Scale 1:240 Imperial

Well Name: Epard # 1-27
Surface Location: 660' FNL, 330' FEL, Sec 27-T10S, R34W
Bottom Location:
API: 15-193-20806-00-00
License Number:
Spud Date: 7/20/2011 Time: 7:30 AM
Region: Thomas County
Drilling Completed: 8/1/2011 Time: 3:50 PM
Surface Coordinates:
Bottom Hole Coordinates:
Ground Elevation: 3183.00ft
K.B. Elevation: 3194.00ft
Logged Interval: 3750.00ft To: 4850.00ft
Total Depth: 4850.00ft
Formation: Marmaton
Drilling Fluid Type: Chemical/Fresh Water Gel

OPERATOR

Company: Murfin Drilling Co., Inc
Address: 250 N. Water, Suite 300
Wichita, KS 67202

Contact Geologist: Dave Doyel
Contact Phone Nbr: 316-253-8693/316-631-3960
Well Name: Epard # 1-27
Location: 660' FNL, 330' FEL, Sec 27-T10S, R34W API: 15-193-20806-00-00
Pool: Field: Jimmy SE
State: Kansas Country: USA

LOGGED BY

Company: Charlie Sturdavant Consulting
Address: 920 12th Street
Golden, CO 80401

Phone Nbr: 303-907-2295----303-384-9481
Logged By: Geologist Name: Charlie Sturdavant

NOTES

The Murfin Drilling Co., Inc., Epard # 1-27 well was drilled to a LTD of 4854', bottoming in the Mississippian. The geologist was on location and examining samples from 3750' to TD. Oil shows were noted in several zones in the Lansing Group, and in the Marmaton, Pawnee, Ft. Scott, and Johnson zone.

Drill stem tests were conducted in four zones of the Lansing, one in the Pawnee, and one in the Johnson. Oil was recovered on several of the tests.

Based on the favorable DST's and on log analysis, it was determined by all parties involved, that production casing should be run, and that the Pawnee and Lansing should be further tested through perforations.

The dry samples were saved and will be available for review at the Kansas Geological Survey well sample library, located in Wichita, Kansas.

Respectfully submitted,
Charlie Sturdavant
Consulting Geologist

Well Comparison Sheet

Charlie Sturdavant Consulting

WELL COMPARISON SHEET

	DRILLING WELL Murfin Drilling., Inc Epard #1-27 660' FNL & 330' FEL Sec. 27, T10S R34W				COMPARISON WELL MDCI James #1-22 1100' FNL &750' FEL Sec. 22, T10S R34W				COMPARISON WELL MDCI James A #2-22 1000' FNL & 1350' FWL Sec. 22, T10S R34W			
	3194 KB				3212 KB		Structural Relationship		3224 KB		Structural Relationship	
Formation	Prognosis	Sub-Sea	Log	Sub-Sea	Log	Sub-Sea	Sample	Log	Log	Sub-Sea	Sample	Log
Anhydrite	2696	498	2694	500	2716	496	2	4				
Topeka	3870	-676	3856	-662	3881	-669	-7	7	3888	-664	-12	2
Queen Hill	4031	-837	4024	-830	4050	-838	1	8	4056	-832	-5	2
Heebner	4080	-886	4072	-878	4098	-886	0	8	4104	-880	-6	2
Toronto	4105	-911	4095	-901	4112	-900	-11	-1	4129	-905	-6	4
Lansing	4119	-925	4112	-918	4137	-925	0	7	4145	-921	-4	3
Muncie Creek	4251	-1057	4252	-1058	4276	-1064	7	6	4288	-1064	7	6
Stark Shale	4336	-1142	4340	-1146	4360	-1148	6	2	4373	-1149	7	3
Marmaton	4435	-1241	4432	-1238	4449	-1237	-4	-1	4462	-1238	-3	0
Pawnee	4541	-1347	4532	-1338	4560	-1348	1	10	4566	-1342	-5	4
Ft. Scott	4595	-1401	4581	-1387	4608	-1396	-5	9	4615	-1391	-10	4
Cherokee	4630	-1436	4617	-1423	4646	-1434	-2	11	4650	-1426	-10	3
Johnson Zone	4674	-1480	4666	-1472	4689	-1477	-3	5	4696	-1472	-8	0
Mississippian	4740	-1546	4740	-1546	4800	-1588	42	42	4770	-1546	0	0
Total Depth	4900	-1706	4850	-1656	4860	-1648	-58	-8	4842	-1618	-88	-38

Daily Drilling Report

Charlie Sturdavant Consulting

DAILY DRILLING REPORT

Company: Charlie Sturdavant Consulting
920 12th Street
Golden, CO 80401

Well: Epard #1-27
Location: 660' FNL & 330' FEL
Sec. 27 T10S R34W
Thomas County, KS

Murfin Drilling Co. Office: 316-858-8660
David Doyel 316-253-8693

Wellsite Geologist: Charlie Sturdavant
Cell: (303) 907-2295
Office: (303) 384-9481

Elevation: 3194' KB 3183' GL
Field: Wildcat
API No. : 15-193-20806-0000
Surface Casing: 8 5/8" set @ 254' KB

Drilling Contractor: Murfin Drilling Rig #2 785-443-2394, Tool Pusher: Jorge Tinoco, cell: 620-453-2000

DATE	7:00 AM DEPTH	REMARKS
7/20/2011	0 ft.	Spud the well at 0730 hrs.
7/21/2011	767 ft.	Drilling ahead.
7/22/2011	1006 ft.	Drilling ahead.
7/23/2011	2619 ft.	Drilling ahead.
7/24/2011	3500 ft.	Drilling ahead. Geologist on location @ 1800 hrs.
7/25/2011	4037 ft.	Drilling ahead.
7/26/2011	4170 ft.	Stuck drill pipe at 3887 ft. while short tripping in advance of DST #1
7/27/2011	4170 ft.	CTCH. Will commence drilling shortly. Conducted a successful DST #1 last night.
7/28/2011	4317 ft.	Drilling ahead. DST #2 4192'-4216 was wet.
7/29/2011	4370 ft.	CFS in Lansing K zone. Conducted a successful test of Lansing H, I, and J zones, recovering 469 ft. of total fluid, gocm and ocm.
7/30/2011	4538 ft.	Drilling ahead. Conducted a successful DST of the Lansing K zone yesterday, recovered 313' total fluid, mostly oil and gas and ocgm.
7/31/2011	4600 ft.	Tripping back in hole after a successful DST #5, recovering 1575' gassy oil and 2472' of gip.
8/1/2011	4703 ft.	Drilling ahead after testing the Johnson zone. Recovered 63' ocm & 20' muddy oil.
8/2/2011	4854 ft.	Coming out of the hole, laying down drill pipe, in preparation for running production casing. Completed logging operations last night at 0150 hrs. Geologist off location @ 0820 hrs.

CONTRACTOR

Contractor: Murfin Drilling Co., Inc
Rig #: 2
Rig Type: mud rotary
Spud Date: 7/20/2011 Time: 7:30 AM
TD Date: 8/1/2011 Time: 3:50 PM
Rig Release: Time:

ELEVATIONS

K.B. Elevation: 3194.00ft Ground Elevation: 3183.00ft
K.B. to Ground: 11.00ft

ROCK TYPES

▨	Dolsec	▨	shale, grn	■	Carbon Sh	▨	Sltst
▨	Lmst fw<7	▨	Shgy	▨	Shcol		
▨	Lmst fw7>	▨	shale, gry	▨	Ss		

ACCESSORIES

MINERAL
- Argillaceous
- Calcareous
- Chert White
- Chert, dark
- Chert, tripolitic
- Dolomitic
- Glauconite
- Pyrite
- Sandy

FOSSIL
- Bioclastic or Fragmental
- Bryozoa
- Crinoids
- Fossils < 20%
- Fussilinid
- Oolite
- Oolites
- Pellets
- Sponge Spicules
- Spicules

STRAT./SED. STRUCTS
- Stylolite
- Stylolites

STRINGER
- Shale
- green shale

TEXTURE
- CX Cryptocrystalline
- L Lithogr
- MX Microxln

OTHER SYMBOLS

MISC
- Daily Report
- Digital Photo
- Document
- Folder
- Link
- Vertical Log File
- Horizontal Log File
- Core Log File
- Drill Cuttings Rpt

DST
- DST Int
- DST alt

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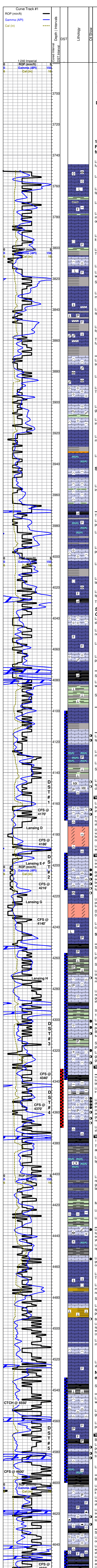


Geological Descriptions

TG, C1 - C5

1:240 Imperial

Murfin Drilling Company, Inc
#1-27 Epard
660' FNL & 330' FEL, Sec 27, T10S, R34W
Thomas County, Kansas
KB: 3194'

Drilling Contractor: Murfin Drilling Co, Inc., Rig #2
Tool pusher: Jorge Tinoco, cell #: 620-354-2000

Geologist: Charlie Sturdavant
Cell #: 303-907-2295

10' samples and drill time begin at 3750'. First samples are flooded with red shale cavings from above Permian section.

Limestone: mottled tan and gray and cream and tan, sli fossiliferous, fussulinids, sli arg., packstone to wackestone.

Ls as above w/ tr oolites, tight, no shows.

Limestone: cream, micrite w/ sparry patches (lithographic), hard and tight, tr of chalk.

Limestone: gray, tan, argillaceous to clean micrite, f- to crypto-xln., tight.

Limestone: cream to tan to lt gray, sli fossiliferous wackestone to mudstone. Some thin layers of light green-aqua shale. tight. Tr black, organic shale.

Limestone: cream and tan micrite, cream vf-xln, succrosic mudstone, to lt gray, wackestone,fossiliferous, crinoids. All are tight w/ no shows.

Limestone: cream to lt tan, micro-xln mudstone to hard, dense micrite. Tr gray, argillaceous, sli foss. wackestone, vf-xln. Tr aqua-green shale.

Limestone: lt tan, fossil debris, well-cemented grainstone.

Llimestone: cream, dense, lithographic micrite to sli fossiliferous, clean wackestone.

Shale: lt grayish-tan, waxy, soft, calc.,

Limestone: lt gray to lt tan, sli fossiliferous, wackestone, set in a f-xln matrix. fine pinpoint porosity, no shows.

Limestone: cream, lithographic, pyritic mudstone, stylolites, echiniod spines, tr aqua shale streaks, arg streaks.

Limestone: mixed types as noted above, w/ arg streaks, tr pellets, tr fossils, lt gray to tan, wackestone, no shows.

Tr lt gray, calc, lumpy shale. Limestone: cream, fossiliferous, fussulinids, echinoids, set in a f-xln to crypto-xln matrix, wackestone.

Topeka 3870 (-676)

Limestone: lt tan to cream, f-xln, fossil debris grainstone, to finely succrosic, non-fossiliferous, to peletal, fussulinid packstone.

Limestone: as above w/ tr aqua-green shale.

Limestone: lt tan, f-xln, succrosic w/ pinpoint porosity, non-fossiliferous. Tr well-cemented oolitic grainstone, no shows.

Limestone: lt tan, fossiliferous, bryozoans, fuss., pellets, tr oolites, tr glauconite, tr silty, aqua-green shale.

Limestone: cream to lt tan, fossil debris, tight, packstone, tr oolites, fair inter-xln porosity, no shows.

Limestone: cream micrite. Tr lt gray, siltstone speckled w/ black organic matter. Tr lt gray fossiliferous (brach, echiniods) grainstone.

Limestone: cream to lt tan, stylolitic, lithographic micrite.

Samples are still flooded with Permian red shales.

Limestone: cream to lt tan, fossiliferous grainstone to packstone, fir inter-xln por., Tr shale: aqua-green and lt grayish-tan, soft, calc.

King Hill Shale 3971 (-777)

Tr black, carbonaceous shale.

Limestone gray to tan, fossiliferous, wackestone, weak inter-xln porosity, no shows.

Limestone: lt tan, vf-xln to micritic mudstone, stylolites, no shows, tight.

Limestone: lt tan, fossil debris, oolite-bearing grainstone, fair pinpoint porosity, no shows.

Limestone as above, tr siltstone and lt gray, soft shale.

Limestone: gray, arg., crinoidal, fussulinid-bearing wackestone w/ shale laminations, tr lt gray soft shale. No shows.

Limestone: cream, vf-xln to crypto-xln, mudstone, very few fossil frags., tight, no shows

Tr black shale **Queen Hill 4027 (-833)**

Samples to this point are flooded with red shales. Cut pump strokes from 64 to 60.

Limestone: tan, oolitic, bioclastic grainstone w/ fair inter-xln porosity, no shows.

Limestone: lt grayish-tan, vf-xln, tr foss., wackestone, micro-succrosic, no shows.

Limestone: lt tan, vf-xln/succrosic, tr foss., mostly mudstone, no shows.

Limestone: lt tan, oolitic, pelletal, fossiliferous, well-cemented packstone, no shows.

Heebner Shale 4074 (-880)

Shale: black, carbonaceous, dolomitic.

Limestone: lt brown, sli fossiliferous, sponge spicules, vf-xln matrix, wackestone.

Shale: lt grayish green to aqua green, calcareous.

Toronto 4098 (-904)

Morgan Mud, Mud check
4158' @ 1150 hrs.
7/25/2011
Vis. 57, Wt. 9.2
PV 17, YP 18
WL 7.6, Cake 2/32"
pH 11.5, Ca 10 ppm
CHL 6000 ppm
Sol 6.4, LCM 1
DMC: $2,813
CMC: $14,592

Lansing 4114 (-920)

Limestone: cream, f-xln, tr foss., fair pinpoint porosity, no aroma, but spotty black oil show in porosity, no fluor, but good streaming cut.

Limestone: cream to lt tan, tr lithographic, tr stylolites, dense, tight mudstone, crypto-xln., no shows.

Limestone as above, tr pyrite.

Shale: gray to med gray, to gray with dark green streaks, calcareous.

Prep to run DST #1 4100'-4170'. Pipe stuck at 3887' while short tripping.

Limestone: cream to lt tan, micro-xln, tr foss., pyrite, streaky porosity w/ spotty oil shows. Dull yellow fluor, but good streaming cut. Tr lt gray chert, mottled w/ dark spots.

Epard #1-27_DST#1.jpg

Limestone: lt tan to lt gray, oolitic, bioclastic grainstone w/ good secondary porosity that is filled with dark, live oil, yellow fluor, good instant streaming cut.

DST #1: 4100'-4170'.
Rec: 187' Water, 496' MCW (90% water, 10% mud), 124' WCM (50% mud, 50% water), 40' WCM w/ specks of oil (15% water, 85% mud).
IFP 60.20-170.44#
ISIP: 1236.5#
FFP: 181.68-381.25#
FSIP: 1203.96#

The first sample after returning to drilling is 95%+ cavings, but has a strong hydrocarbon aroma. One fragment of limestone was found with partial oil staining (only the porosity was stained) and good cut. Cavings!

Dolomite: tan, micro-xln mudstone with a well-developed secondary porosity, vugs, sparry calcite, druzzy-lined vugs, possibly ghost ooiltes(?). Mineral fluor, but no shows. Chert: lt gray, vitreous. Some frags have small, reddish-brown calcite inclusions.

Morgan Mud, Mud chk. @ 4216', 7/27/11, Vis 55, Wt 9.0, PV 17, YP 18, WL 6.0, Cake 2/32, pH 11.0, Ca 10ppm, CHL 7800ppm, DMC $1351, CMC $15,943

Limestone: cream to lt tan, micrite w/ individual spar grains to 0.3mm. Chert: white to lt gray, spicular, fossiliferous, vitreous.

Epard#1-27_DST#2.jpg

Limestone: cream to lt tan, diagenetically altered, ghost oolites, good secondary porosity, sparry patches have the most por., vf- to med-xln, hard to subchalky, no shows.

DST #2: 4192'-4216.
Rec: 1534' Water, 40' MCW (30% mud, 70% water)
IFP: 126.35-404.77#
ISIP: 1244.46#
FFP: 427.11-950.45#

60 min sample: Fair oil aroma in wet sample cup. Limestone: cream to lt tan, diagenetically altered, former fossiliferous grainstone to packstone, good secondary pinpoint porosity w/ spotty to sub-saturated, live oil staining, some broken vugs with druzzy calcite coating and oil staining, some inter-xln porosity w/ oil, yellow fluor, good cut. Chert: white to lt gray, opaque, vitreous, fossiliferous, oil stained in the qtz cores (the only porosity available in a chert).

Strap @ 4216' was 5.98' short to board.

Limestone as above w/ more mudstone matrix and pinpoint, secondary porosity. Spotty oil in the pinpoint por. Tr white, vuggy tripolitic chert (most is fresh and vitreous).

Driller was 12' off bottom when CTCH before commencing to drill, so the first samples were all cavings.

Dolomite to dolomitic limestone: cream, succrosic, f-xln, rhomb size to 0.2mm, good inter-xln porosity, tr vuggy por. No shows.

Limestone: cream, dense tight, lithographic micrite, tr pyrite, still carrying fragments w/ very, weak, spotty oil shows.

Still an abundance of red shale cavings that mask samples.

Vis 58, Wt. 9.0#

Muncie Creek 4251 (-1057)

Shale: black and dark gray with thin streaks of od green, calc.

Limestone: mottled cream and brown, fossiliferous, isolated oolites, pyritic, packstone, no porosity, no shows.

Tight connection at 4260'

Shale: gray, soft, and greenish gray pyritic, both are calc.

Limestone: Cream to lt tan to mottled, fossiliferous, tr ooiltes, packstone w/ very little porosity. Some fragments exhibit fine pinpoint, secondary porosity w/ weak spotty staining. The sample cup has strong hydrocarbon aroma. Mineral fluor masks the oil, but it cuts well. Chert: white to lt gray, opaque, vitreous, pyritic.

****Driller had to short trip for DST #3 due to tightness in hole.**

Limestone: cream to tan, dense micrite to recrystallized, former grainstone, now micro-xln w/ little to no porosity. Tr of bioclastic packstone from above w/ good inter-xln por and wesk, spotty oil show. Free rhombopora branch. Tr black shale.

DST #3: 4257'-4340'
Rec: 187' OCM (10% oil, 90% mud), 63' GOCM (5% gas, 25% oil, 70% mud), 63' GOCM (10% gas, 10% mud, 80% oil), 156' Gassy Oil (10% gas, 90% oil).
IFP: 29.37-118.57#
ISIP: 1278.59#
FFP: 128.77-205.99#
FSIP: 1238.69#

Shale: grayish-green to olive green, waxy, soft, calcareous.

Tr black carbonaceous shale.

Limestone: cream to lt tan, vf-xln, ghost fossils tr ooiltes, recrystallized w/ poor pinpoint porosity to micro-vuggy. Spotty oil shows in the pinpoint porosity, saturated to spotty oil staining in the vyggy to med xln zones. Bright yellow fluor, excellent streaming cut. Moderate aroma in the wet sample cup.

Shale: gray to dark dull green, micaceous, organic lams, limey in places.

Limestone: cream, fossiliferous, crinoids, bryozoans, sponge spicules, ghost ooilites, diagenetically altered from an original bioclastic/oolitic grainstone, f-xln, fair inter-xln porosity, no shows.

Morgan Mud Mud chk
4340' @ 0930 hrs 7/28/11
Vis 58, Wt 9.1, PV 18, YP 20, WL 7.2, Cake 2/32, pH 10.0, Ca 10ppm, CHL 9600ppm, Sol 5.7, LCM 0.5
DMC $985, CMC $16928

Epard#1-27_DST#3.jpg

Stark Shale 4336 (-1142)

Limestone: cream, dense with random streaks of fine porosity that have dark, live oil staining, micro-xln w/ micro vugs, weak dull yellow fluor, fair cut. Tr black shale.

Limestone: brown mottled w/ tan, fossiliferous packstone, sli arg., ghost fossils, tr fussulinids, tr sparry micrite. No shows. Tr black shale, tr gray shale.

Morgan Mud Mud chk
4370' @ 0930 hrs 7/29/11
Vis 53, Wt 9.1, PV 17, YP 17, WL 7.6, Cake 2/32, pH 10.0, Ca 10ppm, CHL 9400ppm, Sol 5.7, LCM 0.5
DMC $504, CMC $17432

Limestone: cream to lt tan, oolitic grainstone that has undergone some diagenetic alteration. Good to excellent inter-oolite porosity, inter-xln porosity in the cement between the oolites, good, live oil staining, bright yellow fluor, immediate streaming cut. The sample cup has a very strong hydrocarbon aroma. Gas bubbles emanate from the pores. The lower portion is a bioclastic grainstone, but tighter with fewer oil shows. Becomes a lithographic micrite near the bottom.

DST # 4: 4332'-4370'
Rec: 187' GHOCM (20% g, 40% oil, 40% m); 63' GMCO (20%g, 10%m, 70% oil); 63' GO (30%g, 70% oil);
189' GIP.
IFP: 35.67-100.87#
ISIP: 1157.50#
FFP: 117.62-124.32#
FSIP: 1157.74#

Limestone: cream, micrite, dense tight, some secondary pinpoint porosity with slight show of free, live oil. Specks of white, opaque, vitreous chert.

Epard#1-27_DST#4.jpg

Tr black, carbonaceous, sli calcareous shale.

Tr gray, calcareous shale, soft. Limestone: tan, mottled w/ gray specks, arg., sli fossil debris, f-xln, poor porosity, wackestone, NS.

Limestone: cream to lt tan, crypto-xln, sli. lithographic, stylolitic micrite, tight, no shows.

Limestone: white to cream to lt tan, micro- to crypto-xln, micrite to recrystallized, former packstone, weak inter-xln por., no shows. Shales: greenish-gray, gray calc., tr black shale. Tr arg ls w/ thin shale laminations.

Mixed shales: lt gray, gray, greenish-gray, green, black, tr arg ls

Limestone: brown, fossiliferous, fussulinids, arg, micro-xln matrix, wackestone.

Limestone: cream to lt tan, dense, crypto-xln micrite. Mixed shales as above.

Marmaton 4435 (-1241)

Limestone: tan to cream, fossiliferous, sponge spicules, fussulinids, broken fossils, pelletal, vf-xln, packstone, fair hydrocarbon aroma, one frag had secondary pipoint and micro-vuggy porosity with live oil saturation, bright yellow fluor, and instant streaming cut. Still an overabundance of cavings!

Limestone: cream to tan, micro- to crypto-xln mudstone, stylolites. Chert: lt tan, opaque, vitreous, spicular, fossiliferous. Tight, no shows.

The samples from 4440' to 4510' are flooded with Premian red bed cavings. I had the driller reduce the pump strokes from 58 to 56 per minute at 4510', in a attempt to clean up the samples. Result was that there were no sample returns. Went back to 58 strokes and add a tank of gell while CTCH for 1 hour at 4550'. The result is very few cuttings are being recovered. Try tilting the sample trap next.

Limestone: lt tan to cream, one fragment had good secondary porosity, oolitic grainstone, inter-xln to micro-vuggy porosity w/ oil saturation, good fluor and cut. The rest is cream micrite. Faint oil aroma in sample cup.

Limestone: white to tan, micro- to crypto-xln mudstone, tight, no shows. Tr aqua-green shale w/ pyrite.

Limestone: cream to tan, sli fossiliferous, crinoids, spicules, vf- to micro-xln matrix, wackestone, weak inter-xln porosity in sparry patches, no shows.

Shale, brown, fissile, calc.

Limestone: mottled tan and brown, brown patches were fossils, crin., spicules, oolites, fossil debris, all recrystallized w/ f-xln, intergranular porosity, packstone to wackestone. No shows.

Brown, limey shale.

Limestone: brown to mottled brown and tan, f- to vf-xln, tr foss., patches of sparry calcite, tr pyrite, wackestone. A few fragments of f-xln, sub-succrosic ls w/ pinpoint porosity and slight spotty oil show, good fluor, but week cut (cavings?).

Limestone: brown to tan and brown mottled, bioclastic packstone to mud-supported wackestone to non-fossiliferous mudstone, no shows.

Limestone: mottled tan and brown, tr fossiliferous wackestone to crypto-xln micrite.

Note: the flood of red shale cavings made sample examination difficult.

Shale: black, carbonaceous.

Morgan Mud Mud chk
4568' @ 0945 hrs 7/30/11
Vis 56, Wt 9.1, PV 16, YP 21,WL 7.6, Cake 2/32, pH 11.0, Ca 10ppm, CHL: 10,900ppm, Sol 5.7, LCM: 1.0 DMC $1,697, CMC $19,129

Pawnee 4543 (-1349)

Limestone: tan, fossil debris set in a vf-xln matrix, packstone to wackestone, weak inter-xln porosity, no shows.

Limestone: as above w/ fussulinids, spicules, oolites. Tr opaque chert: lt gray, dark gray white, vitreous. F-xln w/ poor inter-xln por.

Limestone: mottled cream with tan and gray spots, tr pyrite, f-xln, weak porosity, no shows.

Epard#1-27_DST#5.jpg

DST # 5: 4532'-4600'
Rec: 187' OCM (10% o, 90% m); 1575' GO (30% gas, 70% oil); 2472' GIP.
IFP: 127.88-233.83#
ISIP: 1004.42#
FFP: 267.33-583.90#
FSIP: 966.91#

Black shale, carbonaceous, pyritic, non-calc.

Limestone: tan, micrite with secondary micro-vuggy and pinpoint porosity w/ oil staining in the pores, bright yellow fluor, excellent cut. Fair hydrocarbon aroma in sample cup. Thin shale laminations on some frags. Aqua-green shale. Tr gray and white, opaque, vitreous chert.

Limestone: cream to lt tan, crypto-xln, stylolitic micrite. No shows.

Increased the mud weight to get better sample returns. Vis.: 62cp, Wt.: 9.1

Ft. Scott 4595 (-1401)

Black, carbonaceous shale, non-calcareous.

Limestone: lt grayish-tan, fossil debris set in a vf- to micro-xln matrix, packstone, tight, no shows. Also brown micrite. Tr pyrite. Some frags have thin, lt gray shale laminations.

Morgan Mud Mud chk
4609' @ 0910 hrs 7/31/11
Vis 72, Wt 9.0, PV 19, YP 24, WL 7.2, Cake 2/32, pH 11.5, Ca 10ppm, CHL: 9,800ppm, Sol 5.0, LCM: 1.0 DMC $579, CMC $19,708

Limestone: tan to brown, some frags are mottled, sli fossiliferous (brach) to non-foss., pyrite, micro- to crypto-xln matrix, wackestone to mudstone, tight, no shows.

Limestone: tan, gray, and brown, mottled, ooiltic, foss frag, f-xln grainstone, separated by brown micrite layers. Mostly tight, but w/ some secondary pinpoint and micro-vuggy porosity and oil staining. Dull yellow fluopr, slow cut. Tr gray to blk, opaque, vitreous chert.

Cherokee 4630 (-1436)

Shale: black, carbonaceous

Sample quality has greatly improved with higher vis mud.

Limestone: Lt brown oolitic grainstone w/ poor to good inter-xln por in the cement, no shows. Most is well-cemented.

Limestone: tan, tr oolites, tr,fossils, micro- to crypto-xln matrix, wackestone, w/ white to lt gray to tan, opaque to translucent, vitreous chert. No porosity, no shows.

Limestone: tan, gray, and brown, mottled, ooiltic, foss frag, f-xln grainstone, separated by brown micrite layers. Mostly tight, but w/ some secondary pinpoint and micro-vuggy porosity and oil staining. Dull yellow fluor, slow cut. Tr gray to blk, opaque, vitreous chert.

Mixed dark gray to black shales with interbedded gray mottled, arg limestone.

Limestone: cream to tan to brown, sli fossiliferous, f- to crypto-xln matrix, wackestone, tight, no shows.

Limestone as above w/ lithographic, stylolitic micrite and shale laminations. No shows.

Epard#1-27_DST#6.jpg

Johnson Zone 4674 (-1480)

Limestone: lt tan to lt brown, oolitic, bioclastic grainstone w/ goood secondary, micro-vuggy porosity that is saturated with live, brown, free oil, dull yellow fluor, and instant streaming cut. Some micrite w/ secondary, pinpoint porosity and staining. Weak odor in sample cup. Some gray shale laminations.

DST #6: 4644'-4700'
Rec: 63' OCM (30% oil, 70% mud); 20' MO (30% mud, 70% oil).
IFP: 21.18-29.01#
ISIP: 1021.54#
FFP: 36.47-49.70#
FSIP: 934.45#

Layers of brown, crinoidal, arg limestone. Tr chert: tan to black, crinoidal, vitreous. Mixed with brown to tan bioclastic, brach, packstone to wackestone. Greenish-gray, pyritic shale, black shale.

Black, carbonaceous shale.

Circulated samples have ls fragments with micro-vuggy porosity and spotty oil staining.

Shale: mixed, black, fissile and carbonaceous, yellow ochre to olive to lt brown, greenish-gray, chunky.

Limestone: cream to lt tan, micro- to crypto-xln mudstone, no porosity, no shows. Tr sparry calcite, tr stylolites.

Limestone: white to vy lt gray, clean, micro-xln, patches of sparry calcite, sub-chalky, mudstone, weak porosity restricted to spar, NS

Morgan Mud Mud chk
4743' @ 0920 hrs 8/01/11
Vis 71, Wt 9.1, PV 18, YP 24, WL 7.6, Cake 2/32, pH 10.5, Ca 10ppm, CHL: 9,800ppm, Sol 5.7, LCM: 1.5 DMC $1826, CMC $21,534

Sandstone: white, f-gr (ranges from vf-gr to med-gr), silica cement, specks of glauconite, tr black grains (mafic mineral, not magnetite), sub-angular to sub-rounded grains, quartz arenite. No shows. Some frags have thin, dark gray shale laminations. Pyritic ss in the shaley zones.

Mississippian 4740 (-1546)

Limestone: lt tan, oolitic grainstone, arenaceous (well-rounded, f- to med-gr qtz sand grains). Tight, no shows. Tr clear chert.

Many fragments of a colonial cerioid coelentrate were observed, possibly **lithostrotionella**.

Limestone: as above. Some frags are more arenaceous than oolitic. Lt brown to tan lithographic, stylolitic micrite.

Limestone: tan, crypto-xln, lithographic micrite, tr pyrite, no shows.

Limestone: tan, arenaceous, sli oolitic, f-xln, weak porosity, no shows. Also micrite as above.

Limestone: lt tan, arenaceous, sli ooiltic, f-xln, tr orange, translucent, vitreous chert. No shows.

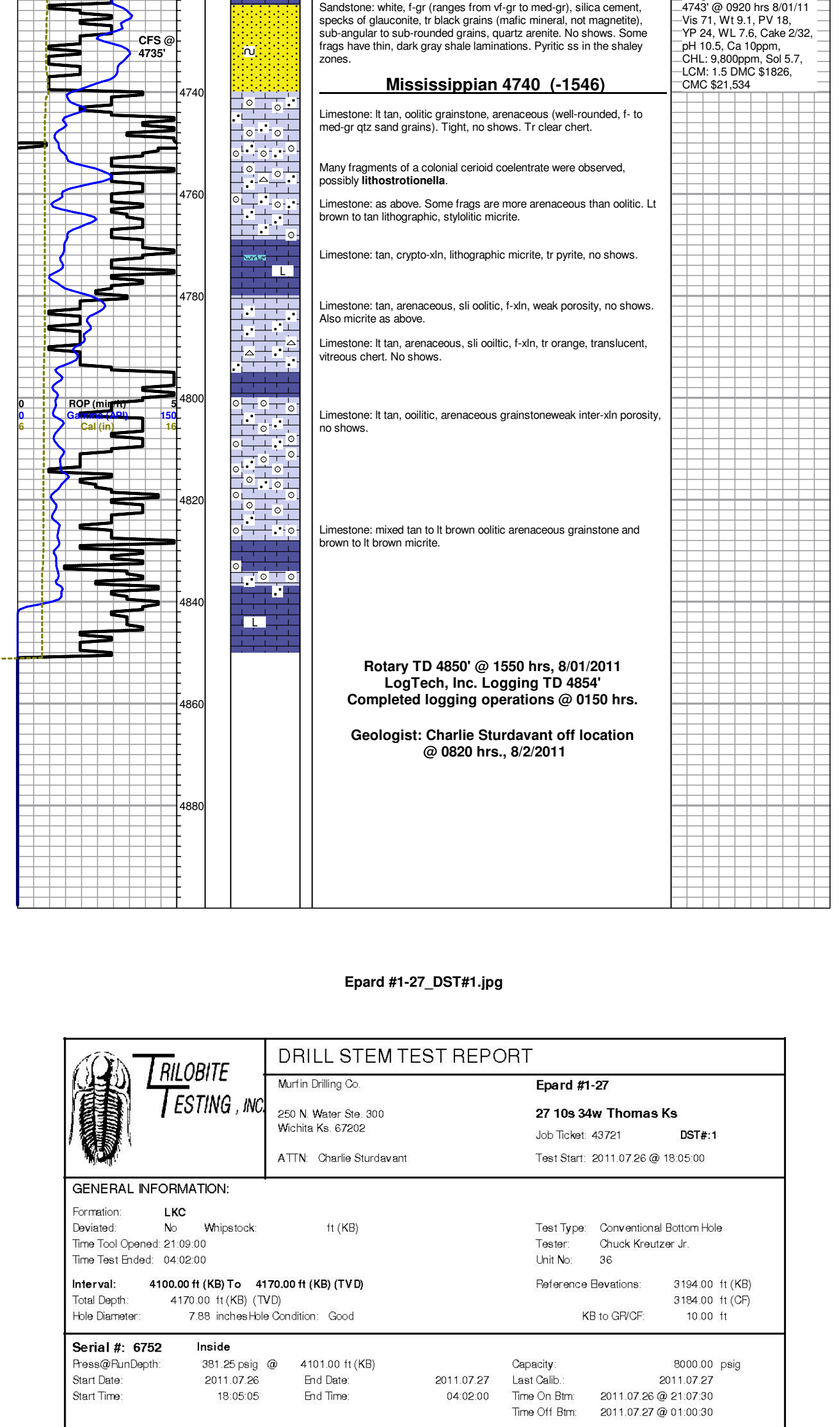
Limestone: lt tan, ooilitic, arenaceous grainstoneweak inter-xln porosity, no shows.

Limestone: mixed tan to lt brown oolitic arenaceous grainstone and brown to lt brown micrite.

Rotary TD 4850' @ 1550 hrs, 8/01/2011
LogTech, Inc. Logging TD 4854'
Completed logging operations @ 0150 hrs.

Geologist: Charlie Sturdavant off location @ 0820 hrs., 8/2/2011

Epard #1-27_DST#1.jpg


DRILL STEM TEST REPORT

Murfin Drilling Co.
250 N. Water Ste. 300
Wichita Ks. 67202
ATTN: Charlie Sturdavant

Epard #1-27
27 10s 34w Thomas Ks
Job Ticket: 43721 DST#:1
Test Start: 2011.07.26 @ 18:05:00

Interval: 4100.00 ft (KB) To 4170.00 ft (KB) (TVD)
Hole Condition: Good

Test Type: Conventional Bottom Hole
Tester: Chuck Kreutzer Jr.
Unit No: 36
Reference Elevations: 3194.00 ft (KB)
3184.00 ft (CF)
KB to GR/CF: 10.00 ft

Serial #: 6752 Inside
Press@RunDepth: @ 4101.00 ft (KB)
End Date: 2011.07.27
End Time: 04:02:00
Capacity: 8000.00 psig
Last Calib.: 2011.07.27
Time On Btm: 2011.07.26 @ 21:07:30
Time Off Btm: 2011.07.27 @ 01:00:30

TEST COMMENT: IF: Strong blow, Built to B.O.B in 13 mins.
ISI: No blow back over 60 mins.
FF: Strong blow, Built to B.O.B in 15 mins.
FSI: No blow back over 90 mins.

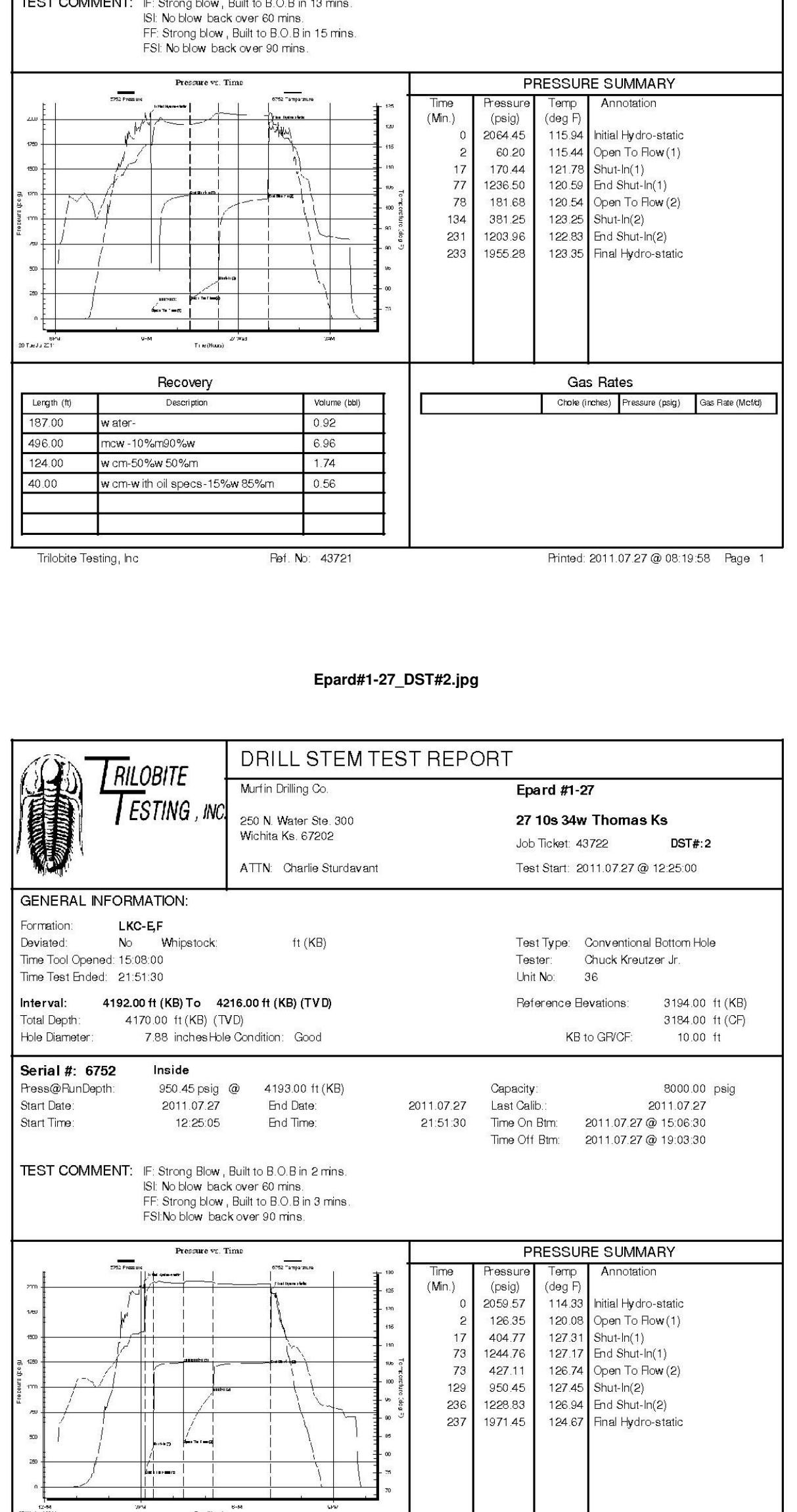
PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2064.45	115.94	Initial Hydro-static
2	60.20	115.44	Open To Flow (1)
17	170.44	121.78	Shut-In(1)
77	1236.50	120.59	End Shut-In(1)
78	181.68	120.54	Open To Flow (2)
134	381.25	123.25	Shut-In(2)
231	1203.96	122.83	End Shut-In(2)
233	1955.28	123.35	Final Hydro-static

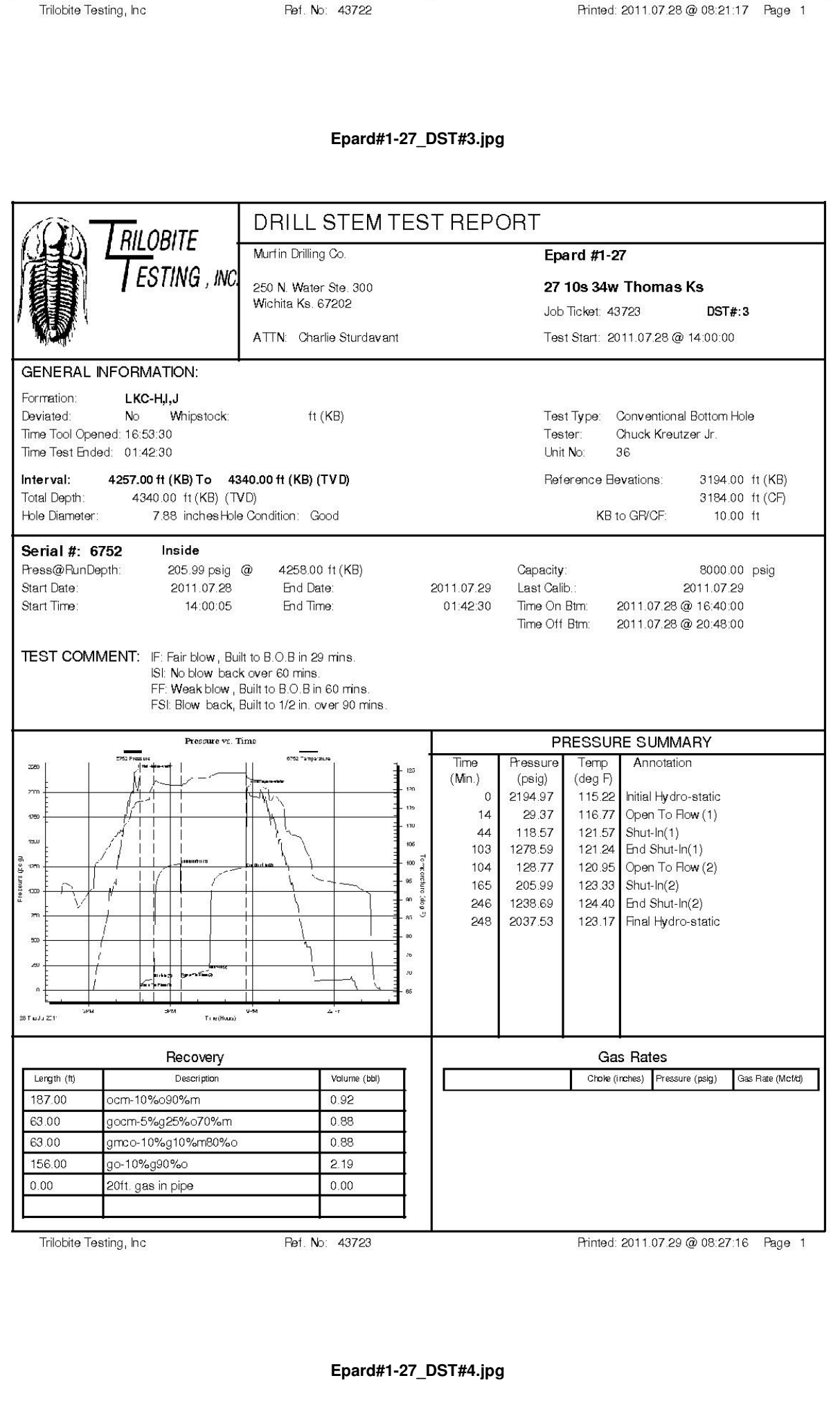
Recovery

Gas Rates

Epard#1-27_DST#2.jpg


DRILL STEM TEST REPORT

Epard#1-27_DST#3.jpg


DRILL STEM TEST REPORT

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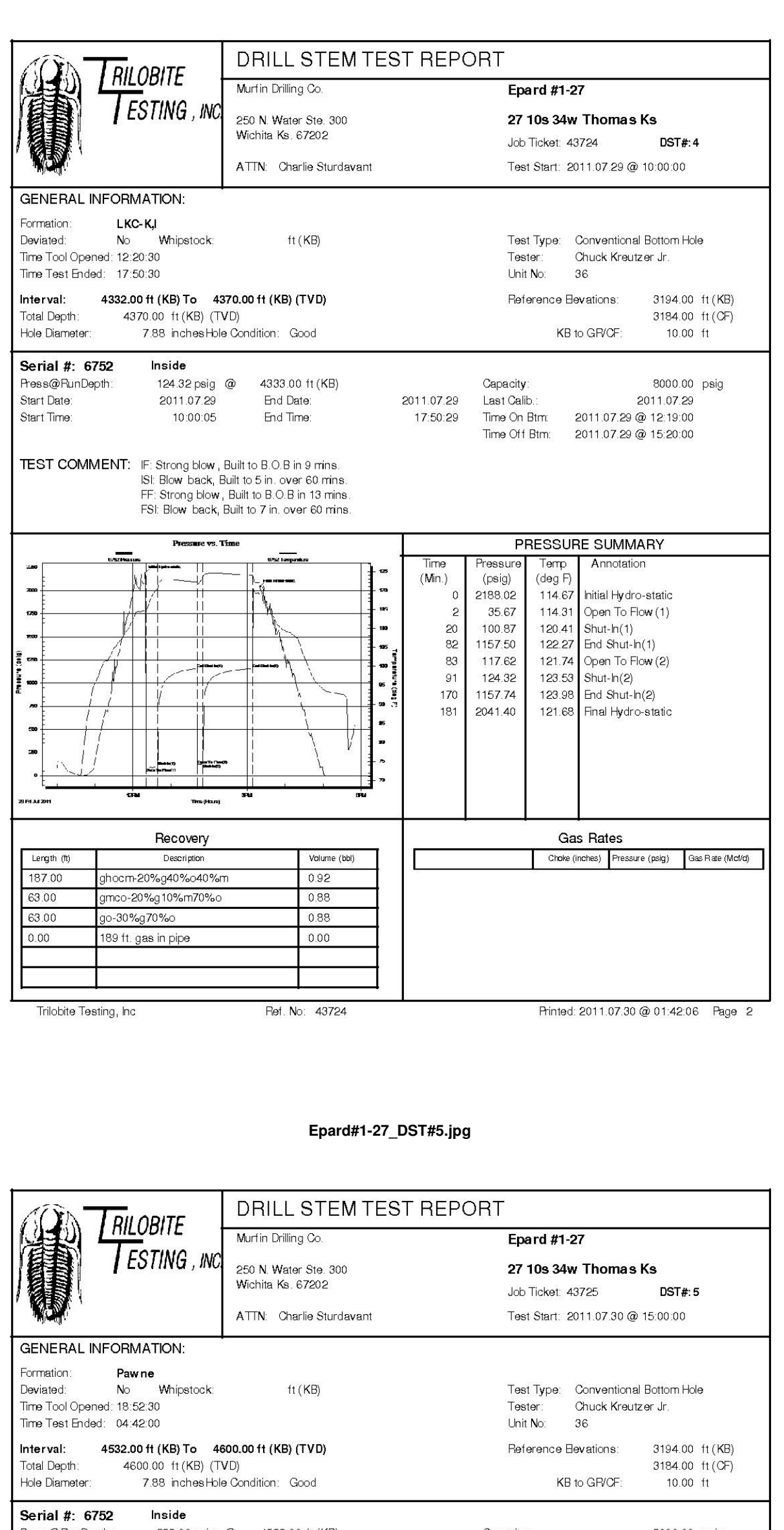
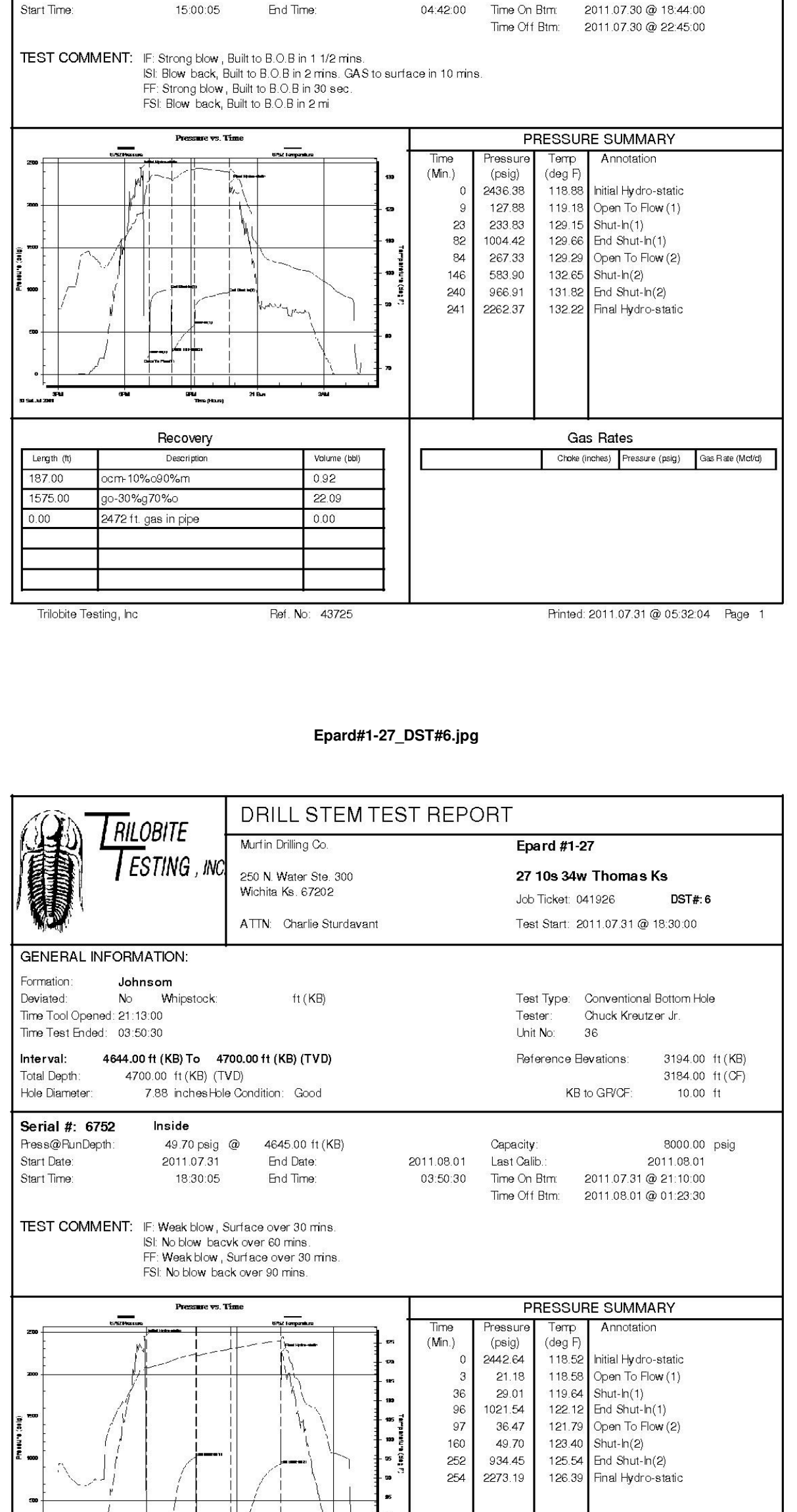
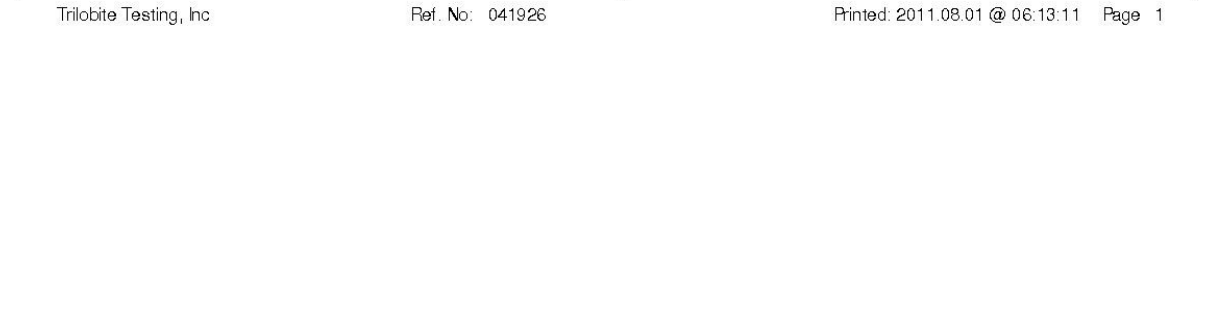

DRILL STEM TEST REPORT

Epard#1-27_DST#5.jpg


DRILL STEM TEST REPORT

Epard#1-27_DST#6.jpg


DRILL STEM TEST REPORT

Murfin Drilling Co.
250 N. Water Ste. 300
Wichita Ks. 67202
ATTN: Charlie Sturdavant

Epard #1-27
27 10s 34w Thomas Ks

TEST COMMENT: IF: Weak blow , Surface over 30 mins.
ISI: No blow bacvk over 60 mins.
FF: Weak blow , Surface over 30 mins.
FSI: No blow back over 90 mins.

PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2442.64	118.52	Initial Hydro-static
3	21.18	118.58	Open To Flow (1)
36	29.01	119.64	Shut-In(1)
96	1021.54	122.12	End Shut-In(1)
97	36.47	121.79	Open To Flow (2)
160	49.70	123.40	Shut-In(2)
252	934.45	125.54	End Shut-In(2)
254	2273.19	126.39	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
63.00	ocm-30%o70%m	0.31
20.00	mo-30%m70%o	0.10

Gas Rates

	Choke (inches)	Pressure (psig)	Gas Rate (Mcf/d)

Trilobite Testing, Inc Ref. No: 041926 Printed: 2011.08.01 @ 06:13:11 Page 1