

Scale 1:240 (5"=100') Imperial
 Measured Depth Log

Well Name: #1 Anderson 32B

Well Id: 1980' FNL, 2207' FWL, SECTION 32-19S-30W, E/2 SE NW
 License Number: API: 15-101-22579 Region: Lane County
 Spud Date: 08/02/2016 Drilling Completed: 08/12/2016
 Surface Coordinates: LAT 38.3605939
 LONG -100.6593915
 Vertical hole
 Bottom Hole Coordinates: 3/4 Degree Deviation
 Ground Elevation (ft): 2929' K.B. Elevation (ft): 2934'
 Logged Interval (ft): 3700' To: RTD Total Depth (ft): 4730'
 Formation: Mississippian at RTD
 Type of Drilling Fluid: Chemical

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OPERATOR

Company: Ritchie Exploration Inc.
 Address: 8100 E 22nd St. N #700
 Wichita, KS 67226
 (316) 691-9500

GEOLOGIST

Name: John Goldsmith
 Company: Website Services, LLC
 Address: 427 Roosevelt St
 Cheney, KS 67025
 (316) 640-0236

RIG AND BIT RECORDS

Contractor: WW Drilling Rig #2 Collar Tally: 475' Pump: National K-380
 Pusher: Lonnie Lang Liner & Stroke: 6 x 14

Bit Record

Size	Type	Footage	Condition	Hours	Serial #
12 1/4	Sm-tooth	0-231'	RR	2.75	RD 6702
7 7/8	Sm-F27	231'-4730'	New	118.75	RH 5198

COMMENTS

Surface Casing: 5 joints of 8 5/8" set at 231'
 Production Casing: 5.5" production casing was set at 4716'
 Mud by: MudCo
 DST's by: Trilobite Testing
 Logs by: Pioneer Energy Services (DIL, CN-CD, ML)
 RTD=4730'
 LTD=4730'

FORMATION TOPS

FORMATION	SAMPLE TOPS		LOG TOPS	
	Depth	Datum	Depth	Datum
Heebner Shale	3947'	-1013	3947'	-1013
Toronto	3958'	-1024	3958'	-1024
Lansing	3992'	-1058	3992'	-1058
Muncie Creek Shale	4170'	-1236	4170'	-1236
Stark Shale	4276'	-1342	4277'	-1343
Hushpuckney Shale	4316'	-1382	4316'	-1382
Base of KC	4362'	-1428	4361'	-1427
Marmaton	4392'	-1458	4393'	-1459
Altamont	4404'	-1470	4404'	-1470
Pawnee	4482'	-1548	4482'	-1548
Myrick Station	4512'	-1578	4512'	-1578
Ft Scott	4527'	-1593	4527'	-1593
Cherokee Shale	4549'	-1615	4548'	-1614
Johnson Zone	4589'	-1655	4589'	-1655
Morrow	4604'	-1670	4604'	-1670
Mississippian	4614'	-1680	4614'	-1680
RTD	4730'	-1796		
LTD			4730'	-1796

DSTs

DST #1 "LKC-L" 4310-4344' 8-8-16 30-45-45-60
 1st Blw: 1/4" blw bit to 5" (No BB)
 2nd Blw: Surf blw bit to 1.25" (No BB)
 IFF: 21-46# ISIP: 989# FFP: 61-74# FSIP: 991#
 Hyd: 2161-2118#
 Rec: 60' OCMW (5%Oil, 65%WTR), 60' OCM (10%Oil), 30' CO.

DST #2 "Altamont A" 4385-4440' 8-9-16 30-45-45-60
 1st Blw: Bit to BOB in 17min (No BB)
 2nd Blw: Bit to BOB in 22min (No BB)
 IFF: 24-155# ISIP: 977# FFP: 158-252# FSIP: 937#
 Hyd: 2237-2168#
 Rec: 189' OCMW (10%Oil, 60%WTR), 126' GOCMW (10%Gas, 10%Oil, 20%WTR), 217' OCM (10%Oil).

DST #3 "Altamont C" 4442-4466' 8-9-16 30-30-30-30
 1st Blw: Surf blw died 6min (No BB)
 2nd Blw: No blw, flushed, no blw (No BB)
 IFF: 15-15# ISIP: 22# FFP: 14-16# FSIP: 20#
 Hyd: 2222-2158#
 Rec: 5' Mud.

DST #4 "Pawnee" 4475-4549' 8-10-16 30-45-45-60
 1st Blw: Bit to BOB in 1.5min (BOB BB in 7min)
 2nd Blw: Bit to BOB in 2min (BOB BB in 30min)
 IFF: 152-496# ISIP: 1150# FFP: 514-820# FSIP: 1129#
 Hyd: 2265-2228#
 Rec: 1525' GIP, 239' GO(80%Oil), 1827' GO(60%Oil), 126' MCGO(60%Oil, 20%Gas), 63' GOCM(10%Oil, 20%Gas).

DST #5 "Cherokee" 4547-4606' 8-11-16 30-30-30-30
 1st Blw: 1/4" blw bit to 1" in 30min (No BB)
 2nd Blw: No blw, flush tool, no blw (No BB)
 IFF: 17-17# ISIP: 23# FFP: 16-19# FSIP: 23#
 Hyd: 2246-2204#
 Rec: 5' Mud.

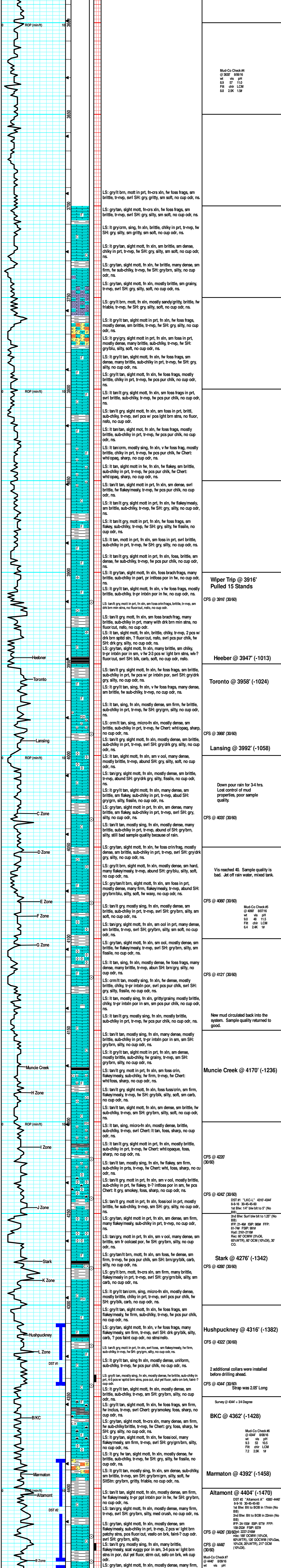
DST #6 "Mississippi" 4604-4678' 8-11-16 30-45-45-60
 1st Blw: Blw bit to BOB in 4min (No BB)
 2nd Blw: Blw bit to BOB in 5min (No BB)
 IFF: 73-370# ISIP: 1200# FFP: 385-687# FSIP: 1199#
 Hyd: 2342-2240#
 Rec: 63' GIP, 220' OCMW(10%Oil, 10%WTR), 504' OCMW(5%Oil, 70%WTR), 378' GOCMW(30%Gas, 10%Oil, 50%WTR), 441' OCMW(5%Oil, 85%WTR).

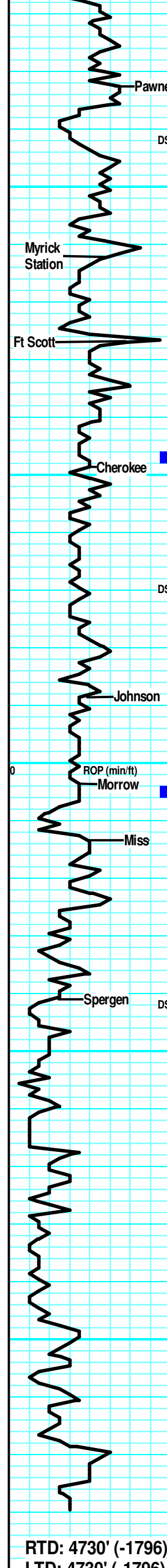
ROCK TYPES

Anhy	Dol	Siltst	Gry sh
Cht	Lmst	Ss	Sandylms
Congl	Shale	Carb sh	Shaly ls

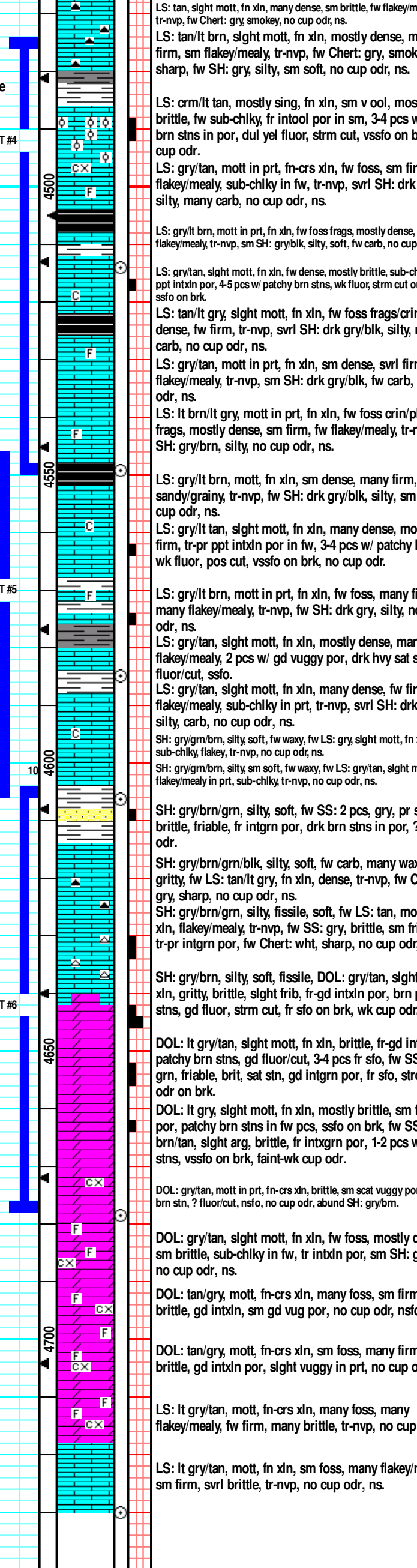
ACCESSORIES

Circulation	Crin	Oomold	Pyr
Connection	Foram	MINERAL	TEXTURE
FOSSIL	Gastro	Chtdk	Chrxln
Brach	Oolite	Chtlt	Flxln
Bryozoa	Plant	Glaui	Microxln
	Fuss	Nodule	





RTD: 4730' (-1796)
LTD: 4730' (-1796)



RTD: 4730' (-1796)
LTD: 4730' (-1796)

Hyd: 222-2158#
Rec: 5' Mud.

Pawnee @ 4482' (-1548)
DST #4 "Pawnee" 4475-4549' 8-10-16
30-45-49
1st Blw: Blt to BOB in 1.5min (BOB BB in 7min)
2nd Blw: Blt to BOB in 2min (BOB BB in 30min)
IFP: 152-466# ISP: 1150# FFP:
214-520# FSP: 115#
Hyd: 225-225#
Rec: 155' GP, 227' GC(87%O₂), 1827' GC(70%O₂), 127' MCCM(5%O₂), 20%(Gas), 63' GOCM(10%O₂, 20%Gas).

Myrick Station @ 4512' (-1578)
CFS @ 4514'
(30' / 60')

Ft Scott @ 4527' (-1593)

Mud-Co Check#8
@ 4547' 81016
wt vis pH
9.3 55 10.0
Filt chr LCM
8.8 4.4k 2#

CFS @ 4548' (30/60)

Cherokee @ 4549' (-1615)

DST #5 "Cherokee"
4547-4605' 8-11-16
30-30-30-30
1st Blw: 1/4" blw bit to 1" in 30min (No BB)
2nd Blw: No blw, flush tool, no blw (No BB)
IFP: 17-17# ISP: 23# FFP:
15-5# FSP: 23#
Hyd: 2246-220#
Rec: 5' Mud.

CFS @ 4585' (30/60)

Johnson @ 4589' (-1655)

Morrow @ 4604' (1670)
CFS @ 4605' (30/60)

Mississippi @ 4614' (-1680)

Mud-Co Check#9
@ 4630' 81116
wt vis pH
9.2 54 9.5
Filt chr LCM
6.6 5k 2#

DST #6 "Mississippi" 4604-4678'
8-11-16 30-45-45-49
1st Blw: Blw bit to BOB in 4min (No BB)
2nd Blw: Blw bit to BOB in 5min (No BB)
IFP: 73-37# ISP: 1300# FFP:
355-67# FSP: 115#
Hyd: 2342-2240#
Rec: 63' GP, 227' GC(87%O₂), 10%(WTR), 53' OCMW(5%O₂), 70%(WTR), 37' GOCM(30%Gas, 10%O₂, 5%WTR), 41' OCMW(5%O₂, 8%WTR).

CFS @ 4678' (30/60)

Mud-Co Check#10
@ 4727' 81216
wt vis pH
9.1 59 11.0
Filt chr LCM
7.2 4k 2#

CFS @ 4730' (30/60)

Survey @ 4730' = 34 Degree

LS: tan, slight mott, in xln, many dense, sm brittle, fw flakey/mealy, tr-nvp, fw Chert: gry, smoleky, no cup odr, ns.

LS: tan/l brn, slight mott, in xln, mostly dense, many firm, sm flakey/mealy, tr-nvp, fw Chert: gry, smokey, foss, sharp, fw SH: gry, silty, sm soft, no cup odr, ns.

LS: crn/lt tan, mostly sing, in xln, sm v ool, mostly brittle, fw sub-chily; fr intool por in sm, 3-4 pcs wk light brn stns in por, dul yel fluor, strn cut, vsslo on brk, wk cup odr.

LS: gry/tan, mott in prt, fr-crs xln, fw foss, sm firm, many flakey/mealy, sub-chily in fw, tr-nvp, svrl SH: drk gry/bk, silty, many carb, no cup odr, ns.

LS: gry/lt brn, mott in prt, in xln, fw foss frags, mostly dense, fw flakey/mealy, tr-nvp, sm SH: gry/bk, silty, soft, fw carb, no cup odr, ns.

LS: gry/tan, slight mott, in xln, sm dense, mostly brittle, sub-chily, tr-pr ppt intn por, 4-5 pcs w/ patchy brn stns, wk fluor, strn cut on brk, v sfo on brk.

LS: tan/lt gry, slight mott, in xln, fw foss frags/crin, many dense, fw firm, tr-nvp, svrl SH: drk gry/bk, silty, many carb, no cup odr, ns.

LS: gry/tan, mott in prt, in xln, sm dense, svrl firm, many flakey/mealy, sub-chily in fw, tr-nvp, svrl SH: drk gry/bk, silty, carb, no cup odr, ns.

LS: lt brn/lt gry, mott in prt, in xln, fw foss crin/plant frags, mostly dense, sm firm, fw flakey/mealy, tr-nvp, sm SH: gry/brn, silty, no cup odr, ns.

LS: gry/lt brn, mott, in xln, sm dense, many firm, many sand/grainy, tr-nvp, fw SH: drk gry/bk, silty, sm carb, no cup odr, ns.

LS: gry/lt tan, slight mott, in xln, fw foss frags, mostly firm, friable, fr intgrn por, drk brn stns in por, 7 cup odr.

LS: gry/lt brn, mott in prt, in xln, fw foss, many firm, many flakey/mealy, tr-nvp, fw SH: drk gry, silty, no cup odr, ns.

LS: gry/tan, mott in prt, in xln, mostly dense, many firm, flakey/mealy, 2 pcs w/ gd vuggy por, drk hvy sat stn, gd fluor cut, sfo.

LS: gry/tan, slight mott, in xln, many dense, fw firm, many flakey/mealy, sub-chily in prt, tr-nvp, svrl SH: drk gry/bk, silty, carb, no cup odr, ns.

SH: gry/brn, silty, soft, fw waxy, fw LS: gry, slight mott, in xln, dense, sub-chily flakey, tr-nvp, no cup odr, ns.

SH: gry/brn, silty, sm soft, fw waxy, fw LS: gry/tan, slight mott, in xln, flakey/mealy in prt, sub-chily, tr-nvp, no cup odr, ns.

SH: gry/brn, silty, soft, fw SS: 2 pcs, gry, pr sort, brittle, friable, fr intgrn por, drk brn stns in por, 7 cup odr.

SH: gry/brn/gm/bk, silty, soft, fw carb, many waxy, sm gritty, fw LS: tan/lt gry, in xln, dense, tr-nvp, fw Chert: gry, sharp, no cup odr, ns.

SH: gry/brn, silty, fissile, soft, fw LS: tan, mott, in xln, flakey/mealy, tr-nvp, fw SS: gry, brittle, sm friable, tr-pr intgrn por, fw Chert: wht, sharp, no cup odr, ns.

SH: gry/brn, silty, soft, fissile, DOL: gry/tan, slight mott, in xln, gritty, brittle, slight frib, fr-gd intn por, brn patchy stns, gd fluor, strn cut, fr sfo on brk, wk cup odr.

DOL: lt gry/tan, slight mott, in xln, brittle, fr-gd intn por, patchy brn stns, gd fluor/cut, 3-4 pcs fr sfo, fw SS: brn, in grn, friable, brit, sat stn, gd intgrn por, fr sfo, strong cup odr on brk.

DOL: lt gry, slight mott, in xln, mostly brittle, sm fr intn por, patchy brn stns in fw pcs, sfo on brk, fw SS: lt brn/tan, slight arg, brittle, fr intgrn por, 1-2 pcs w/ brn stns, vsslo on brk, faint-wk cup odr.

DOL: gry/tan, mott in prt, fr-crs xln, brittle, sm soft vuggy por, pos light brn stn, 7 fluor cut, nfo, no cup odr, sbund SH: gry/brn.

DOL: gry/tan, slight mott, in xln, fw foss, mostly dense, sm brittle, sub-chily in fw, tr intn por, sm SH: gry/brn, no cup odr, ns.

DOL: tan/gry, mott, fr-crs xln, many foss, sm firm, fw brittle, gd intn por, slight vuggy in prt, no cup odr, nsfo.

DOL: tan/gry, mott, fr-crs xln, sm foss, many firm, svrl brittle, gd intn por, slight vuggy in prt, no cup odr, ns.

LS: lt gry/tan, mott, fr-crs xln, many foss, many flakey/mealy, fw firm, many brittle, tr-nvp, no cup odr, ns.

LS: lt gry/tan, mott, in xln, sm foss, many flakey/mealy, sm firm, svrl brittle, tr-nvp, no cup odr, ns.