The thesis tries to verify a model for dynamic disconnection of sunspots from their magnetic roots proposed in the publication "The dynamical disconnection of sunspots from their magnetic roots"(Schüssler & Rempel, 2005, Astron. Astrophys. 441, 337). In order to accomplish this task I conducted a numerical simulation, including a computation of a quiet Sun model using the OPAL opacity and equation of state tables. While simulating the time evolution of sunspot we retained the steps as are in the reffered article. The quiet Sun model corresponded well with other quiet Sun models, which are considered to be state-of-the-art. However, I was not able to reproduce the results fully as I didn't observe the dynamic disconnection. I suggest a more thorough testing of the presented code.