Table 25.--Semiquantitative spectrographic, chemical, and radiometric analyses of ashed surface samples of lignite and carbonaceous shale from Ludlow Member of Fort Union Formation, Slim Buttes, Harding County, S. Dak.

[Analyses graphically shown on plate 18C in U.S. Geol. Survey Prof. Paper 463, 1965. For explanation of code used in semiquantitative spectrographic analyses, see Prof. Paper 463, p. 51. Tr, near threshold (below limit of sensitivity); 0, looked for but not detected. Analysts: Spectrographic, J. C. Hamilton; Radiometric, C. G. Angelo; Chemical, R. P. Cox, H. E. Crowe, J. N. Rosholt, Jr., J. P. Schuch, James Wahlberg, and J. E. Wilson]

Locality No. shown on pl. 12	Sample No.	Location (section, township, and range)	Bed thickness (feet)	Source of sample	Ash (percent)	Chemical: Uranium in ash (percent)	Chemical: Uranium in sample (percent)	Chemical: Selenium in sample (ppm)	Radiometric: Equivalent Uranium	Semiquantitative spectrographic analyses: Si	Al	Fe	Ca	Na	Mg	K	As	Mo	Ba	Ti	Sr	B	Zr	Mn	Ni	V	Y	Cu	La	Co	Pb	Ge	Cr	Ga	Sc	Yb	Be	Nb	Ag	Other elements
32	235178	SESW 12 17N 7E	3.0	.....	22	0.045	0.010	5	0.059	2+	1	2+	1	2	2	3+	3-	3-	3	3	3	4	4	3	4	5+	5+	4-	4-	5+	4-	5-	5-	5-	5-	6+	6+	0	0	Ce, <0.05.
33	173	SWNW 13 17N 7E	4.5	Upper 1.5 ft.	26	.069	.018	3	.013	1	1	1	1	2+	2	2-	3	4	3+	3+	3	5+	4	4-	4	5+	4	4-	4	4-	5+	0	5+	5-	5	5	5	0	0	Nd, 4.
	174	do.	4.5	Next 1.0 ft.	21	.013	.028	5	.024	1	1	1	2+	2-	3+	2-	3	3	3+	3+	3	5+	4+	5+	4+	4-	4+	4-	4+	4-	4-	5+	5-	5-	5-	5+	4-	0	0	Er, Tr; Nd, 4; Tl, Tr; Zn, 4; Ce, 4+; P, 3+.
	175	do.	4.5	do.	17	.017	.029	30	.026	1	1	2+	1	2-	3+	3+	0	3+	3+	3+	3	4-	4+	5+	3-	4	3-	4-	3-	4+	5+	4-	5-	5	5-	5+	4-	0	0	Dy, 5+; Er, 5+; Gd, 4-; Nd, 4+; Tl, Tr; Zn, 4; Ce, 3-.
	176	do.	4.5	Basal 1.0 ft.	27	.31	.082	50	.056	1	1	2+	1	3	3+	2-	3-	3	3	3+	3-	5+	3-	4-	4+	4+	3	3-	3+	4-	4+	4-	5	6+	5	0	4-	5	6	Cd, <0.05, Dy, 4; Er, 4; Eu, <0.1; Gd, 4+; Ho, 4+; Nd, 3; Pr, 4+; Sm, 4+; Tl, Tr; Ce, 3+.
45	130	SWNE 24 16N 8E	.2	.....	56	.099	.055	3	.027	1	1	2	2	2-	2-	2	0	4-	4+	3	4	4	4	5+	5+	4	4-	4	4-	5+	5+	0	4-	5-	5+	5-	6	Tr	0	Nd, 4-; Ce, 4.
	132	do.	1.0	.....	21	.099	.021	30	.018	1	1	2	1	2+	2	2-	0	4	3-	3-	3-	4	4	3-	4	4	4-	4-	5+	4-	5+	5+	5+	6+	5	5-	0	0	Nd, Tr; Ce, <0.05.
46	135	SENE 24 16N 8E	1.2	.....	45	1.61	.072	50	.043	1	2+	2+	2	2+	2-	2	0	3	3-	3	4+	4-	4+	4+	4	4	4-	4-	5+	4-	5+	5+	4-	6+	5	5-	5-	Tr	0	Nd, Tr; Ce, Tr.
47	159	NWSW 17 16N 9E	1.6	Upper 0.5 ft.	35	.093	.033	20	.024	1	2+	1	1	2	2	2	0	4	3-	3	4+	5+	4	5+	4-	5+	4-	4-	5+	5	5	5-	5+	6	5	5-	6+	5-	0	Nd, 4-; Ce, Tr.
	160	do.	1.6	Next 0.5 ft.	24	.059	.014	10	.011	1	1	2	1	2-	2	0	0	4	3+	3+	3-	4-	4	5+	4	4-	4	4-	4-	5	5	5-	5+	5-	5+	5	5	5	0	Nd, 4-; Ce, 4.
	161	do.	1.6	Basal 0.6 ft.	44	.020	.009	5	.010	1	2+	1	1	2	3+	2	0	4	3-	3-	4+	5	4-	5+	4-	4-	5+	4-	5	5-	5	0	5+	6+	5	5-	6	Tr	0	
48	147	NWSW 18 16N 9E	.5	.....	23	.658	.15	7	.11	1	2+	1	2+	2	3+	2	3	3+	3	3	4+	5+	4	4-	4	4	4	4-	4	5+	4-	<0.005	4-	5	5+	5+	5-	0	0	Nd, 4; Tl, Tr; Ce, 4.
	149	do.	.4	.....	33	.646	.21	5	.20	1	2	2+	2	2	3	2	2-	2-	4+	3	4	5+	4+	5+	5+	4-	4-	4-	4-	5	5+	5	5+	6+	5	5-	6	0	0	Nd, 4-; Tl, Tr; Ce, Tr.
50	143	SWSE 12 16N 8E	2.5	Upper 1.0 ft.	20	.049	.010	7	.009	1	2+	1	2+	2+	2-	2-	3-	4+	3-	3	4+	4-	4+	4	4-	4-	4-	4	5+	5	5	5+	4-	5-	5+	5-	6	Tr	0	Nd, 4-; Ce, Tr.
	142	do.	2.5	Basal 1.2 ft.	22	.037	.008	5	.009	1	2+	1	1	2+	3+	2	0	4	3	3-	3-	4-	4+	4	4-	5+	4-	5+	5	5	5	0	5+	6+	5	5-	6+	0	0	Tl, Tr.
51	166	do.	2.8	Upper 0.9 ft.	24	.060	.014	20	.040	1	2	1	2+	2	3+	2	3	3-	3-	3	4+	4-	4	4-	5+	4-	5+	4	5	5-	5	5	5+	6+	5	5-	6	0	0	Nd, Tr; Tl, Tr.
	164	do.	2.8	Basal 1.5 ft.	25	.064	.016	7	.016	1	2	2+	1	2	2-	2-	0	4+	3-	3	3-	4-	4	4	5	4-	5+	4-	5	5-	5	5-	5+	0	5	6+	6	0	0	
Near 51	163	do.	1.1	.....	33	.027	.009	10	.010	2	2	1	1	2+	2-	2-	0	4	3+	3	4+	5+	4	5+	4-	5+	4	5+	5+	5	5-	5-	5	6+	5	5	5-	0	0	Nd, 4-; Ce, Tr.
53	169	SESW 12 16N 8E	1.8	Upper 0.7 ft.	22	1.18	.26	70	.17	2+	1	2	2+	2-	2	2-	3	3	3	3+	4+	4-	3-	4-	4	4+	4	4-	4-	4-	4-	5+	5+	5-	5	5	5+	0	0	Nd, 4-; Ce, <0.05; Tl, Tr.
	167	do.	1.8	Basal 1.0 ft.	60	.182	.11	20	.080	1	1	2+	2	2-	2-	2	3-	3	3-	3+	4+	4	4+	5+	5+	4-	5+	4-	5	5+	5	5	4-	5-	5	6+	6	0	0	Cd, <0.05.
Near 53	170	do.	.9	.....	33	.036	.012	5	.011	1	2+	1	2+	2	2	2	0	4-	3	3+	4+	5+	4+	4	4	4-	4-	4-	5+	5+	5+	5	5+	5	5	5-	6+	5-	0	Cd, 5+.
49	145	NWSE 13 16N 8E	.7	.....	26	.613	.16	10	.11	1	1	2+	2-	2	3+	2-	0	3	3-	3+	4	4	4+	4-	4-	4	4-	4-	5+	5	5+	5+	4-	5-	5+	5-	6+	5-	0	Nd, 4-; Ce, Tr.
54	138	SESE 11 16N 8E	.9	.....	41	.81	.33	10	.24	1	2+	2	2	2	2-	2	3	3+	3-	3+	4	4	4+	4	4	4	4-	4	4-	4-	4+	5+	4-	6+	5	5-	5-	Tr	6-	Nd, 4-; Ce, 4; Sn, <0.002.
	172	do.	1.2	.....	31	.035	.011	10	.006	1	1	1	2	2	2	2-	0	4	3-	3+	3	4+	4	3-	4-	4-	4-	4	5	5	5+	5+	5+	5	5	5-	5	0	0	
56	136	SESW 11 16N 8E	2.0	.....	36	.073	.026	100	.019	1	2+	2	1	2	2-	2-	0	4	3-	3-	4+	4-	4+	4	5+	4	5+	4-	5	4-	5+	5+	5+	Tr	5-	6+	6	Tr	Tr	Tl, 4-.
57	156	SESW 2 16N 8E	1.9	Upper 1.0 ft.	32	.13	.041	70	.034	1	1	1	1	2	2-	2	0	3-	3+	3+	4+	4	4+	3-	4	4+	4-	4-	5+	4-	5+	5+	5+	5-	5	5-	5-	Tr	0	Nd, Tr.
	155	do.	1.9	Basal 0.9 ft.	30	.10	.031	5	.028	1	1	1	1	2+	2-	2	3	3	3	3+	4	4+	3-	3-	4	4	4-	4-	5	4-	5+	5	5+	5-	5	5-	6+	Tr	0	Tl, 4.
58	162	NESW 6 16N 9E	.7	.....	40	.329	.13	5	.053	1	1	1	1	3+	2-	2-	3	3-	3+	3+	4	3+	4+	5+	4-	4-	4	4-	5+	5	5+	5-	5+	6+	5	5	6+	5-	0	Nd, 4-; Ce, 4.