

MINERAL OPERATIONS

FANCY HILL, ARKANSAS

PAGE 1 OF 34

DRILL HOLE LOG

Drill Hole No. JR-1Date: Spudded 11-20-78Bearing: _____ Inclination: VerticalDrilled By: Boyles Bros. - Leon ReevesJames Doyle Price & Roy Wisener

Coordinates: North _____ East _____

Logged By: Edmond F. Lawrence

Elevation: _____

Total Depth: 1792.6 feet

DEPTH		% RECOVERY	SAMPLE NUMBER	SAMPLE INTERVAL	ANALYSES			DESCRIPTION OF MATERIAL DRILLED
FROM	TO				Sp. Gr.	BeSo ₄		
0.0	28.0	100						Colluvium - red clay with numerous cobbles & boulders of novaculite as float from hill south of JR-1 claim.
28.0	34.0	100						Black siltstone with small amount yellow-brown iron oxide on fractures; fractures 50° & 70° @ 28-29'; fractured zone dipping 30° at 33-34'; siltstone dips 40° at 35.6'.
34.0	38.5	100						Same as above
38.5	44.0	100						Black silty shale with occasional pod medium grain sandstone.
44.0	60.4	100		(Lost water at 45')				Gray-black siltstone with traces pyrite; bedding 40° at 43.8' & 50° at 44.7'; fracture zone at 57.6-58.0'; grades to a fine-grained sandstone with 1-2% white mica; possibly tuffaceous.
60.4	62.0	100						Same as above
62.0	69.0	100						Black carbonaceous shale with shiny slickenside surfaces; fractured zone dipping 65° at 65.0-67.0; scattered pyrite grains.
69.0	75.0	100						Gray-black shale; no slicks, bedding at 46° at 74.0'; 0.2' fracture zone dips 40° @ 78.0'; soft-sediment deformation at 75.6'.

MINERAL OPERATIONS

FANCY HILL, ARKANSAS
DRILL HOLE LOG

PAGE 2 OF 34

Drill Hole No. JR-1

Date: _____

Bearing: _____ Inclination: _____

Drilled By: Boyles Bros. - Leon Reeves & Jim Hill

Coordinates: North _____ East _____

Logged By: Edmond F. Lawrence

Elevation: _____

Total Depth: _____

DEPTH		% RECOVERY	SAMPLE NUMBER	SAMPLE INTERVAL	ANALYSES			DESCRIPTION OF MATERIAL DRILLED
FROM	TO				Sp. Gr.	BaSe4		
75.0	116.0	100						Same as above, bedding 40° at 89.0'; 0.3' fracture zone at 93°; bedding 40° @ 98.0'; 1/8"-1" fine grained sandstone extruded along fractures at 103.0'; possibly soft sediment deformation; bedding 25° @ 101.0'; soft sediment deformation at 103-110'; small amount calcite as veinlets from 103 to 114.0'; fracture zone dipping 35-55° @ 109-116'.
116.0	137.0	66		(7.3' lost in hole from barrel)				Black shale, slightly silty; general fractures dipping 20°-35°; sandstone dikelets as soft sediment deformation; 0.05' calcite veinlet at 121.2' dipping 20°; scattered grains of pyrite, bedding not obvious; one piece of core 5.3' long.
137.0	151.0	85		(core lost in hole from barrel)				Gray-black silty shale, highly competent; 1 piece of core at 143-151' is 8' long; dense, conchoidal fractures.
151.0	159.0	65		(2.4' lost from core barrel)				Same as above; fractures dipping 45° @ 153' & 154'; occasional veinlets of calcite.
159.0	171.1	100						Same as above; 0.05' calcite veinlet dipping 50° @ 170.4'.
171.1	171.7	95						Gray siltstone at 171.1-171.7'; bedding 50° @ 171.2'.

DRILL HOLE LOG

Drill Hole No. JR-1

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Drilled By: Leon Reeves & Jim Hill/ Gary Campbell

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DEPTH		% RECOVERY	SAMPLE NUMBER	SAMPLE INTERVAL	ANALYSES			DESCRIPTION OF MATERIAL DRILLED
FROM	TO				Sp. Gr.	BaSo ₄		
171.7	197.0	48		(13.0' lost from core barrel)				Black carbonaceous silty shale; minor fractures 25-70°
197.0	209.3	100						Same as above, with occasional veinlets of calcite & pyrite; occasional grains pyrite in groundmass;
								bedding 50° at 198.4'; one fracture 70° at 202.0';
209.3	215.5	100						Same as above; ½" calcite veinlet dipping 55° @ 211.2'
215.5	220.9	100						Gray silty shale; poor bedding dipping 65° at 217.0'.
220.9	226.0	80						Same as above; with thin septa black carbonaceous
								shale at 223.0-225.8'; bedding 25-35° @ 223-226'.
226.0	232.2	100						Gray siltstone with occasional fractures at 35-55°.
232.2	241.0	100						Same as above with fractures at 35-55°.
241.0	250.0	100		(1.5" core loss at 243-250')				Black silty shale with fractures at 35-55°; possibly
								a fault zone at 247-250'.
250.0	255.0	100						Same as above; tight fractures at 249-250' dipping
								60° & 75°; 70° fractures at 253' & 254'.
255.0	258.0	85						Same as above; bedding at 35°.
258.0	264.0	100						Same as above; bedding 50° at 260' & 65° at 263.2'.
264.0	269.0	100						Same as above; ½% disseminated pyrite
269.0	279.0	100						Same as above; ½% disseminated pyrite; bedding 50° @
								275'; small amount white mica.
279.0	285.0	100						Gray siltstone with wisps of black shale; bedding

FANCY HILL, ARKANSAS
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DEPTH		% RECOVERY	SAMPLE NUMBER	SAMPLE INTERVAL	ANALYSES			DESCRIPTION OF MATERIAL DRILLED
FROM	TO				Sp. Gr.	BaSo ₄		
								25° @ 279'; fine disseminated pyrite; some soft sediment deformation.
285.0	295.0	100						Same as above, several pods of pyrite at 285.1; bedding dips 20° @ 286.2'; several random veinlets of calcite; bedding 15° at 294.4' where thin beds of medium sandstone is interbedded with black shale & shows soft sediment deformation.
295.0	305.0	100						Same as above; bedding 10° @ 303.2'; several layers of 0.05'-0.1' coarser grained sandstone; bedding 12° @ 304.8'.
305.0	305.6	100						Same as above
305.6	307.0	100						Interbedded sandstone and black shale with beds 0.05-0.1' thick dipping 15°-25° at 304.8 & 306.0'.
307.0	338.0	100						Black carbonaceous shale, possibly some graphite; 0.05'x 0.2' pod fine-grained pyrite at 308.6'; fracture dipping 75° @ 313.6'; fractures 85°-90° @ 310.0-315.0' fracture dipping 70° @ 316.8'.
338.0	345.0	100						Same as above but with thin numerous beds of light gray fine-grained sandstone dipping 65° @ 341.0' and 55° @ 345'; one fracture dipping 65° @ 343.4'; some

DRILL HOLE LOG

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Bearing: Inclinatio:

Drilled By: Leon Reeves & Gary Campbell

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DEPTH		% RECOVERY	SAMPLE NUMBER	SAMPLE INTERVAL	ANALYSES			DESCRIPTION OF MATERIAL DRILLED
FROM	TO				Sp. Gr.	BaSo ₄		
								soft sediment deformation; 20-30% sandstone.
345.0	355.0	100						Same as above; contortion due to soft sediment deformation beds dipping 70° @ 358.5'.
355.0	362.0	100						Same as above with 20-40% sandstone.
362.0	365.0	100						Same as above; 10-20% sandstone; bedding dips 25°.
365.0	375.0	100						Same as above; 10-20% sandstone as 0.05-0.20' beds; bedding 55° @ 366' & bedding 30° @ 374'; small amount pyrite as 0.020 x 0.040' pods @ 374.6'.
375.0	385.0	100						Same as above; 10-40% sandstone beds; bedding 45° @ 380.0', & 25° @ 381.0', & 15° @ 384.6'
385.0	395.0	100						Same as above; some contortion due to soft sediment deformation; fracture tight dipping 85-89° at 390.2'; small amount pyrite as occasional pods; random calcite veinlets; bedding 75° @ 394.6'
395.0	405.0	100						Same as above, with 2-5% calcite in random veinlets; bedding 45° @ 403.4'.
405.0	405.8	100						Same as above
405.8	406.5	100						Gray fine-grained sandstone; minute random calcite veinlets; bedding 45°.
406.5	409.2	100						Black carbonaceous shale with minute veinlets of

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DEPTH		% RECOVERY	SAMPLE NUMBER	SAMPLE INTERVAL	ANALYSES			DESCRIPTION OF MATERIAL DRILLED
FROM	TO				Sp. Gr.	BaSe ₄		
								calcite.
409.2	409.6	100						Gray sandstone bedding 55°
409.6	413.2	100						Black carbonaceous shale
413.2	421.6	100						Black carbonaceous shale; shear zone at 413.2-415.0'; 10-15% calcite as random veinlets along shear zone, several vugs with euhedral pyrite.
421.6	425.0	100						Black carbonaceous shale; bedding 75° @ 424.0'; somewhat graphitic.
425.0	435.0	100						Same as above with several minute veinlets of calcite and traces of pyrite; one calcite veinlet is 88°; three fractures dip 70°-75° (see 429.0 for formation of veinlet).
435.0	443.5	100						Same as above; at 439-442' layers of graphitic shale 0.02-0.04'; a tight fracture dips 70° @ 438.2'; bedding 70°-75° @ 439-443'.
443.5	445.0	100						Interbedded black shale & gray fine-grained sandstone; bedding 25°.
445.0	455.0	100						Same as above; bedding dips 20° at 447.8' & 453.2'; several random veinlets of calcite
455.0	460.0	100						Same as above with 20% sandstone; bedding 45° @ 458.6'

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FROM	TO				Sp. Gr.	BaSo ₄		
460.0	462.5	100						Gray fine-grained sandstone
462.5	474.0	100						Black carbonaceous shale with a few minute veinlets of calcite from 462.5-468.7'.
474.0	484.0	100						Same as above; 0.5' fracture zone dipping 60° @ 475.8' one vertical fracture at 479.0'; bedding 35° @ 478.0'; three fractures dipping 35°, 55°, & 70° @ 481.5' to 482.0'.
484.0	494.0	100						Same as above; two fractures dipping 60° @ 488.2'; one fracture at 493.6' dipping 25°, has small amount chlorite.
494.0	504.0	100						Same as above; one fracture @ 504.0' dips 60°; bedding 40° @ 503.0'.
504.0	514.0	100						Same as above; bedding 50° @ 508.1'; several bedding-plane faults at 508-512'; 0.2' gray-tan clay (?) with reticulated black wisps of carbonaceous shale, with approx. 20% pyrite in a 0.1" layer @ 509.1'.
514.0	524.0	100						Same as above
524.0	534.0	100						Same as above; bedding 45° @ 525.2 and 50° @ 533.0'; one fracture at 529' dipping 60°.
534.0	540.6	100						Same as above; bedding 55° @ 535.2'; traces pyrite on

MINERAL OPERATIONS

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PAGE 0 OF 34

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DEPTH		% RECOVERY	SAMPLE NUMBER	SAMPLE INTERVAL	ANALYSES			DESCRIPTION OF MATERIAL DRILLED
FROM	TO				Sp. Gr.	BaSo ₄		
								fracture.
540.6	545.0	100						Gray siltstone with several pods & thin beds of black shale; tight fault dipping 75° @ 540.6.
545.0	555.0	100						Same as above; bedding 40° @ 546.2; fracture dipping 60° @ 549.0; considerable calcite as high angle (65-85°) veinlets @ 545-555'; contorted bedding @ 551-553', 2.0' shear zone; bedding 40° @ 553.4'.
555.0	575.0	100						Siltstone with black shale, brecciated & with contorted bedding, probably a shear zone from 551-574', fracture dips 70° @ 574.0'; fair amount calcite as veinlets from 545' to 571.0; veinlets dipping 40° to 65°.
575.0	585.0	100						Same as above; shear zone & brecciated rock extends to 583.0', fracture 35° @ 578.5'; fracture 60° @ 580.0', and 80° @ 582.3'; small amount pyrite in vug at 580.0'.
585.0	591.5	100						Same as above; fractures at 590.0' dip 60°; bedding 60° @ 587.0'.
591.5	595.0	100						Gray siltstone to fine-grained sandstone; with occasional pods & wisps of black shale; fracture @ 593.2' dips 60°; small calcite veinlets.

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FROM	TO				Sp. Gr.	BaSo ₄		
595.0	604.0	100						Same as above; fracture dips 60° @ 596.8'; two fractures dipping 50° @ 598.5 & 599.6; fair amount calcite as random veinlets & along fractures; brecciated at 590-604.0'; fractures dipping 50° @ 602.2'.
604.0	607.0	100						Same as above; with some black shale as breccia fragments.
607.0	612.8	100						Black shale with some siltstone as contorted bedding, soft sediment deformation.
612.8	614.0	100						Gray fine-grained sandstone and/or siltstone
614.0	618.0	100						Black shale; brecciated; fault dipping 60° @ 616.5'; small amount pyrite.
618.0	622.0	100						Same as above; bedding 40° @ 619.7'; fault 60° @ 618.0', bedding 40° @ 622.0'.
622.0	630.0	100						Black carbonaceous shale with several calcite veinlets along fractures; fault with 1.8' breccia at 622.0-623.8' dipping 50°; bedding 50° @ 623.8'; shale shows conchoidal fracture @ 629-630'.
630.0	640.0	100						Same as above; bedding 50° @ 630.5'; & 40° @ 635.5'; thin beds of fine-grained sandstone contorted by soft

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DEPTH		% RECOVERY	SAMPLE NUMBER	SAMPLE INTERVAL	ANALYSES			DESCRIPTION OF MATERIAL DRILLED
FROM	TO				Sp. Gr.	BaSo ₄		
								sediment deformation.
640.0	648.0	100						Same as above; fracture 70° @ 641' & 642.8', and 40° @ 643.0'; slaty cleavage at 643.2'; bedding dips 88° in one direction & reverses to 85° in the opposite direction in a 6" piece of core at 641'; 0.5' shear zone dipping 70° @ 645' & 0.8' breccia at 647.4'; 2.4' of fine-grained sandstone @ 645.0-647.4.
648.0	652.0	100						Black carbonaceous shale with 40% gray fine-grained sandstone.
652.0	655.0	100						Gray fine-grained sandstone, bedding 40° @ 654.4.
655.0	665.0	100						Same as above; one fracture 40° @ 659.5'; sandstone fine to medium grained; 2-5% white mica.
665.0	675.0	100						Same as above; 0.05' quartz veinlet dipping 70° @ 669.2'.
675.0	684.0	100						Same as above; 0.05' quartz veinlet dipping 65° @ 683.7'
684.0	694.0	100						Same as above; small amount black shale at 688-689'; bedding 75° @ 693'.
694.0	696.5	100						Same as above
696.5	700.5	100						Same as above; fault with 0.05' gouge dipping 70° @ 700.2 along contact with black shale; small amount

MINERAL OPERATIONS

FANCY HILL, ARKANSAS
DRILL HOLE LOG

PAGE 11 OF 34

Drill Hole No. JR-1

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FROM	TO				Sp. Gr.	BeSo ₄		
								quartz as blebs & veinlets.
700.5	710.0	100						Black carbonaceous shale; fault dips 80° @ 703.0', has thin beds of fine-grained sandstone interbedded with black shale @ 700.5-702.0'; 60° fault @ 704.6', bedding 75° @ 703.0' & 65° @ 708.0'; shearing 70° @ 709-710'
710.0	715.0	100						Same as above; shearing at 70° @ 710-714'; bedding 65° @ 714.2'.
715.0	720.0	100						Same as above; with bedding 70°.
720.0	725.0	100						Same as above; bedding 70°.
725.0	733.0	100						Same as above; bedding 60° @ 726.0' & 88° @ 729.0'; 85° @ 731-733'.
733.0	742.0	100						Same as above; bedding 50° @ 737' with 10-20% fine-grained sandstone; some slight faulting; ¼-½" of sandstone beds; slaty cleavage @ 738.0-740.6"; traces pyrite.
742.0	752.0	100						Same as above; bedding 25°-70° @ 742-751' & 75° @ 751-752'; possibly soft-sediment deformation; small amount disseminated pyrite.
752.0	762.0	100						Same as above; bedding 35° @ 755' & 15° @ 761'; black shale has a conchoidal fracture at 752-759'; small

MINERAL OPERATIONS

FANCY HILL, ARKANSAS
DRILL HOLE LOG

PAGE 12 OF 34

Drill Hole No. JR-1

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FROM	TO				Sp. Gr.	BeSo ₄		
								amount pyrite.
762.0	772.0	100						Same as above; bedding 20° @ 763', 30° @ 766', & 70° @ 770-772'; no pyrite noted; very fine-grained sandstone.
772.0	781.0	100						Same as above; 1.6' fine-grained sandstone @ 771.7-773.2'; bedding 50° @ 774' & 20° @ 778-781'; traces of pyrite.
781.0	790.0	100						Same as above; bedding 20° @ 782.0'-790.0'; 1.4' fine-grained sandstone @ 786.8-788.0'.
790.0	800.0	100						Same as above; bedding 20° @ 791'; reverse fault dipping 70° @ 792-795'; bedding 35° @ 795-797' & 30° @ 797-800'; 35-50% sandstone.
800.0	805.0	100						Same as above; bedding 30°, small amount calcite & quartz with pyrite @ 801-805'; some minor faulting.
805.0	815.0	100						Same as above; bedding 15° @ 805.5'; fracture 85° @ 806-808'; small amount pyrite on fractures, bedding 10° @ 811'; fault 65° @ 811.5', with movement of 0.2'; bedding 20° @ 814-815'.
815.0	825.0	100						Same as above except thinner beds of black shale & sandstone 0.005-0.2'; bedding 20° @ 816-822' @

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FROM	TO				Sp. Gr.	BaSo ₄		
								25° @ 822-825'; no pyrite noted.
825.0	835.0	100						Same as above; bedding 20° @ 825-829'; some minor faulting @ 829-833.5'; bedding 55° @ 834'.
835.0	841.0	100						Same as above; bedding 20°; alternating black shale and sandstone; small amount calcite in random veinlets.
841.0	845.0	100						Gray fine-grained sandstone with a few thin lenses of black shale; bedding 20°; one fracture.
845.0	845.4	100						Same as above
845.4	854.4	100						Black silty shale; bedding 20°.
854.4	855.8	100						Gray fine-grained sandstone
855.8	863.2	100						Interbedded thin layers of black shale & gray fine-grained sandstone; bedding 20° @ 856.2' & 30° @ 863.0'.
863.2	865.0	100						Gray fine to medium grained sandstone; bedding 20°.
865.0	875.0	100						Same as above; bedding 15° @ 873'; drilling very good.
875.0	885.0	100						Same as above; one fracture dipping 65° @ 878.6'; 0.1' quartz veining dipping 15° @ 882.1', bedding 15° @ 882-883'.
885.0	895.0	100						Same as above; massive fine to medium grained gray sandstone; 0.5' zone with fragments of black shale @ 893.4; bedding 15°; two thin septa black shale @ 895.0'.

MINERAL OPERATIONS

FANCY HILL, ARKANSAS
DRILL HOLE LOG

PAGE 17 OF 34

Drill Hole No. JR-1

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FROM	TO				Sp. Gr.	BaSo ₄		
895.0	905.0	100						Same as above; but with several 0.05-0.5' layers of black shale; traces of pyrite along fractures; bedding 20° @ 897' & 15° @ 904'; fractures dipping 60° @ 902' & 904'; quartz veinlets dipping 15° along bedding @ 903.6'.
905.0	915.0	100						Same as above; bedding 25° @ 908' & 20° @ 914'; 0.8' black shale (80%) & sandstone (20%) @ 907.8-908.6'.
915.0	925.0	100						Same as above; bedding 20°; 65% black shale @ 921.2-922.0'.
925.0	935.0	100						Same as above; massive; bedding 20°
935.0	945.0	100						Same as above; 0.8' interbedded black shale @ 935.0-935.8', and 937.2-938.6'; bedding 10° @ 936' & 15° @ 943'.
945.0	955.0	100						Same as above with some carbonaceous material, bedding 20° @ 950.0' & 15° @ 954'.
955.0	965.0	100						Interbedded black shale and gray siltstone @ 954.4-965.0'; bedding slightly contorted in places; bedding 20°.
965.0	975.0	100						Same as above; bedding 10° @ 968' & 35° @ 973'; 2-5% white mica; scattered flakes of biotite.

MINERAL OPERATIONS

FANCY HILL, ARKANSAS

PAGE 15 OF 34

DRILL HOLE LOG

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FROM	TO				Sp. Gr.	BaSo ₄		
975.0	984.8	100						Same as above; 0.05-0.1' quartz veinlet with euhedral crystals @ 981' dipping 80°; numerous random quartz veinlets; fault with 0.2' gouge dipping 20° @ 984'.
984.8	985.0	100						Fault gouge dipping 20°.
985.0	995.0	100						Fine-grained gray sandstone dipping 30° @ 994'; 0.05-0.2' quartz veinlet dipping 85° @ 985-987'; several fractures dipping 60°; 0.2-0.3' gouge zone @ 994.0 dipping 70° containing quartz & apple-green chlorite; appears to have been leached by later solutions.
995.0	1005.0	100						Same as above; bedding 20°; 0.05' quartz veinlet @ 996.4'; dipping 65° with small amount pyrite; several random quartz veinlets, some along bedding planes @ 20°; fault dipping 60° @ 1004.5' with slickensides and quartz, pyrite & chlorite.
1005.0	1008.0	100						Same as above; eight quartz veinlets dipping 20°-40° and several minute random quartz veinlets.
1008.0	1017.0	100						Gray fine-grained sandstone with several quartz veinlets from 0.01 to 0.05'; principally along bedding but some random; small amount pyrite with quartz; several fractures @ 50°-60°, some with chlorite along

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Elevation: _____

Total Depth: _____

DEPTH		% RECOVERY	SAMPLE NUMBER	SAMPLE INTERVAL	ANALYSES			DESCRIPTION OF MATERIAL DRILLED
FROM	TO				Sp. Gr.	BeSo ₄		
								fracture planes where slickensided; 0.1' fault gouge dipping 60° @ 1015'.
1017.0	1025.0	100						Same as above; minor fault dipping 60° @ 1017.1'; 2-5% quartz as random veinlets with traces pyrite as euhedral crystals; 0.05' gouge at 1019.1' dipping 60°; bedding 50° @ 1019.4'; 0.05' quartz veinlet with chlorite dipping 60° @ 1021.2'; several fractures at 60° with 0.01' to 0.03' gouge, bedding 65° @ 1022.5'; fracture & gouge zone dipping 75° @ 1024.4'.
1025.0	1035.0	100						Same as above; soft sediment deformation @ 1025-1026'; bedding 35° @ 1030.4'; 0.15' quartz vein dipping 40° @ 1031.0'; bedding 30° @ 1032'; fair amount black shale interbedded with sandstone @ 1033'; minor fault with slickensides dipping 30° @ 1034.6'; bedding 20° @ 1035'.
1035.0	1045.0	100						Same as above; bedding 30°; some slickensides along bedding planes @ 1034.4'; 0.05' quartz vein dipping 30° @ 1041.8'.
1045.0	1055.0	100						Same as above; 0.05' quartz veinlet dipping 75° @ 1048'; fine to medium grained sandstone; thin black shale layers @ 1049.5' to 1050.1', and black carbonaceous sandstone @ 1050.1' to 1053.8'; bedding 20°.

MINERAL OPERATIONS

FANCY HILL, ARKANSAS
DRILL HOLE LOG

PAGE 17 OF 34

Drill Hole No. JR-1

Date: _____

Bearing: _____ Inclination: _____

Drilled By: Leon Reeves & Gary Campbell

Coordinates: North _____ East _____

Logged By: Edmond F. Lawrence

Elevation: _____

Total Depth: _____

DEPTH		% RECOVERY	SAMPLE NUMBER	SAMPLE INTERVAL	ANALYSES			DESCRIPTION OF MATERIAL DRILLED
FROM	TO				Sp. Gr.	BaSo ₄		
1055.0	1065.0	100						Same as above; carbonaceous sandstone @ 1056.1-1057.0'; ½% white mica, bedding 20°; some thin black shale layers @ 1063.5-1064.0'.
1065.0	1073.0	100						Same as above; black shale intermixed with gray sandstone @ 1065.0-1066.4'; bedding 30° @ 1067-1075'; minor fault dipping 60° @ 1071.8'.
1073.0	1075.0	100						Black carbonaceous shale with some admixed gray fine-grained sandstone; bedding 35°; fair amount pyrite in and adjacent to quartz veinlets at 1074.9'.
1075.0	1076.7	100						Same as above
1076.7	1085.0	100						Gray fine grained sandstone with some black carbonaceous material; bedding 35° @ 1078-1082' and 45° @ 1082-1083'.
1085.0	1089.4	100						Same as above; bedding 35° @ 1085.2'; 0.4' thin-bedded black shale @ 1085.1-1085.5' & 0.7' at 1086.4-1087.1'.
1089.4	1095.0	100						Black carbonaceous shale with some thin bands of gray sandstone; several vertical calcite gash veinlets @ 1093.6'; bedding 25° @ 1094'.
1095.0	1105.0	100						Same as above; more silty, with some thin layers of gray sandstone; bedding 35° @ 1097'; minor faults with

FANCY HILL, ARKANSAS
DRILL HOLE LOGDrill Hole No. JR-1

Date: _____

Bearing: _____ Inclination: _____

Drilled By: Leon Reeves & Gary Campbell

Coordinates: North _____ East _____

Logged By: Edmond F. Lawrence

Elevation: _____

Total Depth: _____

DEPTH		% RECOVERY	SAMPLE NUMBER	SAMPLE INTERVAL	ANALYSES			DESCRIPTION OF MATERIAL DRILLED
FROM	TO				Sp. Gr.	BaSo ₄		
								slickensides dipping 35° @ 1098' & 45° @ 1102.4';
								bedding 30° @ 1101'.
1105.0	1110.2	100						Same as above; with fault dipping 30° @ 1108.7' with
								numerous quartz veinlets in gouge.
1110.2	1111.6	100						Gray sandstone with numerous thin septa black shale
								dipping 20°.
1111.6	1112.4	100						Black shale with two thin layers gray sandstone dipping
								20°.
1112.4	1115.0	100						Gray fine-grained sandstone
1115.0	1116.3	100						Same as above; 0.02' quartz veinlet dipping 60° @
								1116.3'.
1116.3	1125.0	100						Black shale; interbedded with gray sandstone in places,
								several random quartz veinlets; bedding 35°; pyrite on
								fracture.
1125.0	1135.0	100						Same as above; bedding 20° @ 1126'; pyrite on fractures;
								silty black shale; alternating gray to black shale &
								silty shale.
1135.0	1145.0	100						Same as above, but with wider bands of gray sandstone;
								bedding 20°; faults 60° @ 1143.0' & 70° @ 1144.3';
								fair amount pyrite as pods along bedding in two places.

FANCY HILL, ARKANSAS
DRILL HOLE LOG

Drill Hole No. JR-1

Date:

Bearing: Inclinaton:

Drilled By: Leon Reeves & Gary Campbell

Coordinates: North East

Logged By: Edmond F. Lawrence

Elevation:

Total Depth:

DEPTH		% RECOVERY	SAMPLE NUMBER	SAMPLE INTERVAL	ANALYSES			DESCRIPTION OF MATERIAL DRILLED
FROM	TO				Sp. Gr.	BaSo ₄		
1145.0	1152.0	100						Same as above, with one band of gray sandstone 1.2' wide dipping 30° @ 1146-47'; some soft sediment deformation of thin sandstone layers in black shale bedding 15° @ 1150.'.
1152.0	1158.0	100						Same as above, interbedded thin beds of black shale & gray sandstone; some apparent soft sediment deformation; bedding 45° @ 1156'.
1158.0	1165.0	100						Black carbonaceous shale with numerous 0.01-0.02 layers of gray sandstone; bedding 55° @ 1159' & 65° @ 1161-63', and 85° @ 1165.0'.
1165.0	1175.0	100						Same as above with 0.8' gray sandstone @ 1171'; bedding 65-70° @ 1174.5'; bedding 70°-88° @ 1165-1174'
1175.0	1177.0	100						Same as above; bedding contorted; fault zone with 2-4' breccia dipping 75° @ 1176-1177', numerous adjacent bedding plane faults @ 55° @ 1176.0-1177.0'.
1177.0	1182.0	100						Gray fine-grained sandstone with streaks of black shaly material, dipping 80°.
1182.0	1185.0	100						Interbedded black shale & gray sandstone dipping 75°.
1185.0	1195.0	100						Black carbonaceous shale with a few thin layers of sandstone; shale slightly silty in places; concoidal

FANCY HILL, ARKANSAS
DRILL HOLE LOGDrill Hole No. JR-1

Date: _____

Bearing: _____ Inclination: _____

Drilled By: Leon Reeves & Gary Campbell

Coordinates: North _____ East _____

Logged By: Edmond F. Lawrence

Elevation: _____

Total Depth: _____

DEPTH		% RECOVERY	SAMPLE NUMBER	SAMPLE INTERVAL	ANALYSES			DESCRIPTION OF MATERIAL DRILLED
FROM	TO				Sp. Gr.	BaSo ₄		
								fractures; several 40° fractures at 1193-1195', bedding 75°-88°.
1195.0	1205.0	100						Same as above; bedding 75°-89°; changing to 45° @ 1194.0-1194.6' & back to 70°-89° @ 1194.6-1205'; 1193.5-1205.0' is 95% gray sandstone and 5% streaky black shale, but may be only a thin bed as the dip is 80°-90°-87°; small amount quartz as minute random veinlets.
1205.0	1206.8	100						Gray sandstone, fine-grained with streaks of black shale; bedding at 1205', 88°; & 45° @ 1206.8'.
1206.8	1211.0	100						Interbedded black shale & gray sandstone, dipping 70° @ 1208' & 50° @ 1210'; brecciated & gouge zone @ 1214.6' to 1215.8; fault dipping 60°.
1211.0	1215.0	100						Gray sandstone, fine-grained with several thin beds of black shale dipping 50° @ 1212' & 35° @ 1214'; numerous minute random quartz veinlets.
1215.0	1225.0	100						Black shale with numerous thin beds of gray sandstone; some soft sediment deformation; bedding 40° @ 1115-1123' & 55° @ 1124' & 15° @ 1154.5'; traces pyrite.
1225.0	1228.0	100						Gray sandstone, fine-grained, bedding 15° @ 1126' &

MINERAL OPERATIONS

FANCY HILL, ARKANSAS
DRILL HOLE LOG

PAGE 21 OF 34

Drill Hole No. JR-1

Date: Leon Reeves & Gary Campbell

Bearing: Inclinaton:

Drilled By: Edmond F. Lawrence

Coordinates: North East

Logged By:

Elevation:

Total Depth:

DEPTH		% RECOVERY	SAMPLE NUMBER	SAMPLE INTERVAL	ANALYSES			DESCRIPTION OF MATERIAL DRILLED
FROM	TO				Sp. Gr.	BaSo ₄		
								65° @ 1128'; fracture 60° @ 1127.5' & 75° @ 1129'.
1228.0	1235.0	100						Interbedded black shale and gray sandstone as 0.1-0.4' beds; bedding 25° @ 1129-1135'; 30° @ 1131' & 40° @ 1133'; trace amounts pyrite.
1235.0	1235.8	100						Same as above
1235.8	1237.6	100						Gray fine-grained sandstone.
1237.6	1239.4	100						Interbedded black shale & gray fine-grained sandstone; bedding 40°
1239.4	1240.6	100						Gray fine-grained sandstone; bedding 25°.
1240.6	1245.0	100						Interbedded black shale & gray sandstone, bedding 20°; several pyrite pods.
1245.0	1248.0	100						Gray fine-grained sandstone; massive with small amount calcite.
1248.0	1255.0	100						Gray sandstone with 10-20% carbonaceous matter & thin beds black shale; bedding 20° @ 1248-1251' & 30° @ 1251-1255'; small amount quartz as random veinlets @ 1250-1251' & 1253.5-1255'; small amount pyrite as scattered grains.
1255.0	1265.0	100						Interbedded black shale & gray sandstone; bedding 30° @ 1256'; 20° @ 1257-1265'; numerous minute random quartz veinlets, usually in the sandstone or silty

FANCY HILL, ARKANSAS
DRILL HOLE LOG

Drill Hole No. JR-1

Date: _____

Bearing: _____ Inclination: _____

Drilled By: Leon Reeves & Gary Campbell

Coordinates: North _____ East _____

Logged By: Edmond F. Lawrence

Elevation: _____

Total Depth: _____

DEPTH		% RECOVERY	SAMPLE NUMBER	SAMPLE INTERVAL	ANALYSES			DESCRIPTION OF MATERIAL DRILLED
FROM	TO				Sp. Gr.	BaSo ₄		
								shale; fault dipping 50° @ 1261' with 0.3' breccia; some soft sediment deformation.
1265.0	1269.0	100						Black carbonaceous shale with several very thin septa of gray sandstone; bedding 30°; graphitic material along fractures; fractures 60°.
1269.0	1278.0	100						Same as above with thin septa gray sandstone dipping 70° and rolling over to 75° in the opposite direction in the same piece of core; slaty cleavage
1278.0	1285.0	100						Same as above; bedding 75° @ 1281' & 35° @ 1281.6-1282.2; then back to 75° @ 1284'; fractures at 1283' dipping 35° & 65° @ 1284.5'; small amount quartz & calcite at 1282-1284' with scattered grains of pyrite.
1285.0	1295.0	100						Same as above; dipping 75° to 88° & over to 88° in the opposite direction; 20° @ 1287.5' & 40° @ 1288-1289'; a minor fault at 1286.8' dipping 20°.
1295.0	1305.0	100						Same as above; bedding contorted; fracture dipping 20° @ 1295.4'; fault with 0.05' gouge & quartz dipping 45° @ 1302.0'; somewhat silicified; bedding generally 20°-30°; fractures dipping 40° @ 1304-1305'.
1305.0	1313.0	100						Same as above; fracture zone at 1305.0-1305.4';

MINERAL OPERATIONS

FANCY HILL, ARKANSAS

PAGE 23 OF 34

DRILL HOLE LOG

Drill Hole No. JR-1

Date:

Bearing: Inclinatio:

Drilled By: Leon Reeves & Gary Campbell

Coordinates: North East

Logged By: Edmond F. Lawrence

Elevation:

Total Depth:

DEPTH		% RECOVERY	SAMPLE NUMBER	SAMPLE INTERVAL	ANALYSES			DESCRIPTION OF MATERIAL DRILLED
FROM	TO				Sp. Gr.	BaSo ₄		
								bedding 85° @ 1306.0' & reverses to 85° in the opposite
								direction at 1306.4'; bedding 30° @ 1309'; faulting
								@ 1309.4' with 0.2' gouge; bedding 70° @ 1309.8-1313.0'.
1313.0	1315.0	100						Gray sandstone interbedded with black shale @ 1313.0-
								1315.0'; bedding 70°.
1315.0	1325.0	100						Same as above; shear zone dipping 60°-70°; 0.3'
								breccia @ 1321' & 0.2' breccia @ 1322'; fair amount
								pyrite as finely disseminated; small amount white mica.
1325.0	1335.0	100						Black carbonaceous shale with 5-10% interbedded gray
								fine-grained sandstone, dipping 20°.
1335.0	1344.5	100						Same as above; dipping 25° @ 1441'; several minor
								faults dipping 65° with 0.1-0.2' offsets; small amount
								quartz & calcite as random veinlets.
1344.5	1354.5	100						Same as above; dipping 20° @ 1343-1355'; small amount
								quartz & calcite as random veinlets; traces pyrite.
1354.5	1364.0	100						Same as above; dipping 20° @ 1355-1362' & 25° @
								1363'; small amount soft sediment deformation; fault
								dipping @ 1363.6' with 0.4' gouge.
1364.0	1369.0	100						Same as above; fault zone dipping 50°-70° @ 1363.4-
								1366.2.

MINERAL OPERATIONS

FANCY HILL, ARKANSAS
DRILL HOLE LOG

PAGE 4 OF 34

Drill Hole No. JR-1

Date:

Bearing: Inclination:

Drilled By: Leon Reeves & Gary Campbell

Coordinates: North East

Logged By: Edmond F. Lawrence

Elevation:

Total Depth:

DEPTH		% RECOVERY	SAMPLE NUMBER	SAMPLE INTERVAL	ANALYSES			DESCRIPTION OF MATERIAL DRILLED
FROM	TO				Sp. Gr.	BaSo ₄		
1369.0	1370.5	100						Fine-grained gray sandstone with 5-15% black shale lenticles.
1370.5	1373.0	100						Black carbonaceous shale with thin lentils of gray fine-grained sandstone; shear zone @ 1370.5-1373.0', dipping 50°; several small drag folds; normal fault; bedding 50°.
1373.0	1380.0	100						Same as above; shear zone @ 1373-1380', dipping 75°; bedding 40-75°; small amount quartz & calcite filling fractures; bedding contorted in shear zone; traces pyrite.
1380.5	1382.0	100						Fine-grained gray sandstone with wisps & thin lentils of black shale; minor fault dipping 45° @ 1381' & 50° @ 1382'.
1382.0	1385.0	100						Black carbonaceous shale @ 1382.0-1385.0' with small amount quartz & calcite as random veinlets.
1385.0	1395.0	100						Same as above; fracture dipping 65° @ 1397'.
1395.0	1405.0	100						Same as above; numerous minute veinlets calcite filling minor fractures; gash veinlets; 0.1' quartz veinlet @ 1404.0'; fault dipping 75° @ 1403.8' with 0.4' breccia zone; 2-5% pyrite as 0.05' pods with

MINERAL OPERATIONS

FANCY HILL, ARKANSAS
DRILL HOLE LOG

PAGE 25 OF 34

Drill Hole No. JR-1

Date:

Bearing: Inclinatio:

Drilled By: Leon Reeves & Gary Campbell

Coordinates: North East

Logged By: Edmong F. Lawrence

Elevation:

Total Depth:

DEPTH		% RECOVERY	SAMPLE NUMBER	SAMPLE INTERVAL	ANALYSES			DESCRIPTION OF MATERIAL DRILLED
FROM	TO				Sp. Gr.	BeSo ₄		
								euهدral crystals.
1405.0	1415.0	100						Same as above; minor faults dipping 60° @ 1405', 1406.5' & 1412.5'; bedding 40° @ 1408'; 0.05' shear zone dipping 35° @ 1409'; trace amounts pyrite.
1415.0	1417.5	100						Same as above; 0.4' breccia zone dipping 60° @ 1416'; 0.5' breccia zone dipping 35° @ 1416.5'; this zone has been leached with some quartz filling fractures.
1417.5	1418.5	100						Fine-grained gray sandstone dipping 35°.
1418.5	1421.0	100						Black carbonaceous shale
1421.0	1423.0	100						Interbedded fine-grained sandstone & black shale, dipping 35°.
1423.0	1424.0	100						Black carbonaceous shale, dipping 40°.
1424.0	1429.2	100						Silty gray shale with thin lentils of black shale dipping 35°.
1429.2	1433.0	100						Black carbonaceous shale with a few thin lentils of gray sandstone dipping @ 40° @ 1431' & 65° @ 1432.3'; 0.8' shear zone dipping 75° @ 1432.7'.
1433.0	1442.0	100						Fine-grained gray sandstone dipping 35° @ 1433.8'; 0.2' breccia zone dipping 70° @ 1433.4'; 0.02 breccia zone dipping 35° @ 1435.0'; small amount quartz

DRILL HOLE LOG

JR-1

Drill Hole No. _____

Date: _____

Bearing: _____ Inclination: _____

Drilled By: Leon Reeves & Gary Campbell

Coordinates: North _____ East _____

Logged By: Edmond F. Lawrence

Elevation: _____

Total Depth: _____

DEPTH		% RECOVERY	SAMPLE NUMBER	SAMPLE INTERVAL	ANALYSES			DESCRIPTION OF MATERIAL DRILLED
FROM	TO				Sp. Gr.	BaSo ₄		
								filling fractures; 75° shear zone at 1436 & 1439.5';
								slickensides raking 25°; bedding 35° @ 1441'; fair
								amount black shale @ 1438-1440'
1442.0	1458.0	100						Same as above; with 10-30% black shale as wisps,
								lenses, & thin lentils; dipping 30°; 0.05' quartz
								vein dipping 60° @ 1446.9'; 75° fracture at 1451.0'
								with 0.2' breccia; 0.1' shear zone dipping 75° @
								1449.0; numerous fractures dipping 45° to 60° @ 1450'
								to 1458'.
1458.0	1465.0	100						Same as above; shear zone dipping 75° @ 1462-1467';
								slickensides raking 35°-40°; small amount quartz
								filling fractures; trace amounts pyrite along fractures.
1465.0	1470.0	100						Same as above; fault 75° @ 1466.0'; brecciated at
								1466-1470'; fault dipping 75° @ 1469'; traces pyrite.
1470.0	1479.4	100						Black carbonaceous shale; faults dipping 60° @ 1471'
								& @ 1477'; fractured zone at 1470-1480'; fault dipping
								70° @ 1469'; small amount quartz filling fractures.
1479.4	1480.0	100						Fine-grain gray sandstone; several minute quartz
								veinlets dipping 35°.
1480.0	1485.0	100						Same as above with a few seams of arkosic sediments;

MINERAL OPERATIONS

FANCY HILL, ARKANSAS
DRILL HOLE LOG

PAGE 1 OF 34

Drill Hole No. JR-1

Date:

Bearing: Inclination:

Drilled By: Leon Reeves & Gary Campbell

Coordinates: North East

Logged By: Edmond F. Lawrence

Elevation:

Total Depth:

DEPTH		% RECOVERY	SAMPLE NUMBER	SAMPLE INTERVAL	ANALYSES			DESCRIPTION OF MATERIAL DRILLED
FROM	TO				Sp. Gr.	BeSo ₄		
								bedding 60° @ 1481' & 75° @ 1484'; two minor faults dipping 75° @ 1483-1484'; with slickensides raking 30° downward to the east (?).
1485.0	1495.0	100						Same as above; several fractures @ 35°-40°; bedding 60° @ 1493'; minor fault dipping 70° @ 1491.8'; small amount pyrite along fractures.
1495.0	1504.0	100						Same as above; minor faults dipping 70° @ 1496.5' & 1501.0'; bedding 70° @ 1502.0'; black shale grades into silty shale; small amount quartz & calcite along fractures.
1504.0	1505.0	100						Same as above
1505.0	1514.0	100						Gray to black silty shale; fracture dipping 70° @ 1507'; bedding 65° @ 1513'; from 1-3% mica.
1514.0	1523.0	100						Same as above with 1-3% white mica; dipping 60° @ 1516'; two fractures dipping 25° @ 1520'.
1523.0	1532.0	100						Same as above, more arkosic, 3-7% white mica; minute veinlets calcite along 20° fracture @ 1528.5' and as random veinlets; minor faults dipping 80° @ 1525' & 1532'.
1532.0	1541.0	100						Same as above; 8% white mica; bedding 70° @ 1537';

Drill Hole No. JR-1

Date: _____

Bearing: _____ Inclination: _____

Drilled By: Leon Reeves & Gary Campbell

Coordinates: North _____ East _____

Logged By: Edmond F. Lawrence

Elevation: _____

Total Depth: _____

DEPTH		% RECOVERY	SAMPLE NUMBER	SAMPLE INTERVAL	ANALYSES			DESCRIPTION OF MATERIAL DRILLED
FROM	TO				Sp. Gr.	BaSo ₄		
								minor fault dipping 75° @ 1541'.
1541.0	1551.0	100						Same as above; bedding 70° @ 1548'; 5-8% white mica; minor fault dipping 75° @ 1551'.
1551.0	1558.0	100						Same as above; slightly more carbonaceous; partly concoidal fracture; minor fault dipping 75° @ 1554.5'; bedding 75° @ 1556'; small amount calcite as random veinlets and along fractures.
1558.0	1563.5	100						Silty black carbonaceous shale; same as above but more carbonaceous; fault dipping 70° with brecciated shear zone @ 1559.0-1563.5; numerous fragments gray sandstone in black shale matrix; fair amount quartz as random veinlets & along fractures; traces pyrite.
1563.5	1565.0	100						Gray fine-grained sandstone, dipping 55° @ 1564' with thin wisps black shale.
1565.0	1575.0	100						Black carbonaceous shale with minute random quartz veinlets; fractures 65° with slickensides raking down 20° westerly; bedding 60°; fractures dipping 60° @ 1568' & 40° @ 1561'; bedding 40° @ 1570-1572'; 0.6' gouge zone @ 1572', dipping 70°; quartz in random veinlets & in fractures; 0.2' gouge zone @ 1574';

MINERAL OPERATIONS

FANCY HILL, ARKANSAS
DRILL HOLE LOG

PAGE 29 OF 34

Drill Hole No. JR-1

Date:

Bearing: Inclination:

Drilled By: Leon Reeves & Gary Campbell

Coordinates: North East

Logged By: Edmond F. Lawrence

Elevation:

Total Depth:

DEPTH		% RECOVERY	SAMPLE NUMBER	SAMPLE INTERVAL	ANALYSES			DESCRIPTION OF MATERIAL DRILLED
FROM	TO				Sp. Gr.	BaSo ₄		
								with 0.6' offset, hanging wall up and to the north(?); bedding 55° @ 1574.2' & 50° @ 1575'.
1575.0	1585.0	100						Same as above; slightly sandy @ 1575.6-1576.4; bedding 50° @ 1575.5'; fault with 0.2' gouge & quartz veining, dipping 60° @ 1576.5'; brecciated @ 1576.5-1578.2'; bedding 45° @ 1580'; several fractures parallel to bedding; 5% pyrite as pods and veinlets @ 1582.2-1582.5'; up to 1% pyrite at 1582.5 to 1585.0'; small amount quartz as random veinlets and on fractures.
1585.0	1590.0	100						Same as above; small amount quartz as random veinlets and filling fractures; groundmass slightly silicified.
1590.0	1598.0	100						Same as above; with small amount quartz filling fractures and as random veinlets; minor fault dipping 50° @ 1594'; shear zone dipping 60°-65° @ 1594.5-1600.0'; some brecciation @ 1595'; bedding 50-65° & traces pyrite.
1598.0	1605.0	100						Gray fine-grained sandstone; fractures dipping 45°; shear zone dipping 70° @ 1602.2-1602.4'; traces pyrite.
1605.0	1615.0	100						Same as above; minor fault dipping 85° @ 1605'; trace amount pyrite along fractures; bedding 60° @ 1609';

MINERAL OPERATIONS

FANCY HILL, ARKANSAS
DRILL HOLE LOG

PAGE 0 OF 34

Drill Hole No. JR-1

Date:

Bearing: Inclinatio:

Drilled By: Leon Reeves & Gary Campbell

Coordinates: North East

Logged By: Edmond F. Lawrence

Elevation:

Total Depth:

DEPTH		% RECOVERY	SAMPLE NUMBER	SAMPLE INTERVAL	ANALYSES			DESCRIPTION OF MATERIAL DRILLED
FROM	TO				Sp. Gr.	BaSo ₄		
								faults dipping 60° @ 1608.5-1609.5'.
1615.0	1624.0	100						Same as above; fault zone in sandstone dipping 60°; bedding 55° @ 1622'; small amount quartz as minute veinlets; pyrite along fractures as traces to ½%.
1624.0	1634.0	100						Same as above; fracture systems dipping 70° & 50°; several minute veinlets of quartz dipping 30°-70°; bedding not apparent.
1634.0	1643.0	100						Same as above; fracture system @ 50°; several minute veinlets of quartz dipping 50°; some black shale admixed randomly as stringers.
1643.0	1650.0	100						Same as above; fracture zone dipping 60° @ 1646-1647'; small amount pyrite,
1650.0	1657.0	100						Same as above; fracture zone dipping 60-70°; small amount pyrite.
1657.0	1665.0	100						Same as above; fractured (shear) zone dipping 60°; brecciated zone @ 1664-1665'; bedding 55°; small amount quartz as minute veinlets; traces pyrite along fractures.
1665.0	1668.0	100						Same as above; fault zone dipping 45° @ 1666' with fair amount quartz in brecciated zone; small amount

MINERAL OPERATIONS

FANCY HILL, ARKANSAS
DRILL HOLE LOG

PAGE 1 OF 34

Drill Hole No. JR-1

Bearing: _____ Inclination: _____

Coordinates: North _____ East _____

Elevation: _____

Date: _____

Drilled By: Leon Reeves & Gary CampbellLogged By: Edmond F. Lawrence

Total Depth: _____

DEPTH		% RECOVERY	SAMPLE NUMBER	SAMPLE INTERVAL	ANALYSES			DESCRIPTION OF MATERIAL DRILLED
FROM	TO				Sp. Gr.	BaSo ₄		
								pyrite along fractures.
1668.0	1669.0	100						Silty black shale; bedding 55°; minor faults @ 55° & 70°; traces pyrite.
1669.0	1677.0	100						Same as above; interbedded with some sandstone; bedding 55°; fractures dipping 60°; traces quartz & pyrite.
1677.0	1679.5	100						Same as above; bedding 50°; several lentils of black shale @ 1677'.
1679.5	1685.0	100						Interbedded gray sandstone & black shale; bedding 50°; minor fault dipping 50° @ 1683'; traces pyrite.
1685.0	1688.8	100						Same as above; dipping 50°; small amount quartz as random veinlets & traces pyrite.
1688.8	1695.0	100						Gray, fine-grained sandstone; shear zone dipping 75° @ 1688.8 with brecciated and fracture zone to 1692.5', dipping 40°-45°; traces pyrite on fractures; minute veinlets of quartz.
1695.0	1705.0	100						Same as above; fractures dipping 45° & 55° @ 1695-1699; bedding 55°; 0.1' vein of quartz with considerable pyrite & chlorite @ 1704.0' dipping 60°; slickensides rake down 40°; 3-5% white mica in groundmass.

MINERAL OPERATIONS

FANCY HILL, ARKANSAS
DRILL HOLE LOG

PAGE 32 OF 34

Drill Hole No. JR-1

Date:

Bearing: Inclination:

Drilled By: Leon Reeves & Gary Campbell

Coordinates: North East

Logged By: Edmond F. Lawrence

Elevation:

Total Depth:

DEPTH		% RECOVERY	SAMPLE NUMBER	SAMPLE INTERVAL	ANALYSES			DESCRIPTION OF MATERIAL DRILLED
FROM	TO				Sp. Gr.	BeSo ₄		
1705.0	1715.0	100						Same as above; 0.1' quartz veinlet dipping 65° @ 1706.7' with traces pyrite; sandstone somewhat brecciated & re-cemented; several fractures @ 40° & 55°.
1715.0	1725.0	100						Same as above; fractures @ 60°; small amount quartz along fractures; traces pyrite.
1725.0	1734.0	100						Same as above; bedding 35°; two thin (0.05') beds black shale; traces pyrite; 0.01' quartz veinlet dipping 40° @ 1734'; several minute veinlets quartz.
1734.0	1737.0	100						Same as above
1737.0	1745.0	100						Same as above; 2.5% white mica.
1745.0	1755.0	100						Same as above; with 2-3% white mica; bedding 45°; fracture system at 45° & 45° opposite direction; 0.02' quartz veinlet dipping 75° @ 1748' with a few subhedral crystals of pyrite.
1755.0	1761.0	100						Same as above; bedding 30°; 0.02' quartz vein dipping 55° @ 1751.2'; several minute random quartz veinlets; traces pyrite; 1.0' black shale dipping 30° @ 1758.5-1759.5'.
1761.0	1764.0	100						Black carbonaceous shale; bedding 45°, minor fault,

MINERAL OPERATIONS

FANCY HILL, ARKANSAS
DRILL HOLE LOG

PAGE 33 OF 34

Drill Hole No. JR-1

Bearing: _____ Inclination: _____

Coordinates: North _____ East _____

Elevation: _____

Date: _____

Day: Leon Reeves & Gary Campbell
Night: Bill Vest & Terry Bone

Drilled By: _____

Logged By: Edmond F. Lawrence

Total Depth: _____

DEPTH		% RECOVERY	SAMPLE NUMBER	SAMPLE INTERVAL	ANALYSES			DESCRIPTION OF MATERIAL DRILLED
FROM	TO				Sp. Gr.	BaSo ₄		
								dipping 60° @ 1764.0 with small amount pyrite.
1764.0	1767.0	100						Same as above; minor fault dipping 30° @ 1767.0'; bedding 60°.
1767.0	1774.0	100						Gray, fine-grained sandstone, bedding 45°; several fractures dipping 45°; small amount quartz as random minute veinlets; traces pyrite.
1774.0	1784.0	100						Silty gray to black shale with bands of black shale bedding 45° @ 1777' & 30° @ 1779'; 0.08' quartz vein dipping 80° @ 1783.8' with calcite & traces pyrite; at 1778'-1780' a shear zone strikes N 20°W & dips 60°E and is a reverse fault (east side up in increments of 0.05'); several pods pyrite in the black shale @ 1776'; gray sandstone @ 1773.8-1784.0'.
1784.0	1790.0	100						Novaculite, gray, banded; minor fault dipping 55° @ 1784.6; 0.5' shear zone @ 1785.0-1785.5'; bedding 45° @ 1787-1789'; some green chlorite along bedding planes has the appearance of possible replacement of inter-bedded shale and gray fine-grained sandstone that has been replaced by novaculite; conchoidal fractures.
1790.0	1792.0	50						Gray to greenish gray novaculite, bedding 45°.

PAGE 3 OF 34

Total Depth: _____

1 / 79