



00052527

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BBT 28 1987

COLD. OIL & GAS CONS. COMM.

DVR	
FIP	
MMH	✓
JAM	✓
JJD	✓
RLS	
CGM	

GEOLOGICAL REPORT
ON
NORTHWEST EXPLORATION CO.
THEOS & SON #1
SE/SE SEC. 8, T1N, R92W
RIO BLANCO COUNTY, COLORADO

BY
MICHAEL R. ARCHIBALD
FOR
LARSEN GEO LOGGING

WELL SUMMARY

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COLO. OIL & GAS CONS. COMM.

OPERATOR: Northwest Exploration Co.

WELL: Theos & Son #1

LOCATION: SE/SE Sec. 8, T1N, R92W

COUNTY: Rio Blanco

STATE: Colorado

SPUD DATE: 8-4-81

COMPLETION DATE (TD): 9-2-81

ELEVATIONS: 6922' GL 6938' KB

TOTAL DEPTH: 9990' LOGS 10,000' DRLR

CONTRACTOR: True Drilling Co.; Rig #16

TYPE RIG: Triple

PUMPS: #1 National C-350 5 1/2" x 18"

#2 National C-250 5 1/2" x 15"

GEOLOGIST: Michael R. Archibald

ENGINEER: Ron Hubbard (Tadpole)

TOOL PUSHER: Ken Amderson

TYPE DRILLING MUD: LSND

MUD COMPANY: New Park Drilling Fluids

MUD ENGINEER: Robert Murry

HOLE SIZES: 12 1/4" to 2515' 8 3/4" to 10,000'

CASING: 9 5/8" set @ 2504'

MUD LOGGING BY: Balab - Stu Walsak, Dave Beard, Mike Young

TYPE UNIT: One-man logging - continuous hot wire

CORE INTERVALS: None

DST DEPTHS: #1 3100'-3260' (Frontier formation)

#2 5394'-5428' (Weber formation)

DST COMPANY: Haliburton for DST #1, Lynes for DST #2

ELECTRIC LOGS BY: Schlumberger

TYPE LOGS RUN WITH DEPTHS: DLL with micro SFL, gamma ray from T.D. to surface casing, FDC/CNL with gamma ray & caliper from T.D. to surface casing, integrated sonic from T.D. to surface, cyberlook

LOGGING ENGINEER: Looney/Olsen

BOTTOM FORMATION: Belden

WELL STATUS:

DVR	
FJP	
HHM	
JAM	
JUD	
RLS	
SCM	

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FORMATION TOPS (FROM E-LOGS)

COLO. OIL & GAS CONS. COMM.

OPERATOR: Northwest Exploration Co.

WELL: Theos & Son #1

Northwest Exploration Theos & Son #1 G.L. 6922' K.B. 6938'

FORMATION	THEOS & SON #1		PROGNOSIS (est tops)	
	DEPTH	SUBSEA	DEPTH	SUBSEA
<u>Cretaceous</u>				
Mancos	surface		surface	
Frontier	3003'	(+3935)	-----	
Dakota	3370'	(+3568)	3700'	(+3238)
<u>Jurassic</u>				
Morrison	3615'	(+3323)	-----	
Entrada	4030'	(+2908)	4330'	(+2608)
<u>Triassic</u>				
Chinle	4369'	(+2569)	4750'	(+2188)
Shinarump	4710'	(+2228)	-----	
<u>Pennsylvanian</u>				
Weber	5390'	(+1548)	5750'	(+1188)
Maroon	5562'	(+1376)	5950'	(+ 988)
Minturn	7010'	(- 72)	7250'	(- 312)
Minturn "A"	7150'	(- 212)	-----	
Minturn "B"?	7630'	(- 692)	-----	
Minturn "B" (Salt)	7725'	(- 787)	-----	
Belden	9690'	(-2752)	9400'	(-2462)

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WELL CHRONOLOGY

COLO. OIL & GAS CONS. COMM.

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WELL: Theos & Son #1

DATE	WOB	RPM	PP	OPERATIONS
8-12-81				Geologist arrived on location, casing set @ 2504', wait on cement, cut casing, nipple up, drill out
8-13-81	20	72	1150	Drilling to 2627' @ 6:00 A.M., Mancos formation, drilling to 2660' @ 8:30 A.M., trip for new bit #4, dev 4 1/4°, resume drilling @ 2:00 P.M.
8-14-81	20	70	1400	Drilling to 2853' @ 5:30 A.M., survey @ 2843', dev 4 1/4°, trip for new bit #5, resume drilling @ 3:00 P.M.
8-15-81	18	70	1450	Drilling to 3104' @ 6:00 A.M., Frontier formation, survey @ 3083', dev 4 1/2°, trip for new bit #6, resume drilling approx. 2:00 P.M., drilling to 3261', circ samples
8-16-81				Circulate & condition hole for DST #1, strap out of hole, pick up test tool, trip in, testing, trip out with tool, recovered 40' of rat hole mud, trip in & resume drilling approx. 12:00 A.M.
8-17-81	20/22	70	1450	Drilling to 3349' @ 6:00 A.M.
8-18-81	15/18	70	1450	Drilling to 3578' @ 6:00 A.M., Dakota formation, dev @ 3545' is 6°, trip for new bit #7 @ 7:00 P.M., 5 1/4° dev @ 3640'
8-19-81	10/20	70	1400	Resume drilling @ 12:30 A.M., drilling to 3686' @ 6:00 A.M.
8-20-81	30	70	1400	Drilling to 3932' @ 6:00 A.M., Morrison formation, 6° dev @ 3857'
8-21-81	10/20	70	1400	Drilling to 4245' @ 6:00 A.M., Entrada formation
8-22-81	25	70	1400	Drilling to 4395' @ 2:30 A.M., trip for new bit #8, 5 1/4° deviation @ 4395', trip in hole, wash & ream to bottom, resume drilling @ 11:00 A.M.

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WELL CHRONOLOGY 29 1981

OPERATOR: Northwest Exploration Co. COLO. OIL & GAS CONS. WELL: Theos & Son #1

DATE	WOB	RPM	PP	OPERATIONS
8-23-81	35/38	80	1200	Drilling to 4525' @ 6:00 A.M., 4 3/4° dev @ 4485'
8-24-81	35/38	80	1200	Drilling to 4769' @ 6:00 A.M., 4 1/2° dev @ 4737'
8-25-81	35/38	80	1200	Drilling to 5035' @ 6:00 A.M., 5 3/4° dev @ 4986', drilling to 5124', circulate & drop survey, dev 6°+, trip for new bit #9
8-26-81	30	80	1300	Cut drilling line, resume drilling approx. 4:00 A.M., drilling to 5154' @ 6:00 A.M., Moenkopi formation
8-27-81	22	85	1300	Drilling to 5348' @ 6:00 A.M., survey @ 5333', dev 6 1/2°, drilling to 5428' @ 8:30 P.M., circulate samples, circulate and condition hole for DST #2, Weber formation
8-28-81				Circulate & condition mud, trip out, pick up test tool, trip in hole, testing, trip out with tool, recovered 194' drilling mud, trip in with new bit #10, resume drilling approx 10:00 P.M.
8-29-81	35	55	1250	Drilling to 5471' @ 6:00 A.M.
8-30-81	45	65	1450	Drilling to 5601' @ 6:00 A.M., Maroon formation, trip out for hole in pipe, lay down two bad drill collars, trip in with bit # 11, wash & ream 40 feet to bottom, resume drilling, dev @ 5585' is 6 1/4°
8-31-81	40	65	1500	Drilling to 5769' @ 6:00 A.M., dev @ 5774' is 6 1/4°
9-1-81	40	65	1500	Drilling to 5964' @ 6:00 A.M., drilling to 6053', trip out for new bit #12, change bottom hole assembly
9-2-81	35/40	65	1500	Trip in hole, resume drilling @ 2:30 A.M., drilling to 6083' @ 6:00 A.M.

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WELL CHRONOLOGY

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OPERATOR: Northwest Exploration Co.

WELL: Theos & Son #1

DATE	WOB	RPM	PP	OPERATIONS
9-3-81	25	65	1500	Drilling to 6240' @ 6:00 A.M., dev 7° @ 6230'
9-4-81	35	65	1500	Drilling to 6389' @ 6:00 A.M., dev @ 6387' is 7 1/4°
9-5-81	40	65	1500	Drilling to 6591' @ 6:00 A.M., dev @ 6546' is 7 1/4°, drilling to 6618' @ 11:00 A.M., trip for new bit #14, resume drilling @ 5:30 P.M.
9-6-81	40	65	1500	Drilling to 6700' @ 6:00 A.M., dev @ 6702' is 7°
9-7-81	20/40	65	1350	@ 6839', trip for hole in pipe, (not located), trip in hole with new bit #14, resume drilling @ 7:00 A.M., Morgan formation, drilling to 6851', trip out wet, look for hole in pipe, trip in, resume drilling @ 5:30 P.M.
9-8-81	40	65	1300	Drilling to 6937' @ 6:00 A.M., dev @ 6922' is 7 3/4°, drilling to 7020', tear down #1 pump, trip out to look for hole in pipe
9-9-81	40	65	1450	Finish trip out, change out bottom hole assembly, change out jars, trip in hole, resume drilling @ 12:00 P.M.
9-10-81	40	65	1450	Drilling to 7159' @ 6:00 A.M., Minturn formation, dev @ 7159' is 7 3/4°, drilling to 7296' @ 10:30 P.M., trip for new bit #15
9-11-81	40	65	1500	Finish trip, resume drilling @ 6:00 A.M., dev @ 7254' is 8°, drilling to 7324' @ 10:30 A.M., lost circulation (lost 125 bbl), trip up into casing, mix mud, got return @ 3:00 P.M., trip in & circ every 15 stands, resume drilling @ 11:00 P.M.
9-12-81	40	65	1450	Drilling to 7375' @ 6:00 A.M., dev @ 7379' is 8°

WELL CHRONOLOGY

OPERATOR: Northwest Exploration Co.

WELL: Theos & Son #1

DATE	WOB	RPM	PP	OPERATIONS
9-13-81	40	65	1450	Drilling to 7537' @ 6:00 A.M., dev @ 7474' is 8°
9-14-81	20/40	65	1400	Drilling to 7726' @ 6:00 A.M., dev @ 7631' is 8°
9-15-81	40	65	1400	Drilling to 7939' @ 6:00 A.M., dev @ 7915' is 8°+, drilling to 7963' @ 10:00 A.M., trip for new bit #16, cut drilling line, trip in hole, resume drilling @ 8:30 P.M.
9-16-81	40	65	1400	Drilling to 8007' @ 6:00 A.M., dev @ 7963' is 8 1/4°, drilling to 8073', dev 9 3/4°
9-17-81	28	80	1200	Drilling to 8083' @ 12:30 A.M., trip out to change bottom hole assembly
9-18-81	26/10	80	1250	Drilling to 8183' @ 6:00 A.M., dev @ 8213' is 10 1/4°
9-19-81	37	65	1400	Drilling to 8491' @ 6:00 A.M., dev @ 8432' is 9 3/4°
9-20-81	15/35	65	1350	Drilling to 8698' @ 6:00 A.M., dev @ 8495' is 9 1/4°, drilling to 8717' @ 10:00 A.M., dev 9 3/4°, trip for new bit #18, trip in hole, resume drilling @ 8:30 P.M.
9-21-81	40/18	65	1500	Drilling to 8817' @ 6:00 A.M., drilling to 8875', lost circulation (lost 150 bbls mud), mix vis to 45 & 10% LCM, resume drilling
9-22-81	40	65	1350	Drilling to 8940' @ 6:00 A.M., dev @ 8902' is 10°
9-23-81	40	65	1350	Drilling to 9052' @ 6:00 A.M., drilling to 9075' @ 12:30 P.M., trip for new bit #19, dev @ 9059' is 9 3/4°, pulled tight @ 8279', trip in hole, resume drilling @ 11:00 P.M.

WELL CHRONOLOGY

OPERATOR: Northwest Exploration Co.

WELL: Theos & Son #1

DATE	WOB	RPM	PP	OPERATIONS
9-24-81	30/45	65/75	1300	Drilling to 9109' @ 6:00 A.M.
9-25-81	48	65	1500	Drilling to 9225' @ 6:00 A.M., dev @ 9278' is 10 1/4°
9-26-81	48	65	1500	Drilling to 9339' @ 6:00 A.M.
9-27-81	48	65	1500	Drilling to 9495' @ 6:00 A.M.
9-28-81	48	62	1500	Drilling to 9636' @ 4:30 A.M., trip out to unplug bit, pulled up tight, circulate & ream tight hole, trip out, trip is w/ new bit #20, resume drilling @ 10:00 P.M., dev @ 9636' is 11°+
9-29-81	42	65	1500	Drilling to 9673' @ 6:00 A.M.
9-30-81	45	65	1500	Drilling to 9808' @ 6:00 A.M., Belden formation
10-1-81	45	65	1500	Drilling to 9923' @ 6:00 A.M.
10-2-81	45	65	1500	Drilling to T.D. of 10,000' @ 2:00 A.M., circulate & condition mud, short trip 20 stands, circulate, trip out for E-logs, start running E-logs @ 5:30 P.M.
10-3-81				Finish running E-logs, geologist released

SAMPLE DESCRIPTION

OPERATOR: Northwest Exploration Co.

WELL: Theos & Son #1

Sample Quality: poor-fair, abundant cavings due to use of reamers & keyseat wiper; samples were not lagged from 2515'-3075', samples were lagged from 3075'-3450', lagging of samples was discontinued at 3450' but are adjusted to correct depth from 3450' to T.D.

2515-2520	SH	80%	dk gy to gy blk, frm, blk carb, sl calc
	SS	20%	tan, yellowish brn, fri, arg, sl calc, vf gr, well srted, sbang-sbrnd, p ϕ , tr biotite
2520-2560	SH	100%	dk gy-gy blk, frm, blk carb, calc
2560-2580	SH	100%	dk gy-gy blk, frm, blk carb, sl calc
2580-2600	SH		dk gy to gy blk, frm, blk carb, sl calc, tr wh, vf-f gr, mod well srted, sbang, fri, noncalc, micaceous SS, p vis ϕ
2600-2660	SH		dk gy-gy blk, frm, blk carb, sl-mod calc
2660-2700	SH		dk gy to gy blk aa
2700-2730	SH	90%	dk gy to gy blk, frm, sl calc, carb, blk
	SS	10%	wh, yellow brn, vf-m gr, sbang, calc, sme glauconite & blk grns, p vis ϕ , no show
2730-2770	SH		dk gy-gy blk, frm, carb, blk, sl calc
2770-2790	SH	90%	aa, tr pyr
	SS	10%	wh, yellow brn, vf-m gr, aa
2790-2840	SH	100%	dk gy to gy blk, sft-frm, blk carb, sl-mod calc
2840-2900	SH	100%	dk gy, frm, subplty to blk, sl calc
2900-2980	SH	100%	dk gy to gy blk, frm, sl slty in pt, blk, carb, sl calc
2980-3010	SH	90%	aa, except sl to mod calc
	SS	10%	wh, crm, vf gr, fri, biotite incl, well srted, sbang, v sl calc
<u>Frontier</u>			
3010-3020	SLTST	60%	m-dk gy, frm-mod hd, v calc, v arg, blk, sme carb incl, tt grdng to slty SH
	SH	40%	dk gy, frm, blk carb, occ slty

3020-3040	SH	70%	aa
	SLTST	30%	aa
3040-3060	SH	60%	dk gy to gy blk, sft-frm, sl calc, v slty in pt, blk, carb, tr pyr
	SLTST	40%	dk gy, blk, frm, v calc, grdg to slty SH
	SS	tr	wh, vf gr, fri, biotite incl, sbang, sl calc
3060-3070	SS	60%	gy-gy brn, vf-f gr, fri-frm, calcite cmt, arg, p ϕ , tr fr ϕ , sbang
	SH	40%	aa
3070-3090	SS	80%	lt-m gy, vf-f gr, frm, calcite cmt, sl arg, sbang, gen p ϕ , sme biotite incl
	SH	20%	aa
3090-3105	SS	60%	aa, wk yel grn flor w/wk diffuse cut
	SLTST	40%	trip sample - lagged after trip
3105-3110	SS	80%	lt gy to lt gy brn, frm-mod hd, f-m gr, gen p ϕ , tr fr ϕ , v sl calc, sli cmt, sbang, approx 30% bri yel grn flor w/wk-fr strmg cut
3110-3120	SS	60%	lt gy, crm, mod hd, sl sli cmt, f gr, vp-p ϕ , tr blk stn, approx 10% wk-bri yel grn flor w/wk-fr strmg cut
	SH	40%	dk gy, frm
3120-3130	SS	40%	lt gy-gy, frm-mod hd, f gr, vp-p ϕ , tr fr ϕ , tr blk stn w/fr strmg cut
	SH	60%	aa
3130-3140	SS	50%	gy, mod hd, sli cmt, vf gr, vp ϕ , 1-3% bri yel grn flor w/wk diffuse cut
	SH	50%	gy, mod hd, blk
3140-3150	SLTST	70%	gy to dk gy, mod hd-hd, sli cmt, tt, sl-mod arg, no show
	SH	30%	aa
3150-3160	SH	80%	dk gy to gy blk, frm, blk, v slty in pt, noncalc
	SLTST	20%	aa
3160-3200	SH	90%	dk gy to gy blk, sft-frm, blk, rarely calc, occ slty, sme intbdd wh bentonite
	SLTST	10%	aa

3200-3260	SH	90%	dk gy to gy blk, sme lt gy, sft-frm, blk, rarely calc
	CLYST	10%	wh, bentonite, sft, occ w clastic incl
3260-3290	SS	20%	m-dk gy, mod hd-hd, vf gr, sli cmt, v arg, slty, sbang, vp ϕ , no show
	SLTST	60%	dk gy, frm-mod hd, sl calc, v arg, blk, aren in pt, tt
	SH	20%	dk gy to gy blk, frm, blk, sl calc
3290-3300	SS	10%	m-dk gy aa
	SLTST	50%	aa with sme carb incl
	SH	40%	aa
3300-3310	SLTST	70%	dk gy, mod hd-hd, blk, aren, v arg, noncalc, carb incl, tt, grdg to slty SH
	SH	30%	dk gy, frm-mod hd, blk, v slty, noncalc, sme disseminated pyr
3310-3330	SH	70%	dk gy, blk, frm-mod hd, v slty, noncalc, carb, sme pyr
	SLTST	30%	aa
3330-3360	SH	90%	dk gy, blk, frm-mod hd, slty,, noncalc
	SLTST	10%	lt-dk gy, blk, mod hd, v arg
3360-3370	SH	60%	aa, tr pyr
	SLTST	30%	lt-dk gy, blk, mod hd, noncalc, v arg, tt
	SS	10%	wh, vf gr, mod hd, carb in pt, vp ϕ , sbang, sme chert incl (?), v sl calc
<u>DAKOTA</u>			
3370-3390	SH		dk gy, mod hd, pred blk, sme plty sbwaxy, noncalc, occ slty
3390-3410	SH	70%	aa
	SS	10%	wh, vf-f gr, sbang, mod srted, sl-mod calc, gen vp ϕ , tr p-fr ϕ , rare blk stn
	SLTST	20%	aa
3410-3440	SH	80%	dk gy, mod hd, blk, slty, noncalc, carb in pt
	SLTST	20%	lt-dk gy, v arg, blk, noncalc, tt
3440-3450	SS	20%	wh, crm, vf gr, mod hd, calc, vp ϕ , sbang, rare brn stn, no cut
	SH	80%	aa
3450-3464	SLTST		dk gy-gy blk sli, hd, arg, tt

3464-3473	SS	60%	wh, crm, mod hd, wh sli matrix, m gr, sbang-sbrnd, cln, mod well srted, rare blk stn, no cut
	SLTST	20%	aa
	SH	20%	dk gy, frm, blk, carb
3473-3495	SS	80%	wh, f-m gr, mod hd, sli matrix, sbrnd, mod well srted, cln, rare blk stn, no cut, vp ϕ
	SH	20%	dk gy, aa
3495-3500	SS	60%	wh, f-m gr, frm-mod hd, noncalc, gen p ϕ , tr fr ϕ , mod well srted, sbrnd, no show
	SH	30%	dk gy, sft-frm, mod hd, blk
	CLYST	10%	bentonite, wh, lt gy, v sft, noncalc, sme clastic incl
3500-3510	SH	40%	aa
	CLYST	30%	sme wh bentonite, sme lt gy lt gygrn frm clyst
	SS	30%	aa, sme c grs, tr blk stn
3510-3520	SH	50%	m-dk gy, mod hd, plty, blk, sbwaxy, slty, tr pyr
	CLYST	30%	wh, sft, micaceous, sme lt gy-lt gy grn
	SS	20%	wh, frm-mod hd, vf-m gr, sbang-sbrnd, mod well srted, gen p ϕ , tr fr ϕ , no show, sme unconsol cse qtz gr, frosted, sbrnd
3520-3536	SS	40%	wh, clr, frm-hd, f-cse gr, quartzite in pt, sme sbang-ang w/chert incls, sme sbrnd, mod well srted
	SH	40%	aa
	CLYST	20%	aa
3536-3547	CLYST	80%	lt grn, crm, wh, sft-frm, occ clastic incl
	SH	20%	dk gy, frm, plty, slty, noncalc
3547-3557	SS	70%	wh, lt grn, mod hd-hd, qtz in pt, cherty, sbang-sbrnd, vp ϕ , poorly srted, no show
	SH	20%	dk gy aa
	CLYST	10%	lt grn, mod hd, sil
3557-3562	SS	60%	wh, unconsol, f gr, sbrnd-rnd, well srted
	SH	30%	dk gy, blk-sbplty, mod hd, slty, occ sbwxy, tr pyr
	CLYST	10%	aa

3562-3570	SS	70%	largely aa, f-m gr, abnt lt brn-gybrn chert
	SH	20%	aa
	CLYST	10%	aa
3570-3587	SS	30%	wh, unconsol, f-m gr aa
	SS	20%	wh, hd, qtz, ang, no ϕ , sme chert incl
	CLYST	50%	lt gy to lt gy grn, lt grn, mod hd, sli, noncalc, occ clastic incl
3587-3636	CLYST	90%	aa
	SH	10%	dk gy, mod hd, blk, noncalc
<u>Morrison</u>			
3636-3646	CLYST	80%	lt grn, lt gy grn, frm, blk, v slty in pt grdng to arg sltst, aren in pt, noncalc, sl sil
	SH	10%	dk gy, frm, blk, noncalc
	SLTST	10%	lt grn, mod hd, v arg, aren in pt, tt
3646-3663	CLYST	90%	lt grn, lt gygrn, mod hd-hd, v sil, slty in pt, noncalc
	CVGS	10%	dk gy SH
3663-3673	LS	30%	brn, hd, dns, micrite, sl arg, no vis ϕ , no show
	CLYST	70%	lt grn, lt gygrn aa
3673-3693	CLYST	80%	lt grn, lt gygrn, mod hd-hd, sl-mod sil, slty in pt, noncalc
	SLTST	20%	wh, lt grn, blk, v arg, aren in pt, tt, sil
3693-3704	CLYST	90%	lt grn, lt gygrn, mod hd, sl-mod, sil, slty in pt, noncalc
	SLTST	10%	aa
3704-3712	LS	40%	lt brn, buff, mod hd-hd, dns, micrite, vp ϕ , no show
	CLYST	60%	lrgy aa, sme wh sft bentonite
3712-3723	LS	20%	aa
	CLYST	80%	lt grn, lt gy grn, sme wh, frm-hd, sl-mod sil, slty
3723-3744	LS	40%	aa
	CLYST	60%	aa
3744-3754	LS	70%	lt brn, lt gybrn, mod hd-hd, micrite, sl arg, vp ϕ , no show

	CLYST		lt grn, mod hd-hd, sl calc, sil in pt
3754-3762	LS	90%	aa
	CLYST	10%	aa
3762-3782	LS	20%	aa
	CLYST	80%	lt grn, lt gygrn, frm-mod hd, sl calc, sil in pt, sm wh bentonite strngs
3782-3793	LS	70%	lt gy-lt gygrn, lt brn, mod hd-hd, micrite, sl arg, vp ϕ , no show
	CLYST	30%	lt grn, lt gy, mod hd, sl calc, sil in pt, occ slty
3793-3801	LS	10%	aa
	SLTST	30%	lt grn, lt gy, brn, frm-mod hd, sl-v arg, aren in pt, sil in pt
	CLYST	60%	lt grn, gy, rdbrn, sme pnk & lav, pred sft-frm, slty
3801-3812	LS	10%	aa
	CLYST	70%	pred gy, sme lt grn, rdbrn, brn, sft-frm, calc, occ slty
	SLTST	20%	aa
3812-3821	SLTST	40%	wh, lt gygrn, frm, blk, calc, sl arg, aren, tt
	CLYST	60%	pred gygrn, gy, sme lav, tan, sft-frm, occ slty, calc
3821-3831	SLTST	70%	brn, lt grn, rdbrn, gy, wh, mod hd, v arg, calc, blk, tt
	CLYST	30%	aa
3831-3842	LS	20%	gy-gybrn, hd, micrite, vp ϕ , no show
	SLTST	40%	pred gy, sme wh aa
	CLYST	40%	aa
3842-3851	SLTST	10%	aa
	CLYST	90%	pred rdbrn, lt gy, lt grn, sme wh, sft-frm, v sl calc, slty
3851-3863	SLTST	40%	lt grn, lt gy, wh, frm-mod hd, sl arg, sil in pt, sl calc, blk
	CLYST	20%	aa
3863-3872	SLTST	80%	rdbrn, lt grn, gy, brn, sme pnk, sl-mod arg, aren, frm, tt
	CLYST	20%	aa
3872-3879	SS	80%	wh, fri-frm, vf gr, well srtd, sbrnd, sl calc, gen p ϕ , no show

	SH	20%	dk gy, frm, noncalc, blk, cvgs
3879-3892	SS	80%	wh aa except f gr, no show
3892-3904	SS	90%	wh, fri-frm, vf-f gr, mod well srted, sl calc, chert incl, sbrnd-rnd
3904-3914	SS	70%	lrgly aa, tr blk o stn w/fnt strmg cut
	SH	30%	dk gy, gygrn, grn, sme clyst, blk
3914-3930	SS	10%	aa
	SLTST	20%	gy, gygrn, mod hd, v arg, sl calc, tt
	CLYST	70%	rdbn, grn, gy, sft-frm, calc, slty in pt
3930-3940	SS	50%	wh, uncons, vf-gr, well srted, rnd, sme lt orng incl
	CLYST	50%	aa
3940-3950	SLTST	40%	rdbn, gy, sme gygrn, frm, tt, sl calc
	CLYST	60%	aa
3950-3960	SLTST	40%	gy, gygrn, sme brn, frm, sl arg, calc, tt
	CLYST	40%	rdbn, grn, wh, sft, sl calc, slty
	SS	20%	wh, lt brn, fri-frm, vf gr, sl arg, calc, well srted, sbrnd-rnd, no show, tr glau
3960-3970	LS	10%	lt brn, hd, dns, micrite, vp ϕ , no show
	SS	60%	wh, vf-f gr, uncons, well srted, rnd, sme sl calc
	CLYST	30%	lt grn, frm-mod hd, sil, slty
3970-3980	SS	30%	wh, vf-f gr, frm, calc, well srted
	CLYST	70%	aa
3980-3990	SS	60%	wh, vf-f gr, uncons, well srted, rnd
	CLYST	40%	aa
3990-4000	SS	90%	wh, vf-f grn, unconsol, well srted, rnd, no show
4000-4010	SS	80%	wh, uncons-fri, f-m gr, mod well srted, sbrnd-rnd, sl calc, p-fr ϕ , no show
	CLYST	20%	lt grn, rdbn, frm-hd, no sil
4010-4020	SS	40%	aa
	CLYST	60%	aa
<u>Entrada</u>			
4020-4040	SS	90%	wh, fri-frm, vf-f gr, mod well srted, sbang-sbrnd, sl calc, sme chert incl, tr glau & pyr, gen p ϕ , rare blk stn, no cut

	CLYST	10%	aa
4040-4060	SS	30%	aa except vp ϕ , no stn
	CLYST	70%	gy, lt gygrn, brn, rdbn, wh, sft-frm, v sl calc
4060-4110	SS	20%	wh, vf gr, fri-frm, noncalc, well srted, sbang, vp-p ϕ , no show
	CLYST	80%	gy, lt gygrn, lt grn, wh, brn, sft, rarely calc, tr pyr, sme strngs of gy-gybrn, mod hd, micritic LS
4110-4117	SS	60%	wh, f-m gr, fri-frm, v sl calc, p srted, sbrnd-sbang, sme orng incl, gen p ϕ
	CLYST	40%	gy, grn, frm-mod hd, sil in pt, sme dk gy-brn SH, tr brn dns LS
4117-4125	SS	40%	aa
	CLYST	60%	aa
4125-4150	SS	20%	aa
	CLYST	80%	aa
4150-4175	CLYST	90%	gy, lt grn, lt gygrn, rdbn, wh, sft, sl calc, occ slty, tr brn micritic LS
	SS	10%	lt orng, wh, frm, vf-m gr, poorly srted, sbang-rnd, sl calc, poor ϕ
4180-4192	SS	70%	lt orng, fri-frm, vf-f gr, mod well srted, sbrnd, gen p ϕ , no show
	CLYST	30%	lt grn, gy, wh, sft-mod hd, sil
4192-4198	SS	70%	lt orng, uncons-lfrm, noncalc, vf gr, well srted, sbrnd-rnd, p-fr ϕ , no show
	CLYST/SH	30%	gy, grn, brn, sft-frm, noncalc, occ aren, sme strngs of gy dns dolomitic LS
4198-4207	SS	30%	aa
	CLYST/SH	70%	aa
4207-4243	SS	70%	lt orng, vf-f gr, uncons-lfrm, noncalc, lrgly aa, no show
	CLYST	30%	lt grn, lt gy, frm-mod hd, sil, aren in pt
4243-4319	SS	90%	lt orng, crm, fri-frm, f gr, mod well-well srted, sbrnd, noncalc, cln, p-fr ϕ , no show
	CLYST	10%	wh, lt grn, sft-frm, blk
4319-4352	SS	80%	orng, fri-frm, f gr, well srted, sbrnd, noncalc, p-fr ϕ , no show

	CLYST	20%	wh, lt grn, grn, sft-frm, noncalc
4352-4368	SS	80%	wh, fri-frm, f gr, sme m gr, well srted, sbrnd, noncalc, p-fr ϕ , no show
	CLYST	20%	wh, lt grn, aa
<u>Chinle</u>			
4368-4387	SLTST	40%	rdbrn, orng, frm, calc, blk, v arg, tt
	SH	60%	orng, sft, blk, calc
4387-4400			trip sample, largely cavings
4400-4406	SLTST	90%	orng, rdbrn, frm, blk, v sl calc, aren, v arg, tt
	SH	10%	orng, sft-frm, slty, blk
4406-4415	SLTST	70%	rdorng, orng, frm, sl-mod calc, v arg, aren, tt
	SH	30%	lt orng-orng, sft-frm, sl calc, blk, slty
4415-4465	SLTST	40%	aa
	SH	60%	aa, v slty grdg to arg SLTST
4465-4513	SLTST	60%	aa
	SH	40%	aa, mottled w/wh gyp
4513-4593	SLTST	60-70%	rd-rd orng, frm, sl-mod calc, v arg, tt
	SH	30-40%	orng, mottled, sft-frm, sl-mod calc, blk- sbplty, sbwxy, slty, sme intbdd wh gyp
4593-4600	SLTST	30%	rd to rd orng aa
	SH	40%	orng aa
	CLYST	30%	lt grn, crm, wh, v sft, bentonitic, micaceous, occ slty
4600-4643	SLTST	60%	rd to rd orng aa
	SH	30%	lt orng to orng aa
	CLYST	10%	lt grn to grn, sft-frm, occ slty, micaceous
4643-4673	SLTST	40%	rd-rd orng, frm, sl calc, blk, arg, tt
	SH	50%	lt orng, mot, sft, calc, slty, sbplty
	CLYST	10%	gy, grn, sft, micaceous
4673-4688	SLTST	40%	rd to rd orng aa
	SH	40%	rd orng, aa
	CLYST	20%	gy, lt grn, crm-wh, sft-frm, micaceous, bento- nitic in pt, v calc in pt
4688-4719	SLTST	60%	rd to orng, sft-frm, mod calc, tt, v arg grdg to v slty SH

	CLYST	10%	aa
	SH	30%	orng aa
<u>Shinarump</u>			
4719-4727	SH	60%	rd to orng, sme mot lav, yel brn, v sft, calc, slty
	SLTST	30%	rd, orng, sft-frm, calc, v arg grdg to slty SH
	CLYST	10%	aa
4727-4736	SH	80%	mar, rd, orng, v sft, mot, calc, sbplty, occ slty
	SLTST	20%	aa
4736-4770	SH	100%	pred rd, mar, sme lav & orng, sft, mot, sbplty, v sl calc, tr crm clyst
4770-4780	SH	70%	pred rd, mar, sme lav & bri orng, sft, sbplty, blk, pred noncalc
	CLYST	30%	crm, wh, lt grn, v sft, noncalc
4780-4790	SH	90%	rd, brn, orng, lav, sft-frm, sl calc, slty
	SLTST	10%	crm, lt grn, frm, blk, sil, tt
4790-4811	SH	70%	orng, brn, rd, lav, sme grn, sft, occ calc, occ slty
	SLTST	30%	rdbrn, frm, v arg, sme lt grn, lt gy, frm, cln, micaceous
4811-4821	SH	60%	orng, mot, sme rd, brn, mar, sft-frm, v sl calc, blk-sbplty
	SLTST	20%	rdbrn, frm, v arg, mica, tt
	SS	20%	rd, rdbrn, frm, arkosic, micaceous, vf gr, v arg, slty
4821-4830	SH	50%	aa
	SLTST	20%	aa
	SS	30%	rdbrn, rd, arkosic aa, sme loose cse, frtd, rd, qtz gr, tr gyp
4830-4842	SH	40%	orng, mar, rd, lt grn, crm, sft, calc, blk-sbplty, slty
	SLTST	40%	rdbrn, lt gy, grn, mot, frm, sil, tt, rdbrns are v arg
	SS	20%	aa
4842-4850	SH	10%	aa

	SLTST	70%	pur, rdbrn, grn, gy, frm, aren, mod-v calc, blky, tt
	SS	20%	rdbrn, pur, wh, mot, arkosic, tt, calc, arg in pt, sme cse, frtd, rnd, qtz gr
4850-4870	SLTST	70%	rdbrn, orng, frm-mod hd, v arg, calc, tt
	SH	30%	orng, rd, mar, lav, lt grn, sft-frm, blky-sbplty, pred noncalc
4870-4920	SH	90%	rdbrn, brn, sft-frm, blky-sbplty, occ sbwxy, tr lav & lt grn clyst
	SLTST	10%	aa
4920-4928	SLTST	70%	rdbrn, brn, sft-frm, blky, v arg, calc, tt
	SH		aa
4928-4940	SH		aa
4940-4980	SLTST	40%	brn, rdbrn, orng, sme lt grn, fri-frm, v arg in pt, calc, tt
	SH	60%	rd, mar, lav, lt gy-lt grn, sft, calc, sbplty
4980-4990	SLTST	70%	pred lt grn, frm, calc, mica, blky, tt, sme rdbrn, v arg, occ aren
	SH	30%	aa
4990-5001	SH	70%	rd, brn, sme orng, lav, sft, calc, sbplty
	SLTST	30%	rdbrn, brn, frm, calc, v arg, tt
5001-5013	SLTST	30%	aa
	SH&CLYST	70%	crm, lt gy, grn, lav, brn, sft, slty in pt
5013-5032	SH	70%	brn, rdbrn, sft-frm, sbplty, v sl calc, v slty in pt
	SLTST	30%	brn, rdbrn, frm, v arg, sl calc, blky, tt
5032-5043	SLTST	90%	brn, rd, frm-mod hd, rarely calc, sil, arg, tt
	SH	10%	aa
5043-5065	SLTST	50%	aa
	SH	50%	rd, mar, brn, sft, plty, mot
5065-5072	SLTST	90%	brn, rdbrn, frm-mod hd, rarely calc, sil, v arg, tt
	SH	10%	aa
5072-5083	SLTST	90%	pred brn, rdbrn, sme lt gy, crm
	SH	10%	aa

5083-5091	SLTST	90%	lt gy-gy, crm, frm-mod hd, sil, noncalc, blk, cln, tt, tr blk stn, no cut
	SH	10%	aa, tr ANHY, wh, sft, intbdd
5091-5109	SLTST	100%	lt gy-gy, crm, frm-mod hd, sil, noncalc, blk, cln, tt
5109-5125	CLYST	30%	crm, lt gy, lt grn, v sft, mica, v sl calc
	SLTST	30%	aa
	SH	40%	rdbn, brn, pru, frm, calc, slty in pt
5125-5147	SH	60%	lt grn, lt gy, sme rdbn, slty, sl calc, mica, sil, tr pyr, sme crm, v sft, clyst
	SLTST	40%	dk brn, brn, gy, gygrn, mod hd, v arg, tt
5147-5158	SLTST	40%	lt grn-gy, frm-mod hd, v arg, anhy, tt, sme blk asph res, tr fnt lt grn flor w/slo fnt dif cut
	SH	60%	lt grn, lt gy aa
5158-5166	SLTST	30%	aa, rare, lt grn flor w/ring cut
	SH	70%	lt grn, mod hd, v slty in pt, v sl calc, sil, occ grdg to a v arg SLTST
5166-5176	SLTST	70%	lt gy-gy, frm-mod hd, tr ANHY, calc, vp ϕ , aren in pt, approx 70% blk asph res, 20% fnt lt grn flor w/slo diffuse to fnt strmg cut
	SH	30%	lt grn, frm-mod hd, v slty, sil
5176-5187	SLTST	40%	largely aa, abnt blk res w/ring cut
	SH	60%	lt grn aa
5187-5197	SH	100%	lt grn, lt gy, frm-mod hd, v slty grdg to arg SLTST, tr diss pyr, sl calc
5197-5209	SH	70%	aa
	SH	30%	brn, rdbn, frm-mod hd, slty, pred noncalc
5209-5250	SLTST	80%	crm, lt gy, frm-mod hd, noncalc, vp ϕ , aren in pt, approx 20% blk res, rare flor, tr slo fnt-wk strmg cut
	SH	20%	aa
5250-5260	SLTST	60%	dk brn, frm-mod hd, v arg, tt, no stn, flor, or cut
	SH	40%	mar, lav, dk brn, rdbn, sft, occ slty, sme rd, wh, clyst
5260-5270	CLYST	70%	rd, mar, mot, sme crm, wh, v sft, bent

	SH	30%	gy, brn, grn, frm, slty, sbplty
5272-5283	SH	80%	rd, rdbrn, gy, lav, frm, sbplty, pred noncalc
	CLYST	20%	crm, gygrn, lav, v sft, noncalc, sme clastic incl
5283-5292	SH	60%	aa
	CLYST	10%	aa
	SLTST	30%	brn, frm, v arg, blk, noncalc, tt
5292-5304	SLTST	90%	lt gy-gy, buff, mod hd, v sl calc, blk, vp ϕ , approx 20% blk asph res, tr fnt lt grn flor, w/sl wk diffuse cut
5304-5324	SLTST	30%	dk brn, sme gy, frm-mod hd, blk, v arg grdg to slty SH
	SH	70%	dk brn, orng brn, frm, v slty in pt, sbplty, tr wh v sft clyst
5324-5333	SLTST	60%	dk brn aa
	SH	40%	aa
5333-5384	SH	90%	orng-rd, dk brn, dk gy, mar, sft-frm, sbplty, occ slty, occ slty calc
	SLTST	10%	aa
5384-5397	SH	70%	aa
	SLTST	30%	aa
<u>Weber</u>			
5397-5405	SH	50%	rdbrn, orng, mar aa
	SS	50%	lt gy-gy, fri-frm, vf gr, well srtd, sbang- sbrnd, mod-v calc, gen p ϕ , tr f ϕ , approx 50% w/lt grn flor and blk sptty stn, gen slo wk strmg cut w/tr fr strmg cut
5405-5410	SS	50%	lt gy-gy, fri-frm, vf gr, aa, gen p ϕ , tr f ϕ , approx 50% lt grn flor & blk sptty stn, abnt blk asph res, sme wk diffuse cut
	CALCITE?	30%	wh, sft, mas, sndy, abnt blk asph res
	SH	20%	rdbrn, orng, aa
5410-5415	SS	80%	lt gy-gy, fri-frm, vf gr, well srtd, sbang- sbrnd, gen p ϕ , tr f ϕ , mod-v calc, approx 50% cuttings w/sptty blk stn & wk yel grn flor, fnt diffuse cut
	CALCITE?	20%	wh, sft-frm, sndy, abnt blk asph res

5415-5428	SS	80%	lt gy-gy aa, approx 50% cuttings w/decreasing blk sptty stn & wk yel grn flor, sme fnt to wk strmg cut
5428-5446	SS	100%	buff, crm, frm-mod hd, vf grn, well srted, sbang-sbrnd, sl calc, p ϕ , approx 10% blk sptty stn & lt grn flor, sme wk diffuse-fnt strmg cut
5446-5453	SS	80%	buff, crm, largely aa, rare blk stn, no flor or cut
	SH	20%	rd, crm, sft cvgs
5453-5575	SS	90%	buff, crm, wh, frm-mod hd, sl-mod calc, vf gr, well srted, sbrnd-sbang, p ϕ , sil, rare blk stn, no flor or cut
	SH	10%	rdbn, mar, rd orng, sft-frm, sbplty, prob cvgs
<u>Maroon</u>			
5575-5583	SS	70%	wh, crm, lt gy, v lt grn, vf gr, mod hd, sl calc, sil, vp-p ϕ , no show
	SLTST	20%	orng, rd orng, frm, sme calc, arg, blk, aren in pt, micaceous in pt
	SH	10%	mar, rd, rd orng, sft-frm, blk, noncalc, mot, occ slty
5583-5593	SS	70%	pred rdbn, orng, sme wh & lt gy, frm-mod hd, v calc, vf-f gr, mod well srted, sbrnd-sbang, arg, vp-p ϕ , no show
	SLTST	10%	aa
	SH	20%	aa
Trip sample pred cavings			
5593-5604	SS	30%	buff, wh, lt orng, frm, sl calc, sil, vf gr, well srted, sbang-sbrnd, p ϕ , no show
	SH	60%	rdbn, mar, orng, lt grn, dk gy, sft-frm, occ slty
	SLTST	10%	rdbn, orng, sft-frm, tt, v arg
5604-5609	SS	70%	orng, wh, frm-mod hd, sl calc, vf-f gr, mica, mod well srted, sbang-sbrnd, sme dk orng incl, vp-p ϕ , no show
	SH	30%	aa

5609-5612	SS	80%	aa
	SH	20%	aa
5612-5643	SS	90%	lt orng-orng, fri-frm, sl calc, vf-f gr, sbang, p ϕ , no show
	SH	10%	gy-dk gy, lt grn, crm
5643-5657	SS	50%	orng, wh, frm-mod hd, non-v sl calc, vf-f gr, sbrnd, p ϕ , no show
	SH	40%	lt grn, gy, orng, mar, sft-frm, noncalc, blk
	SLTST	10%	orng, brn, frm, sl calc, v arg, tt
5657-5664	SS	60%	aa
	SH	20%	aa
	SLTST	20%	arng, dk brn, sme lt grn, frm, v arg, tt
5664-5710	SS	90%	orng-rd orng, frm-mod hd, v sl calc, sil, vf-f gr, sbang-sbrnd, mod well srtd, p ϕ , no show
	SH	10%	lt grn, gy, crm, sme orng, rdbrn
5710-5720	SS	100%	rdbrn, rd, arkosic, f-cse gr, mod hd, v sl calc, sil, micaceous, vp ϕ , arg, no show
5720-5735	SS	60%	orng, wh, rdbrn, sme arkosic aa, pred vf-f gr, mod hd, sil, p ϕ , no show
	SH	30%	aa
	SLTST	10%	lav, orng, brn, frm, v arg, tt, micaceous
5735-5762	SS	70%	aa
	SH	30%	lt orng, frm, sme lt grn, aren, sl calc, blk
5771-5782	SS	80%	rd, rd orng, mod hd, arg, f-cse gr, arkosic, micaceous, ang-sbang, poorly srtd, vp ϕ , no show
	SH	20%	aa
5782-5812	SS	80%	rd, rd orng, largely aa except f-m gr
	SH	20%	aa
5812-5822	SS	80%	rd, frm-mod hd, arkosic, vf-m gr, v calc, arg, poorly srtd, micaceous, vp-p ϕ , no show
	SH	20%	orng, rd, lt gy, frm, sl calc, blk-sbplty
5822-5829	SH	50%	aa
	SS	50%	aa
5829-5840	SS	60%	aa
	SH	40%	aa

5840-5860	SS	90%	rd, mod hd-hd, qtzitic, vf-cse gr, sme unconsol, sbang-ang, poorly srted, arg & micaceous in pt, poor-fr ϕ , no show
	SH	10%	aa
5860-5866	SS	80%	pur, rd, rd orng, mod hd, f-m gr, micaceous in pt, ang-sbang, p-fr ϕ , no show
	SH	20%	crm, lt orng, lt grn, frm, blkly-sbplty, occ slty
5866-5880	SS	10%	aa
	SLTST	40%	rd, rd orng, frm, sl calc, arg, aren, tt
	SH	50%	lt orng, gy, lt grn, crm, frm, sbplty-blky, occ slty & micaceous
5880-5890	SLTST	60%	aa
	SH	40%	aa
5890-5895	SH	60%	pred lt orng, rd, mar, sme lt grn, frm, blkly-sbplty
	SLTST	40%	aa
5895-5913	SS	70%	rd, rd orng, pur, frm-mod hd, arkosic in pt, vf-cse gf, poorly srted, arg, micaceous, sl calc, vp ϕ , no show
	SLTST	20%	orng, frm, blkly, aren, arg, tt
	SH	10%	aa
5913-5923	SLTST	30%	orng, rd orng aa, grdg to vf SS, tt
	SS	20%	orng, frm-mod hd, vf gr, well srted, sbang, vp ϕ , no show
	SH	50%	lt orng, rdbrn, mar, lt grn, frm, occ sl calc
5923-5944	SLTST	70%	orng, blkly, frm, sl calc, arg, v aren grdg to vf gr SS, tt
	SH	30%	lt orng, lt grn, frm, blkly, sme mar
5944-5962	SLTST	60%	rd orng, orng, frm, v arg, aren in pt, sl calc, blkly, tt, occ micaceous
	SH	20%	lt orng, sft-frm slty, sbplty-blky, sl calc
	SS	20%	rd orng, frm, vf gr, arg, well srted, micaceous, sbang, p ϕ , no show, v slty
5962-5990	SLTST	70%	brn, rdbrn, orng, frm-mod hd, calc, arg, aren, tt
	SH	30%	aa

5990-6001	SLTST	80%	rdbn, orng, frm, v arg, calc, tt, micaceous
	SH	20%	orng, lt orng, sft, slty in pt, sl calc
6001-6010	LS	40%	gy-crm, mod hd, chky, micrite, vp ϕ , no show
	SLTST	40%	rdbn, orng, sme lt grn & pur, aa
	SH	20%	aa
6010-6022	SS	80%	rd, rdbn, mod hd, sl calc, slty, vf-m gr, sme cse gr, micaceous, ang, v arg, vp ϕ , no show
	SLTST	10%	aa
	SH	10%	orng, lt orng, sft, sl calc, slty
6022-6033	SS	40%	aa
	SLTST	50%	orng, rdbn, frm, sl calc, aren, v arg, micaceous, tt
	SH	10%	aa
6033-6042	SLTST	50%	rdbn, orng, sme crm & lt grn, frm, v arg, sl calc, aren, mica, tt
	SS	10%	aa
	SH	40%	pred orng, sme lt grn & gy, frm, sl calc
6042-6050	SS	80%	rd, rdbn, arkosic, mod hd, v sl calc, arg, slty, vf-m gr, micaceous, ang-sbang, poorly srtd, vp ϕ , no show
	SLTST	20%	aa
6050-6070	SLTST	70%	pred rdbn, brn, sme lt grn, frm-mod hd, blk, micaceous, v arg, aren, tt
	SS	10%	orng, wh, lt grn, frm, calc, vf-f gr, sbrnd, p ϕ , no show
	SH	20%	orng, lt grn, mar, lt gy, sft-frm, slty in pt
6070-6080	SLTST	70%	rdbn, wh, lt grn, frm-mod hd, blk, sl calc, occ v arg, aren, tt
	SS	10%	wh, largely aa
	SH	20%	aa
6080-6088	SLTST	30%	aa
	SH	70%	brn, rdbn, sme lt orng, frm, calc, slty, mica
6088-6101	LS	20%	gy, mod hd-hd, dns, micrite, no vis ϕ , sl arg, no show
	SS	60%	crm, lt grn, wh, frm, sl calc, vf gr, well srtd, sbrnd, mic incl

	SH	20%	brn, rdbrn aa
6101-6120	SS	90%	wh, crm, frm, calc, vf gr, well srted, sbrnd, sme mica incls, hemitite stn, sme scat m-cse grs, vp ϕ , no show
	SH	10%	lt grn, rdbrn, gy, fmr, blk, sl calc
6120-6132	SS	60%	aa
	LS	10%	gy, gybrn, mod hd, occ chky, frag, aren, no vis ϕ , no show
	SH	10%	lt orng, crm, sft-frm, slty
	SLTST	20%	lt orng, rdbrn, frm, v arg, aren, tt, micaceous
6132-6141	SS	50%	aa
	SLTST	30%	lt orng, rdbrn, frm-mod hd, calc, v arg, mica, tt
	SH	20%	aa
6141-6159	SS	80%	brn, lt brn, lt gy, wh, mod hd-hd, v calc, arg, vf gr, well srted, mica incls, vp ϕ , no show
	SH	10%	aa
6159-6174	SS	90%	crm, wh, vf-m gr, mod w srted, sbrnd, mod-v calc, mica incls, vp ϕ , no show
	SH	10%	aa
6174-6180	SS	80%	lt gy-gy, crm, brn, vf-f gr, mod well srted, sl arg, mod-v calc, micaceous, vp ϕ , no show
	LS	10%	gy, hd, dns, micrite, no vis ϕ , no show
	SH	10%	crm, lt orng, brn, sft-frm, slty
6180-6192	LS	30%	gy-dk gy, mod hd-hd, dns, micrite, no vis ϕ
	SS	20%	aa
	SLTST	50%	brn, gybrn, lt grn, frm, sl calc, v arg, mica, tt
6192-6204	LS	60%	gy-dk gy, buff, mod hd-hd, micrite, dns, occ frag, aren in pt, no vis ϕ , no show
	SS	30%	gy, crm, mod hd, v calc, vf-f gr, cln, sbang-sbrnd, vp ϕ , no show
	SH	10%	dk gy, frm-mod hd, blk, aren in pt
6204-6214	LS	40%	aa
	SLTST	50%	gy, hd, sil, sl arg, occ mica, v tt, noncalc
	SH	10%	aa
6214-6223	LS	10%	aa
	SLTST	70%	gy, hd, sil, v sl calc, arg, occ mica, tt
	SH	20%	orng, lt grn, dk gy, blk, sl calc, frm-mod hd
6223-6235	SLTST	70%	gy-dk gy, frm-mod hd, calc, mica, tt
	SS	10%	lt gy, vf gr, mod hd, calc, mica incls, well

			srted, vp ϕ , no show
	SH	10%	dk gy, lt grn, sft frm, slty, blk
	LS	10%	aa
6235-6245	SLTST	50%	gy-dk gy, mod hd-hd, sil, aren, tt
	SH	40%	gy-dk gy, crm, sl-mod calc, blk, slty
	SS	10%	aa
6245-6260	SS	90%	lt gy-gy, frm, calc, vf gr, well srted, sbrnd, mica incl, vp ϕ , no show
	SH	10%	dk gy, lt grn, frm, sl calc, blk
6260-6270	SS	80%	largely aa, vf gr grd to SLTST
	LS	10%	dk gybrn, hd, dns, micrite, vp ϕ , no show
	SH	10%	aa
6270-6280	SS	70%	lt gy, crm, wh, frm-mod hd, calc, micaceous, vp ϕ , no show
	SH	20%	lt grn, lt gy, crm, calc in pt, blk
	LS	10%	aa
6280-6291	SLTST	50%	lt gy, brn, lt grn, frm-mod hd, sl calc in pt, arg in pt
	SS	20%	wh, m-cse gr, calc, frm, sme orng incl, vp ϕ , no show
	SH	30%	gy, brn, lt grn, crm, frm-mod hd, sl calc, blk
6291-6300	SS	70%	wh, crm, mod hd, v sl calc, f-m gr, sme cse gr, poorly srted, sbang-sbrnd, vp ϕ , no show
	LS	10%	lt gy-gybrn, hd, dns, micrite
	SH	20%	brn, lt grn, frm, sbplty, occ sbwxy, occ slty
6300-6312	SS	60%	wh, clr, uncons, cse gr, sbrnd-rnd, frtd in pt, fr ϕ , no show
	SH	40%	lt gy, lt grn, aa
6312-6333	SS	80%	bri wh, cln, frm-mod hd, calc, sbrnd-sbang, well srted, vp ϕ , no show
	SH	20%	rdbrn, gy, lt grn, frm, blk
6333-6341	SLTST	70%	pred lt orng, rdbrn, sme lt grn, frm, v arg, calc in pt, blk, tt
	SH	30%	rdbrn, lt gy, lt grn, frm, noncalc, slty in pt, sil in pt
6341-6352	SLTST	70%	orng, rd orng, frm, calc, mica, v arg, tt
	SH	30%	lt grn, gy, orng, aa

6352-6364	SH	50%	rdbn, brn, orng, crm, lt grn, frm, noncalc- v sl calc, blk, slty & aren in pt
	SLTST	50%	aa
6364-6393	SS	60%	wh, lt orng, frm-mod hd, pred f gr, sme m- cse gr, poorly srted, sbang-sbrnd, occ arg, calc, vp ϕ , no show
	SLTST	20%	rdbn, orng, frm, mod hd, aren, calc, tt
	SH	20%	lt grn, crm, rdbn, gy, non-sl calc, blk
6393-6398	SS	90%	pred bri wh, sme lt orng, tt, gen aa
	SH	10%	aa
6398-6411	SS	80%	lt orng, unconsol, cse, sbrnd-rnd, qtz, mod srted, f-g ϕ , no show
	SH	20%	gy, grn, brn, frm-mod hd, non-sl calc, blk, tr brn dns micritic LS
6411-6420	SS	70%	pred lt orng, rdbn, unconsol, m-cse gr, sme lt orng, vf-f gr, frm, arg, well srted, sbang, calc, vp-p ϕ , no show
	SLTST	20%	brn, orng, frm, aren, arg, calc, tt
	SH	10%	aa
6420-6433	SS	60%	lt orng, orng, unconsol-mod hd, vf-cse gr, v p srted, sme calc cmt, arkosic & micaceous in pt, sl arg, vp-p ϕ , no shows
	SLTST	30%	aa
	SH	10%	aa
6433-6440	SS	50%	orng, rdbn, frm-mod hd, calc, vf-m gr, p srted, sbang, sbrnd, calc, micaceous, vp-p ϕ , no show
	SH	20%	gy, crm, brn, lt grn-grn, frm, non-sl calc, blk
	SLTST	30%	aa
6440-6445	SS	20%	aa
	SLTST	30%	orng, gy, pur, lt grn, frm-mod hd, sl calc, occ mica, aren, sl arg, tt
	SH	50%	lt orng, crm, gy, lt grn, largely aa, tr dns micritic LS
6445-6455	SH	40%	lt grn, gy, lt orng, brn, frm, noncalc, sbply
	SLTST	30%	lt orng, rdbn, frm-mod hd, sl calc, aren in pt, tt

	SS	30%	aa
6455-6472	SH	30%	aa
	SLTST	30%	aa
	SS	70%	lt orng, orng, sme wh, pred m-cse gr, unconsl, fr-p ϕ , sme vf-f gr, frm, calc, arg, vp-p ϕ , no shows
6472-6486	SH	30%	gy-dk gy, grn, crm, brn, frm-mod hd, noncalc, sl calc, blk
	SLTST	30%	lt orng, rdbrn, frm, arg, aren, blk, calc, tt
	SS	40%	lt orng, orng, wh, vf-m gr, frm-mod hd, sl calc, poorly srtd, sband-sbrnd, sme unconsol, cse gr, rnd
6486-6495	SS	80%	orng, f-cse gr, mod hd, calc, poorly srtd, sband-sbrnd, p-fr ϕ , no show
	SLTST	10%	wh, orng, aren, mod hd, tt
	SH	10%	aa
6495-6543	SS	60%	lt orng, frm-mod hd, vf gr, sl calc, sband, well srtd, slty, grdg to a sndy SLTST
	SH	10%	lt grn, gy, lt orng, frm, blk
	SLTST	30%	orng, rdbrn, frm, v arg, aren in pt, blk, tt
6543-6550	SS	40%	aa
	SLTST	30%	aa
	SH	30%	lt gy, lt grn, orng, frm, occ calc, blk
6550-6554	SLTST	70%	orng, rdbrn, frm-mod hd, occ micaceous, aren, v arg, calc, tt
	SS	20%	aa
	SH	10%	aa
6554-6592	SS	80%	lt orng, orng, frm, vf-f gr, sl calc, mod well srtd, sbrnd, gen p ϕ , no show
	SLTST	10%	aa
	SH	10%	lt grn, crm, frm, calc, blk, occ aren
6592-6612	SS	40%	aa
	SLTST	30%	lt orng, rdbrn, frm, calc, blk, aren in pt, arg, mica, tt
	SH	30%	rdbrn, mar, grn, crm, sft-frm, calc in pt, sme sil, blk-sbplty

6612-6623	SS	20%	wh, frm, sl calc, vf gr, well srted, sbrnd, p ϕ , no show
	SLTST	20%	aa
	SH	60%	rdbrn, orng, mar, grn, wh, sft-frm, calc in pt, occ slty, sbplty
6623-6630	SS	40%	wh, lt orng, largely aa
	SLTST	30%	rdbrn, lt gy, calc, occ arg, aren grdg to vf SS
	SH	30%	aa
6630-6638	SS	70%	lt orng, wh, crm, hemitite stn, frm-mod hd, sl calc, vf-f gr, slty, sbang-sbrnd, mica incl, gen p ϕ , no show
	SLTST	20%	aa
	SH	10%	rdbrn, crm, lt grn, frm, blk, calc, occ slty
6638-6651	SS	50%	lt orng, clr, uncons, cse gr, poorly srted, rnd, fr-g ϕ , sme vf-f gr, consol, ss, aa, no show
	SLTST	50%	lt orng, rdbrn, frm, arg, mica, blk aren, tt
6651-6660	SS	60%	lt gy-lt grn, crm, frm-mod hd, sl calc, vf-f gr, mod well srted, sbrnd, mica incl, p ϕ , no show, sme cse gr aa
	SLTST	30%	lt orng, lt grn, aa
	SH	10%	aa, tr gybrn dns micritic LS
6660-6680	SS	90%	wh, lt gy, frm, f-cse gr, poorly srted, sbang- rnd, pred f gr, sl calc, mica incl, p ϕ , no show
	SLTST	10%	lt grn aa
6680-6690	SS	80%	aa
	SLTST	10%	aa
	SH	10%	aa
6690-6701	SS	70%	lt gy, wh, lt orng, pred vf-f gr, frm-mod hd, calc, sbang, micaceous, sme m-cse, uncons, sbrnd-rnd, qtz gr
	SLTST	20%	gybrn, gy-grn, frm, calc, aren, sl arg, tt
	SH	10%	brn, gy-lt grn, frm, slty, blk, sl calc
6701-6708	SS	40%	aa
	SH	50%	rdbrn-brn, lt gy-lt grn, frm, calc, aren, sl arg, tt

	SLTST	10%	aa
6708-6719	LS	70%	m-dk gy, mod hd, micrite, v arg, vp ϕ , no show
	SS	10%	aa
	SH	20%	aa
6719-6730	LS	20%	aa except aren in pt
	SS	30%	wh, lt gy, lt orng, frm, calc, mod well srted, sbang-sbrnd, p ϕ , mica, no show
	SH	40%	gy-dk gy, rdbrn, mar, frm, sl calc, blkysbplty
	SLTST	10%	rd orng, frm, sl calc, blkys aren in pt, v arg, tt
6730-6740	SS	20%	lt gy, frm, calc, mod srted, sbang, sl arg, mica incls, vp-p ϕ , no show
	SLTST	50%	pred brn, sme lt gy & lt grn, frm, sl calc, micaceous, v arg, tt
	SH	30%	brn, rdbrn, gy, mar, sft-frm, sl calc
6740-6750	SLTST	60%	brn, largely aa
	SH	20%	aa
	SS	20%	aa
6750-6760	SS	50%	lt gy, crm, wh, sme hemitite stn, frm, sl-mod calc, vf-f gr, mica incl, mod srted, sbang-sbrnd, vp-p ϕ , no show
	SLTST	30%	brn, lt gy-gy, frm, sl-mod calc, v arg, mica, tt
	SH	20%	gy, brn, rdbrn, frm, blkys, slty, calc
6760-6770	SS	60%	lt brn, lt orng, lt gy, frm, mod calc, vf-f gr, mod well srted, sbang-sbrnd, occ mica
	SH	20%	gy, lt grn, rdbrn, brn, frm, blkysbplty
	SLTST	20%	lt orng, rdbrn, gy, aa
6770-6775	SLTST	20%	aa
	SS	70%	lt brn, lt gy, sme wh, frm, sl calc, vf-f gr, sbrnd, mod well srted, sl arg, occ slty, vp-p ϕ , no show
	SH	10%	aa
6775-6782	SS	70%	lt brn, rdbrn, frm, calc, vf gr, slty grdg to aren sltst, well srted, vp ϕ

	SH	30%	lt orng-crm, sft-frm, blk, v calc
6782-6800	SS	60%	pred lt brn aa, sme orng, clr, unconsl, cse gr, fr-g ϕ , no show
	SH	40%	pred lt orng aa, sme rdbrn, lt grn, mot mar, sft-frm, sl calc, sbpty
6800-6808	SH	80%	aa
	SS	10%	aa
	SLTST	10%	lt-dk brn, rdbrn, frm, calc, v arg grding to slty SH, tt
6808-6820	SS	40%	wh, fri-frm, sl calc, well srted, vf gr, sbrnd, cln, vp ϕ , no show
	SH&CLYST	30%	SH aa, CLYST, crm, sft-frm, v calc
	SLTST	30%	lt gy, frm-mod hd, noncalc, sil, sl arg, blk tt, tr gy, mod hd, micritic LS
6820-6830	SH	60%	m-dk gy, sme brn, frm, sl calc, blk
	SLTST	30%	gy, frm, sl calc, blk, arg, tt
	SS	10%	aa
6830-6841	SLTST	60%	lt-m gy, aa
	SS	10%	aa
	SH	30%	m-dk gy, brn, orng, frm, blk, non-sl calc
6841-6858	SS	30%	lt gy, wh, vf-m gr, mod srted, frm, sl calc, sbang-sbrnd, sme cht incl, vp-p ϕ , no show
	SH	70%	pred rdbrn, sme lt-m gy, lt grn, sft-frm, noncalc, plty
6858-6869	SS	10%	lt gy, wh, aa
	SH	50%	rdbrn, brn, m-dk gy, lt grn, frm, blk, v slty, noncalc
	SLTST	40%	brn, lt-m gy, frm-mod hd, blk, v sl calc, v arg
6869-6880	SLTST	80%	pred lt-m gy, sme brn, frm-mod hd, calc, arg, aren in pt, blk, tt
	SH	10%	aa
	SS	10%	lt gy, wh, frm, calc, vf gr, well srted, slty in pt, vp ϕ , no show
6880-6888	SS	70%	lt gy-wh, frm-mod hd, f gr, sme clr cse gr, calc, rnd-sbrnd, well srted, vp-p ϕ , no show
	SH	10%	aa
	SLTST	20%	aa

6888-6898	SLTST	70%	lt-m gy, brn, crm, frm-mod hd, sl calc, blk, micaceous, tt
	SH	10%	aa
	SS	20%	aa
6898-6908	SS	50%	lt brn, lt gy, wh, frm-mod hd, calc, micaceous, vf gr, slty, mod well srted, p ϕ , no show
	SLTST	40%	aa
	SH	10%	gy, rdbn, lt grn, frm, blk, slty, tr gybrn, hd, dns, micritic LS
6908-6920	SS	60%	lt brn, buff, lt gy, wh, frm, sl-mod calc, vf-f gr, slty, sil in pt, sbang-sbrnd, micaceous in pt, vp ϕ , no shows
	SLTST	20%	gy, frm, sl calc, aren, blk, micaceous, tt
	SH	20%	m-dk gy, frm, sl calc, sbplty, sl slty
6920-6930	SS	20%	aa
	SLTST	70%	pred lt brn-brn, frm-mod hd, calc, blk, sl aren, tt
	SH	10%	aa
6930-6939	SH	40%	m-dk gy, brn, rdbn, mar, frm, non-sl calc, blk-sbplty
	SLTST	50%	brn, gy, largely aa, micaceous
	SS	10%	aa
6939-6948	SS	50%	pred clr, cse gr, well rnd, unconsl, qtz grs, sme, wh, fri, f gr, sbang, well srted, SS, fr-g ϕ , no shows
	LS	20%	gy-gybrn, hd, dns, micrite, v dolomitic, sl arg, no vis ϕ
	SH	30%	dk gy, sme brn & rdbn, frm, slty, noncalc, blk-sbplty
6948-6960	SS	70%	clr, unconsl, cse gr, well rnd, mod well srted, qtz, occ frosted, g ϕ , no show
	SH	30%	dk gy, brn, frm, occ slty, sbplty
6960-6970	LS	80%	m-dk brn, mod hd-hd, v arg, v dolomitic, micrite, no vis ϕ , no show
	SH	20%	aa
6970-6982	LS	10%	aa
	SLTST	70%	lt brn, frm, v calc, arg, tt

6982-	SH	20%	gy-dk gybrn, frm, non-sl calc
6982-6992	SLTST	60%	aa
	SH	40%	aa
6992-7000	ANHY	20%	wh, lt gy, sft, mas
	SS	50%	crm, wh, frm, sl calc, vf gr, well srted, sbang, poor porosity, no show
	SH	30%	gy-dk gy, rdbrn, lt grn
7000-7010	ANHY	10%	wh aa
	SS	50%	lt brn, wh, aa
	SH	40%	gy-dk gy, rdbrn, frm, non-sl calc, splnty in pt
<u>Minturn</u>			
7010-7019	ANHY	20%	wh, lt gy, sft, mas
	SH	60%	rdbrn, orng, dk gy, sft-frm, blk, occ slty
	SS	10%	lt brn, frm, sl calc, vf gr, well srted, vp ϕ , no show
7019-7028	SS	60%	clr, frosted, unconsl, crs, rnd-well rnd, qtz, fr-g ϕ , no show
	SH	40%	aa
7028-7038	ANHY	10%	lt gy, wh, sft, mas
	LS	80%	lt gy, pnk cast, frm-mod hd, sl arg, v ANHY, micrite, no vis ϕ , no show
	SH	10%	gy-gyblk, aa
7038-7063	LS	80%	lt-m gy, frm-mod hd, mot, chky in pt, mod arg, micrite, no vis ϕ , no show
7063-7072	LS	90%	gy-gyblk, mod hd-hd, arg, sl foss, dolomitic in pt, no vis ϕ , no show
	SH	10%	rdbrn, cvgs
7072-7082	SS	60%	wh, mod hd-hd, sil, noncalc, vf gr, well srted, sbrnd, vp ϕ , no show
	SOLO	30%	gy, mod hd-hd, sl calc, mott, micxln, no vis ϕ , no show
	LS	10%	aa
7082-7093	SS	50%	wh, lt gy, largely aa, slty
	LS	50%	dk brn, hd, dns, crpxl, micrite, rare fos, dolomitic in pt, no vis ϕ , no show

7093-7112	SS	80%	wh, lt gy, fri-frm, vf gr, well srted, sbrnd, sl calc, gen p ϕ , no show
	LS	20%	brn-dk brn, largely aa
7112-7140	SS	80%	lt gy, crm, mod hd, mod calc, vf gr, slty, well srted, sbrnd, occ sil, vp ϕ , no show
	SH	10%	rdbrn, dk gy, frm, blk, cvgs
	LS	10%	lt gy, crm, mod hd, chky, micrite, vp ϕ , no show
<u>Minturn "A"</u>			
7140-7177	SS	90%	lt gy, crm, frm-mod hd, vf gr, well srted, calc, sbrnd, gen p ϕ , no show
	SH	10%	rdbrn, dk brn, lt grn, dk gy, frm, blk, tr wh sft mass ANHY
7177-7186	ANHY	10%	wh, sft, mass
	LS	30%	lt-m gy, mod hd, aren, micxln, sl arg, occ dolomitic, vp ϕ , no show
	SS	60%	aa
7186-7196	ANHY	20%	wh, sft, mass
	LS	10%	aa
	SS	70%	lt gy, buff, mod hd, sil, vf gr, slty, vp ϕ , no show
7196-7206	ANHY	20%	wh, sft, mass
	SS	80%	lt gy, buff aa, v anhydritic
7206-7215	ANHY	40%	wh, sft, mass, sme gy, frm, sndy, dolomitic
	SS	60%	lt gy-gy, buff, frm-mod hd, v anhydritic, vf gr, sbrnd-sbang, mod well srted, vp ϕ , no show
7215-7225	ANHY	50%	pred lt gy-gy, frm-mod hd, xln, dolomitic, sme wh, sft, mass, sme gyp
	SS	50%	aa
7225-7240	ANHY	70%	aa
	SS	30%	aa
7240-7247	DOLO	70%	lt gy-gy, frm-mod hd, sl aren in pt, v anhydritic, abnt interbedded & intercrystalline gypsum, dns, micxln-vf xln, vp ϕ , no show
	ANHY	30%	aa
7247-7259	SS	60%	lt gy, crm, wh, frm, calc, vf gr, well srted, vp ϕ , no show

	DOLO	20%	aa
	ANHY	20%	pred wh, sft, mass, sme lt gy-gy, frm-mod hd, v dolomitic
7259-7280	SS	70%	lt gy, crm, wh aa
	ANHY	10%	aa
	SH	20%	rdbnr, rd orng, dk gy, frm, blk, sbplty, non-v sl calc
7288-7295			sample missing
7295-7300	SS	50%	lt gy, frm-mod hd, calc, vf gr, well srtd, p ϕ , no show
	SH	30%	rdbnr, rd orng, dk gy, aa
	LS	10%	lt-m gy, frm, chky, micrite, vp ϕ , no show
	ANHY	10%	wh, sft, mas
7300-7310	SS	30%	aa
	SLTST	20%	gy, brn, frm, sl calc, blk, arg, tt
	LS	10%	aa
	SH	40%	m-dk gy, rdbnr, brn, grn, frm, sbplty
7310-7320			no sample returns, lost circulation
7320-7332	LS	10%	lt-m gy, mod hd, occ chky, arg, micrite, vp ϕ , no show
	DOLO	30%	m-dk gy, gybrn, mod hd-hd, arg, anhydritic, sl calc, mott, vf xln, vp ϕ , tr blk stn, no flor, no cut
	ANHY	20%	gy, frm, dolomitic, sme intr xln gyp
	SS	30%	lt gy, crm, aa
	SH	10%	aa
7332-7342			no sample returns, lost circulation
7342-7362			poor sample, abnt cavings
	SH&CLYST	40%	rdbnr, dk gy, sbplty SH w/sft, lt grn, gy, wh, lav clyst
	SLTST	40%	lt gy-gy, brn, blk, frm, arg, v calc, tt, micaceous in pt, rare blk stn, no flor or cut
	LS&DOLO	20%	aa
7362-7370	SLTST	70%	lt gy-gy, brn, frm-mod hd, calc, occ aren, blk, tt
	SH&CLYST	30%	lt gy, lt grn, crm, sft clyst - dk gy, brn, frm, slty, sbplty SH

7370-7380	SS	40%	lt gy, lt brn, frm, sl calc, f gr, mod well srted, sbrnd, p-fr ϕ , no show, occ micaceous
	SLTST	20%	aa
	LS	10%	dk gy, gybrn, frm-mod hd, sl dolomitic, micrite, vp ϕ , no show
	SH	30%	dk gy, brn, rdbn, occ slty, blk-sbplty, sl- non calc
7380-7391	SLTST	70%	lt brn, buff, gy, frm, arg, v calc, tt
	SS	10%	wh, frm, sl calc, f-m gr, poorly srted, sbrnd- rnd, p-fr ϕ , no show
	SH	20%	dk gy, sft-frm, slty, occ slty, sl calc, tr frm-mod hd, dk gy, v arg LS
7391-7400	LS	40%	lt gybrn, sft-frm, chky, micrite, v arg grdg to lmy SH, vp ϕ , no show
	SS	30%	aa
	SH	30%	aa
7400-7420	SLTST	30%	lt-m gy, frm, v arg, v calc, blk, tt
	LS	30%	gy-gybrn, sme dk brn, sft-frm, v arg grdg to lmy SH, vp ϕ , no show
	SS	20%	wh, aa
	SH	20%	aa
	SLTST	70%	brn, gy, frm-mod hd, v calc, sl arg, tt
7420-7430	LS	10%	gy, mod hd, dns, micrite, vp ϕ , no show
	SH	20%	dk gy, brn, frm, calc, slty
	SLTST	70%	brn, gy, frm-mod hd, v calc, sl arg, tt
7430-7438	LS	40%	lt-m gy, mod hd, chky, arg, micrite, vp ϕ , no show
	SLTST	30%	aa
	SH	20%	aa
	SS	10%	wh, frm, calc, vf gr, well srted, sbrnd, p ϕ , no show
	SLTST	70%	brn, gy, frm-mod hd, v calc, sl arg, tt
7438-7462	LS	10%	dk gy, mod hd, v arg, micrite, no vis ϕ , no show
	SLTST	20%	lt gy-gy, brn, frm-mod hd, sl-mod calc, blk, tt
	SS	70%	lt gy, wh, buff, frm-mod hd, sl-mod calc, vf gr, p ϕ , sme f gr w/cse gr incl, p ϕ , no show

7462-7468	LS	10%	lt-m gy, mod hd, dolomitic, no vis ϕ , no show
	SS	60%	lt gy, wh, mod hd, sl calc, pred vf-f gr, sme vf-cse gr, sbrnd-rnd, gen p ϕ , no shows
	SLTST	30%	aa
7468-7482	SS	70%	lt gy, brn, pred unconsl, sme frm-mod hd, f-cse gr, poorly srted, sbrnd-well rnd, fr-g ϕ
	SLTST	20%	aa
	LS	10%	aa
7482-7490	DOLO	20%	dk gy, hd, dns, micxln, no vis ϕ , v arg, sl-mod calc
	SS	30%	wh, lt orng, lt gy, frm-mod hd, calc, vf-cse gr, v poorly srted, sbrnd-rnd, sl micaceous, gen p ϕ , no show
	SLTST	30%	lt-m gy, brn, rdbrn, frm, calc, arg, blk, tt
7490-7502	SH	20%	brn, rdbrn, noncalc, frm, plty, occ slty
	LS	10%	dk gy-gyblk, hd, dns, v arg, micrite, vp ϕ , no show
	SS	30%	largely aa
7502-7517	SLTST	60%	aa
	SH	10%	aa
	SS	10%	aa
7517-7550	SLTST	70%	brn, lt gy, mar, sft-frm, v arg, v calc, aren in pt, tt
	LS	20%	aa
	SS	30%	wh, lt gy, mod hd, sil in pt, sl calc, vf-f gr, mod well srted, p ϕ , no show
7550-7556	SLTST	70%	brn, lt gy, frm-mod hd, sil, arg, tt sli calc
	SS	40%	pred aa, sme clr, lt orng, unconsl, cse gr, rnd, no shows
	SLTST	60%	brn, rdbrn, frm-mod hd, v arg, sil, sl calc, tt, tr gy dns micritic LS
7556-7581	SH	20%	brn, lt gy-gy, rd orng, frm, blk, slty, calc
	SLTST	50%	aa
	SS	30%	aa
7581-7587	SS	20%	lt gy-wh, frm-mod hd, sl calc, vf-f gr, mod well srted, sbrnd-sbang, p ϕ , no show

	SLTST	50%	brn, rdbrn, gy, frm-mod hd, v arg, calc, occ aren, blk, tt
	LS	10%	gy-dk gy, frm-mod hd, v arg micrite, no vis ϕ , no show
	SH	20%	brn, gybrn, frm, slty, sl calc, sbplty
7857-7600	SS	40%	wh, lt gy, mod hd, sl calc, vf-f gr, sbrnd, cln, vp-p ϕ , no show
	SLTST	40%	brn, rdbrn, lt gy, frm-mod hd, sl calc, sil in pt, arg, occ aren, blk, tt
	LS	10%	dk gy-gyblk, hd, v arg, micrite, no vis ϕ , no show
	SH	10%	aa
7600-7610	SS	20%	aa
	SLTST	60%	aa
	SH	10%	aa
	LS	10%	aa
7610-7618	SS	20%	lt gy, wh, pred aa, sme m-cse, unconsl, clr-frosted, rnd, qtz grs
	SLTST	60%	brn, gybrn, mod hd, sl sil, sl calc, aren in pt, tt
	LS	10%	dk gy, gyblk, hd, dns, v arg, v dolomitic, micrite, no vis ϕ , no show
	SH	10%	brn, gybrn, rd, frm
7618-7636	SLTST	90%	lt gy, brn, rdbrn, sl sil, sl calc, aren, tt
7636-7649	SLTST	70%	aa
	SH	10%	rdbrn, orng, dk gy, frm, blk
	SS	10%	aa
	ANHY	10%	lt gy-gy, wh, frm, mas, sl calc
7649-7657	SS	20%	lt gy, wh, frm-mod hd, sl calc
	LS	10%	dk gy-gyblk, sme lt gy, hd, dns, v arg, v dolomitic, vp ϕ , no show
	SLTST	70%	brn, rdbrn, lt gy, frm-mod hd, v arg, sl calc
7657-7667	ANHY	20%	wh, lt gy, sft-frm, sme xln, sme mass
	SLTST	50%	aa
	SS	30%	lt gy, wh, frm, vf gr, well srted, sbrnd, p ϕ , no show

7667-7675	ANHY	30%	lt gy, wh, sft-frm, sme xln, sme mass
	SS	40%	lt gy, wh, frm, vf gr, slty grdg to a SLTST calc, vp ϕ , no show
	SLTST	30%	lt gy, brn, frm-mod hd, calc, blk, tt
7675-7686	ANHY	40%	pred wh, sft, mass, sme lt gy-gy, frm, xln, slty
	SS	40%	lt gy, wh, crm, frm-mod hd, v anhydritic, sl calc, vf gr, slty grdg to a SLTST
	SLTST	20%	aa
7686-7695	ANHY	60%	aa
	SS	40%	aa
7695-7708	ANHY	60%	lt gy-gy, frm, xln, occ slty, sme wh, sft, mas
	LS	30%	dk gy, gyblk, hd, dns, v arg, v dolomitic grdg to lmy DOLO, anhydritic in pt
	SS	10%	aa
7708-7726	DOLO	60%	dk brn, dk gy, blk, hd, mot, v arg, micxln, sl calc in pt, sme anhy & gyp xls, no vis ϕ , no show
	ANHY	40%	pred lt gy, frm, xln, sme wh, sft, mas
	DOLO	70%	aa
7726-7739	ANHY	30%	aa
	DOLO	50%	aa
	ANHY	20%	aa
7739-7762	DOLO	50%	aa
	ANHY	20%	aa
	SS	30%	wh, fri-frm, vf gr, sl calc, well srtd, gen p ϕ , sme fr ϕ , no show
7762-7770	SS	60%	wh, frm, sltst - vf gr SS, calc, well srtd, p ϕ , no show
	DOLO	20%	aa
	ANHY	20%	aa
7770-7790	SS	70%	wh, frm-mod hd, vf gr SS grdg to SLTST, well srtd, sbrnd-rnd, calc, p ϕ , no show
	DOLO	20%	dk brn, gyblk, mot, hd, dns, arg, micxln, vp ϕ , no show
	ANHY	10%	lt gy, wh, pred xln, sme sft, mass
7790-7808	SS	70%	aa, sme rnd, unconsl cse gr
	DOLO	20%	aa
	ANHY	10%	aa

7808-7816	SS	40%	aa
	DOLO	10%	aa
	SLTST	40%	wh, mod hd, sl calc, cln, blk, tt, aren grdg to vf gr SS
	ANHY	10%	aa
7816-7840	SS	10%	aa
	SLTST	60%	aa
	DOLO	20%	dk brn, gyblk, hd, dns, v arg, sl calc, no vis ϕ , no shows
	ANHY	10%	aa
7840-7850	SLTST	10%	aa
	LS	10%	gybrn-brn, mod hd, arg, dolomitic, micrite, vp ϕ , no show
	DOLO	50%	brn-dk brn, gy-gyblk, hd, v arg, mod-v calc grdg to dolc LS, micxln, vp ϕ , no show, sme intraxln ANHY
	ANHY	30%	lt gy, wh, frm, pred xln, sme sft wh mass
7850-7860	LS	60%	gy-dk gy, gybrn, mod hd-hd, mod-v arg, sl dolo- mitic in pt, micrite-microsparite, anhydritic in pt, vp ϕ , no show
	DOLO	10%	aa
	ANHY	30%	aa
7860-7868	LS	70%	aa
	DOLO	10%	aa
	ANHY	20%	aa
7868-7890	LS	80%	lt-dk gy, sme ltbrn, buff, mod hd-hd, mod-v arg, dolomitic in pt, chky, in pt, micrite- microsparite, sme inter xln & interbedded ANHY
	ANHY	10%	wh, frm, xln
	DOLO	10%	dk gy, gyblk aa
7890-7898	SH	10%	dk gy, frm, plty, calc
	LS	60%	pred dk gy, mod hd-hd, v arg, dolomitic, anhydritic, micrite, vp ϕ , no show
	ANHY	20%	wh, frm, xln
	SLTST	10%	wh, frm, calc, blk, cln, aren in pt, tt
7898-7909	SS	30%	lt gy-wh, frm, calc, vf tr, slty grdg to SLTST, mod well srted, sbrnd, gen p ϕ , no show

	LS	40%	aa
	ANHY	20%	aa
	SH	10%	aa
7909-7918	SS	30%	aa
	SLTST	20%	gy, buff, frm-mod hd, calc, aren in pt, tt
	LS	30%	aa
	SH	10%	aa
	ANHY	10%	aa
7918-7927	SLTST	40%	gy, buff, rdbrn, frm-mod hd, calc, aren in pt, tt
	LS	30%	gy-dk gy, mod hd, arg, occ dolomitic, micrite-microsparite, vp ϕ , no show
	SH	20%	dk gy, brn, frm, splnty, sl calc
	SS	10%	rdbrn, wh, frm, calc, vf gr, well srted, vp ϕ , no show
7927-7952	LS	10%	aa
	SLTST	40%	aa
	SS	40%	aa
	SH	10%	aa
7952-7970	SLTST	70%	rdbrn, brn, lt gy, fri-mod hd, sl calc, sl-mod arg, aren in pt, blk, occ sil, tt
	SS	20%	lt gy-wh, frm-mod hd, v sl calc, well srted, sbrnd, vf gr, p ϕ , no show
	SH	10%	dk gy, brn, frm, calc, sbplty
7970-7994	SLTST	60%	aa
	SS	20%	aa
	SH	10%	aa
	LS	10%	gy, dk gy, blk, hd, dns, dolomitic micrite, vp ϕ , no show
7994-8010	SLTST	60%	brn, lt gy, fri-frm, sl-mod arg, calc, hemi-tite stn, aren, tt
	LS	20%	aa
	SH	10%	dk gy, mar, rdbrn, sft-frm, bentonitic in pt
	SS	10%	lt gy, wh, frm, vf gr, slty, sl calc, poor ϕ , no show
8010-8033	LS	30%	gy, frm-mod hd, arg, micrite, vp ϕ , no show
	SLTST	50%	aa

8033-8040	ANHY	10%	wh, sft, mass
	SH	10%	aa
	LS	40%	gy-dk gy, frm-mod hd, arg, slty, micxln, vp ϕ , no show
8040-8050	SLTST	50%	gy-dk gy, brn, frm, v calc, v arg, tt
	SH	10%	dk gy, rdbrn, frm, calc
	LS	60%	gy-dk gy, frm-mod hd, arg, occ slty, micrite, vp ϕ
	SLTST	30%	lt gy-gy, frm, arg, v calc grdg to slty LS, tt
8050-8060	SH	10%	gy-dk gy, brn, rdbrn, frm, sbplty, calc
	LS	40%	largely aa, sme blk, hd, dns, dolomitic LS
	SLTST	40%	aa
	SS	20%	wh, frm, calc, vf gr, well srted, sbrnd-rnd, vp ϕ , no show
8060-8073	LS	20%	gy-dk gy, mod hd, chky, arg, micrite, sme dns, dolomitic, vp ϕ , no show
	SS	20%	lt gy, wh, frm-mod hd, calc, well srted, sbrnd-rnd, vf gr, sme hemitite stng, p ϕ , no show
	SLTST	60%	lt gy-gy, mod hd, v calc, aren in pt, sl arg, blk, tt
8073-8090	LS	10%	aa
	SS	30%	lt gy, wh, fri-frm, calc, vf gr, well srted, sbrnd, sme hemitite stng, gen p ϕ , tr fr ϕ , no show
	SLTST	60%	lt gy-gy, frm-mod hd, sl calc, sil in pt, aren in pt, tt
8090-8098	SS	20%	aa
	LS	10%	brn, lt gybrn, frm-mod hd, v arg, micrite occ grdg to lmy SH
	SH	10%	gybrn, rbbrn, frm, sbplty, calc
	SLTST	60%	lt gy-gy, frm-mod hd, v calc, v arg, blk, tt
8098-8112	SS	30%	lt gy, wh, frm, calc, vf tr, well srted, poor ϕ
	SLTST	40%	aa
	LS	20%	aa

	SH	10%	aa
8112-8118	ANHY	20%	lt gy, brn, frm, xln, dolomitic, sme sft, wh, mass
	LS	30%	lt brn-brn, gybrn, frm-mod hd, sme frm, v arg, sme mod hd, dolomitic, micrite, vp ϕ , no show
	SLTST	40%	aa
	SH	10%	brn, gy, frm, sbplty, calc
8118-8129	LS	10%	aa
	ANHY	10%	aa
	SLTST	80%	lt gy-gy, fri-frm, v calc, sl arg, blk, tt, sme interbedded & interxln ANHY
8129-8150	LS	30%	gy, gybrn, mod hd, sl arg, dolomitic, micrite, vp ϕ , no show, sme dk gy DOLO
	SS	20%	lt gy, wh, frm, vf tr, calc, well srted, p ϕ , no show
	SLTST	50%	gy, dk gy, aa, sme dolomitic
8150-8160	SS	30%	lt gy, crm, frm-mod hd, vf gr, calc, well srted, sbrnd, p ϕ
	LS	20%	aa
	SLTST	50%	aa
8160-8170	ANHY	10%	wh, sft, mass
	LS	10%	aa
	DOLO	10%	dk gy-gyblk, hd, dns, cryptoxln
	SLTST	70%	lt gy-gy, frm-mod hd, v dolomitic, sm v calc
8170-8175	ANHY	10%	aa
	LS	10%	gy, frm-mod hd, dolomitic, arg, vp ϕ , micrite
	SLTST	60%	aa
	SH	20%	rdbrn, brn, mar, sft-frm, blk-sbplty, noncalc, prob cavings
8175-8195	ANHY	20%	wh, sft, mas
	LS	10%	aa
	SLTST	60%	gy-dk gy, frm-mod hd, sl calc, v dolomitic, blk, tt
	SH	10%	rdbrn, mar, sft, blk-sbplty, noncalc
8195-8391	SALT		interp by drill rate & chloride increase in mud, samples are 100% cavings

8391-8394	SLTST	80%	lt gy-gy, frm-mod hd, blk, v dolomitic, tt
	SH	20%	rdbn, mar, sft-frm, sbplty, noncalc
8394-8402	DOLO	30%	m-dk gy, mod hd-hd, sl arg, micxln-vf xln, sl slty, vp ϕ , no show
	LS	10%	lt brn, buff, frm-mod hd, arg, chky, micrite, occ dolomitic, vp ϕ , no show
	ANHY	10%	lt gy, wh, sft-frm, mas
	SLTST	50%	lt gy-gy aa, cvgs
8402-8439	DOLO	90%	gy, gybrn, hd, micxln-vf xln, v slty grd to dolomitic SLTST, vp ϕ
	ANHY	10%	lt gy, wh, sft-frm, mass
8439-8442	SH	20%	dk gy, blk, sft, sbplty, calc
	DOLO	30%	aa
	SS	50%	lt gy, mod hd, dolomite matrix, vf gr, well srted, sbrnd-rnd, vp ϕ , no show
	SS	90%	lt gy-wh, aa
8442-8470	LS	10%	dk gy, hd, dns, micrite, vp ϕ , no show
8470-8480	SS	100%	aa
8480-8490	SS	50%	aa
	LS	10%	brn, gy, frm, micxln, dolomitic, vp ϕ , no show
	SLTST	40%	lt gy-lt gybrn, frm-mod hd, dolomitic, aren, tt
8490-8499	SS	30%	lt gy, frm-mod hd, calc, vf gr, well srted, sbang-sbrnd, p ϕ , rare blk stn, no flor or cut
	SLTST	30%	lt gy-lt gybrn, frm-mod hd, sl calc, aren, tt
	LS	20%	brn, gybrn, frm-mod hd, v arg, micrite, vp ϕ , no show
	DOLO	20%	dk gy, hd, dns, sl-mod calc, micxln, vp ϕ , no show
8499-8511	ANHY	10%	wh, sft, mass
	SS	10%	aa
	SLTST	30%	lt gy, mod hd, dolomitic, aren, blk, tt
	LS	30%	aa
	DOLO	20%	aa, slty

8511-8529	SS	10%	aa
	ANHY	10%	wh, sft, mas
	SLTST	20%	aa
	DOLO	50%	brn, gy, mod hd-hd, sl calc, v slty, arg, micxln-vf xln, vp ϕ , no show
	LS	10%	brn, gybrn, frm, v arg, micritic, vp ϕ , no show
8529-8543	SLTST	30%	gy-gybrn, frm, sl calc, dolomitic, aren, vp ϕ , blk
	ANHY	20%	wh, sft, mass
	DOLO	40%	aa
	LS	10%	aa
8543-8670	SALT		interp by drill rate samples are 80-100% cavings
	ANHY	10%	wh, sft, mass
	ANHY	40%	from 8610-8630
8670-8703	SLTST	50%	lt gy-gy, mod hd, v dolomitic, aren, blk, tt, anhydritic in pt
	SS	10%	lt gy, crm, frm-mod hd, sl calc, vf gr, well srted, p ϕ , no show
	DOLO	30%	gy-dk gy, mod hd-hd, v slty grdg to dolomitic SLTST, micxln, vp ϕ , no show
	ANHY	10%	wh, sft, mass, occ slty
8703-8713	SLTST	20%	lt gy, lt gybrn, frm-mod hd, dolomitic in pt, arg, blk, tt, aren
	ANHY	20%	wh, sft, mass
	DOLO	60%	gy-dk gy, mod hd-hd, v slty in pt, arg, sl calc, vp ϕ , no show
8713-8721			trip sample, cavings
8721-8730	LS	30%	gy, mod hd, arg, micrite, no vis ϕ , no show
	SH	20%	dk gy, rdbrn, prob cvgs
	SS	50%	lt brn, buff, fri, v calc, vf gr, well srted, sbang, v slty grdg to a sndy SLTST, p ϕ , no show
8730-8764	SS	90%	lt brn, buff, fri, mod-v calc, vf gr, well srted, sbang, v slty grdg to a sndy SLTST, p ϕ , abnt dull yel min flor, no show

	LS	10%	aa
8764-8777	SS	100%	aa
8777-8798	SS	50%	aa
	SH	50%	mar, gy, wh, dk gy, lt grn, sft, sme noncalc, sme lmy, prob cvgs
8798-8827	SH	100%	pred mar, sme lt grn, rdbn, wh, sft, cvgs
8827-8838	SH	80%	aa
	LS	20%	gy-gybrn, mod hd, arg, occ slty, micrite, vp ø, no show
8838-8849	ANHY	30%	pred tan, sme gy & wh, sft, mass
	LS	20%	gy-dk gy, mod hd, arg, anhydritic, micrite
	SH	50%	aa
8849-8858	LS	40%	dk brn, gy, blk, hd, slty, arg, micrite, vp ø, no show
	SH	60%	blk, dk gy, sft-frn, sbplty-plty, v calc
8858-8870	LS	20%	aa
	SH	80%	aa
8870-8884	SLTST	80%	lt gy, mod hd-hd, v dolomitic, cln, aren in pt, tt
	ANHY	10%	wh, lt gy, sft, mass
	SH	10%	aa
8884-8912	SLTST	80%	lt gy, hd, cln, v dolomitic, aren, tt
	LS	10%	dk brn, gybrn, hd, slty, micrite, vp ø, no show
	SH	10%	blk, sft, v calc, sbplty
	ANHY	tr	wh, lt gy, sft, mass
8912-8924	SLTST	60%	aa
	LS	20%	dk gy, gyblk, hd, dns, dolomitic in pt, anhydritic, micrite, vp ø, tr blk asph stn, no flor or cut
	ANHY	20%	tan, lt gy, wh, sft, mass
8924-8931			aa
8931-8952	ANHY	40%	tan, wh, sft, mass
	LS	20%	dk gy, gyblk, hd, dns aa
	SLTST	40%	lt gy, hd, aren in pt, cln, v dolomitic, anhydritic, tt

8952-8959	ANHY	30%	aa
	LS	20%	aa
	SLTST	50%	aa
8959-8970	ANHY	30%	aa
	LS	30%	aa
	SLTST	40%	aa, w/rare blk stn, no flor or cut
8970-8981	LS	40%	lt gy-gy, sme gyblk, hd, dns, sl dolomitic, slty, anhydritic, micrite, vp ϕ , no show
	ANHY	30%	pred wh, sft, mass
	SLTST	30%	lt gy, hd, mod dolo, sl, calc, anhydritic, tt
8981-8994	SLTST	20%	aa
	LS	40%	lt gy-gy, sme gyblk, hd, dns, sl dolo, occ slty tr foss, micrite, vp ϕ , rare blk stn, no flor or cut
	ANHY	40%	wh, sft, mass
8994-9013	SLTST	20%	aa
	LS	30%	aa
	ANHY	50%	aa
9013-9021	ANHY	40%	wh, sft, mass
	SLTST	10%	aa
	DOLO	30%	lt gy-gy, hd, slty in pt, anhy, frag in pt, micxln, no vis ϕ , no show
	LS	20%	lt gy-gy, mod hd-hd, occ chky, tr foss, rare ghost ool, micrite, vp ϕ , rare blk stn, no flor or cut
9021-9032	ANHY	40%	aa
	LS	30%	lt gy-gy, gybrn, mod hd-hd, occ chky, rare foss, occ dolom micrite, vp ϕ , rare blk stn, no flor or cut
	DOLO	30%	lt gy-gy, hd, dns, frag in pt, anhy, sl-mod calc, anhy in pt, vp ϕ , tr blk stn, no flor or cut
9032-9051	ANHY	60%	wh, sft, mass
	DOLO	40%	lt gy, gybrn, hd, micxln-vf xln, sl slty, sl calc, anhy in pt, vp ϕ , tr blk stn, no flor or cut
9051-9063	ANHY	30%	wh, sft, mass
	DOLO	60%	lt gy-gy, gybrn, hd, pred micxln, sme vf xln, slty in pt, anhy in pt, rare ghost ool, rare blk stn, no flor or cut

9063-9072	LS	10%	lt gy, mod hd, chky, micrite, vp ϕ , no show
	ANHY	20%	aa
	DOLO	70%	lt gy-lt gybrn, hd, pred dns, occ slty, sl calc, anhydritic in pt, micxln, vp ϕ , rare blk stn, no flor or cut
9072-9104	LS	10%	aa
	ANHY	10%	sft, wh, mass
	DOLO	70%	lt gybrn, buff, lt gy, hd, pred dns, micxln, mse vf xln, occ slty, anhydritic, sl-mod calc, vp ϕ , no show
9104-9112	LS	20%	gy, dk gy, mod hd-hd, arg, dolomitic, micrite, rare ghost fos, tr pyr, vp ϕ , no show, tr lt brn, trans, chert
	ANHY	50%	wh, sft, mass
	DOLO	40%	gy, gybrn, buff, sme dk gy, aa
9112-9131	LS	10%	aa
	ANHY	20%	wh, sft, mass
	LS	30%	gy-lt gybrn, mod hd, chky in pt, mott, micrite-microsparite, vp ϕ , rare blk stn, no flor or cut
9131-9153	DOLO	50%	gy, buff, hd, pred dns, micxln, sme vf xln, slty in pt, sl-mod calc, sl arg, vp ϕ , rare blk stn, no flor or cut, tr lt brn, trans, chert
	LS	50%	lt gy-gy, mod hd, micrite-microsparite, chky in pt, dolomitic in pt, rare ghost fos, sl arg, occ slty, vp ϕ , rare blk stn, no cut
	DOLO	30%	lt gy, mod hd-hd, sme dns micxln, sme v slty, sl-mod calc, vp ϕ , no show
9153-9162	SLTST	20%	gy, mod hd, dolomitic, tt
	ANHY	10%	wh, sft, mass
	LS	40%	lt gy-gy, mod hd-hd, micrite, chky in pt, sl dolomitic, slty in pt, sme cse gr clr qtz incl, occ frag, vp ϕ , no show
9162-9183	DOLO	40%	lt gy-gy, sme dk gy, mod hd, micxln, sl arg, slty in pt, vp ϕ , rare blk, res, no cut
	SLTST	50%	brn, rdbrn, frm-mod hd, v calc, anhydritic in pr, arg, blk, tt

9183-9192	ANHY	10%	wh, trans, sft-frm, xln-mass
	LS	40%	lt gy-gy, gybrn, mod hd-hd, aa
	SLTST	50%	brn, rdbrn, aa
	ANHY	10%	aa
9192-9199	LS	40%	lt gy-gy, gybrn, sme dk gybrn, mod hd-hd, chky in pt, micrite, vp ϕ , no show
	SH	40%	rdbrn-brn, sft, calc, occ slty, blk-sbplty
	SLTST	10%	aa
	LS	50%	lt gy-gy, mott, mod hd, v chky, arg, micrite, vp ϕ , no show
9199-9208	ANHY	10%	wh, sft, mass
	LS	30%	lt gy-gy, mod hd, micxln, arg, dolomitic in pt, slty in pt, vp ϕ , no show
	DOLO	10%	gy-dk gy, hd, micxln, calc, slty, vp ϕ , no show
	SLTST	50%	aa, prob cvgs
9208-9219	LS	40%	lt gy-gy, sme gybrn & dk gy, hd, dns, micrite, sme mod hd chky, vp ϕ , no show
	DOLO	20%	aa
	ANHY	10%	wh, sft, mass
	SLTST	30%	aa, prob cavings
9219-9241	LS	80%	gy-dk gy, mod hd, v arg, chky in pt, mott, micrite, vp ϕ , rare blk stn, no flor or cut
	ANHY	10%	wh, sft, mass
	DOLO	10%	dk brn, gy, hd, micxln, sl-mod calc, vp ϕ , no show
			tr lt brn, trans chert
9241-9254	LS		lt-dk gy, gybrn, mod hd, chky in pt, hd, dns in pt, pred micrite, sme microsparite, tr fos frag, arg, rare blk stn, no flor or cut
9254-9270	LS	60%	aa
	DOLO	40%	lt gy, dk gybrn, mod hd-hd, v slty in pt, dns in pt, micxln, vp ϕ , no show
9270-9282	ANHY	20%	wh, sft, mass
	LS	60%	gy-dk gy, mod hd-hd, v slty in pt grdg to a calc SLTST, anhydritic in pt, micxln, tr foss, vp ϕ , no show

	DOLO	20%	gy, mod hd-hd, micxln, v slty, sl calc, vp ø, no show
9282-9292	ANHY	20%	sft, wh, mass
	LS	60%	lt-dk gy, mod hd-hd, chky in pt, hd, dns, frag in pt, occ slty, micrite, vp ø, rare blk stn, no flor or cut
	DOLO	20%	dk gy-dk brn, hd, dns, v arg, micxln, sl-mod calc, vp ø, no show
9292-9304	LS	70%	gy-dk gy, frm-mod hd, v chky in pt, hd, dns, dolo in pt, slty in pt, anhydritic, rare scat foss traces
	ANHY	10%	aa
	DOLO	10%	aa
9304-9312	LS	80%	gy-dk gy, mod hd-hd, v arg, v dolo in pt, occ chky, micrite, tr foss frag, vp ø, no show
	DOLO	20%	aa
9312-9320	LS		gy-dk gy, mot, mod hd, v chky, v arg, slty in pt, tr ghost fos, vp ø, rare blk stn, no flor or cut
	CHT	tr	lt gy, trans
9320-9329	SH	10%	blk, v sft, v calc, blk
	LS	80%	gy-dk gy, mot, frm-mod hd, v arg, occ slty, tr fos ghosts, tr pyr, micrite vp ø, rare blk stn, no flor or cut
	ANHY	10%	wh, sft, mass
9329-9388	LS	100%	lt gy-crm, frm-mod hd, v chky, sme lt gy dns, crpxln micrite, tr fos ghosts, lam or v thn bedded, vp ø, no show
9388-9429	LS	100%	lt gy-crm, lt gybrn, frm-mod hd, pred crm, v chky, sme lt gy-lt gybrn, mod hd, dns, crpxln, micrite, vp ø, no show
9429-9479	LS	100%	lt gy-crm, frm-hd, pred lt gy, hd, dns, crpxln, micrite, w/sme crm, frm, v chky, micrite, gen p ø, no show
9479-9588	LS	100%	lt gy-crm, mod hd-hd, pred lt gy, hd, dns, crpxln, dolo w/ tr fos ghosts, sme crm, mod hd, chky, cln, vp ø, no show
9588-9626	LS	100%	lt gy, crm, lt gybrn, mod hd-hd, micrite-micro- sparite, sl dolo, tr pell in microspar, chky in pt, vp ø, no show

9626-9642	CHERT	10%	lt-dk brn, trans-opaque, tr wh, banded chert or agate
	LS	90%	lt gy-crm, gybrn, mod hd-hd, sme dns hd crp-xl micrite, pred crm, mod hd chky micrite-microsparite, tr foss, (crin, foram, pellets & ool), sme rexln or partially rexln in a micro-spar or sparry matrix, occ slty & arg, rare blk res, no flor or cut
9642-9662	LS	100%	gy-dk gy, sme crm, mod hd, mottled, mod-v arg in pt, occ slty & aren, occ chky micrite-microsparite, tr cht aa, vp-p ϕ , rare blk res, no flor or cut
9662-9672	LS	100%	gy-dk gy, mott, mod hd, sl arg, micrite, v aren & slty occ grdg to calc SLTST, v pell, w/sme chky strks, gen p ϕ , no show
9672-9690	ANHY	40%	wh, lt brn, sft, mass
	LS	60%	gy-dk gy, lt gybrn, sft-mod hd, v arg, micrite-pellmicrite, chky, occ aren, vp-p ϕ , no show
<u>Belden</u>			
9690-9709	SH	60%	gyblk-blk, sft-frm, v calc, carb, sbfis-blky, tr pyr
	LS	40%	dk gy, gybrn, frm-mod hd, occ dolomitic, mod arg, sme chky, micrite, vp ϕ , no show
9709-9719	SH	50%	aa
	LS	50%	gy-dk gy, mod hd, v arg, occ dolomitic, occ anhydritic, micrite-pellmicrite, vp-p ϕ , rare blk res, no flor or cut
9719-9730	SH	20%	gyblk-blk aa
	LS	80%	gy-dk gy, frm-mod hd, several types, sme crystalline pellmicrite, sme v aren, micaceous, pelletal micrite, pred marly, v arg, v anhydritic, slty, micrite, all have vp ϕ , no show
9730-9736	SS	10%	clr-wh, mod hd-hd, m-cse gr, ang, poorly srtd, calc, vp ϕ , no shows
	SLTST	20%	pred lt grn, sme lt gy, mod hd, aren, calc, micaceous
	LS	70%	gy-dk gy, mod hd, v arg, slty, v aren, occ

			micaceous, pelletal, micrite-microsparite, sme strngrs ANHY
9736-9747	SS	20%	aa
	SLTST	30%	lt gy, lt grn, aa
	ANHY	10%	wh, sft, mass
	SH	20%	gy-dk gy, sft, blkysbfbis, sl calc
	LS	20%	aa
9747-9770	SH	50%	gy-dk gy, sft, blkysbfbis, sl-mod calc, tr pyr
	SS	30%	wh, mod hd-hd, cse gr, ang, poorly srtd, occ micaceous, sl calc, p ϕ , no show
	SLTST	10%	lt grn, mod hd, calc, blkysbfbis, micaceous, tt
	LS	10%	buff, m-dk gy, mod hd, sme crystalline micrite w/ghost traces of pellets, sme dk gy, v arg, micrite, earthy appear, vp ϕ , no show, tr ANHY, wh, sft, mass
9770-9782	SH	60%	gy-dk gy, sft-frm, sbfbis, sl calc, occ mott, v calc, w/unidentifiable fos frags
	ANHY	10%	wh, sft, lmy & arg
	SS	20%	wh, mod hd, calc, cse gr, ang, poorly srtd, abnt rnd micrite LS frags or pellets, p ϕ , no show
	LS	10%	gy, gybrn, marly, mod hd, arg, sme lt gy, hd, dns, crpxln micrite, vp ϕ , no show
9782-9792	SS	80%	wh, mod hd, calc, cse gr, ang, poorly srtd, sme rnd micrite LS frags, rare glau gr, gen p ϕ , tr fr ϕ , approx 20-30% of spl w/blk sptty intra xln stn, no flor
	ANHY	10%	wh, sft, mass
	SLTST	10%	lt gy, gy, mod-v arg, aren, blkysbfbis
9792-9801	SS	90%	aa, no show
	SH	10%	gy, sft-frm, calc, blkysbfbis
9801-9813	SS	70%	aa, no show
	SH	10%	aa
	LS	20%	gy, frm, v arg, micrite, earthy appear, vp ϕ , no show

9813-9832	SS	30%	aa
	SH	30%	gy-dk gy, frm, calc, blkysbfis
	LS	40%	gy-gybrn, frm-mod hd, v arg, pelletal in pt, micrite, vp ϕ , no show
9832-9841	SS	30%	aa
	SH	20%	aa
	LS	50%	gy-gybrn, frm-mod hd, v aren, arg, slty, occ pelletal, micrite, vp ϕ , no show
9841-9850	SS	10%	clr, wh, pred, unconsl, v cse, ang, qtz & cht gr, sme cse gr SS w/calc cmt
	SLTST	10%	pred lt grn, sme lt gy, mod hd, v calc, sl arg, aren, tt
	LS	80%	lt gy-gy, gybrn, mod hd, chky, v aren, occ grdg to calc SS, tr fos frags & pellets, sl arg, micrite-microsparite, vp-p ϕ , no show
9850-9862	SS	40%	aa
	SLTST	20%	lt-dk grn, mod hd, aren, micaceous, calc, tt
	LS	40%	aa
9862-9873	SS	30%	clr, wh, lt grn, pred clr, v cse, unconsl, ang, qtz gr, sme wh, lt grn, vf-cse gr, poorly srted, sbang-ang, SS w/calc cmt and sm glau gr, gen p ϕ , tr fr ϕ , no show
	SLTST	30%	lt grn, lt gy, mod hd, aren, micaceous, blkys, tt
	LS	40%	buff, lt brn, gybrn, mod hd, chky in pt, abnt pellets & foram fos, arg slty occ aren, vp ϕ , no show
9873-9881	LS	40%	buff, brn, gy, mod hd, sme chky, frag, pell, micrite-microsparite, sme hd, frag micrite, sme v arg, sndy, slty, micrite, all vp ϕ , no shows
	SS	20%	aa
	CLYST	40%	gy, v sft, pell, occ slty & micaceous, v calc, no fissility
9881-9890	SLTST	20%	gy, grn, mod hd, v arg, calc, aren, tt
	SS	10%	aa
	LS	30%	brn-dk brn, lt gy, frm-mod hd, sme v chky,

			sme frag, pell, micrite-microsparite, vp ϕ , no show
	CLYST	40%	gy-gybrn, v sft, occ pell, v calc, grdg to carb mud
9890-9904	SS	10%	aa
	LS	90%	brn, crm, buff, aa, approx 50% chky, pell, v sft, v arg, carb mud
9904-9912	LS	100%	approx 30% brn, frm-mod hd, frag, pell, micrite- microsparite, 70% crm, v sft, arg, chky carb mud
9912-9942	SS	10%	wh, lt grn, mod hd, f-cse gr, sbang-ang, poorly srted, p ϕ , tr glau gr, no show
	LS	90%	approx 50% frm-mod hd, lt brn, crm, gy, chky, occ pell & slty, vp ϕ , no show, approx 50% crm-lt gy, v sft, v arg, chky, carb mud, tr brn cht
9942-9962	LS	100%	approx 30% brn-dk brn, dk gy, mod hd, v arg xln micrite, v aren in pt, frag in pt, tr pellets and fos frags, approx 70% dk gy, crm, v sft, v arg, carb mud
9962-9994	LS	100%	gy, crm, lt brn, buff, pred crm, sft-frm, chky, arg, micrite, sme mod hd, brn-gy, arg, xln, frag micrite, vp ϕ , no show

Total Depth = 10,000 ft.

DST #1

OPERATOR: Northwest Exploration Co.

WELL: Theos & Son #1

FORMATION: FrontierINTERVAL: 3100' to 3262'REASON FOR TEST: Sample showsTYPE TEST: ConventionalTESTING COMPANY: HaliburtonWATER CUSHION: NoneIF 15 MINUTES open with 1 1/4" blow, decrease to 1/2" in 5 min., shut
in with 1/2" blowISI 45 MINUTES blow died immediatelyFF 60 MINUTES open with 1/4" blow, blow died in 20 min.FSI 120 MINUTES no blowRECOVERY: 40 ft. rat hole mudBOTTOM HOLE SAMPLER: PRESSURE 10 PSI RECOVERY .04 cu. ft. gas
1800cc mudRESISTIVITY DATA: (Not done by tester)

PRESSURES:

TOP CHART (3077')

IH	<u>1345.4</u>	FH	<u>1345.4</u>
IF	<u>24</u>	to	<u>24</u>
ISI	<u>26.7</u>	to	<u>--</u>
FF	<u>24</u>	to	<u>24</u>
FSI	<u>26.7</u>	to	<u>--</u>

BOTTOM CHART (3259')

IH	<u>1529.1</u>	FH	<u>1555.5</u>
IF	<u>105.9</u>	to	<u>105.9</u>
ISI	<u>119.1</u>	to	<u>---</u>
FF	<u>105.9</u>	to	<u>119.1</u>
FSI	<u>119.1</u>	to	<u>---</u>

TOP CHOKE: 1/8"BOTTOM CHOKE: 3/4"BOTTOM HOLE TEMPERATURE: 106°F

DST #2

OPERATOR: Northwest Exploration Co.

WELL: Theos & Son #1

FORMATION: WeberINTERVAL: 5394' to 5428'REASON FOR TEST: Sample showsTYPE TEST: ConventionalTESTING COMPANY: Lynes Inc.TESTER: Stormy HaysWATER CUSHION: NoneIF 15 MINUTES open with weak blow, 2 inches in 2 min., 2 inches at end
of flow periodISI 45 MINUTES blow died in 7 min., no gas to surfaceFF 60 MINUTES open with very weak blow, 1/8" in 5 min., dead in 12 min.FSI 120 MINUTES dead throughout periodRECOVERY: 184' of drilling mudBOTTOM HOLE SAMPLER: PRESSURE 32 PSI RECOVERY 2000cc mudRESISTIVITY DATA: DRILL PIPE RECOVERY 4.2 @ 80°F 1075 PPM CSAMPLER 4.2 @ 75°FMUD PIT 5.2 @ 92°F 850 PPM C

PRESSURES: CHART (5402')

IH 2452 FH 2401IF 65 to 78ISI 2196 to FF 65 to 95FSI 2209 to --TOP CHOKE: 1/4"BOTTOM CHOKE: 9/16"BOTTOM HOLE TEMPERATURE: 174°F

GEOLOGICAL SUMMARY

OPERATOR: Northwest Exploration Co.

WELL: Theos & Son #1

Frontier

The top of the Cretaceous Frontier Formation was drilled at a depth of 3007' (3003' on E-logs). The formation is approximately 350 feet thick with the upper 130 feet being dominantly a sandstone and the remaining lower portion being dominantly a dark gray silty shale with some interbedded siltstone.

The lower 35 feet of the sandstone sequence (3105'-3140') was marked by a reverse drilling break and contained shows of live oil. Samples from this interval indicate that, in general, the zone is a light gray to light gray brown, firm to moderately hard, fine to medium-grained, slightly calcareous, subangular sandstone with some siliceous cement and having poor visible porosity and only a trace of fair porosity. Sample shows ranged from very poor to fair. The best shows were noted in the interval from 3105'-3120' and consisted of approximately 10-30% bright yellow green fluorescence with weak to fair streaming cuts. A drill stem test was run over the interval to evaluate the show. Low fluid recovery, low flow pressure increases and unusually low shut in pressures (see DST #1) tended to confirm visual observations of low formation porosity. Drill pipe recovery was only 40 feet of rat hole mud, and sampler recovery was 1800cc of mud and .06 cu ft. of gas. The FDC/CNL log also indicated low porosity with the highest crossplot value being 3.5%.

Weber

The top of the Weber formation was drilled at a depth of 5397' (5390' on E-logs) and is approximately 170 feet thick. The dominant lithology of the Weber is a light colored, very fine-grained, well sorted sandstone.

Generally poor or slightly better oil shows were noted in the upper 50 feet of the sandstone. Samples indicated that this interval (5395'-5445') consists of a light gray-gray, friable to firm, very fine-grained, well sorted subangular-subrounded, moderate to very calcareous sandstone containing generally poor visible porosity. Shows in the interval were generally poor with approximately 50% of the cuttings containing weak light green fluorescence and black spotty stain and generally yielding slow, faint to weak streaming cuts and a trace of fair streaming cut. A conventional drill stem test was run over the interval (5394'-5428') to evaluate the show. Total drill pipe recovery was 184 feet of drilling mud and sampler recovery was 2000cc

GEOLOGICAL SUMMARY

OPERATOR: Northwest Exploration Co.

WELL: Theos & Son #1

of drilling mud. Although shut in pressures were high, flow pressures were relatively low and slow to increase. This combined with low porosity values from the E-logs tended to confirm visual estimates of poor formation porosity.

Minturn

The Minturn Formation was the objective pay for this well. The top was encountered at a depth of 7020' (7010' on E-logs) and is approximately 240 feet structurally higher than anticipated. The lithology of the Minturn is varied consisting of alternating beds of siltstones, sandstones, anhydrites, salts, limestones and dolomites. The thickness of the stratigraphic sequence from the top of the Minturn to the top of the Belden formation is approximately 2,670 feet. While containing some differences, the upper 2,100 feet of this section was lithologically very similar to the Hunt Industries No. 1 Keller well in section 25. The sequence in both wells is dominantly siltstone, salt and anhydrite. The major difference in the two wells is in the basal 500-600 feet in which a massive salt section in the Hunt well was instead replaced by a limestone in this well. It was hoped that bioclastic dolomites and limestones indicative of reefal or bioherm structures would be encountered. However, only dense, cryptocrystalline-microcrystalline dolomitic limestones with no visible porosity and no shows were encountered throughout the interval.

Sincerely,

Michael R. Archibald

BIT RECORD

BIT #	SIZE	MAKE	TYPE	DEPTH OUT	FTG	HRS	PP
1	12 1/4	STC	DTJ	1388	1347	67 1/4	1100
2	12 1/4	STC	DGJ	2515	1127	45 1/2	1350
3	8 3/4	STC	DGJ	2660	145	6	1150
4	8 3/4	STC	F-2	2896	236	16	1400
5	8 3/4	HTC	OSC-16	3105	209	13 1/2	1400
RR # 4 6	8 3/4	STC	F-2	3640	535	54 1/2	1450
7	8 3/4	STC	F-3	4395	755	68	1400
8	8 3/4	HTC	J-33	5124	729	72	1400
9	8 3/4	STC	F-3	5428	304	35 1/2	1300
10	8 3/4	STC	F-4	5604	176	30 1/2	1300
11	8 3/4	HTC	J-55R	6053	449	49	1500
12	8 3/4	SEC	M89TF	6618	565	71	1500
13	8 3/4	SEC	M89TF	6839	221	27	1500
14	8 3/4	STC	F-5	7296	457	55 1/2	1450
15	8 3/4	SEC	M84F	7963	694	82	1400
16	8 3/4	STC	F-5	8083	120	24	1400
17	8 3/4	HTC	J-33	8717	634	67 1/2	1400
18	8 3/4	STC	F-4	9075	358	58	1350
19	8 3/4	HTC	J-55	9636	561	98 1/2	1500
20	8 3/4	HTC	J-33	10,000	364	73 1/2	1500

MUD RECORD

MUDDER UP AT

ON

DATE	DEPTH	WT.	F.VIS.	P.VIS.	YIELD	GEL STRNT	PH	FILTR	CK.	ALKA.	SALT	CHLO	CALCIUM	GYP / SAND	SOLID / % WTR.	CUM. COST
8-5-81	200	8.6	35	5	8	2/11	10.0	18.0	3		200			TR	2.5 / 97.5	\$ 896
8-6	397	9.0	32	10	13	4/12	9.0	18.0	3		100			.25	4.8 / 95.2	1,072
8-7	860	9.0	37	8	11	3/11	9.5	17.5	3		300			TR	5.4 / 94.6	1,896
8-8	1270	8.9	34	6	6	1/5	9.5	17.5	3		300			TR	4.6 / 95.4	2,917
8-9	1530	9.1	62	17	21	6/19	10.0	8.0	3		400			2.5	5.6 / 94.4	4,771
8-10	2040	9.0	47	14	18	3/14	9.0	8.0	2		400			TR	5.0 / 95.0	7,056
8-11	2515	9.0	52	16	19	3/10	9.5	7.8	2		400			.25	5.2 / 94.8	8,442
8-12	2515	8.8	34	6	5	1/2	9.6	10.6	2		450			TR	3.4 / 96.6	8,443
8-13	2626	8.6	32	3	10	5/10	11.6	16.4	4		450			TR	2.4 / 97.6	8,745
8-14	2843	8.8	33	5	5	3/11	11.0	12.4	3		550			TR	3.8 / 96.2	10,593
8-15	3100	9.0	40	10	12	2/9	10.0	11.4	2		600			TR	5.0 / 95.0	11,407
8-16	3262	8.9	67	17	23	9/24	9.5	8.8	2		600			TR	4.2 / 95.8	11,799
8-17	3332	8.8	37	9	10	1/5	9.0	8.8	2		500			TR	3.4 / 96.6	12,742
8-18	3562	9.1	35	8	7	1/3	9.5	10.4	2		600			TR	5.6 / 94.4	12,969
8-19	3676	8.9	33	5	7	1/3	9.8	10.2	2		600			TR	4.2 / 95.8	13,187
8-20	3920	8.9	36	8	10	1/5	9.5	9.2	2		450			TR	4.2 / 95.8	13,932
8-21	4235	8.9	35	8	8	1/3	9.0	9.3	2		500			.25	4.2 / 95.8	14,505
8-22	4395	8.9	37	9	9	1/3	10.2	8.5	2		600			TR	4.2 / 95.8	15,391
8-23	4517	8.9	36	8	9	1/3	10.2	9.2	2		400			TR	4.2 / 95.8	15,765
8-24	4745	9.0	35	8	8	1/2	10.0	9.5	2		400			TR	4.8 / 95.2	16,616
8-25	5024	9.0	36	12	13	2/9	8.5	9.6	2		550			TR	5.4 / 94.6	17,659
8-26	5140	8.8	38	10	10	2/12	8.5	13.2	2		350			TR	3.4 / 96.6	18,261
8-27	5241	8.6	36	5	7	6/17	9.0	17.2	2		350			TR	2.4 / 96.6	19,337
8-28	5428	8.7	64	9	21	21/56	10.0	9.0	2		400			TR	2.8 / 96.2	20,567
8-29	5465	8.7	36	7	9	2/12	9.0	10.0	2		500			TR	3.0 / 96.5	21,363
8-30	5600	8.8	36	8	8	2/26	9.5	10.4	2		400			TR	3.4 / 96.5	21,472

MUD RECORD

MUDDER UP AT

ON

DATE	DEPTH	WT.	F.VIS.	P.VIS.	YIELD	GEL STRNT	PH	FILTR	CK.	ALKA.	SALT	CHLO	CALCIUM	GYP / SAND	SOLID / % WTR.	CUM. COST
8-31-81	5769	8.8	39	8	11	3/13	9.0	10.4	2		400			TR	3.8 / 94.7	23,279
9-1	5963	9.0	37	8	9	3/15	10.5	10.6	2		400			TR	4.8 / 93.7	23,281
9-2	6083	9.0	39	9	10	2/9	10.0	12.0	2		400			TR	4.8 / 94.2	24,120
9-3	6239	9.0	40	11	12	2/18	9.5	10.8	2		400			TR	5.0 / 94.0	24,682
9-4	6388	9.0	38	8	10	2/9	9.0	10.5	2		400			TR	5.0 / 94.0	25,203
9-5	6590	8.9	37	7	9	1/5	10.5	9.6	2		400			TR	4.3 / 94.7	25,915
9-6	6700	9.1	36	8	8	1/5	10.5	10.8	2		400			TR	5.8 / 93.2	26,785
9-7	6839	8.9	38	11	11	2/10	8.7	9.5	2		400			TR	4.2 / 94.8	27,590
9-8	6937	9.0	36	8	8	2/9	9.0	13.0	2		400			TR	4.2 / 94.8	28,288
9-9	7020	8.9	35	4	6	2/2	10.5	12.6	2		400			TR	4.3 / 94.2	30,050
9-10	7159	8.9	41	9	10	2/11	8.5	13.5	3		450			TR	4.5 / 94.0	31,736
9-11	7296	8.9	40	11	13	2/9	9.5	11.6	2		400			TR	4.2 / 94.3	33,521
9-12	7375	9.1	44	11	13	3/10	9.0	12.4	2		450			TR	5.6 / 95.4	34,519
9-13	7536	8.8	41	16	18	5/13	9.5	15.2	3		350			TR	5.6 / 95.4	35,939
9-14	7726	8.9	40	14	15	5/16	8.5	13.6	2		450			TR	4.2 / 95.8	37,612
9-15	7939	9.1	38	5	10	5/15	9.5	18.0	3		16,000			TR	5.6 / 94.4	41,111
9-16	8008	9.2	38	11	16	5/12	11.0	13.0	2		22,000			TR	6.4 / 93.6	44,229
9-17	8083	9.2	38	7	10	3/8	10.5	11.0	2		21,000			TR	6.6 / 91.9	46,591
9-18	8260	9.1	38	7	11	6/	8.0	18.5	3		50,000			TR	4.0 / 94.0	48,048
9-19	8491	10.0	36	8	8	1/5	8.5	11.2	2		185,000			TR	5.2 / 93.3	57,700
9-20	8700	10.2	40	11	9	4/14	10.5	22.0	3		304,000			TR	2.8 / 97.2	70,783
9-21	8817	10.5	37	8	8	1/4	10.5	13.6	2		298,650			TR	5.2 / 94.8	73,719
9-22	8938	10.0	52	15	20	—	9.0	13.6	2		303,600			TR	2.0 / 95.5	82,285
9-23	9033	10.0	44	15	15	3/13	8.5	13.2	2		297,000			TR	2.4 / 93.6	86,377
9-24	9110	10.2	43	16	12	3/10	9.0	13.4	2		300,300			TR	3.0 / 93.5	89,439
9-25	9226	10.1	37	7	9	2/7	9.5	8.8	2		257,000			TR	4.2 / 92.3	93,612

ON

[illegible]