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Geological Report

Mazza #2-16

2310 FNL, 990 FWL
Section
Miami Co., Kansas
API#15-121-28186
Elevation: 1078' GL
Driller: Osborn Energy, LLC
Spud: 07-17-06
Production Bore Hole: 9 5/8"
Rotary Total Depth: 643' on 07-20-06
Drilling Fluid: air
Production Csg.: 7"
Geologist: Meredith Pearce

16-16-25E

<u>Formation</u>	<u>Driller Log Tops</u>	<u>Datum</u>
Stark Shale	221'	857'
Hushpuckney Shale	247'	831'
Base Kansas City	266'	812'
Knobtown Sand	No call	
"Big Lake" Sand	No call	
South Mound Zone	416'	662'
Hepler (Wayside) Sand	No call	
"Upper" Mulberry Zone	No call	
Mulberry Zone	No call	
Weiser Sand	No call	
Myrick Station	505'	573'
Anna Shale (Lexington Coal Zone)	510'	568'
Peru Sand	No call	
Summit Shale Zone	547'	531'
Mulky Coal/Shale Zone	571'	507'
Squirrel Sand	No call	
Rotary Total Depth	643'	

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Drilling at 160' in the Kansas City on 07-18-06
Background Gas (BG) 16 units, no prior gas kicks

160-165 SH: gy, sandy
165-170 LS: tan, hard, calcite in fractures
170-175 LS: aa
175-180 LS: aa - SH: gy
180-185 SiltSt: gy - SH: gy - LS: tan
185-190 SiltSt: gy - SH: gy, silty
190-195 SH: gy, sandy in places - LS: tan, gy, calcite
195-200 LS: tan, gy, calcite in fractures
200-205 aa
205-210 aa
210-215 LS: tan, gy, calcite - SH: gy

Sample bags adjusted to fit joints
CG @218 20 units, 15 BG

STARK FORMATION driller called @221', gas kick to 17 units, 1 over BG

215-222 SH: gy, dk gy, TR blk
222-227 SH: dk gy, gy, TR blk - LS: tan, calcite, fossiliferous
227-232 LS: tan, calcite - SH: gy, Lt gy
232-237 LS: tan, gy, calcite, TR SH: blk
237-242 aa

CG @242 23 units, 18 BG

242-247 LS: tan, gy, calcite - SH: gy, TR dk gy

HUSHPUCKNEY SHALE driller called @247', gas kick to 19 units, 1 over BG

247-252 LS: tan, calcite - SH: gy, dk gy, TR blk
252-257 LS: tan, brn, calcite - SH: gy, dk gy, blk
257-262 SH: gy, dk gy - LS: tan, brn, calcite
262-267 LS: tan, calcite, fossils - SH: gy, Lt gy

CG @267 20 units, 19 BG

267-272 SH: Lt gy, sandy in places - LS: tan, calcite
272-277 SH: Lt gy, sandy in places, TR pyritic - LS: tan, calcite
277-282 SH: gy, silty
282-287 SiltSt: gy - SH: gy, silty

KNOBTOWN SAND not called, gas kick to 21 units, 1 over BG

287-292 SH: gy, sandy - SS: clr, gy, shly, ang., poor sort

****GAS TEST @292', No open flow****

CG @292 28 units, 21 BG

292-297 SS: clr, gy, shly, ang., poor sort, occ oil on samples
297-302 aa
302-307 SH: gy, sandy, occ oil on samples
307-312 SH: gy, sandy in places
312-317 aa

CG @317 21 units, 20 BG

317-322 SH: gy, silty
322-327 aa
Gas kick to 24 units, 2 over BG ("Lower" Knobtown not developed)
327-332 SH: gy, sandy in places

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332-337 aa
337-342 aa

CG @342 25 units, 24 BG
342-347 aa
347-352 SH: gy
352-357 aa
357-362 aa
362-367 aa

CG @367 25 units, 24 BG
367-372 SH: gy, sandy in places

"BIG LAKE" SAND not called, gas kick to 27 units, 3 over BG
372-377 SH: gy, sandy in places - SS: clr, gy, tan, ang., poor sort
377-382 SH: gy, sandy in places - SS: clr, gy, tan, ang., poor sort
382-387 SS: clr, gy, tan, ang., poor sort - SH: gy
387-392 SH: gy - SS: clr, tan, lmy in places

CG @392 25 units, 24 BG
392-397 SH: gy, sandy in places
397-402 SH: gy
402-407 SH: gy, silty
407-412 SH: gy

SOUTH MOUND ZONE called @416', gas kick to 366 units, 342 over BG
412-417 SH: gy, TR blk w/free gas

CG @417 496 units, 100 BG
417-420 SH: blk, dk gy, gy, free gas

****GAS TEST @420', Too small to measure**** poor seal at diverter

Drilling stopped @420' to cement

Resumed drilling on 07-20-06 at 7:30am

Background gas, 19 units
420-423 SH: gy, TR blk
Gas kick to 34 units, 19 BG
423-428 SH: gy
428-433 aa
433-438 aa
438-443 aa

CG @443 27 units, 25 BG
443-448 SH: gy, sandy in places, TR lmy
448-453 SH: gy, TR LS: tan
453-458 SH: gy, TR LS: tan
458-463 LS: tan, calcite in fractures - SH: gy
463-468 LS: tan to brn, calcite in fractures

CG @468 26 units, 22 BG
468-473 LS: brn, tan, calcite in fractures - SH: gy
473-478 aa
478-483 aa
483-488 LS: brn, calcite, TR fossils
488-493 LS: brn, calcite, TR fossils - SH: gy

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CG @493 29 units, 22 BG
493-498 SH: gy - LS: tan
498-503 SH: gy, silty
503-508 LS: brn, dk brn, calcite - SH: gy, pyrite

LEXINGTON COAL ZONE called @510', kick to 728 units, 707 over BG
508-513 LS: dk brn, brn - SH: gy, dk gy, blk, v slight free gas, pyrite
513-518 SH: gy, sandy, blk, TR coal, TR pyrite, v slight free gas

****GAS TEST @518', 163 MCF****

CG @518 158 units, 53 BG
518-523 LS: tan, calcite - SH: gy, TR coal
523-528 SH: gy, TR coal, TR pyrite - LS: tan
528-533 SH: gy, lmy
533-538 SH: gy, lmy - LS: tan
538-543 LS: tan, brn, calcite - SH: gy

CG @543 32 units, 20 BG

SUMMIT SHALE ZONE called @547', kick to 736 units, 734 over BG
543-548 SH: gy, dk gy, blk, slight free gas - LS: tan, calcite
Gas kick to 604 units, 444 over BG, surging water from summit
548-553 SH: blk, free gas, dk gy, gy, TR coal, TR pyrite, TR LS: tan
Gas kick to 316 units, 204 over BG, surging water from summit
553-558 SH: gy, blk - LS: tan, calcite, fossils
558-563 SH: gy, lmy, TR blk
563-568 SH: gy - LS: gy

****GAS TEST @568', Decrease to 115 MCF**** making water, surging

CG @568 29 units, 22 BG, water impeding chromatograph readings

MULKY COAL/SHALE ZONE called @571', kick to 67 units, 58 over BG
568-573 SH: gy, dk gy, pyritic - LS: tan, gy, calcite
573-578 SH: blk, dk gy, pyritic, no shows of free gas
578-583 SH: blk, dk gy, gy, pyritic
583-588 SH: gy, lmy
588-593 SH: gy, sandy in places, TR coal, TR pyrite

****GAS TEST @593', Decrease to 68 MCF****

CG @593 12 units, 10 BG
593-598 SH: gy, lmy, sandy in places, dk gy, pyritic - LS: gy, sandy

SQUIRREL SAND not called, gas kick to 18 units, 7 over BG
598-603 SS: clr, tan, gy, shaly, lmy in places, ang., poor sort, well
cmt'd, - SH: gy, sandy - LS: tan, sandy
603-608 SS: clr, tan, gy, shaly, lmy in places, ang., poor sort, well
cmt'd, - SH: gy, sandy - LS: tan
608-613 SS: clr, tan, gy, shaly, lmy in places, ang., poor sort, well
cmt'd, - LS: tan, calcite - SH: gy, sandy
613-618 SS: clr, tan, gy, shaly, lmy in places, ang., poor sort, well
cmt'd, micaceous, TR pyrite, TR coal

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CG @618 25 units, 11 BG
618-623 SH: gy, sandy - LS: gy, tan, TR SS: aa
623-628 LS: brn, sandy, calcite - SH: gy, dk gy, grn, TR pyrite
628-633 LS: brn, sandy, calcite, fossils - SH: gy
633-638 SS: clr, ang to sub-rnd, occ oil, TR coal - LS: brn, sandy -
SH: gy
638-643 SH: gy, pyrite - SS: clr, ang to sub-rnd, occ oil, TR coal

****GAS TEST @643', No Increase, 68 MCF****

TD @643' on 07-20-06

Brief Summary

Stark	No open flow
Hushpuckney	No open flow
South Mound	Too small to measure
Lexington	163 MCF
Summit	No increase
Mulky	No increase
<u>Squirrel Sand</u>	<u>No increase</u>
Total	163 MCF

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