Ozone

Sections

Ozone Quadrangle, Ark
Sections
Spadra Creek 1-6
Rock Creek 1-12
Narrows Faultblock 1-50
Hagarville Mountain 1-5
Atoka Base 1-30
Steep Ozone 1-20
Strawberry II 1-3
Narrows West 1-3

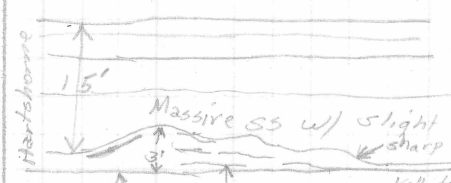
Sections

Monday
Oct 5, 1959

Colony Mtn - NW edge
Ozone - Knoxville quad boundary
T 10N R 22W - NE corner Sec 26

Sample Hartshorne 1-G
Sandstone may be 75' thick
Contact with Atoka shale sharp
and well exposed. May be 2
sandstone dike in Atoka
Hartshorne cross bedding in
lower 15' of unit averages
S 30° W. Samples from this
lower 15'. Sandstone seems
to have abundant white chips
and other non-quartz minerals
At no place is sandstone
weathered to white, pink, or
brown -- it is all grey

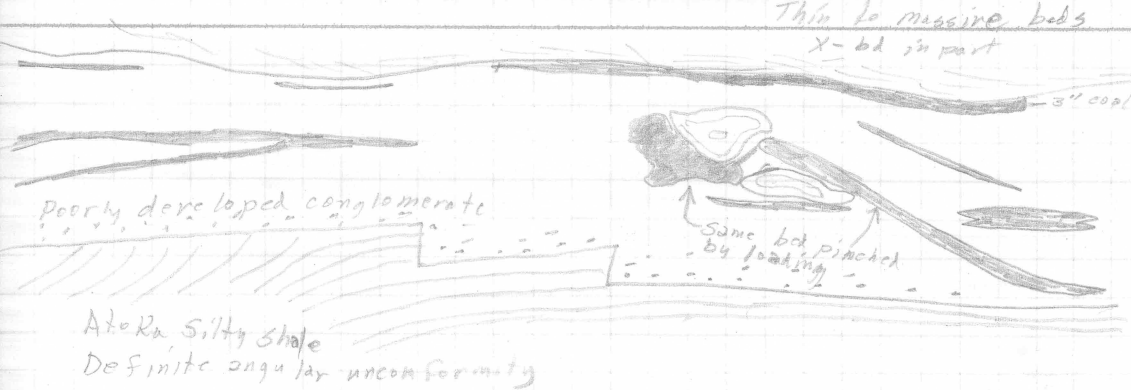
G-2-59 - Photo by Merewether - HP-1
NE Corner of Colony Mtn, Ozone quad



coal beds - 1/16" to 3" thick. 8" pocket are only in Unit of ss + sh that probably accumulated between Atoka + Hartshorne time. Material is poorly bedded and poorly sorted. Hint of underclay type material

6-3-59 Mercwether photo HP-2

NE corner of Colony Mtn. South of 6-2-59. Much the same relationship as described. About 2 to 4 feet of coal-bearing shale, sandstone, and siltstone between Atoka Shale and massive Hartshorne. Loading has bent the coal beds slightly to conform to the massive ss bottom. This is a zone of coal lenses - here and elsewhere, no coal can be traced more than 10' before it pinches out. See sketch on following page


Thin to massive beds
X-bd in part
3" coal bed - ends abruptly
Poorly developed conglomerate
Same bed by faulting
Pinched
Atoka Silty Shale
Definite angular unconformity

Tuesday, Oct 6, 1959

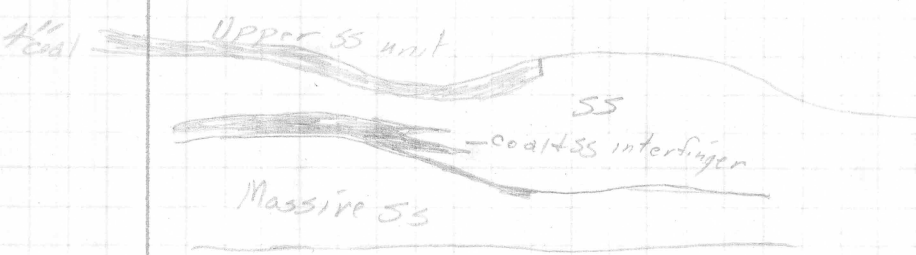
G-4-59 West side of Colony Mtn, Ozone Quad

Hartshorne sandstone

Lower 40'± of unit holds up a bench around edge of mountain. On point (G-4-59) beds are more massive than usual. Lower 30' at least is in beds 5' to 10' thick. These form cliff. They show cross bedding where weathered and dip is mostly southwest. Sand is well sorted and v f to f gr.

G-5-59 Colony Mtn

Coal in lower part of Hartshorne. Here the coal bearing lower unit is 6' thick. It contains sandstone beds 2' thick and probably is separated from overlying sandstone unit, but separation is not as obvious as at G-3-59



Slightly silty SS

Wed Oct 7, 1959

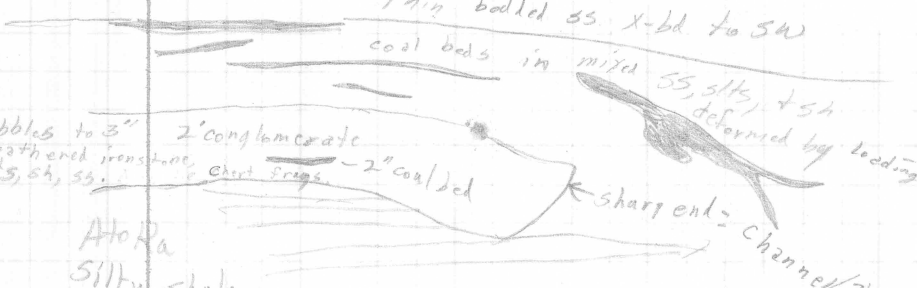
See p. 31, NF 45 & 46

G-6-59 West side of Soul Mtn, Ozone quad

Massive sandstone with base @ 670 channels into underlying silty shale. It cuts down at least 15' in 100 yards and contact clearly shows the cutting out of the underlying shale.

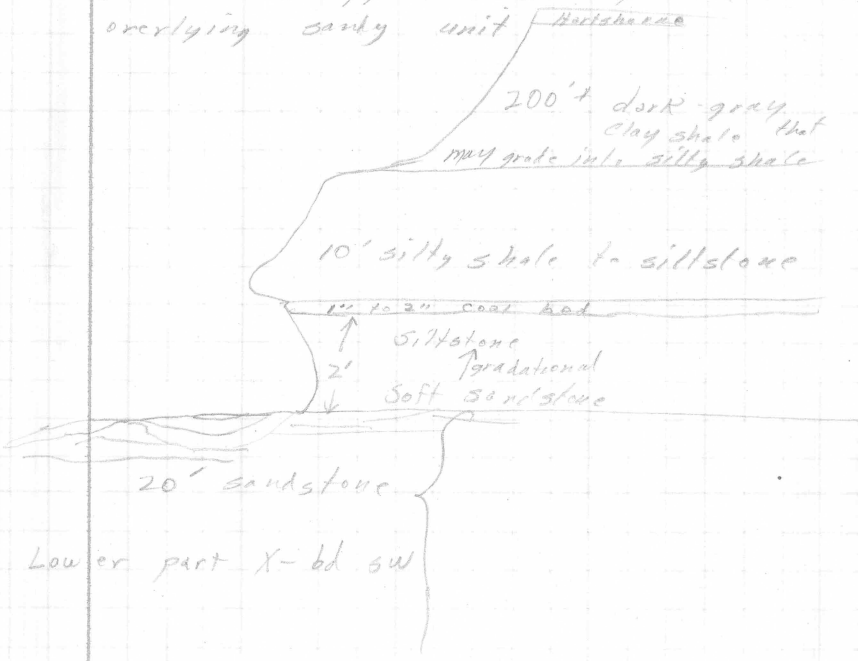
The massive sandstone of the channel is not cross bedded. Farther north along the outcrop, faint cross bedding to fair cross bedding developes in thinner bedded ss. Some of the sandstone is shaley even 20' above the base. Lower part of unit (2'-3') contains some thin coal streaks, up to ¼" thick.

Good photo about center of west side of Soul Mtn.



6-7-59 Good spot for photo
1 Mile east of Hagarville on east bank of Little Piney Creek south of 489 elevation

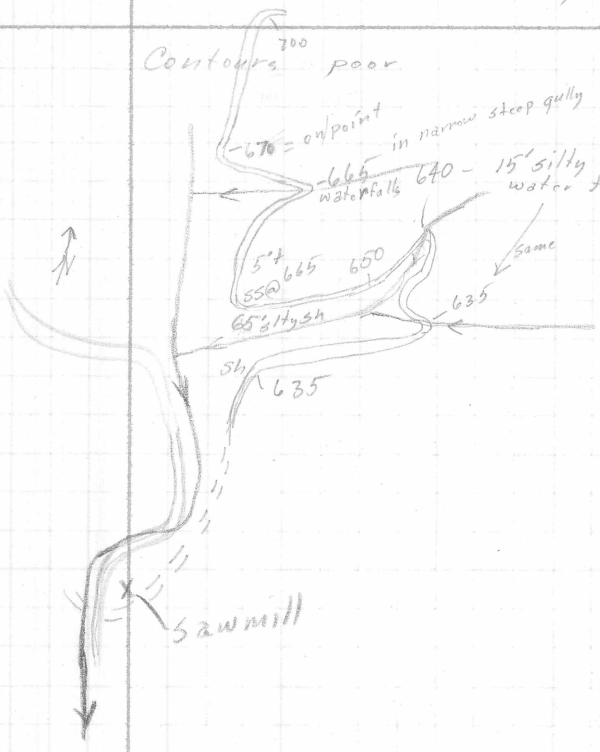
Upper Atoka sandstone is about 20' thick here. vf-f gr, thin-bedded, med gray. Grain size rather even and sandstone is fairly clean. Weathers to irregular slabs 1" thick with uneven, upper and lower surfaces. Top of unit makes bench along stream and appears to be separated from overlying sandy unit



(7)

Thursday, Oct 8, 1959

East side of Little Granny Creek Ozone yard



Saturday, Oct 9, 1959

Spadra Creek section

Center NW¼ Sec 31, T 11N, R 23 W.
Starts on tributary to Spadra creek.
Measured by Haley, recorded by Glick

SC-1
19' 7"
Shale, dark gray, slightly silty; fine to medium grains of mica; beds 1/16" to 1/4" thick; upper 11" is not silty; Contact between this shale and overlying unit is sharp - channel type contact

Spadra creek - tributary junction

SC-2
24' 6"
Sandstone, light-gray (limonite stained), fine to medium grained; coarse mica; abundant red ironstone nodules to ½" in diameter by 1" long, oroid; Unit is massive and is about all one bed but has trace of loading structures and hint of cross bedding; forms overhanging cliff on west side of creek and up west side of tributary; 3'0" (4'7" above base) with zone ironstone and dark-gray shale layers to ½" thick. Shows cross bedding -- current from N 45° E Some features on base of beds look like alined flute casts, but may be load structures. Unit may be stream deposit

SC-3 4' 6"	Sandstone, weathers to olive-gray, medium-grained; abundant coarse to very coarse sand grains; also silt and very fine sand; abundant ironstone pebbles ½" thick and as much as 2" long; cross bedding shows current from NE. This is part of cliff forming unit starting with SC-2 -- grains of SC-3 are larger. Both units show poorly developed ripple marks.
SC-4 5' 6"	Sandstone, olive-gray, fine- to medium-grained, silty; abundant ironstone concretions in layers ½" thick and as much as 6' long. Thin layers to ½" dark-gray to gray shale; Contains thin carbonaceous streaks, almost coal, with coarse flakes of mica. Top of unit undulates and is slightly ripple marked. Sharply separated from SC-5.
	(About 85' from top of this sandstone to base of overlying sandstone)

541 1°

(10)

SC-5 5' 6"	Sandstone, siltstone, and shale interbedded 60% Sandstone, medium-gray, fine-grained; irregular beds ½" to 8" thick. Top of beds are ripple marked. Bottoms are in part poorly fluted and one prod mark found N-S 15% Siltstone, medium-gray in irregular beds ⅛" to ½" thick 25% Shale is dark-gray in beds to ⅛" Top of unit is 9" bed of clean quartzose sandstone with grains that range from coarse silt to very fine sand.
SC-6 28' 9"	Shale, siltstone, and sandstone, interbedded Sandstone, medium-gray, silty, very fine to fine grained, quartzose; irregular beds to 3" thick. Sandstone in lower 3' of unit Siltstone, medium-gray, beds irregular to up to ½" thick Shale, dark-gray, beds to ¼"

SC-6 (cont)

Lower 3' 6" = 20% ss, 30% slts, and 50% shale.

Next 4' 0" = 60% shale, 40% slts

Entire unit grades upward from coarser grains to finer grains

End of section

(12)

Oct 11, 1959

Rock Creek section -- upper Aloka shale and lower Hartshorne sandstone. Measured by Haley & Glick

SW Corner NW ¼, sec 5, T10N, R23W

From first Aloka sandstone top to Hartshorne base is about 240'. This section, therefore, starts 160' ± above/31 Aloka ss

RC-1 17' 7" Shale, weathers yellowish-brown and light gray; beds as much as ½" thick; contains plant fragments; upper 4" is weathered ironstone band with ostracods, gastropods, pelecypods ? and brachiopods ?

RC-2 23' 0" Shale as RC-1; dark gray where fresh. Weathers to a "splintery" mass that stands 20' high in the road cut.

RC-3 11' 6" Siltstone, weathers to light olive gray; beds ⅛" to 3/4"; coarse-grained silt that may be in part vf sandstone; 20% of unit may be silty shale, weathered light gray;

RC-4
17' 3"
Siltstone and shale interbedded
60% Siltstone in beds to ½"
40% shale in beds to ⅛"
Both weathered to light-gray
Fern pinnules collected from shale beds.

RC-5
17' 3"
Siltstone, weathered light-gray, beds as much as ½" thick; contains thin beds of shale weathered light-gray - bed to ⅛" thick. Unit is 80% siltstone, 20% shale. Contact of unit with overlying Hartshorne sandstone not exposed, but can be located to within 1' — shale and sandstone are both exposed almost to the contact

RC-6
8' 0'
Sandstone, grayish-white, fine-grained; in beds about 2' thick; top of hill
From here section is shifted ¼ mile S45°W down Rock Creek (to window through Hartshorne. Here the Hartshorne channels into the Atoka formation)
Not correct on recheck

Note: RC-11 to 12 are under RC-7
Start again in Atoka

RC-7 1' 8"	Siltstone, medium-gray, irregular beds ⅛" to 1" thick (mostly ⅛" thick). Ripple marked. Top of unit has sharp (channeled) contact with the overlying Hartshorne. One scour extends into top of unit 3'. Flute casts suggest NW source. Cross beds in Hartshorne suggest several directions
(Add 4' to bring down to top of underlying sandstone of RC-	
RC-8 12' 2"	Sandstone, light- to medium-gray, very fine to fine-grained; cross bedded in part. Cross bedded layers are even in part ½" to 3" thick. Might be used for building. Unit shows flow structures developed beyond convolute bedding. Beds in this unit are mostly massive to 4' thick but others are cross bedded as described above.

RC-9
16'-0" Sandstone as RC-8 -
Cross bedded in part, bedding mostly 4" to 8", each bed cross bedded

RC-10
18'0" Sandstone, grayish-white, fine-grained, clean. Beds 2' to 3' thick.

Not top of Hartshorne, but top of hill.

End of section.

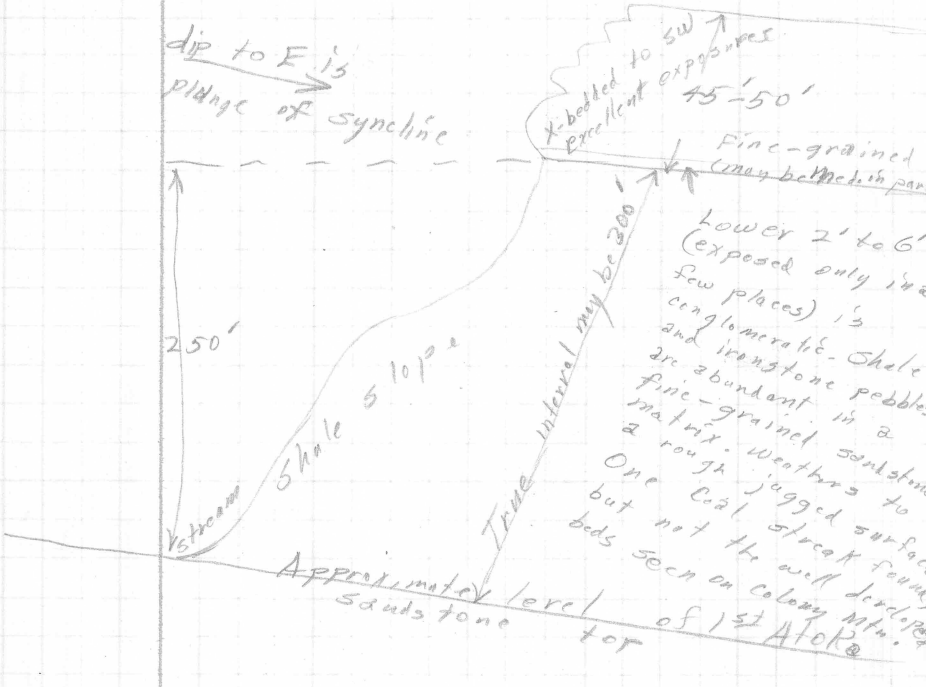
Revised: Start at water level downstream and add under RC-7

RC-11
5'0" Siltstone, medium-gray, irregular beds 1/16" - 1/8" thick; ripple marked. Top of unit is irregular channel contact with overlying sandstone

RC-12
28'4" Sandstone, light- to medium-gray, very fine to fine-grained, coalified plant fragments. Widely scattered ironstone concretions 2" in diameter. Massive bedded - not cross bedded. Break in slope at top = base RC-7 -
End of section

Oct 12, 1959

Hartshorne(?) in SW Treat quadrangle in syncline east of Summerland School of SE Ozone quadrangle



Oct 14, 1959 (17)

Narrows Fault Block # 1 Section
Base @ Little Piney Creek cut-off level
NE ¼ Sec 11, T 10N, R 22W

Measured and sampled by BR Haley,
Recorded by E. Glick

NF-1
12'7"

Siltstone, medium-gray, irregular beds ½" to 1" thick; cross bedd in all directions as shown by thin laminae -- some of this may be from loading. In lower 3', shale partings to ⅛". Shale, dark-gray, slightly silty. Upper 8" is vf gr ss to c-gr quartzose siltstone -- clean, hard

NF-2
5'8"

Sandstone, medium-gray, very fine grained, very silty, well cemented; In 2 beds, lower 3' & upper 2'4" thick. 2" bed of ironstone between beds. Base of sandstone is in clean contact with underlying siltstone, even though grain size seems gradational. Upper contact with shale is sharp.
Upper 2" ss, f-gr, with scattered medium grains
(Total of 4 beds = 5'8")

NF-3 23'0"	Shale & Siltstone interbedded, poorly exposed 70% Sh, dk-gy, in beds ⅛" - ¼" 30% Slts, med-gy, in beds ¼" - ½" Upper 5' very poorly exposed
NF-4 21'0"	Siltstone, medium-gray, nearly shaley bedding. Siltstone is clayey and shaley.
NF-5 5'0"	Sandstone, massive (one bed), moderate reddish brown, medium- to coarse-grained (abundant very coarse grains of quartz) Base of sandstone cliff
NF-6 15'0"	Sandstone, massive, yellowish brown, fine- to medium-grained with scattered coarse-grains. 25' around the corner unit is medium- to coarse-grained with scattered very coarse grains. Quartz granules and sandstone pebbles are present upward in unit. Cross bedded southward. Unit appears to be channel or delta deposit

NF-7
1' 4"

Sandstone, red (weathered), massive (one bed), cross bedded southward, f-m-grained

One pebble of sandstone

NF-8
0' 10"

Sandstone, yellowish-brown, fine- to medium-grained, abundant c-vc grs, massive; One coalified fragment of Calamite trunk 2" x 9" about 8" from base. At same horizon are fragments of shale to ¼"

NF-9
19' 6"

Sandstone, massive, one bed, yellowish-brown, fine- to medium-grained Ironstone bands to ½" thick in all directions (secondary), Zones with c-vc grains & scattered granules of quartz and quartzite.

Top of unit is top of section exposed here, but probably not the top of this sandstone unit.

End of section of first fault block.

Narrows Fault Block 2 Section
Thin fault slice on South side of west flowing stream. These rocks are broken and slumped or faulted so the measurements may be only generally valid

NF-10 16'0"	Siltstone, medium-gray, irregular beds 1/8" to 4" thick; Dark-gray shale partings as much as 6" thick. 90% siltstone. No shale in upper 8'.
NF-11 1'0"	Siltstone, medium-gray, iron-rich, fossiliferous (fragments of crinoids and brachiopods). Fine to medium sand grains. Gradational with underlying unit
NF-12 10'8"	Siltstone, dark-gray, argillaceous; bedding not apparent, but beds appear to be 1/4 to 6" thick. Several fractures or small faults cut this unit.
NF-13	Shale, dark-gray, in beds 1/16" to 1/4". Ironstone nodules as much as 3" long. Unit may be 100' thick, but faulting of this block is too complicated for section measuring.

End of Fault block 2

Narrows Fault Block 3.
Upper Atoka + Harts horne
along East side of Little Piney
Creek from north of Saul Mtn
southward to Saul Mtn

NF-14
7'3"

Sandstone, light- to medium-gray, very silty very fine grained, irregular bedded in part (beds $\frac{1}{8}$" to 2") Cross bedded in part (beds 2" to 18" thick) Current direction S 10° W to S 80° W Ironstone pebbles aligned along foreset laminae. Pebbles average $\frac{1}{2}$" in diameter. Some ironstone layers $\frac{1}{2}$" thick and 2' long on foreset bed planes. Unit shows some depositional slump and some loading features

NF-15
5', 10"

Sandstone, very fine grained, cross bedded, medium-gray. Cross bedding indicates current toward west + Some fine to medium grains of sand Widely scattered ironstone concretions as much as $\frac{1}{2}$" long

NF-16 2' 9"	Sandstone, medium-gray, medium grained, (scattered coarse grains) 28" thick to 22" thick in a distance of 20". An 8" bed at base almost lenses out. A 15" bed in unit has foreset beds that dip S45°W at angles from 25° to 34° to plane of bedding (some true dip may be more). Abundant ironstone pebbles and layers
NF-17 7' 2"	Sandstone, medium-gray, fine-grained well cemented, irregular bedded in beds ½" to 8". Thicker ones are cross bedded SW Some silty partings. Shale parting 1" thick 33" above base. Shale dark-gray to grayish-black. Dark-gray shale pebbles ⅛" x ½".
NF-18 13' 10"	Sandstone, light- to medium-gray, very fine grained, irregular bedded in beds ¼" to 2" and one lens 2' thick 6" dark-gray shale at base and partings of shale and silty sandstone as much as 2" thick. Unit 75% ss. Trace ripple marks

Contact 18 & 19 undulates as much as 1' - Well exposed surface has "pot holes" 5' across and 1' deep

NF-19 2' 9" — sandstone, light to medium-gray, irregularly bedded in beds ½" to 2". Unit becomes increasingly silty upward to the uppermost part of the unit (3") is siltstone. Two sandstone dikes 1" & 3" thick. Sand in dikes is relatively clean and fine-grained. Dikes appear to be over "pot holes" described above.

Note: Fault, displacement unknown, separates NF 19 (up block) and NF-20 (down block) - Displacement probably is only 2' as a tentative correlation across it can be made. Fault dip seems too shallow (18° more than bedding) to be that of a major fault.

NF-20 2' 11"	Siltstone and Shale, dark-gray, interbedded in lower 25", Upper 10" Sandstone, dark-gray fine-grained (scattered medium grained), silty.
NF-21 10' 0"	Shale, dark-gray; ironstone lenses 1"x4' & concretions to 4" in diameter
NF-22 4' 9"	Shale, dark-gray & Fine-grained light-gray, irregular bedded ripple marked Sandstone interbedded. Some layers of sandstone are medium-grained. 50% ss @ base, 80% ss @ top Sandstone in beds ½" to 3" thick Upper sandstone bed contains abundant ironstone pebbles. Prod marks and flow casts on base of ss beds show current direction of S 30° W.
NF-23 5' 0"	Shale and sandstone as NF-22.
Cored 15' 0"	Appears to be Silty Shale

NF-24 25'0"	Shale, dark-gray, in beds 1/8" to 1/4" thick 8" bed med gray f-gr ss at base & 6" bed med-gy
	m-gr ss 30" above base; 2nd 8" bed of similar ss 11" above base. Upper ss bed contains abundant ironstone pebbles. Trace siltstone beds in shale.
NF-25 12'0"	Shale, dark-gray, in beds 1/8 to 1/4" thick; some beds of light gray siltstone 1/2" to 1" thick
NF-26 15'6"	Siltstone, light-gray, irregularly bedded in beds 1/8" to 1" thick; 8" bed light gray very fine grained sandstone at the base. Partings of dark-gray shale 1/16" to 1/8" thick. 80% siltstone. 3' from base is 4" bed of dark-gray shale.

NF-27 2' 0"	Sandstone, light-gray, beds ½"-9", irregularly bedded, very fine grained, very silty
NF-28 1' 10"	Siltstone and dark-gray shale interbedded. Bedding ⅛"-½" 60% siltstone. Ironstone bands ¼"x½".
NF-29 11' 9"	Sandstone, light to medium-gray, very silty, very fine grained, irregularly bedded in beds ¼" to 8" thick. Few thin dark-gray shale laminae. 2" bed f-m ss 43" above base. 18" unit = 3 beds of dark-gray sh 2 " med-gy, silty, vf-gr ss base 45" above base NF-29
NF-30 9' 0"	Shale, dark-gray, ironstone band 3" thick 1' above base. Contact with NF-31 is sharp
NF-31 14' 9"	Sandstone, light-gray, fine to medium grained. Irregularly bedded in beds 2" to 6" thick. Trace C-grs. 1' shale zone 3' from top

NF-32 2' 0"	Shale, dark-gray, abundant Stigmaria
NF-33 5' 0"	Sandstone, light-gray, very fine grained, very silty; interbedded with medium to dark-gray v.f. sdy siltstone with shaley bedding ⅛" to ¼". Sandstone beds 2" to 6" thick. Each unit of ss is one bed
NF-34 7' 0"	Shale, dark-gray; lower 3' has abundant Stigmaria (probably contains Mercwether's coal zone.)
Covered 135' ±	260' @ 10° = 45 + 60 105 EC 160 Haley
NF-35 15' ?	Sandstone, medium-gray, beds 4" to 1' thick, fine-grained. Badly weathered - crops out in ridge above field. Only upper 7' well exposed but thickness estimated to be 15'.

End of this part of section

Section begins at first sandstone exposed along Little Piney Creek south of Saul Mountain. This is about 1000' south of bridge east of Hagerville.

NF-36 15' 0" Sandstone, light-gray, fine-grained with abundant medium-grains. Cross-bedded, mostly from N and E. Ripple marked. Base of unit below water level, and thickness may be slightly more.

NF-37 1' 2" Sandstone, medium to dark-gray, clayey, silty, without bedding; separated sharply from underlying unit along an undulating contact.

NF-38 1' 1" Shale, dark-gray, silty, v.f. sandy, abundant Stigmaria; gradational with underlying unit and in sharp contact with overlying coal. Bony coal 2" thick; coal contains plant fragments, pyrite, and is too bony to show banding. Coal is overlain by 3" dark-gray shale.

NF-39 6'3" Siltstone, light to medium-gray, bedding 1/16" to 1", thinly laminated with light and dark bands. Ironstone nodules to 1" long 42" above base.

NF-40 41' 0" Shale, dark-gray, bedding 1/16" to 1/4" thick; few beds to 1" thick medium-gray siltstone in the lower 3' of unit. Remainder of unit weathers to splintery shale with many "concretion-like" structures to 8" long -- elliptical.

October 15, 1959

NF-41 17' 0" Shale, dark-gray to grayish-black; 8" iron-rich zone at base; in beds 1/16" to 1/8" thick; contains ironstone layers 1"-2" and nodules 1" thick.

This unit extends to top of shale exposed at bridge across Little Piney -- just north of the dump. From here northward, dip and stream slope are assumed to bring this horizon down to water level in Little Piney creek where first small gully comes in from South Fork.

Section starts again at water level in Little Piney Creek

Covered 115' 0"	Mostly black shale, probably all shale
NF-42 32' 0"	Shale, dark-gray to grayish-black in beds 1/16" to 1/8" thick. Top of unit is sharply overlain by next sandstone unit. Some of unit is poorly exposed to covered, but appears to be shale
Note 43 (in channel) = 45 (out of channel)	
NF-43 34'6" (in channel)	Sandstone, light-gray, very fine to fine grained, massive. Rests on shale with channel relationship and contains one channel within the unit. This included channel has shale pebbles to 1" long and shale stringers near its base. At 23' above base is 2' unit of fine- to medium-grained medium-gray sandstone. Even bedded in 2" to 4" beds that might make building stone

NF-44
10' 0"
(more exposed elsewhere)

(Same as NF-42 but 200 yards northward along west side of Saul Mtn. This is the non-channeled part of the unit showing conglomerate and coal. See note page 5 (6-6-54) concerning this part of section)

Shale, dark-gray, in beds 1/16" to 1/2" thick. Contains siltstone laminae to 1/2" thick. Unit 80% shale. Sharp contact with overlying conglomerate.

NF-45
Lens 0'0" to 2'0"

Conglomerate
Sand matrix very fine to fine-grained.
Pebbles - ironstone to 3" long but average 1/2" long. Pebbles & granules of quartzite and quartz as much as 1/4" long. Trace of granule of dense chert. Fragments of coal to 1/4" long. Stringers of coal to 1" x 2'. Coal has abundant vitrain.

NF-46
Lens 0'0" to 2'0"

Interbedded sandstone and coal.
Sandstone, very fine to fine grained, contains abundant fragments of coal. Im irregular beds and lenses 1/2" to 6" thick. Cemented with iron-rich material in part. Coal beds 1" x 5" (maximum). No shale above or below coal. 90% vitrain ± bark, [illegible]

Contact between 45 & 46 is sharp
Contact between 46 & 47 is sharp

NF-47 8' 8"	Sandstone, fine-grained, light-gray, silty. In beds 1" to 2' thick. Cross bedding in lower 3' show current to S & W. Bottom contact sharp & this unit channels underlying units.
NF-48 3' 0"	Sandstone, light-gray, very fine-grained, very silty. In irregular beds $\frac{1}{8}$ to $\frac{1}{2}$" thick. 60% sandstone; interbedded with shale, dark-gray, silty; beds $\frac{1}{16}$" to $\frac{1}{4}$"
NF-49 4' 5"	Sandstone, light- to medium-gray, very silty, very fine grained. Even bedded in beds 1" to 6" thick 6" above base is 7" zone with abundant shale laminae. 20% shale Bedding $\frac{1}{8}$ to $\frac{1}{4}$"
Covered 40' 0"	Poorly exposed to covered, not sampled Float and few beds in place suggest siltstone and very fine grained silty sandstone. Upper half has several beds of fine-grained silty sandstone in place - beds to 1' thick. Few inches of shale exposed.

Covered 80' 0"±	Lower 20' (not sampled) has some dark-gray shale in place. Remainder of unit on basis of slope probably is shale
NF-50' 20' 0"±	Sandstone, light-gray, very fine to fine-grained, quartzose, weathers to clean sandstone; Poorly exposed, but beds to 1' thick exposed.

Top of Saul Mountain
End of section.
10:45 AM
Oct 15, 1959

October 15, 1939

Haley & Glick (39)

Hagarville Mountain section
NW¼ sec 15, T 10 N, R 22 W, Along old road to apple orchard on east end of mountain. Sandstone (1st Atoka ss of Haley is 185' ± dip above 2nd ss)

HM-1 34' 6"	Shale, dark-gray, badly weathered 3' thick siltstone bed at 23' above base; few ironstone concretions to 6" in diameter.
Not Sampled 10' 0"	Shale, dark-gray, poorly exposed to covered. Upper contact not exposed
HM-2 23' 0"	Sandstone, badly weathered, yellowish-brown, fine- to medium-grained, cross bedding shows current toward the south.
HM-3 17' 3"	Sandstone as HM-2. Shale pebbles present in some beds.
Covered 17' 3"	Almost certain to be sandstone -- outcrops on this hill show interval to be ss

HM-4 20' 10"	Sandstone, yellowish-brown, weathered, fine- to medium-grained, some very fine to fine-grained; cross bedded to the south.
HM-5 10' 0"	Sandstone, light-gray, fine-grained with abundant medium grains; abundant macerated plant fragments; beds 2" to 8" thick
Covered 25' 0"	Probably medium-grained sandstone.

Top of hill - house & orchard

End of section.

Haley & Glick
Oct, 1959 (36)

Atoka Base in Hole Creek
Section starts 200 yards downstream
from mouth of easternmost tributary
flowing northward into Hole Creek
shown on the Ozone quadrangle

Base SE¼ SW¼ sec 8 } T11N, R21W
T.P SE¼ NE¼ sec 6 }

AB-1
6'0" ls, mass, mgy, silty, foss, oolitic,
silty & sandy laminae ½" thick
weather showing xbdg towest

Diagram looking west from base of fault, Fault has about 6' of disp

AB-2
3'0" ss, brgy, single bed, vfgr,
limy where not weathered
fossil.

AB-3
4'2" ls, mgy, v foss, silty, silt & sand
lenses, weather showing
xbdg. Polish section along water fall
exposes crin, ool, sand grains, 3 beds
upper bed 6" thick (Page 37 follows p. 39)

From base upward

ATS-6 ls, dk gy, foss, sandy, petroliferous
1'0" v hard where fresh.

17'0" sh. dk gy splintery weathering
17'0" lower part is clay sh, upper part becomes increasingly silty

7'6" ss, mgy, shaly, f-mgr, lower part almost ls.; grain size and limyness decreases upward until it is a vf decalcified ss an upper 2/3'
3 rock types sampled as a unit

Up creek 200 yds

38'0" Sh, dk gy, splintery weathering.
Base about 2 feet above HC 12
few Fe st and slts laminae up to 1"
Sharp contact with overlying unit.
Not Sampled
HC 12 in this area is about 4' of mgr sandy v fossil, mgy ls.

ATB-7 from base up

1'8" ss mgy, f-mgr single bed, abundant pebbles of wood, hard slts 1/2"-1"
3'0" slts, irreg bd, beds 1/16"-1/8", sh laminae 95% slts.

AB7 (Cont)

14'0"	lower 2' SS vf-mgr, decalcified, fossil grades upward into decalcified vf-f gr ss, all is rd br.
1'0"	SS f-mgr decal, foss, weathers back
2'0"	silts, v hard resistant holds up cliff
25'0"	Shy, dkgy, Not sampled - Overlain with sharp contact by thick fgr sandstone (probably lower "Basal Aloma" sandstone) - more than 50' thick.

Section measuring shifted northward up main South flowing branch of Hole Creek. AB-8 and above probably is on north side of fault down on north. If so, a major sandstone bed (the one described above as being over the 25' of shale) is cut out of the section

Page 40 follows

AB-4 15' 0"	SS, med-gy, silty, vf gr; resistant unit forms top of waterfall and is exposed in stream bed for 200 yards above the waterfall. Several shale partings to 6" thick in upper 5' of unit; upper 9'6" of unit is irregularly bedded in beds 2" to 1' thick, cross bedded in part, lenses with m-c grains and some limy layers. Looks like a unit that was deposited by relatively strong currents
AB-5 5' 0"	Shale, dark-gray, fissile, interbedded with ls, med dk gy, foss, sandy (in part v c. gr) lenses of ls 6" to 12" thick. This unit probably is below Hc 9 & 10 of Hole Creek section Above AB-5 is 20' of shale exposed but not sampled. This is from 50' to 30' below the top of AB-6
0' 6"	Up creek 100 yds Shale, dk-gy, not sampled

AB-8 10' 0"	Siltstone and shale interbedded.
(Base not exposed	60% Siltstone, medium-gray, in beds 1" to 6" thick. Resistant--stands runs on these beds for several hundred yards. Trace of worm borings & tracks 40% Shale, dark-gray, silty, in zones 2" to 1' thick between each siltstone bed. Zones contain some ½" thick siltstone laminae Upper 6" bed of siltstone is very hard, fossiliferous, and contains abundant f-m grs of qtz. Probably limy.
AB-9 15' 0"	Shale, dark-gray, well exposed Yellowish-gray sandstone bed 6" thick, f-med gr, containing ½" shale pebbles base 5' above base of unit. Upper 10' all dark-gray clay shale with abundant dark-gray ellipsoidal ironstone concretions. Some of shale is hard and has conchoidal fracture rather than fissility.

AB-10
2' 10"

Limestone, reddish-brown, single bed, silty, sandy, very fossiliferous; sand mostly in upper 10" and increases upward in that part of the unit to sandstone; crinoids, brachiopods, and corals. Trace vc sand grains in upper part of unit. Sharp lower and upper contact but sand grains extend 1" into overlying shale.

AB-11
35' 0"

Sh. dkgy, sl silty?, weathers like mudstone, not too fissile, very well exposed, makes cliff, beds 1/16" to 1/2"

Moved up creek 300 yds

AB-12
4' 0"

from base up

11"-6" ss, conglomeratic (mostly fossil debris and coarse sand in a silty matrix), brach and crin.

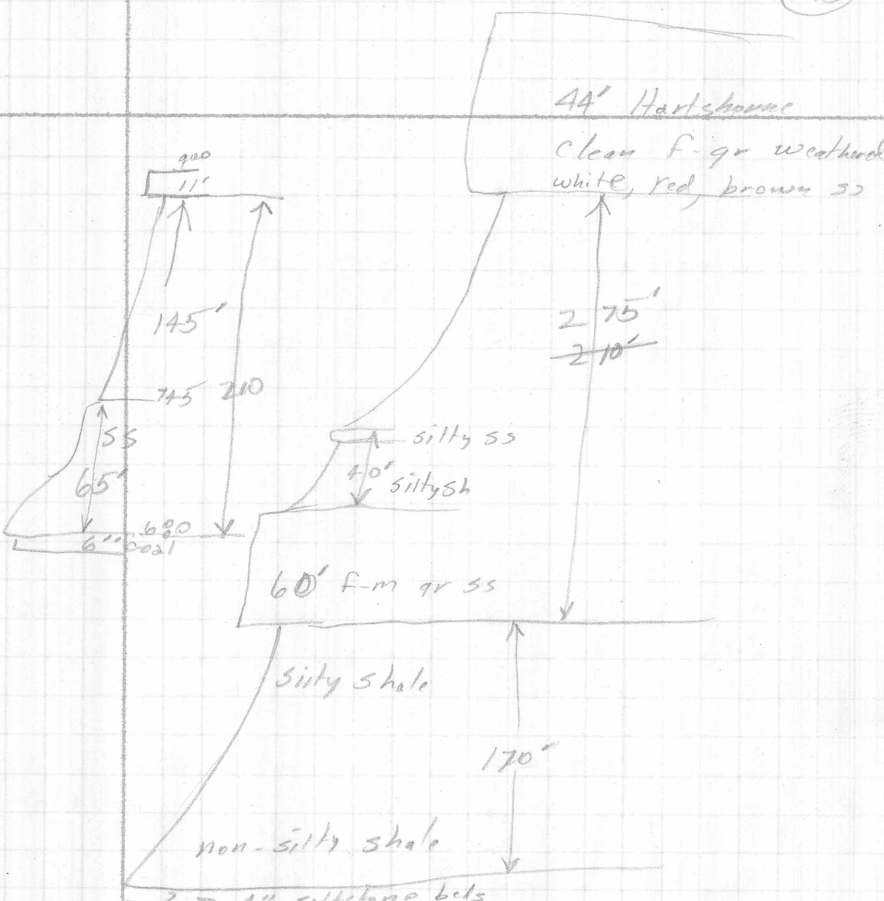
12" Inbd ss & dkgy sh - ss is mgy, vf, irreg bds 1/2"-3"; sh is dkgy, sandy, silty, zones 4" thick with slts & ss laminae

(52") ? ss, f-vc, fossil debris, xbdd with current flowing to south, xbdd to N and NW in an exposure down the creek.

AB-13 10'6"	sh, dkgy, well exposed, fissile, brittle, non-silty, bdg 1/8"-1/4", Trace Fe st conc 1/2 x 8"
AB-14 14'0"	ss, massive, ylbr, weathered, base of unit (lower 2") is conglomeratic qtz pbls to 1/2", clay and Fe stn pbls to 1" lower 9' is vf-mgr soft friable sand with occas. qtz granule, upper 5' abundant vc sand lenses,
AB-15 7'6"	Sh, dkgy, a hard non-fissile clay shale, sharp contact; above and below
AB-16 50'0"	ss, ylbr, weathered, weathers friable, massive, f-mgr, trace crinoids upper 1'
AB-17 66'0"	ss, massive, gngy-brgy, mgr, friable Coarser grain size in upper 20', steeply xbd to the south.
90'0"	covered
AB-18 8'0"	sh mdkgy, silty, Lower 5' with silt laminae silt increases until upper 3' is silts with sh laminae

AB3-19	ss, vf, looks like siltstone bdg when
12'0"	weathered, no appearent bdg when fresh.
AB 20	ss, fgr, limey, fossiliferous, lower 1'
10'6"	mostly orthoids, slts type bdg.
AB 21	intbd slts and sh poorly exposed
12'6"	75% slts. Upper 18" is vf gr ss much like two underlying units
	moved N to waterfall. section somewhat different
	moved up creek to next waterfall
110'0"	covered. (— to Top of AB-24)
AB 22	sh, dk gy, base of waterfall.
2'0"	Not fissile, weathers splintery
AB-23	ss, vf gr, hard, weathery to 1"-4"
12'0	bedg. No bedg when fresh. Upper 18" is silty shaley parting between AB 23 and AB 24 parting is 50% shale
AB-24	ss massive, br gy, fgr.
6'6"	
23'0"	Covered

AB-25	SS, ylbr, silty, weathered vfgr
8'0"	forms cliff, massive, grain size increases upwards to a f-m SS in the upper 2'
AB-26	SS, massive, cliff former, lt gy, vf grained except upper 3' which is f-m grained. upper 1/3 is delcalcified lower 2/3 is extremely hard.
11'0"	
	Moved up creek
48'0"	Covered
AB-27	SS, bdg poorly developed 3"-3', ylbr, weathered, fgr in lower half, vfgr in upper half.
9'0"	
AB-28	SS bdg 2"-2' unit is one bed except where weathered, siliceous, vfgr, ltgy, hard,
8'0"	
AB-29	
10'0"	SS weathered grd br, siliceous, hard, Nf gr, bdg 2"-6"
20'0" covered	
AB-30	SS, vf gr, siliceous, in beds 2" thick poorly exposed -- highest exposure found in head of south-flowing branch of Hole Creek (Top of section)
5'0"	


44' Hartshorne
Clean f-gr weathered
white, red, brown ss
900
11'
145'
745
210
55
65'
680
6'' coal
2 75'
~~2 10'~~
silty ss
40'
silty sh
60' f-m gr ss
Silty shale
170'
non-silty shale
2 – 4" siltstone beds

Oct 1959

Steep "O" section
Measured by Glick, recorded by Haley
SW¼ sec 16, T11N, R23W

Base of section is in Rock Creek just downstream from junction w/ west flowing tributary in which most of section was measured. Top of section is at top of steep part of the tributary

50-1 5'+ ss, mass, only upper 5' sl imp, fgr, br, upper 5" coarser, dirtier, and darker "Big Sand" top

50-2 40'0" sh. Lower 15' poorly exposed, dk gy fissile, brittle weathers like siltstone, slight trace of silt in upper 10", top and bottom contact sharp

50-3 21'0" 1'4" slts qtzose, ltgy (c-gr silt)
4'0" slts, finely laminated
15'8" ss brgy fr mgr massive, sharp top, forms waterfall lip.

SO-4 16'0"	up ↓ 5'0" sts hard qtzose bds 1"-6" Sh partings
	11'0" poorly exy & shaly slts, almost no bdg, lumpy Festu & slts lense, worm borings? unit weathers back, grades into overlying unit
SO-5 14'6"	slts, bd ½"-6" shale ptgs, more shaley at base, more qtzose in upper part, upper 1' dkgy fissile sh, sharp contact with overlying ss
SO-6 22'0"	ss y/br lower 3' f-mgr, remainder is vf-fgr, massive, forms small waterfall.
73'6"	Covered, might contain shale except upper 10' which probably contains ss.
SO-7 7'0"	ss br gy, base not exp, bds 1"-6", hard, vfgr, uppl 1" silty & clayey otherwise clean ss., weak evidense that unit is overlain by shale.

26'0"	covered, probably dkgy sh.
SO-8 18'0"	Sh, dkgy fissile, upper 5' poorly exposed, clay sh 50%, hard silty nonfissile sh 50%. Contact with overlying ss, sharp.
SO-9 41'0"	SS mass, yl br, f-m gr, upper 10' vf-f gr.
SO-10 32'0"	lower SS, f-mgy, massive; upper part poorly exposed but seems to be same type of ss middle part is medium bd.
SO-11 22'0"	3'0" slts gtzose, mica, sandy, 8'0" ss bugy fgr, beds 1" 11'0" slts gtz, shaley partings, gtzose beds 1" thick in lower 4, beds 6" thick in upper 4
SO-12 11'6"	5'6" shale, lower 1'6" poorly exposed lowest 1' exposed is shale mgy, in cliff with overlying sh with no apparent reason for difference in color, underlay without coal. rest of sh is weathered nonfissile silty sh. gunky type 4'0" ss vsilty, vfgrained, weak bdg upper 2' has beds 2" thick

25'9"	Covered: probably shgrading into SO 13
SO 13 8'0"	imbd sh & siltstone 50% of each grades upward into more silty unit has several beds of vf silty ss, 4"thick both ss & siltstone has abundant worm borings on base of beds
SO 14 20'0"	5'0" imbd silty sh and glauconitic siltstone gradational with SO 13, grades upward into silty sh with a few siltstone beds, upper 8' fissile clay sh. upper contact is sh.
SO 15 66'0"	Ozark Hartshorne is 66'0" 1'6" ss f-vc, cong
SO 16	4'0" ss, mass, vf gr, fossiliferous, crin, brach, gast,
SO 17	30'0" ss mass vf gr, no bdg however do have stylitic surfaces
SO 18	20'0" ss as above
SO 19	10'6" ss in bds 6"-2', vf, maybe teetle mite more silty than SO-18
	Top Ozark Hartshorne

23'0"	covered
50-70 10"0"	ss, poorly exposed, weathered, silty, vf, bds 1" - 4", upper 3' is cleaner, makes top of slope and is end of section and underlies field to SE of section

End of Section

Oct 1959

Strawberry Section
Measured by Glick recorded by Kle
measured to pick up the
part of the section above
the "Big sand." This section
missed by Hyley when
he measured the section.

SS, yl br x bd "Big Sand"

SII-1 6'0"	Slts beds 1"-4", dkgy sh ptgs, worm markings
SII-2 15'6"	Sh, dkgy, v silty, silts laminae, and beds up to 3" thick
SII-3 10'0"	Slts, lower 1' qtzose, 5'6" sh dkgy silty, poorly exp, hard non fissile 3'6" slts, beds 3"-6", shale partings hard siliceous
1'0"	covered
SII-4 12'0"	ss f-m gr, weathered, massive,

SII-5	SS, massive, weathered f-m gr.
24'0"	contact, not exposed, looks like a continuation of SII-4

Haley & Glick
Oct 1959

Narrows west section

NW-1
29' 0"
Lower 6' Interbedded dark-gy sh & med-gray siltstone 60% siltstone at base and 2/1 shale at top. Upper 23' dark-gray shale

NW-2
28' 0"
Sandstone, yellowish-brown f-m gr, massive, Base not exposed, but probably little is covered Top not exposed

Covered
8' 0"

NW-3
15' 0"
Sandstone, weathered yellowish-brown. Lower 1' 6" coarse to v. c gr, decalcified - no fossils found, but looks as if it should be fossiliferous
Upper 13½" m-c gr, looks decalcified, Light yellowish-brown
Upper ½ poorly exposed
Unit is massive

End of section