Wyoming Geological Association

28th ANNUAL FIELD CONFERENCE

GUIDEBOOK

1976

Geology and Energy Resources of the Powder River

Casper, Wyoming — Sept. 1976

Editor
Richard B. Laudon

Co-Editors
William H. Curry III
John S. Runge

Copyright 1976, Wyoming Geological Association
# Table of Contents

## GENERAL

<table>
<thead>
<tr>
<th>Title Page</th>
<th>Previous WGA Field Conferences</th>
<th>1</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Table of Contents</td>
<td>List of Publications, Wyoming Geological Association</td>
<td>2 &amp; 3</td>
<td>7</td>
</tr>
<tr>
<td>Greetings from President and General Chairman</td>
<td>Stratigraphic Chart</td>
<td>.5</td>
<td>8</td>
</tr>
</tbody>
</table>

## STRATIGRAPHY, SEDIMENTATION AND PALEONTOLOGY

### UPPER CRETACEOUS GAMMON, SHANNON, AND SUSSEX SANDSTONES, CENTRAL POWDER RIVER BASIN, WYOMING — George C. Crews, James A. Barlow, Jr., and John D. Haun | 9 |

### LATE CRETACEOUS TEAPOT DELTA OF SOUTHERN POWDER RIVER BASIN, WYOMING — William H. Curry, III | 21 |

### TYPE SECTION OF THE TEAPOT SANDSTONE — William H. Curry, III | 29 |

### THE UPPER CRETACEOUS FRONTIER FORMATION IN THE KAYCEE-TISDALE MOUNTAIN AREA, JOHNSON COUNTY, WYOMING — E.A. Merewether, W. A. Cobban and C.W. Spencer | 33 |

### MADISON LIMESTONE (DEVONIAN AND MISSISSIPPIAN) EAST FLANK OF BIGHORN MOUNTAINS, WYOMING — William J. Sando | 45 |

### RELATIONSHIPS BETWEEN EARLY TERTIARY SEDIMENTATION PATTERNS AND URANIUM MINERALIZATION IN THE POWDER RIVER BASIN, WYOMING — David A. Seeland | 53 |

### UPPER CRETACEOUS SHANNON SANDSTONE: AN OFFSHORE, SHALLOW-MARINE SAND BODY — Darwin R. Spearing | 65 |

### POLLEN CHANGES NEAR THE FORT UNION-WASATCH BOUNDARY, POWDER RIVER BASIN — Robert H. Tschudy | 73 |

### REGIONAL DISTRIBUTION OF ENVIRONMENTS OF THE MUDDY SANDSTONE, SOUTHEASTERN MONTANA — Juliana Waring | 83 |

## STRUCTURAL GEOLOGY

### GEOLOGIC MAP OF PALEOZOIC AND MESOZOIC ROCKS, EAST FLANK OF THE BIGHORN MOUNTAINS FROM LAT. 44° 37' 30" N. TO LAT. 44° 52' 30" N., SHERIDAN COUNTY, WYOMING — R.L. Langenheim, Jr., M.L. Reinbold and J.S. Tissue | 97 |

## PETROLEUM

### SUSSEX SANDSTONE PRODUCTION, TRIANGLE U FIELD, CAMPBELL COUNTY, WYOMING — George G. Anderman | 107 |

### DEADMAN CREEK FIELD — Eric Arro | 115 |

### KIEHL FIELD — Eric Arro | 121 |

### AN ENVIRONMENTAL INTERPRETATION OF THE UPPER CRETACEOUS SHANNON SANDSTONE, HELDT DRAW FIELD, WYOMING — M.J. Todd Davis | 125 |

### POWELL-ROSS FIELD, CONVERSE COUNTY, WYOMING — Ronald E. Hando | 139 |

### FALL RIVER ("DAKOTA") OIL ENTRAPMENT, POWDER RIVER BASIN — Sherod A. Harris | 147 |

### PETROLEUM GEOLOGY OF THE WELL DRAW FIELD, CONVERSE COUNTY, WYOMING — E. Burke Isbell, Charles W. Spencer, and Tommie Seitz | 165 |

### SPEARHEAD RANCH FIELD — Alan U. Lange | 175 |
TRABING FIELD — Alan U. Lange .............................................................. 179

STEINLE RANCH FIELD — Steven G. Reid ............................................. 187

TRAPPING MECHANISMS FOR OIL IN LOWER CRETACEOUS MUDDY SANDSTONE AT RECLUSE FIELD, WYOMING — Robert R. Berg .............................. 261

STATISTICAL SUMMARIES OF MUDDY AND MINNELUSA RESERVOIRS IN THE POWDER RIVER BASIN, WYOMING — Donald Basko and E.E. Mulholland .... 273

COAL
COAL IN THE WASATCH FORMATION, NORTHWEST PART OF THE POWDER RIVER BASIN NEAR SHERIDAN, SHERIDAN COUNTY, WYOMING — W.C. Culbertson and W.J. Mapel ............................ 193

HYDROLOGIC FACTORS RELATED TO COAL DEVELOPMENT IN THE EASTERN POWDER RIVER BASIN — Richard W. Davis ........................................ 203

UPDATE ON THE POWDER RIVER COAL BASIN — Gary B. Glass .............. 209

LARGE-SCALE COMPACTION STRUCTURES IN THE COAL-BEARING FORT UNION AND WASATCH FORMATIONS, NORTHEAST POWDER RIVER BASIN, WYOMING — B.E. Law .............................................................. 221

URANIUM
THE BEAR CREEK URANIUM PROJECT — F.J. Buturla and M.E. Schwenk ......................... 231

EVALUATION OF URANIUM RESOURCES IN THE POWDER RIVER BASIN, WYOMING — Donald L. Curry ............................................................ 235

GENESIS AND CHARACTERISTICS OF THE SOUTHERN POWDER RIVER BASIN URANIUM DEPOSITS, WYOMING — A.R. Dahl and J.L. Hagmaier .............. 243

BENTONITE
BENTONITE MINING NEAR KAYCEE, WYOMING — Thomas Thorson .................. 253

BENTONITE IN THE POWDER RIVER BASIN, WYOMING — Claudia A. Wolfbauer .......... 257

WATER RESOURCES
EXPLORATION FOR GROUND WATER IN THE MADISON LIMESTONE, NIOMRARA COUNTY, WYOMING — Keith E. Anderson and Jack E. Kelly ......................... 277

PERMEABILITY AND GROUND WATER CIRCULATION IN THE MADISON AQUIFER ALONG THE EASTERN FLANK OF THE BIGHORN MOUNTAINS OF WYOMING — Peter W. Huntoon ............................. 283

GEOCHEMISTRY

REGIONAL GEOCHEMICAL BASELINES IN SOILS OF THE POWDER RIVER BASIN, MONTANA-WYOMING — Ronald R. Tidball and Richard J. Ebens ................. 299

ROAD LOGS
FIELD TRIP ROAD LOG UPPER CRETACEOUS SANDSTONES CASPER — SALT CREEK — TISDALE MOUNTAIN — W.H. Curry, III and George C. Crews ....................... 312

FIELD TRIP ROAD LOG — GEOLOGY AND URANIUM OPERATIONS SOUTHERN POWDER RIVER BASIN — W.C. Duke and J.C. McGee ................................. 322

LIST OF ADVERTISERS ................................................................. 328