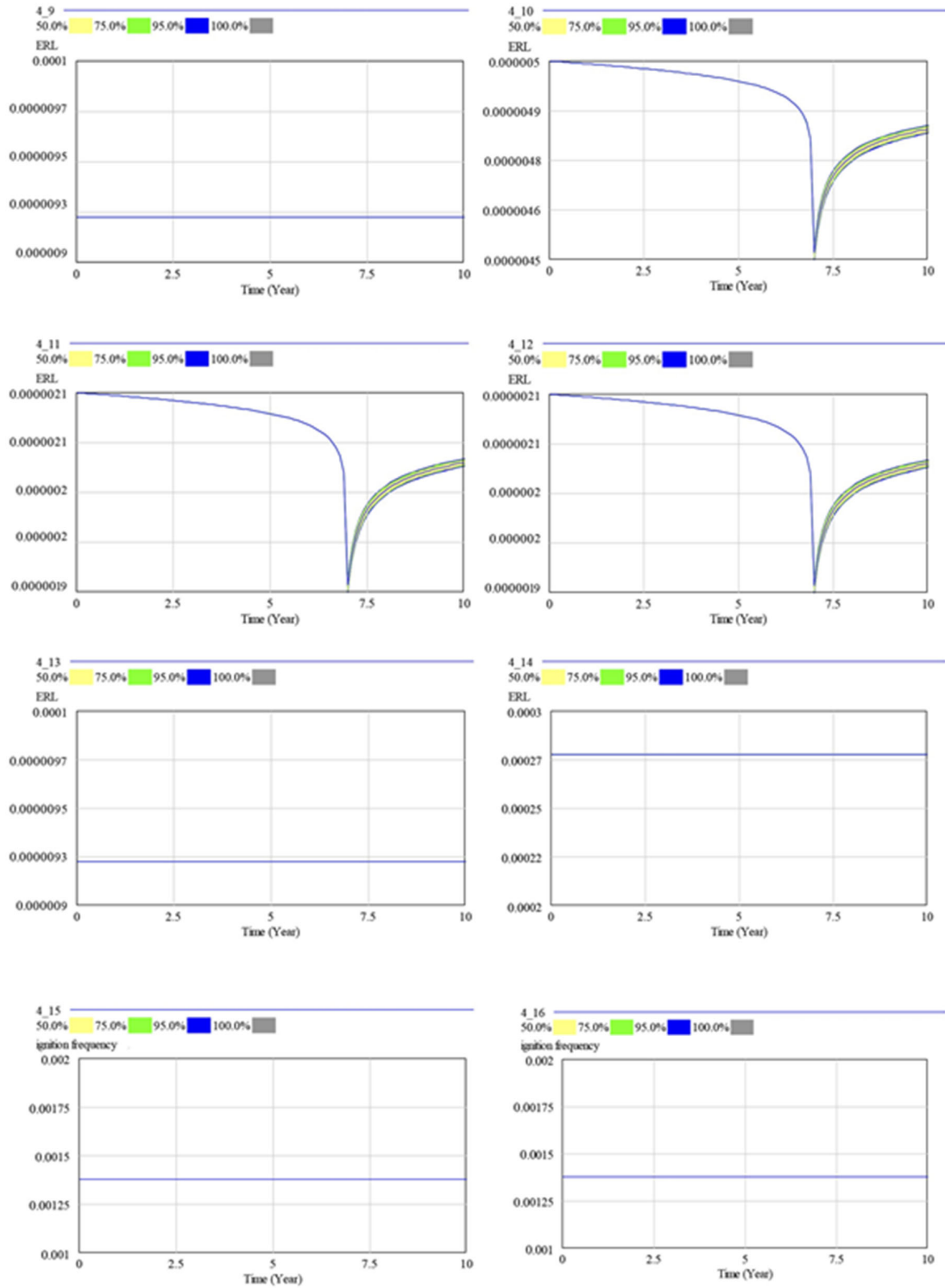


Figure S18. SD Individual ERL plots-Trial Design 9-16, Case #4.



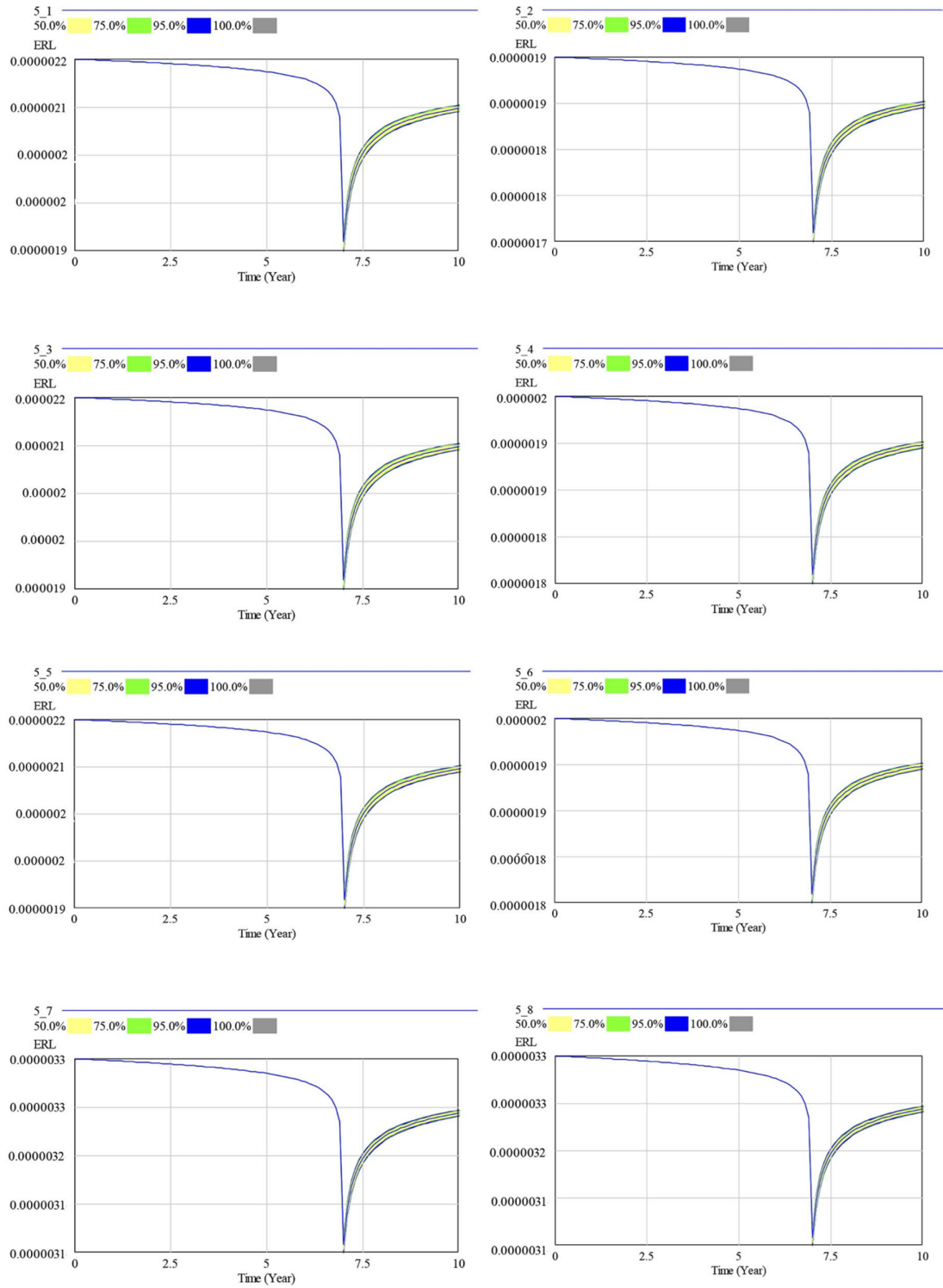


Figure S19. SD Individual ERL plots-Trial Designs 01-08, Case #5.

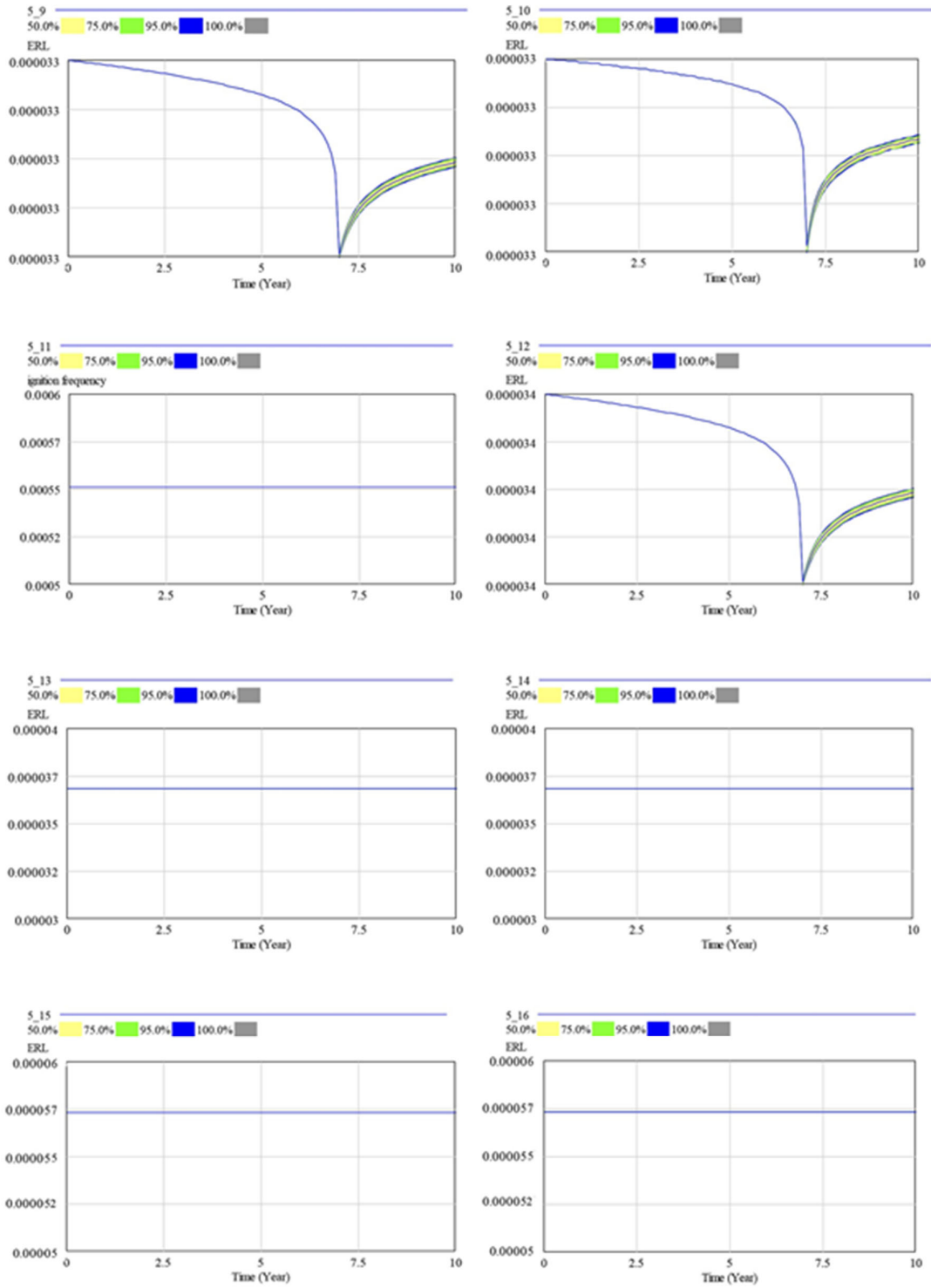


Figure S20. SD Individual ERL plots-Trial Design 9-16, Case #5.

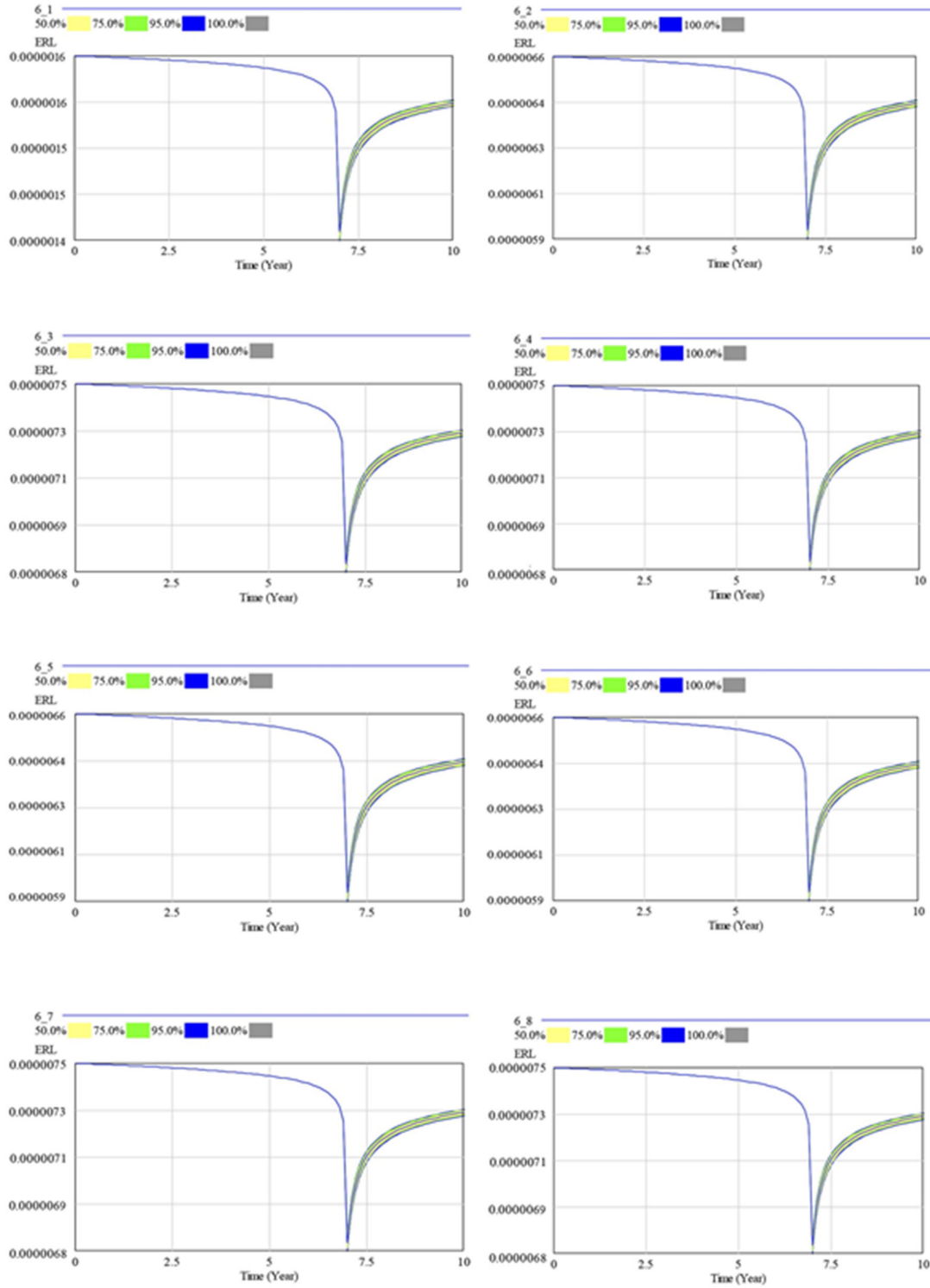


Figure S21. SD Individual ERL plots-Trial Designs 01-08, Case #6.

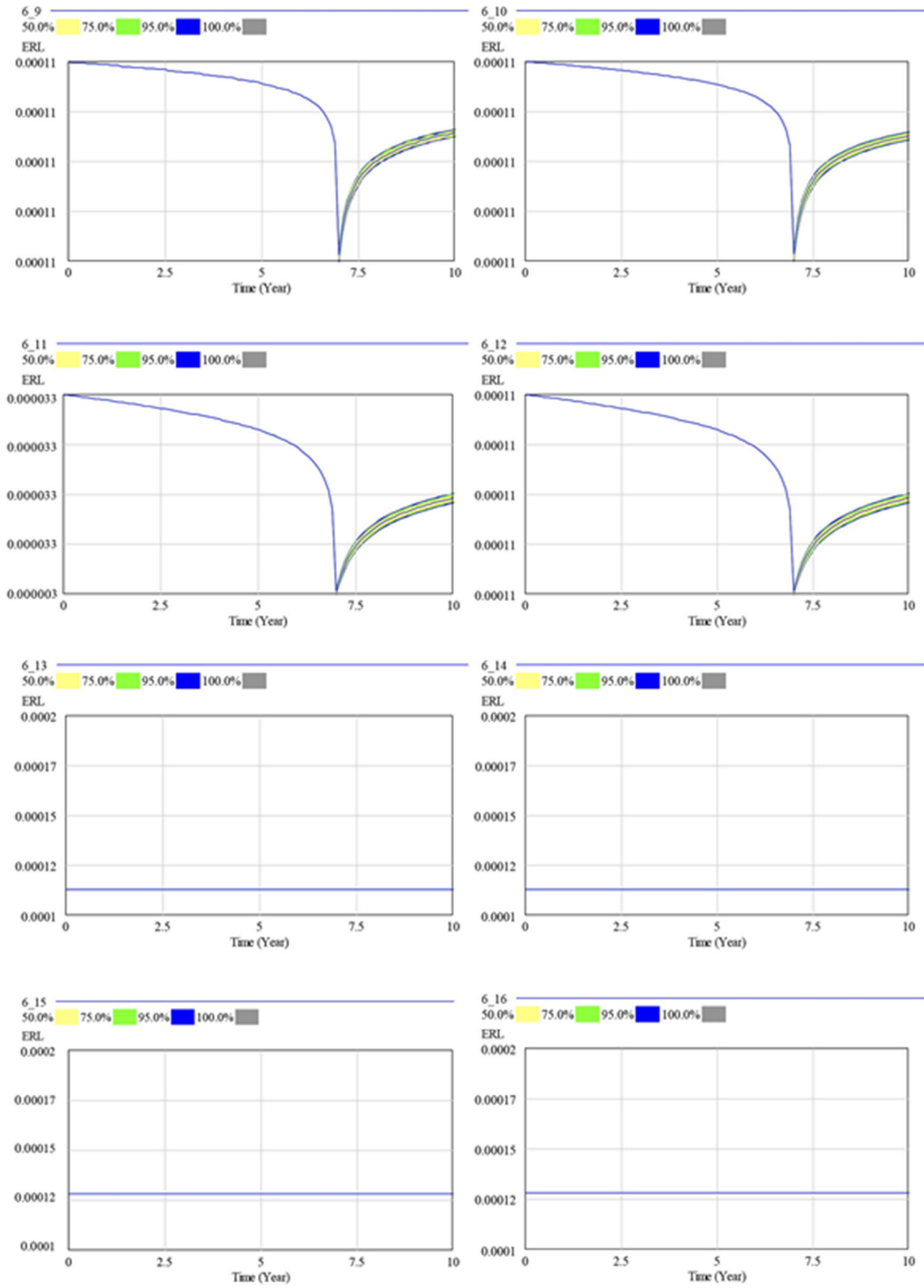


Figure S22. SD Individual ERL plots-Trial Design 9-16, Case #6.

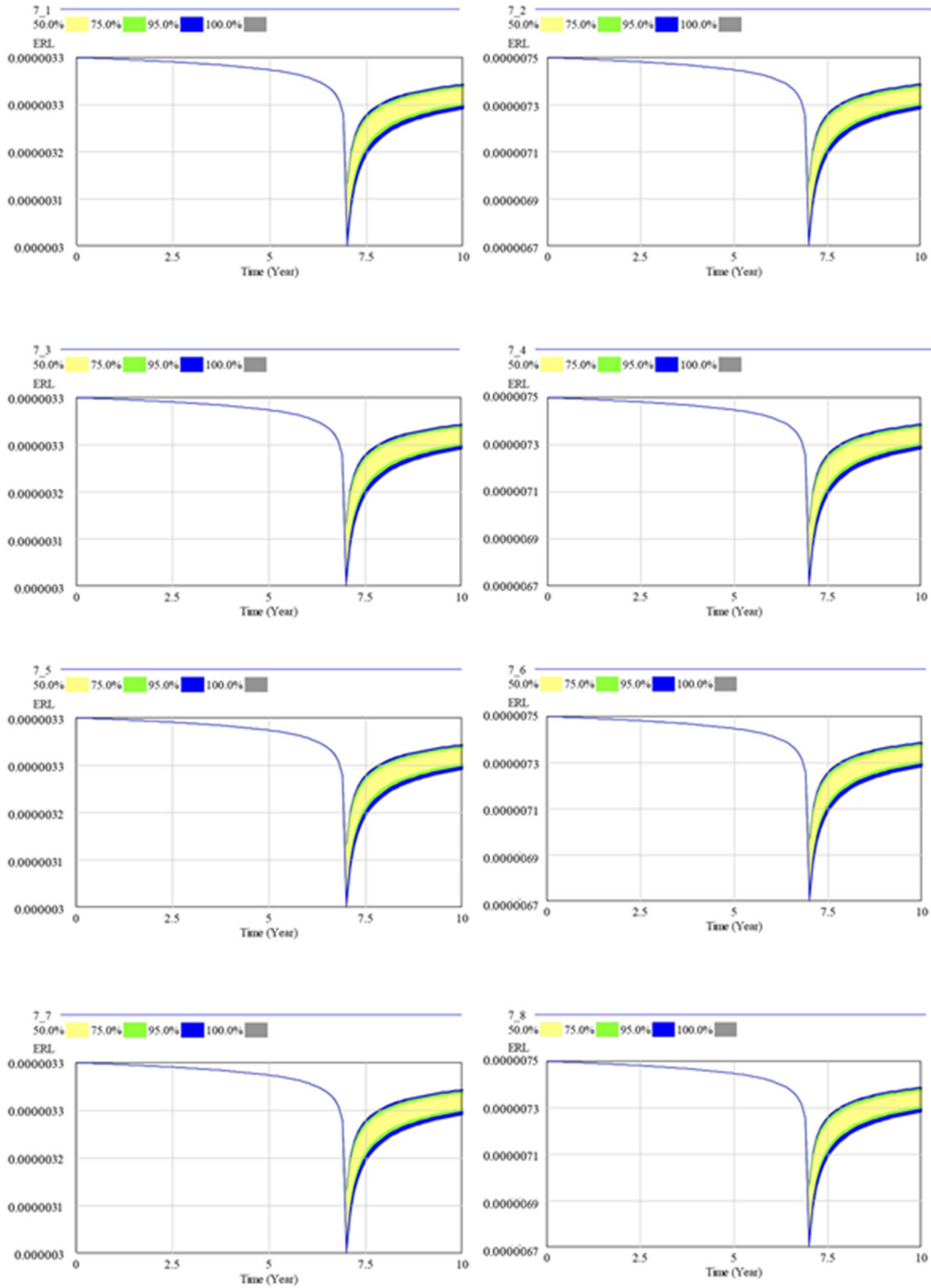


Figure S23. SD Individual ERL plots- Trial Designs 01-08, Case #7.

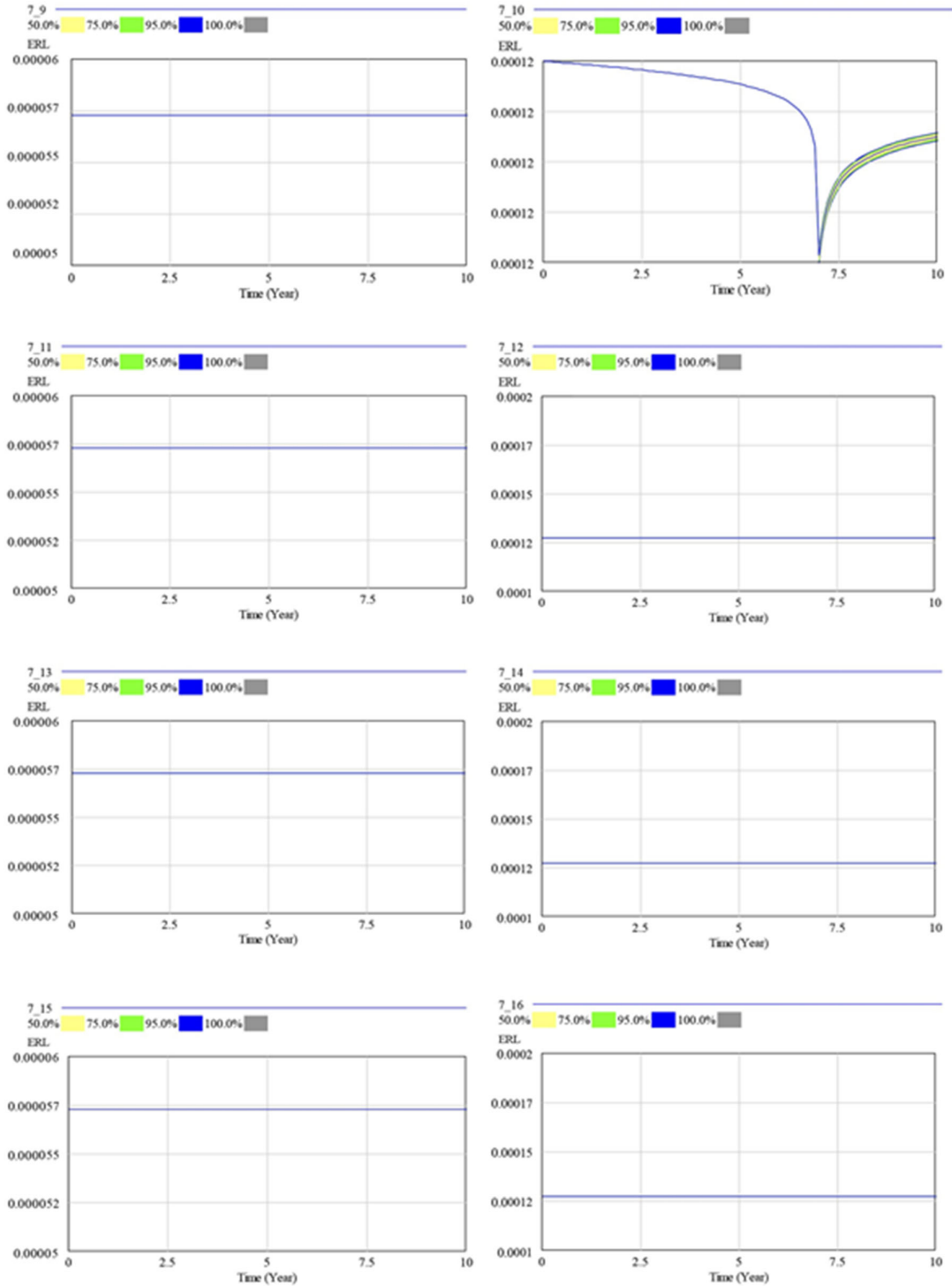


Figure S24. SD Individual ERL plots- Trial Design 9-16, Case #7.

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