

**OCCURRENCE AND DISTRIBUTION
OF THE ALMOND FORMATION IN
PORTIONS OF THE SAND WASH
BASIN, NORTHWESTERN COLORADO**

by

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A thesis submitted to the Faculty and Board of Trustees of the Colorado School of Mines in partial fulfillment of the requirements for the degree of Master of Science in Geology.

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ABSTRACT

The Upper Cretaceous Almond Formation in northwestern Colorado was deposited during the third transgressive-regressive cycle of the North American Western Interior Cretaceous Seaway. The Almond Formation is the transgressive portion of the cycle and the Lewis Shale is the regressive portion of the cycle.

The study area covers portions of the Sand Wash basin, approximately 2,500 mi², which is located entirely in Moffat County, Colorado. The purpose of the study was to indicate whether the Almond Formation has hydrocarbon potential for future exploitation. The data set for the research included 4 cores, 2 outcrop locations, approximately 80 well logs, 11 thin sections, 4 XRD plots, and 47 production tests.

Eight facies were defined from the cores, and depositional environments were interpreted. The depositional environments ranged from the coastal plain position to the lower shoreface. The core facies were correlated to the facies seen in outcrop. The Almond Formation is a shallow marginal-marine facies tract with an estuarine component and a coastal plain component.

A network of 17 stratigraphic cross sections was constructed and showed a back-stepping feature of the Almond Formation from east to west. Electrofacies were defined from the well-log curves and characterized the coarsening-upward feature of the Almond Formation. Isopach maps were then generated showing the thickness of the Almond Formation and the thickness of the interval between the Asquith Marker and the Almond Formation. An apparent vertical stacking of shorelines could be seen on the western side of the basin.

Thin section analysis gave insight into reservoir quality of the formation. The intervals described in the Coastal Federal #1-19-11-94 and Skelly Dyer #B-1 wells were lithic arenites, and included eleven samples total. A 300-point count was performed on

the deepest and shallowest samples in each well. The main constituents in the rocks included quartz, feldspar, calcite, pyrite, kaolinite, dolomite, chert, and muscovite. Porosity was low in the point-counts conducted on the limited number of thin sections, averaging 4-6%. A concerning conclusion was the clays that were clogging pore space in some of the samples.

The data integrated in this study helps give a better understanding of the Almond Formation in northwestern Colorado. The core descriptions and thin section analysis aid in evaluating reservoir quality. The production tests indicate both reservoir quality and the presence of hydrocarbons. The cross sections and isopach maps provide a look at the distribution and trend of the Almond Formation in portions of the Sand Wash basin.

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ACKNOWLEDGEMENTS

My greatest thanks are extended to my thesis advisor, Dr. John Curtis, for his positive mentoring, motivational comments, and impeccable editing skills. This thesis was possible due to the input and support of my committee members. Dr. Neil Hurley for his advice and Dr. Donna Anderson for her help with the core and facies descriptions. I appreciate the patience and guidance provided by everyone involved with this study.

I gratefully acknowledge Kerr-McGee Rocky Mountain Corporation, especially the Exploration Department, for providing data and financial support for this project. I also really appreciate the advice, mentoring, and support received from the staff. A special thanks to Bret Siepman for providing the opportunity. Thank you, John Ladd, for contributing to the idea and direction of the project.

I also acknowledge the well data provided by IHS Energy, including production and test data. Thank you to Wendy Harrison for her advice and opinions on the interpretation of the thin sections. Appreciation is extended to Jeannine Honey at the USGS for the core handling. Genuine gratitude to Larry Kellison for his time in discussing outcrop locations. Thanks to Ira Pasternack for his guidance on the normalization of gamma ray curves.

I would also like to express my sincere appreciation to the professors, administrative staff, and students during my course work at Colorado School of Mines. I have made life-long friends and have many fond memories. I hope to work with many of you again in the future. Best wishes to Kim Doupe, Kim Stevens, Lisa Costanzo, Jessica Jennings, Leyton Woolf, Nate and Shawna Gilbertson, Ryan Kowalski, Becky Ferega, Ben and Rachel George, Priya Maraj, Chris Valorose, and Rob and Raven Amerman.

Finally, I would like to thank my family who has never given up on me and has always been supportive of my decisions in life. To the most important person in my life, my husband Marc Schutt, I am always amazed at the amount of love and encouragement you give me everyday. I am grateful for every moment we spend together and cherish your companionship. Your sacrifice and understanding throughout my graduate career has been a blessing and I dedicate this thesis to you.

The original material for this dissertation includes a significant number of oversized pages. The full text can be viewed by accessing the supplement file.

