

UNITED STATES DEPARTMENT OF THE INTERIOR

GEOLOGICAL SURVEY

U.S. Geological Survey Coal Exploratory Program-
Coal Drilling Activities--FY 79

By

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This report is preliminary and has not been
edited or reviewed for conformity with U.S.
Geological Survey standards.

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INTRODUCTION

The U.S. Geological Survey Coal Exploratory Program is conducted under authority of the Federal Coal Leasing Amendments Act of 1975, PL 93-377, which was signed into law on August 4, 1976. Information in this report was provided by the U.S. Geological Survey offices that are responsible for the drilling activities in this program.

Results of the rotary and core drilling and of the logging will be made public in various forms after the projects are completed.

Montana Drilling Projects - see Figure 1

COAL EVALUATION DRILLING--1979

Drilling Project: Northern Rocky Mountain Area (NRMA), Conservation Division
Location: Big Horn, Rosebud Counties, Montana
7½-minute Quads: Lacey Gulch, Spring Gulch, Tongue River Dam, Half Moon Hill,
Kirby, Bar V NE, Spring Creek Ranch
Starting Date: Spring Completion Date: Fall
No. of Holes: 53
Average Depth: 643'
Maximum Depth: 800'
Rotary Footage: 34,570 Coring: 1340'
Type Logs: Density, Gamma, SP, Resistivity
Purpose: subsurface correlation of the coals in the quads. Res. Eval.
Targets: most holes are deep enough to drill thru the Wall
Sampling Plan: 10' intervals
Person-in-charge: Montana Bureau of Mines & Geology (Robert Matson) & V. Niermeier
Contractor or Driller: Montana Bureau of Mines and Geology (MBMG)
Remarks: The four latter quads may not be drilled this year even
though the holes are proposed. This would account for
34 of the 53 holes proposed.

COAL EVALUATION DRILLING--1979

Drilling Project: Ft. Peck (Branch of Coal Resources)

Location: Roosevelt, Daniels, and Sheridan Counties, Montana

7½-minute Quads: incomplete coverage

Starting Date: about June 1, 1979 Completion Date: September 30, 1979

No. of Holes: about 29

Average Depth: ± 450 feet

Maximum Depth: ± 900 feet

Rotary Footage: ± 17,850 feet Coring: ± 385 feet

Type Logs: Natural Gamma, Gamma-Gamma, Resistivity, Caliper

Purpose: Assessment of coal resources in Ft. Peck Indian Reservation (BIA)

Targets: Coal-bearing Fort Union Formation (Paleocene)

Sampling Plan: Random sampling on 6- to 8-mile centers

Person-in-charge: H. H. Arndt

Contractor or Driller: Mountain States Drilling*

Remarks: *About 14 holes remain to be drilled on existing contract (let in FY 78):

Note:

Area includes Cuskers NE, Cuskers SE, Hay Creek (15 min), Smoke Creek (NW, NE, SW), Coyote Coulee, Rocky Pt., Johnson Lake, Homestead NW, Homestead N Alkali Coulee, Reserve, plus six other unnamed 7½ min. quad.

COAL EVALUATION DRILLING--1979

Branch of Coal Resources

Drilling Project: Prairie Dog Creek EMRIA - Montana

Location: Powder River Co.; all or parts of sec. 5, 7, 8, 9, 10, 14, 15, 16, 17, 18
21, 25, 26, 31, T. 6 S., R. 41 E.

7½-minute Quads: Birney SW

Starting Date: _____ Completion Date: _____

No. of Holes: _____

Average Depth: _____

Maximum Depth: _____

Rotary Footage: _____ Coring: _____

Type Logs: _____

Purpose: _____

Targets: _____

Sampling Plan: _____

Person-in-charge: Schneider

Contractor or Driller: BLM

Remarks: No additional information received.

COAL EVALUATION DRILLING--1979

Conservation Division

Drilling Project: Roosevelt County, east of Big Muddy Creek

Location: Roosevelt County, east of Big Muddy Creek, Montana

7½-minute Quads: see below

Starting Date: June 1, 1979 Completion Date: mid-July, 1979

No. of Holes: 62

Average Depth: 407 feet

Maximum Depth: 600 feet

Rotary Footage: 25,000 Coring: 120

Type Logs: gamma

Purpose: Coal evaluation

Targets: Fort Union Formation

Sampling Plan: information not included

Person-in-charge: Mary Alice Spencer

Contractor or Driller: Montana Bureau of Mines Geology

Remarks: _____

| | | | |
|----------------|----------------|----------------|------------------|
| Three Buttes - | Bainville 3 NW | Johnson Lake - | Medicine Lake - |
| Bainville SW - | Bainville 3 NE | Bainville 2 SW | Capeneys Lake - |
| Bainville SE - | Bainville 4 NW | Bainville 2 SE | Brush Mountain - |
| Fort Kipp - | Red Bank Creek | Bainville 1 SW | |
| Culbertson - | Rocky Point - | Bull Butte | |

COAL EVALUATION DRILLING--1979

Drilling Project: Bull Mountains NRMA- Conservation Division

Location: Musselshell Co., Montana

7½-minute Quads: Numerous quads in Bull Mountain Field

Starting Date: Spring snowmelt Completion Date: ?

No. of Holes: 16± (remainder from last year's program)

Average Depth: 300'±

Maximum Depth: 800'±

Rotary Footage: 6,000 + Coring: ?

Type Logs: gamma, density, resistivity, S. P.

Purpose: Establish KRCRA boundary and evaluate

Targets: all coals to Roundup bed.

Sampling Plan: .5' cuttings

Person-in-charge: Bob Matson, MBMG;

Contractor or Driller: MBMG

Remarks: Continuation of program from 1978 which was interrupted by weather

COAL EVALUATION DRILLING--1979

NRMA Conservation Division

Drilling Project: Sidney

Location: Richland, Wibaux, Dawson Co., Mont.

7½-minute Quads: Numerous, some unpublished

Starting Date: Summer 79 Completion Date: Fall 79

No. of Holes: 46

Average Depth: 282 ft.

Maximum Depth: 800 ft.

Rotary Footage: 17,000 Coring: 60 ft.

Type Logs: Gamma, Density, Resistivity, S. P.

Purpose: Evaluate Sidney KRCRA

Targets: Coals in the Tongue River Member of the Fort Union Formation, particularly
G&H beds

Sampling Plan: 10 ft. sample

Person-in-charge: Matson, MBMG

Contractor or Driller: M.B.M.G.

Remarks: Previously planned program (1977) never accomplished

COAL EVALUATION DRILLING--1979

Drilling Project: East Glendive NRMA- Conservation Division

Location: Dawson and Wibaux Counties, Montana

7½-minute Quads: Unpublished - A M S only

Starting Date: July (?) 79 Completion Date: Aug (?) 79

No. of Holes: 24

Average Depth: 285 feet

Maximum Depth: 400 feet

Rotary Footage: 6,850 Coring: _____

Type Logs: Gamma, Density, Resistivity, SP

Purpose: Evaluation of nominated areas & KRCRA Established

Targets: Coal beds in the Fort Union Formation

Sampling Plan: 10 ft. samples

Person-in-charge: Matson-MBMG

Contractor or Driller: MBMG

Remarks: Left over project from previous year.

COAL EVALUATION DRILLING--1979

Drilling Project: Prairie NRMA- Conservation Division

Location: McCone, Prairie, and Dawson Counties, Montana

7½-minute Quads: Diamond G Creek, Papps Reservoir, McCloud, South Fork Reservoir, Little Sheep Mountain, Watkins, Berry Sch

Starting Date: July 1979 Completion Date: Sept. 79

No. of Holes: 55

Average Depth: 400 feet

Maximum Depth: 600 feet

Rotary Footage: 20,360 feet Coring: None

Type Logs: Gamma, Density, Resistivity, S.P.

Purpose: KRCRA establishment and evaluation

Targets: section from surface through Tongue River Member of the Fort Union Formation

Sampling Plan: 10' foot sample intervals of cuttings

Person-in-charge: Herbert Wincentzen (USGS), Ken Williams MBMG

Contractor or Driller: _____

Remarks: Many holes not located on 7½' quadrangles; therefore an altimeter will be
needed for accurate surface elevations.

COAL EVALUATION DRILLING--1979

Drilling Project: Conservation Division - Northern Rocky Mountain Area
Location: Montana-Bighorn County T. 6 S., R. 40 E. sec. 11 2300'FSL 1800'FW
7½-minute Quads: Taintor Desert T. 7 S., R. 40 E. sec. 5 500' FSL 4250' FWL
Starting Date: Spring 1979 Completion Date: Fall 1979
No. of Holes: 2
Average Depth: 600'
Maximum Depth: 865'
Rotary Footage: 1465 Coring: No coring
Type Logs: Gamma, Density, SP-Res.
Purpose: Coal information - Resource evaluation
Targets: Canyon & Wall coal beds
Sampling Plan: 10-ft intervals
Person-in-charge: MBMG - Steven Volz
Contractor or Driller: Montana Bureau of Mines and Geology
Remarks: _____

Wyoming Drilling Project - see Figure 2

CONSERVATION DIVISION, CRMA
COAL EVALUATION DRILLING - 1979

Drilling Project: Carbon Basin, Wyo. (Edison Development) --

Location: T. 21 N., R. 79 & 80 W., Carbon County, Wyoming

7½-minute Quads.: Carbon, Halfway Hill, and TL Ranch

Starting Date: May, 1979 Completion Date: June

No. of Holes: 6

Average Depth: 800 feet

Maximum Depth: 1,000 feet

Rotary Footage: 4,800 Coring: 100

Type Logs: Natural gamma; Gamma-gamma density; SP; Resistivity

Purpose: Coal Evaluation - Lease Application

Targets: Hanna Fm. - Coal zones above Johnson bed

Sampling Plan: Cuttings - 5-ft. intervals

Person-in-charge: Tim Timmons

Contractor or Driller: Conservation Division - In-house

Remarks: Drilling may not be done by us if Morrison-Knudson, prime
contractor for Edison Development, does the drilling.

COAL EVALUATION DRILLING--1979
1979--to be contracted

Branch of Coal Resources

Drilling Project: Coal Resource Evaluation, Wind River Indian Reservation

Location: Fremont County, Wyoming

7½-minute Quads: 12+

Starting Date: June Completion Date: November

No. of Holes: 10

Average Depth: 800'

Maximum Depth: 1000'

Rotary Footage: 10,000'+ Coring: 400'+

Type Logs: Gamma-Gamma, Natural Gamma, Resistivity, Caliper

Purpose: Determination of coal thickness, depth, quality, samples

Targets Coal beds in Cretaceous Mesaverde, Meeteetse, Lance, etc. Fms.

Sampling Plan: Coal beds 5'+ will be sampled by Twin Hole

Person-in-charge: John F. Windolph, Jr.

Contractor or Driller: to be determined

Remarks: Coal-bed continuity will be checked downdip in basin, and in covered areas under Wind River Formation overlap.

COAL EVALUATION DRILLING--1979
1978 - Continued into 1979

Branch of Coal Resources

Drilling Project: Coal Resource Evaluation Wind River, Indian Reservation

Location: Fremont County, Wyoming

7 $\frac{1}{2}$ -minute Quads: 12+

Starting Date: May - late June Completion Date: October - late November

No. of Holes: 35+

Average Depth: 400'

Maximum Depth: 1000'

Rotary Footage: 17,000'+ Coring: 600+

Type Logs: Gamma-Gamma, Natural Gamma, Resistivity, Caliper

Purpose: Coal Resource Evaluation, thickness, depth, quality, samples

Targets: Coal beds in Cretaceous Mesaverde, Meeteetse, Lance, etc. Fms.

Sampling Plan: Coal beds 3 feet+ will be cored and sampled

Person-in-charge: Jonh F. Windolph, Jr.

Contractor or Driller: B & B Drilling Co., Bull Lake

Remarks: Several holes may be completed as water observation wells.

COAL EVALUATION DRILLING--1979

Branch of Coal Resources

Drilling Project: Hanna and Rock Creek Coal Fields (1978 project)

Location: Carbon and Albany Counties, Wyo.

7½-minute Quads: Elmo, Come West, Pierce Reservoir, Bengough Hills

Starting Date: July, 1978 Completion Date: Dec., 1978

No. of Holes: 44

Average Depth: 450 ft.

Maximum Depth: 1200 ft.

Rotary Footage: 20,000+ Coring: 1,000

Type Logs: Gamma Ray, resistivity, density, and caliper

Purpose: coal exploration

Targets: various coal beds

Sampling Plan: analyze core samples

Person-in-charge: Dan Hansen

Contractor or Driller: K & K Drilling, Montrose, CO

Remarks: Finish drilling contract in spring of 1979. Weathered out during
late November - early December. No additional drilling scheduled for these
coal fields during FY 79, according to Branch Chief.

Completed

COAL EVALUATION DRILLING--1979

Branch of Coal Resources
Drilling Project: West Powder River

Location: Campbell County Wyo. - Powder River 6, Montana

7½-minute Quads: Recluse - Broadus SW 1⁰

Starting Date: Summer 1979 Completion Date: Fall 1979

No. of Holes: 30

Average Depth: 500'

Maximum Depth: 300-700'

Rotary Footage: 15,000 Coring: 1,500

Type Logs: Full suite - calibrated

Purpose: Coal exploratory

Targets: Lebo Sh. Mbr.

Sampling Plan: Full

Person-in-charge: R. G. Hobbs

Contractor or Driller: USGS - OER

Remarks: _____

COAL EVALUATION DRILLING--1979

Drilling Project: NRMA - Conservation Division Coal Evaluation program

Location: Eastern Powder River Basin, Wyoming

7½-minute Quads: North Star School (SE & SW), Rawhide School

Starting Date: June, 1979 Completion Date: October, 1979

No. of Holes: 8

Average Depth: 340'

Maximum Depth: 520'

Rotary Footage: 2720' Coring: 0

Type Logs: Gamma, SP, Resistance

Purpose: Determine top and thickness of 3 coal units

Targets: Felix, Anderson, and Wyodak coal beds

Sampling Plan: Grab sample every 10 feet

Person-in-charge: Lee Jefferis and Frank Kistner

Contractor or Driller: NRMA rig

Remarks: _____

COAL EVALUATION DRILLING--1979

Drilling Project: NRMA - Conservation Division

Location: Campbell County, Wyoming

7½-minute Quads: Eagle Rock

Starting Date: Spring, 1979 Completion Date: Fall, 1979

No. of Holes: 3

Average Depth: 620 feet

Maximum Depth: 840 feet

Rotary Footage: 1,860 Coring: None

Type Logs: SP, Resistivity, Gamma ray

Purpose: Determine top & thickness of coal - Resource Evaluation

Targets: C & Wyodak beds

Sampling Plan: 10-ft intervals

Person-in-charge: Kistner - Schell

Contractor or Driller: NRMA rig

Remarks: _____

COAL EVALUATION DRILLING--1979

Drilling Project: Coal Resource Evaluation in Carbon Basin, Wyoming

Location: T. 21, 22 N., R. 79, 80 W.

7½-minute Quads: Halfway Hill, TL Ranch, Carbon

Starting Date: Spring, 1979 Completion Date: Fall, 1979

No. of Holes: 9

Average Depth: 425'

Maximum Depth: 600'

Rotary Footage: 3800' Coring: 170'

Type Logs: SP, Resistivity, Gamma

Purpose: Coal Resource evaluation

Targets: Johnson coal bed; 109 bed; and 107 bed

Sampling Plan: 10'

Person-in-charge: Frank Kistner, geologist; J. Williams, project geologist

Contractor or Driller: USGS, NRMA rig

Remarks: _____

COAL EVALUATION DRILLING--1979

Drilling Project: USGS/CD/NRMA/Casper

Location: Campbell County, Wyoming

7 1/2 Minute Quads: Weston SW, Lone Tree Creek

Starting Date: June, 1979 Completion Date: Oct., Nov., 1979

No. of Holes: 4

Average Depth: 450 feet

Maximum Depth: 500 feet

Rotary Footage: 1,800 feet Coring: 0

Type Logs: electric, Gamma

Purpose: To determine coal occurrence

Targets: 2 coal zones

Sampling Plan: driller's cuttings

Person-in-charge: Katock - Kistner

Contractor or Driller: U.S.G.S. NRMA drill crew

Remarks: _____

COAL EVALUATION DRILLING--1979

Drilling Project: USGS/ CD/ NRMA/ Casper

Location: Converse Co., Wyo

7½-minute Quads: Coal Draw; Betty Reservoir - SW/4

Starting Date: Spring 1979 Completion Date: Fall/Winter 1979

No. of Holes: 12

Average Depth: 725'

Maximum Depth: 900 '

Rotary Footage: 8700' Coring: 0

Type Logs: GR/SP/RES/LITH/Samples

Purpose: Correlation of coals; update KRCRA

Targets: 10 ' cuttings

Sampling Plan: Frank B. Kistner

Person-in-charge: USGS/ CD/NRMA/Casper

Contractor or Driller: _____

Remarks: _____

COAL EVALUATION DRILLING--1979

Drilling Project: USGS/ CD/NRMA

Location: Campbell Co., Wyo.

7 $\frac{1}{2}$ -minute Quads: Teckla S.W.

Starting Date: Spring 1979 Completion Date: -----

No. of Holes: 2

Average Depth: 550'

Maximum Depth: 700'

Rotary Footage: 1100' Coring: 0

Type Logs: Res/ SP/ Gamma

Purpose: Coal Correlation

Targets: Thin coals

Sampling Plan: 10-Ft. Cuttings

Person-in-charge: Ken Bowen

Contractor or Driller: USGS/CD/NRMA

Remarks: _____

CONSERVATION DIVISION, CRMA
COAL EVALUATION DRILLING - 1979

Drilling Project: Carbon Basin, Wyo. (Edison Development)

Location: T. 21 N., R. 79 & 80 W., Carbon County, Wyoming

7½-minute Quads.: Carbon, Halfway Hill, and TL Ranch

Starting Date: July, 1979

Completion Date: _____

No. of Holes: 7

Average Depth: 800 feet

Maximum Depth: 1,100 feet

Rotary Footage: 5,800'

Coring: _____

Type Logs: Natural gamma; Gamma-gamma density; SP; Resistivity

Purpose: Coal Evaluation - Lease Application

Targets: Hanna Fm. - Coal zones above Johnson bed

Sampling Plan: Cuttings - 5-ft. intervals

Person-in-charge: Tim Timmons

Contractor or Driller: Conservation Division - in-house

Remarks: Drilling may not be done by us if Morrison-Knudson, prime
contractor for Edison Development, does it.

Colorado Drilling Projects - see Figure 3

COAL EVALUATION DRILLING--1979

Branch of Coal Resources
Drilling Project: Colorado Geological Survey - Coal Drilling and Coring Program
Location: Adams, Arapahoe, Douglas, and Elbert Counties
7½-minute Quads: Denver East 1/2° x 1°
Starting Date: Sept. 1979 Completion Date: Oct. 1979
No. of Holes: 15-20
Average Depth: 400'
Maximum Depth: 800'
Rotary Footage: 10,000' Coring: 2,000'
Type Logs: full suite
Purpose: coal evaluation
Targets: Denver and Laramie Formations (Denver A-E beds)
Sampling Plan: coal core
Person-in-charge: Karl Brand (303) 839-2611
Contractor or Driller: Contract not let
Remarks: At least two holes completely cored

CONSERVATION DIVISION, CRMA
COAL EVALUATION DRILLING - 1979

Drilling Project: Gunnison County, Colorado

Location: T. 14 & 15 S., R. 86 & 87 W.

7½-minute Quads.: Squirrel Creek; Mt. Axtell

Starting Date: July

Completion Date: August

No. of Holes: 4 - 5

Average Depth: 1,000 feet

Maximum Depth: 1,500 feet

Rotary Footage: 4,500

Coring: --

Type Logs: Natural gamma; Gamma-gamma density; SP; Resistivity

Purpose: Coal exploration to define KRCRA

Targets: Mesaverde Fm. coals

Sampling Plan: Cuttings - 5-ft. intervals

Person-in-charge: Dave Gaskill

Contractor or Driller: Conservation Division - In-house

Remarks: Drilling may not be done by us if Brent Exploration, Inc. (compa
most interested in area) does the drilling.

COAL EVALUATION DRILLING--1979

Branch of Coal Resources

Drilling Project: McCallum EMRIA - Colo.

Location: Jackson Co.

7½-minute Quads: _____

Starting Date: _____ Completion Date: _____

No. of Holes: _____

Average Depth: _____

Maximum Depth: _____

Rotary Footage: _____ Coring: _____

Type Logs: _____

Purpose: _____

Targets: _____

Sampling Plan: _____

Person-in-charge: Schneider

Contractor or Driller: BLM

Remarks: No additional information received

COAL EVALUATION DRILLING--1979

Branch of Coal Resources
Drilling Project: Lay Creek EMRIA - Colo.

Location: Moffat Co.: sec. 25, 26, 27, 28, T. 8 N., R. 93 W.

7½-minute Quads: _____

Starting Date: _____ Completion Date: _____

No. of Holes: _____

Average Depth: _____

Maximum Depth: _____

Rotary Footage: _____ Coring: _____

Type Logs: _____

Purpose: _____

Targets: _____

Sampling Plan: _____

Person-in-charge: —Schneider

Contractor or Driller: BLM

Remarks: No additional information received

COAL EVALUATION DRILLING--1979

Branch of Coal Resources
Drilling Project: Trinidad

Location Huerfano and Las Animas Counties, Colorado

7½-minute Quads: Black Hills, Santa Clara, Weston

Starting Date: July 1979 Completion Date: August 1979

No. of Holes: 3

Average Depth: 1500'

Maximum Depth: 1500'

Rotary Footage: 5,000? Coring: 500?

Type Logs: Resist Gamma, Density, Neut. Caliper, B H Temp.

Purpose: Coal evaluation

Targets: All coals, Vermejo (Upper Cret.) & Raton (Upper Cret. & Paleocene) Fms.

Sampling Plan: Core coals >2', Methane desorption

Person-in-charge: Danilchik

Contractor or Driller: Not known

Remarks: Fed. coal, private surface

CONSERVATION DIVISION, CRMA
COAL EVALUATION DRILLING - 1979

Drilling Project: Gunnison County, Colorado

Location: T. 14 & 15 S., R. 86 & 87 W.

7½-minute Quads.: Squirrel Creek; Mt. Axtell

Starting Date: September Completion Date:

No. of Holes: 4 - 5

Average Depth: 1,000'

Maximum Depth: 1,500'

Rotary Footage: 4,500 Coring: --

Type Logs: Natural gamma; Gamma-gamma density; SP; Resistivity

Purpose: Coal exploration to define KRCRA

Targets: Mesaverde Fm. coals

Sampling Plan: Cuttings - 5-ft. intervals

Person-in-charge: Dave Gaskill

Contractor or Driller: Conservation Division - in-house

Remarks: Drilling may not be done by us if Brent Exploration, Inc. (com-
pany most interested in area) does it.

CONSERVATION DIVISION, CRMA
COAL EVALUATION DRILLING - 1979

Drilling Project: Colo-Wyo Coal Company, D-034365

Location: sec. 29 & 26, T. 3 N., R. 93 W., Rio Blanco County, Colorado

7½-minute Quads.: Ninemile

Starting Date: July, 1979 Completion Date: July 1979

No. of Holes: 4 (1 twinned, possibly 2)

Average Depth: 1,630'

Maximum Depth: 2,300'

Rotary Footage: 6,522' Coring: 200'

Type Logs: Natural gamma; Gamma-gamma; SP; Resistivity

Purpose: Coal evaluation - short-term lease application

Targets: Trout Creek Sandstone Mbr. of Iles Fm.

Sampling Plan: Cuttings at 5-foot intervals

Person-in-charge: G. Stuckey

Contractor or Driller: Conservation Division (in-house)

Remarks:

CONSERVATION DIVISION, CRMA
COAL EVALUATION DRILLING - 1979

Drilling Project: Sun Coal, C-25889

Location: T. 6, 7 N., R. 87 W.

7½-minute Quads.: Milner

Starting Date: June, 1979 Completion Date: June 1979

No. of Holes: 4 (2 optional)

Average Depth: 600'

Maximum Depth: ±1,000' (1,500')

Rotary Footage: 1,200 Coring: 10'

Type Logs: Natural gamma; Gamma-gamma; Density; SP; Resistivity

Purpose: Coal evaluation - short-term lease application

Targets: Pinnacle coals - to top of Mancos Shale

Sampling Plan: Cuttings - 5-ft. interval

Person-in-charge: G. Stuckey (R. Brown)

Contractor or Driller: Conservation Division (in-house)

Remarks: Area subject to revision by BLM. If area retains its outline,
two holes are needed, two optional depending on time.

CONSERVATION DIVISION, CRMA
COAL EVALUATION DRILLING - 1979

Drilling Project: Energy Fuels, C-22676 (Colorado)

Location: sec. 7, T. 5 N., R. 85 W.

7½-minute Quads.: Cow Creek, Colorado

Starting Date: June, 1979 Completion Date:

No. of Holes: 2 (1 twinned)

Average Depth: 500

Maximum Depth: 500

Rotary Footage: 750 Coring: 12

Type Logs: Natural gamma; Gamma-gamma; SP; Resistivity

Purpose: Coal evaluation-short-term lease application

Targets: Trout Creek Ss. Mbr., Iles Fm.

Sampling Plan: Cuttings at 5-foot intervals

Person-in-charge: G. Stuckey (R. Brown)

Contractor or Driller: Conservation Division (in-house)

Remarks:

COAL EVALUATION DRILLING--1979

Branch of Coal Resources

Drilling Project: Zuni Plateau

Location: Fence Lake SW Quad., Cerco Prieto Quad., N. Mexico

7 $\frac{1}{2}$ -minute Quads: _____

Starting Date: Spring

Completion Date: _____

No. of Holes: 4

Average Depth: 500 ft

Maximum Depth: 500 ft

Rotary Footage: 4,000 ft.

Coring: Selective - 10'/hole

Type Logs: Gamma, density, resistivity, caliper

Purpose: _____

Targets: 7' coal bed

Sampling Plan: _____

Person-in-charge: E. J. McKay

Contractor or Driller: in-house

Remarks: _____

COAL EVALUATION DRILLING--1979

Branch of Coal Resources
Drilling Project: Acoma Indian Reservation
Location: Vicinity of Grants, New Mexico
7½-minute Quads: see below
Starting Date: spring 1979 Completion Date: fall 1979
No. of Holes: 6
Average Depth: 500'
Maximum Depth: 700'
Rotary Footage: 14,000' Coring: 100'
Type Logs: Gamma ray
Purpose: coal evaluation
Targets: Coal in Crevasse Canyon Formation, Mesaverde Group
Sampling Plan: One sample, each bed more than 3 ft. thick in each coal zone
Person-in-charge: W. J. Mapel
Contractor or Driller: in-house
Remarks: _____

Los Pilares
Crown Point
North Pasture
Laguna Honda
Blue Mesa
Sand Canyon
Cehollita Peak
Mecate Meadows

COAL EVALUATION DRILLING--1979

Branch of Coal Resources

Drilling Project: Navajo Reservation

Location: Northwestern New Mexico

7½-minute Quads: Burnham Trading Post, Bisti Trading Post, The Pillar 3 NE, SE, NW, SW

Starting Date: after mid-July, 1979 Completion Date: by Oct 30, 1979

No. of Holes: about 10

Average Depth: 350'

Maximum Depth: 500'

Rotary Footage: 3500 Coring: 200

Type Logs: _____

Purpose: coal evaluation

Targets: Coal in Menefee Fm. (1 or 2 holes in Fruitland Fm.)

Sampling Plan: _____

Person-in-charge: O'Sullivan

Contractor or Driller: contract after June 1, 1979

Remarks: _____

COAL EVALUATION DRILLING--1979

Conservation Division - Farmington, New Mexico

Drilling Project: Nageezi

Location: 32 sections in T. 23 and 24 N. and R. 9, 10, and 11W.

7½-minute Quads: Huerfano T. P., Blanco T. P., Kimbeto, Pueblo Bonito N.W.

Starting Date: Summer '79 Completion Date: Summer '79

No. of Holes: Undetermined

Average Depth: 1000'

Maximum Depth: 1600'

Rotary Footage: Undetermined Coring: Yes

Type Logs: Electric, Natural Gamma, High Resolution Density

Purpose: Coal data collection by sampling and logging

Targets: Coal in Fruitland Fm.

Sampling Plan: Cuttings will be described by geologists at site

Person-in-charge: Russell Jentgen

Contractor or Driller: Not advertised yet.

Remarks: _____

Utah Drilling Projects - see Figure 5

CONSERVATION DIVISION, CRMA
COAL EVALUATION DRILLING - 1979

Drilling Project: Kaiparowits Plateau, Utah (UP&L Exchange)

Location: T. 36, 37 & 38 S., R. 2 & 3 E., Garfield & Kane Cos., Utah

7½-minute Quads.: Canaan Creek; Dave Canyon; Death Ridge; Carcus Canyon

Starting Date: 1980's (?) Completion Date: _____

No. of Holes: 82

Average Depth: 1,354 (900 - 1,920)

Maximum Depth: 1,920

Rotary Footage: 111,010 Coring: 10,000

Type Logs: Natural gamma; Gamma-gamma density; SP; Resistivity

Purpose: Coal Evaluation - Offered Lands - UP&L Exchange

Targets: 3 coal beds in the John Henry Member, Straight Cliffs Fm.

Sampling Plan: Cuttings - 5-ft. intervals

Person-in-charge: Whitey Zeller

Contractor or Driller: Contract

Remarks: May not be necessary - would require road construction - very costly.

CONSERVATION DIVISION, CRMA
COAL EVALUATION DRILLING - 1979

Drilling Project: Wasatch Plateau, Utah (UP&L Exchange)

Location: T. 16, 17, & 18 S., R. 6 & 7 E., Emery County, Utah

7½-minute Quads.: The Cap; Mahogany Pt.; Joe's Valley Reservoir; Red Point;
Hiawatha N.W.

Starting Date: June 1, 1979 Completion Date: October 31

No. of Holes: 21

Average Depth: 2,045'

Maximum Depth: 2,600'

Rotary Footage: 43,000 Coring: Holes to be selected later

Type Logs: Natural gamma; Gamma-gamma density; SP; Resistivity

Purpose: Coal Evaluation - Selected lands - UP&L exchange

Targets: Blackhawk Formation and Star Point Ss.

Sampling Plan: Cuttings - 5-ft. intervals

Person-in-charge: Gene Ellis

Contractor or Driller: Utah Geological and Mineral Survey

Remarks: Grant Program

CONSERVATION DIVISION, CRMA
COAL EVALUATION DRILLING - 1979

Drilling Project: Wasatch #2, North Horn Mt., Utah (continuation)

Location: T. 18 & 19 S., R. 5, 6, 7 E., San Pete & Emery Cos., Utah

7½-minute Quads.: Castledale; Ferron Canyon; Hiawatha

Starting Date: June 1979 Completion Date:

No. of Holes: 8

Average Depth: 1,333 (range 1,100 - 1,700)'

Maximum Depth: 1,700'

Rotary Footage: 10,500 Coring: --

Type Logs: Natural gamma; Gamma-gamma density; SP; Resistivity; (Caliper)

Purpose: Coal evaluation

Targets: (50 ft. into Star Point Ss below the Blackhawk Fm.)

Sampling Plan: Cuttings - 5-ft. intervals

Person-in-charge: Gene Ellis

Contractor or Driller: Himes Drilling, Grand Junction, Colorado

Remarks: Uranium Exploration Contract terminated for default

Drilling Project: Wasatch #2, Utah (continuation)

Location: T. 18 & 19 S., R. 5, 6, 7 E., San Pete & Emery Cos., Utah

7½-minute Quads.: Castledale; Ferron Canyon; Hiawatha

Starting Date: June 1 or earlier, 1979 Completion Date: July 31, 1979

No. of Holes: 8

Average Depth: 1,333 (Range 1,100 - 1,700)'

Maximum Depth: 1,700'

Rotary Footage: 10,500 Coring: --

Type Logs: Natural gamma; Gamma-gamma density; SP; Resistivity; (Caliper)

Purpose: Coal evaluation

Targets: (50 ft. into Star Point Ss below the Blackhawk Fm.)

Sampling Plan: Cuttings - 5-ft. intervals

Person-in-charge: Gene Ellis

Contractor or Driller: Himes Drilling, Grand Junction, Colorado

Remarks: Uranium Exploration Contract terminated for default.

CONSERVATION DIVISION, CRMA
COAL EVALUATION DRILLING - 1979

Drilling Project: Muddy Creek Area - Wasatch Plateau, Utah
Location: T. 20 & 21 S., R. 5 E., San Pete & Sevier Cos., Utah
7½-minute Quads.: Muddy Creek; Flagstaff Peak; Emery West; Heliotrope Mt.
Starting Date: June 15, 1979 Completion Date: Aug. 31, 1979
No. of Holes: 10
Average Depth: 1,350'
Maximum Depth: 1,500'
Rotary Footage: 11,500 Coring: 800
Type Logs: Natural gamma; Gamma-gamma density; SP; Resistivity
Purpose: Coal Evaluation
Targets: Star Point Ss, below the Blackhawk Fm.
Sampling Plan: Cuttings - 5-ft. intervals
Person-in-charge: Howard Albee
Contractor or Driller: Contract
Remarks: To better define and extend KRCRA

COAL EVALUATION DRILLING--1979

Branch of Coal Resources

Drilling Project: Muddy Creek

Location: Area SE and E of Emery, Utah

7½-minute Quads: Emery East

Starting Date: May ?, 1979 Completion Date: May or June 1979

No. of Holes: 11

Average Depth: 100 ft.

Maximum Depth: 110 ft.

Rotary Footage: 0 Coring: 1,070

Type Logs: _____

Purpose: to obtain coal samples for petrographic study

Targets: I-J coal

Sampling Plan: all core to Ed Chav for slabbing

Person-in-charge: T . A. Ryer

Contractor or Driller: in-house

Remarks: _____

COAL EVALUATION DRILLING--1979

Branch of Coal Resources

Drilling Project: Wasatch Plateau Coal Field

Location: Central Utah

7½-minute Quads: Emery West, Acord Lakes

Starting Date: Late May, early June, 1979 Completion Date: late July, 1979

No. of Holes: 3

Average Depth: 1000 ft.

Maximum Depth: 1025 ft.

Rotary Footage: 2,125 ft. Coring: 700 ft.

Type Logs: Gamma Gamma, Natural Gamma, Caliper, Resistivity, drift Survey?

Purpose: To obtain cores of coal beds for comprehensive analysis and relate the analytical data to depositional environments previously worked out or nearby on
Targets: Star Point Sandstone (Cretaceous)

Sampling Plan: Cuttings every 10 ft., core

Person-in-charge: Joseph D. Sanchez

Contractor or Driller: Contract Driller

Remarks: _____

COAL EVALUATION DRILLING--1979

Drilling Project: Dunn-Stark-Billings Counties NRMA-Conservation Division

Location: Dunn County, Stark County, Billings County, North Dakota

7½-minute Quads: see attached

Starting Date: June 1979 Completion Date: August 1979

No. of Holes: 150

Average Depth: 420 feet

Maximum Depth: 700 feet

Rotary Footage: 63,100 feet Coring: 160 feet

Type Logs: Gamma, Gamma Density, Resistivity, SP

Purpose: KRCRA establishment and evaluation

Targets: Shallow coal beds of the Fort Union Formation

Sampling Plan: 5-foot intervals of cuttings

Person-in-charge: Michael Menge (USGS)

Contractor or Driller: _____

Remarks: Quadrangle maps:

| | | |
|-----------------|-------------------------|----------------------|
| Antelope | Gorham SW | Oakdale |
| Belfield | Grassy Butte SE | Petes Creek |
| Belfield NE | Grassy Butte SW | Rattlesnake Butte |
| Belfield SE | Halliday NW | Richardton |
| Belfield SW | Hanks Gully | Richardton SE |
| Boyle | Hungry Man Butte | Roosevelt Creek East |
| Bratburg Butte | Indian Butte | Scairt Woman Draw |
| Clark Butte NW | Killdeer | Schaffner Creek |
| Davis Buttes | Killdeer Mountains | Scheffield |
| Dickinson North | Lake Ilo | South Heart |
| Dickinson South | Lefor | Squaretop Butte |
| Dunn Center | Lefor NW | Tracy Mountain |
| Dunn Center NE | Lehigh | Werner |
| Fairfield | Lone Butte SE | White Butte NE |
| Fairfield SE | Lost Bridge | White Butte NW |
| Fayette | Manning NW | Ziner Butte |
| Fryburg | Marshall NW | |
| Fryburg NE | New England NW | Preliminary maps: |
| Fryburg NW | New Hradec South | Belfield 3 NE |
| Gladstone | North Killdeer Mountain | Belfield 3 NW |
| Gorham | | Belfield 4 NE |
| Gorham NW | | Belfield 4 NW |
| Gorham SE | | |

COAL EVALUATION DRILLING--1979

Drilling Project: West Williams NRMA Conservation Division
Location: Williams Co., ND
7 $\frac{1}{2}$ -minute Quads: see attached list
Starting Date: June 1979 Completion Date: August 1979
No. of Holes: 27
Average Depth: 517 feet
Maximum Depth: 700 feet
Rotary Footage: 13,980 feet Coring: 100 ft
Type Logs: gamma, gamma density, resistance, SP
Purpose: establish and evaluate coal resource areas
Targets: Lignites Fort Union Fm.
Sampling Plan: cuttings at 5' intervals
Person-in-charge: John Spencer, USGS; Robert Matson, Mont. Bur. Mines and Geol.
Contractor or Driller: _____
Remarks: _____

Bainville SE
Bonetrail SE
Bonetrail SW
Bull Butte
Marmon SE
Otter Tail Creek
Red Bank Creek
Trenton
Trenton NE
Trenton NW
Trenton SW
Williston West

COAL EVALUATION DRILLING--1979

Drilling Project: MOUNTRAIL NRMA - Cons. Division

Location: Mountrail County, North Dakota

7½-minute Quads: see attached

Starting Date: June 1979 Completion Date: September 1979

No. of Holes: 32

Average Depth: 318 feet

Maximum Depth: 400 feet

Rotary Footage: 10,180 feet Coring: 50 feet

Type Logs: Gamma, Gamma Density, Resistivity, SP

Purpose: KRCRA establishment and evaluation

Targets: Shallow coal beds of Fort Union Formation

Sampling Plan: 5-foot intervals of cuttings

Person-in-charge: John Spencer (USGS), C. G. Carlson (NDGS)

Contractor or Driller: _____

Remarks: _____

Quadrangle maps:

Battleview
Charlson NE
Powers Lake
Ross NW
White Earth

Preliminary map:

White Earth 2 SE

AMS map:

Williston

COAL EVALUATION DRILLING--1979

Drilling Project: WARD NRMA Conservation Division

Location: Ward County, North Dakota

7½-minute Quads: see attached

Starting Date: June 1979 Completion Date: September 1979

No. of Holes: 17

Average Depth: 478 feet

Maximum Depth: 540 feet

Rotary Footage: 8,140 feet Coring: 20 feet

Type Logs: Gamma, Gamma Density, Resistivity, SP

Purpose: KRCRA establishment and evaluation

Targets: Shallow coal beds of Fort Union Formation

Sampling Plan: 5-foot intervals of cuttings

Person-in-charge: Susan M. Cook (USGS), C.G. Carlson (NDGS)

Contractor or Driller: _____

Remarks: _____

Quadrangle Map:

Douglas West

AMS Map:

McClusky AMS

COAL EVALUATION DRILLING--1979

Drilling Project: DIVIDE NRMA Conservation Division

Location: Divide County, North Dakota

7½-minute Quads: see attached

Starting Date: June 1979 Completion Date: September 1979

No. of Holes: 67

Average Depth: 395 feet

Maximum Depth: 700 feet

Rotary Footage: 26,440 feet Coring: 100 feet

Type Logs: Gamma, Gamma Density, Resistivity, SP

Purpose: KRCRA establishment and evaluation

Targets: Section from surface through Fort Union Formation

Sampling Plan: 5-foot sample intervals of cuttings

Person-in-charge: John Spencer (USGS), C. G. Carlson (NDGS)

Contractor or Driller: _____

Remarks: _____

Quadrangle maps: _____

Alamo
Ambrose
Atcoal
Bright Water Lake
Bush Lake
Columbus SW
Crosby
Hamlet
Noonan
Noonan SE
Noonan SW
Paulson
Stady
Wildrose

AMS maps:

Williston
Wolf Point

COAL EVALUATION DRILLING--1979

Drilling Project: Northern Williams NRMA. Conservation Division

Location: Williams Co., ND

7½-minute Quads: see attached list

Starting Date: Sept. 1978 Completion Date: Aug. 1979

No. of Holes: 77

Average Depth: 440 ft

Maximum Depth: 600 ft

Rotary Footage: 33,980 ft Coring: 200 ft

Type Logs: gamma, gamma density, resistance, SP

Purpose: establish and evaluate coal resource areas

Targets: Lignites in Fort Union Fm.

Sampling Plan: cuttings at 5' intervals

Persop-in-charge: John M. Spencer

Contractor or Driller: Superior Drilling, Evergreen, CO

Remarks: _____

Appam
Big Meadow
Bonetraill
Bonetraill SE
Bonetraill SW
Blacktail Lake
Brush Lake
Brush Mountain
Bright Water Lake
Bull Butte
Charlson NE
Grenora
Hanks
Marmon SE
McGregor

Ray 1NE
Ray 1NW
Ray 1SW
Ray 2NE
Ray 2NW
Ray 2SE
Ray 2SW
Tom Berg Lake
Twin Lakes
West Bonetraill
White Earth 2NW
White Earth 2SE
Zahl

COAL EVALUATION DRILLING--1979

Drilling Project: WARD NRMA Conservation Division
Location: Ward County, North Dakota
7½-minute Quads: see attached
Starting Date: September 1978 Completion Date: August 1979
No. of Holes: 31
Average Depth: 465 feet
Maximum Depth: 700 feet
Rotary Footage: 14,400 feet Coring: 40 feet
Type Logs: Gamma, Gamma Density, Resistivity, SP
Purpose: KRCRA establishment and evaluation
Targets: Shallow coal beds of Fort Union Formation
Sampling Plan: 5-foot intervals of cuttings
Person-in-charge: Susan M. Cook
Contractor or Driller: Superior Drilling Co.
Remarks: Completion of 1978 drilling program that was delayed

Quadrangle Maps:

Burlington
Carpio
Carpio NE
Coulee
Des Lacs
Burlington NW
Hartland
Kenmare
Minot NW
Minot-15'
Mosquito Butte
Niobe
Tolley SE

AMS Map:

Minot AMS

COAL EVALUATION DRILLING--1979

Drilling Project: MOUNTRAIL NRMA Conservation Division
Location: Mountrail County, North Dakota
7½-minute Quads: see attached
Starting Date: September 1978 Completion Date: August 1979
No. of Holes: 5
Average Depth: 624 feet
Maximum Depth: 740 feet
Rotary Footage: 3120 feet Coring: _____
Type Logs: Gamma, Gamma Density, Resistivity, SP
Purpose: KRCRA establishment and evaluation
Targets: Shallow coal beds of Fort Union Formation
Sampling Plan: 5-foot intervals of cuttings
Person-in-charge: Susan M. Cook
Contractor or Driller: Superior Drilling Co.
Remarks: Completion of delayed 1978 drilling program

Quadrangle Maps:

Coulee
Donnybrook

AMS Map:

Williston AMS

COAL EVALUATION DRILLING--1979

Drilling Project: RENVILLE NRMA, Conservation Division

Location: Renville County, North Dakota

7½-minute Quads: see attached

Starting Date: September 1978 Completion Date: August 1979

No. of Holes: 3

Average Depth: 280 feet

Maximum Depth: 400 feet

Rotary Footage: 840 feet Coring: _____

Type Logs: Gamma, Gamma Density, Resistivity, SP

Purpose: KRCRA establishment and evaluation

Targets: Shallow coal beds of Fort Union Formation

Sampling Plan: 5-foot intervals of cuttings

Person-in-charge: Susan M. Cook

Contractor or Driller: Superior Drilling Co.

Remarks: Completion of delayed 1978 drilling program

Quadrangle Maps:

Carpio
Carpio NE
Hartland

COAL EVALUATION DRILLING--1979

Branch of Coal Resources

Drilling Project: Rattlesnake Butte EMRIA - No. Dak.

Location: Stark Co., all of T. 140 N., R. 98 W. except sec. 1, 12, 13, 24, 25,
& 36; east $\frac{1}{2}$ T. 140 N., R. 99 W.; sec. 29, 30, 31, 32, T. 141 N., R. 9
7 $\frac{1}{2}$ -minute Quads: sec. 25, 26, 27, 28, 29, 32, 33, 34, 35, 36, T. 141 N., R. 98 W

Starting Date: _____ Completion Date: _____

No. of Holes: _____

Average Depth: _____

Maximum Depth: _____

Rotary Footage: _____ Coring: _____

Type Logs: _____

Purpose: _____

Targets: _____

Sampling Plan: _____

Person-in-charge: Schneider

Contractor or Driller: BLM

Remarks: No additional information received

COAL EVALUATION DRILLING--1979

Drilling Project: Arkoma Basin EMRIA (Branch of Coal Resources)

Location: Eastern Oklahoma

7½-minute Quads: Blocker, Stigler East and West, Red Oak, Panama, Spiro, Hackett

Starting Date: May 1979 Completion Date: October 1979

No. of Holes: 18

Average Depth: 175'

Maximum Depth: 220'

Rotary Footage: _____ Coring: 100%

Type Logs: full suite

Purpose: rehabilitation potential - coal evaluation

Targets: Pennsylvanian coals

Sampling Plan: complete core

Person-in-charge: Will Witt (Bur. Rec.) Schneider (BCR)

Contractor or Driller: _____

Remarks: BLM Program
