Acknowledgements

I am particularly thankful for the help and guidance of my advisor Dr. Gregory M. Nielson. He assisted me in preparing and conducting research and in presenting it to the scientific community. I further express my gratitude to Dr. Robert E. Barnhill, Dr. Gerald Farin, Dr. Thomas A. Foley, and Dr. Alyn P. Rockwood who not only supported me during the process of creating this dissertation, but also taught me very different ways of describing and solving mathematical problems using diverse tools. They all had a major influence on me as a researcher. I also appreciate the help of all other members of the CAGD research group at Arizona State University and all the benefits I gained in the many discussions I had with them. In addition, I thank Wayne B. Woodland for his assistance in composing most of the pictures and Joseph A. Reuter for his help. This research was supported by the Department of Energy under contract DE-FG02-87ER25041 and by the National Science Foundation under contract DDM 8807747.