Wyoming Geological Association
35th Annual Field Conference
GUIDEBOOK
1984

The Permian and Pennsylvanian Geology of Wyoming

Co-Editors
JIM GOOLSBY and DOUG MORTON

Casper, Wyoming
September 23-26, 1984
TABLE OF CONTENTS

Title Page .................................................. 1
Dedication .................................................. 9
Table of Contents ............................................. 2 & 3
Special Acknowledgement ................................... 10
In Memoriams ................................................ 4 & 5
Greetings .................................................. 11
Reprint from 1944 Book ..................................... 6 & 7
WGA Officers & Field Conference Committee .......... 12
Original Pre-Organization Letter ......................... 8
Stratigraphic Chart ........................................ 13

List of Advertisers .......................................... 422

HISTORICAL

CASPER: FROM INDIANS TO ENERGY — by Sue A. Spearing ........................................ 15

REGIONAL GEOLOGY

PERMIAN STRATIGRAPHY, SEDIMENTARY FACIES, AND PETROLEUM GEOLOGY,
WYOMING AND ADJACENT AREA — by James Peterson ........................................... 25

PETROLEUM

EDSEL FIELD (MINNELUSA), POWDER RIVER BASIN, WYOMING —
by Daniel W. Bean, Harvey R. Duchene and Walter A. King ..................................... 65

CYCLIC SEDIMENTATION AND DEPOSITIONAL ENVIRONMENTS OF THE UPPER MINNELUSA
FORMATION, CENTRAL CAMPBELL COUNTY, WYOMING — By Gene R. George ..................... 75

SIGNIFICANCE OF INTERDUNE DEPOSITS IN THE UPPER CASPER FORMATION —
by Anne O. Kelly .................................................. 97

BUCK CREEK FIELD, NIOBRARA COUNTY, WYOMING —
By J. Duncan McBane ........................................... 111

POSSIBLE BASAL PHOSPHORIA COQUINITE TREND, FREMONT AND SWEETWATER
COUNTIES, WYOMING — By W.R. Merschat .................................................. 119

THE MINNELUSA REVISITED, 1984 — By John F. Trotter ........................................... 127

PRELIMINARY REPORT ON TAR SAND OCCURRENCES IN THE BUSH BUTTE
QUADRANGLE, WYOMING, WITH EMPHASIS ON THE TRAPPER CANYON DEPOSIT —
By Alan J. Ver Ploeg and Rodney H. DeBruin .................................................. 153

ALUM CREEK FIELD, FALL RIVER COUNTY, SOUTH DAKOTA —
By D.F. Cardinal and M. Sherer .................................................. 169

STRATIGRAPHY AND SEDIMENTATION

INFLUENCE OF DEPOSITIONAL FACIES ON HYDROCARBON PRODUCTION IN THE TENSLEEP
SANDSTONE, BIG HORN BASIN, WYOMING: A WORKING HYPOTHESIS —
By Sarah Andrews and Lindi S. Higgins .................................................. 183

PALEOTOPOGRAPHY AT THE TOP OF THE TENSLEEP FORMATION,
BIGHORN BASIN, WYOMING — By William H. Curry, III ........................................... 199
STRATIGRAPHY AND DEPOSITIONAL ENVIRONMENTS OF THE MIDDLE MEMBER OF THE MINNELUSA FORMATION, CENTRAL POWDER RIVER BASIN, WYOMING — By Robert J. Desmond, James R. Steidtmann and Donald F. Cardinal ................................................................. 213

THE PERMIAN UPPER MINNELUSA FORMATION, WYOMING: ANCIENT EXAMPLE OF AN OFFSHORE-PROGRADING EOLIAN SAND SEA WITH GEOMORPHIC FACIES, AND SYSTEM-BOUNDARY TRAPS FOR PETROLEUM — By Steven G. Fryberger ................................................................. 241

THE TENSLEEP FORMATION OF THE SOUTHEASTERN BIG HORN BASIN, WYOMING — By David A. Moore .......................................................................................................................... 273

DISSOLUTION OF PERMIAN SALT AND MESOZOIC SYNDEPOSITIONAL TRENDS, CENTRAL POWDER RIVER BASIN, WYOMING — By Donald L. Rasmussen and Daniel W. Bean ................................................................. 281

SEDIMENTOLOGY AND DEPOSITIONAL HISTORY OF THE PERMO-TRIASSIC SPEARFISH FORMATION, SOUTHWESTERN BLACK HILLS, SOUTH DAKOTA — By J.M. Sabel ........................................................................................................... 295

ORIGIN AND PALEOTECTONIC SETTING OF THE PENNSYLVIANIAN QUADRANT SANDSTONE, SOUTHWESTERN MONTANA — By Herb I. Saperstone and Frank G. Ethridge .......................................................................................... 309


STRUCTURE

NORTH FORK AND CELLARS RANCH FIELDS, JOHNSON CO., WYOMING: EXAMPLES OF LATE PERMIAN TECTONISM AND RESULTANT DIFFERENTIAL SEDIMENTATION — By W. Richard Moore ........................................................................................................... 341

STRUCTURAL CONTROLS ON A STRATIGRAPHIC TRAP: THE COTTONWOOD CREEK FIELD, BIGHORN BASIN, WYOMING — By M. Lee Allison ........................................................................................................... 355

MINERALS

MINERAL RESOURCES OF PERMIAN AND PENNSYLVIANIAN ROCKS IN WYOMING — By Ray E. Harris and W. Dan Hausel ........................................................................................................... 369

GOLD, SILVER, AND OTHER SELECTED TRACE ELEMENTS IN THE PHOSPHORIA FORMATION OF WESTERN WYOMING — By J.D. Love ........................................................................................................... 383

WATER RESOURCES

HYDRODYNAMICS OF THE FOUNTAIN AND CASPER FORMATIONS, LARAMIE BASIN, WYOMING — By Richard W. Davis ........................................................................................................... 389

ROADLOGS .............................................................................................................................................. 401