

OPERATOR: California Energy Company

WELL: "88-21 TCH"

FIELD: Newberry

LOCATION: 120' N, 53' W fr SE cor Sec. 21  
T.21S-R.12E, Deschutes County, OR

ELEVATION: 6269' (KB), 6258' (GL) estimated

LOG DATE: 5/16 to 7/21/95

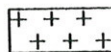
GEOLOGISTS: Jess McCulloch, Fred Pulka

HOLE SIZES		CASING DATA	
0-21'	12 1/4"	0-21'	10 3/4"
21-500'	9 7/8"	0-500'	7"
500-1357'	6 1/8"	0-1357'	4 1/2"
1357-3709'	3.895"	16-3709'	3 1/2"
3709-4876'	3.035"	0-4855'	2"

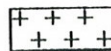
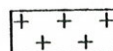
LOST CIRCULATION ZONES

DEPTH	DATA	DEPTH	DATA
50'	Partial Returns	720'	Partial Returns
90'	Lost Full Returns	1050'	Partial Returns
97'	Lost Full Returns	1540'	Partial Returns
260'	Partial Returns	1561'	Lost 10bbbs
268'	Lost Full Returns	1698'	Lost 40bbbs
309'	Lost Full Returns	3619'	Minor Losses
333'	Lost Full Returns		
424'	Lost 20bbbs		
434'	Lost 20bbbs		
460'	Lost 10bbbs		
500'	Partial Returns		
512'	Lost Full Returns		
517'	Lost Full Returns		

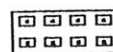
CUTTINGS 0-1357' CORE 1357-4876'



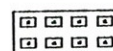
RHYOLITE



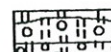
RHYODACITE



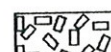
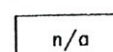
ANDESITE



ANDESITE PORPHYRY



VESICULAR ANDESITE



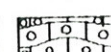
DIORITE PORPHYRY



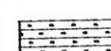
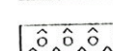
BASALT



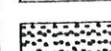
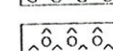
PORPHYRY BASALT



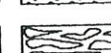
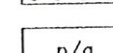
VESICULAR BASALT



BEDDED TUFF



MASSIVE TUFF



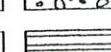
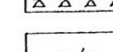
WELDED TUFF



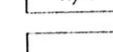
SCORIA



DEBRIS FLOW



ARGILLITE



CLAYSTONE



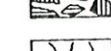
MAFIC BLOCKS



PUMICE BLOCKS



RHYOLITE BLOCKS



HORNFELS

CONFIDENTIAL

# CALIFORNIA ENERGY COMPANY, INC.

WELL: "TCH 88-21"

KB ELEVATION: 6269'

LOG DATE: 5/17-20, 1995

FIELD: Newberry

LOCATION: 120' N, 53' W fr SE cor Sec. 21, T.21S-R.12E, Deschutes County, OR

LOGGED BY: F. Pulka

D	ROP (ft/hr)	%R	LITHOLOGY	DESCRIPTION	ALTERATION	Breccia	Vein	Pore	MRT/BHT	
						#/ft	Density	Fill %	Az/Drift	
0				Base Alluvium @ 21' (KB), 10' (GL)						
				<p>ANDESITE: blk gry - dk brn occ dk brn or blchd whyel; v hd ang ctgs; 20% ves or scoria; most ves lined w/ wh cly or whblue cly; surf contam has alt of rks to fri whyel cly</p> <p>ANDESITE: blgry w/ 30% dk redbrn occ blk; mixed aphan mas ctgs w/ scoria; scoria either glassy or aphyric; most ves ctd w/ wh cly or whblue cly; little surf contam; tr 1-3mm px pheno in AND</p>	perv wh-whyel cly alt of near surf samples			<10%		
100	5/16			<p>ANDESITE: m gry molt wh; v hd ang ctgs; aphyric massive non ves ctgs; loc sl-marg wh cly alt; 1% spkid blk w/ vf gr opaqr mnrsl</p> <p>BASALT &amp; SCORIA: equal parts blk &amp; orng ctgs; the scoria is glassy w/ ves com lined w/ wh cly; mas blk vit-dull aphyric-glassy BSLT</p>	sl marg wh cly alt of AND				<10%	
				<p>50' LCZ. Add LCM and got 90% returns. Lost returns @ 62'. Add LCM and got full returns.</p> <p>90' Lost Returns. Drill to 96' blind. Set 15 sack plug. Lost returns at 97'. Drill blind to 112'. Set 30 sack LCM/cement plug (#2). Top of plug 95'. Hole would not hold fluid. Set 15 sack plug (#3). Tag at 80'. Drill 112-113'. Twisted off at XO. Retrieve fish.</p> <p>NO RETURNS</p>	wh-whblue cly linings in ves					
200	5/17			<p>VES BASALT: redbrn &amp; m gry zns; pred aphyric; mstly clear ves; 10% glassy apr; loc limonite alt; assoc blk-dk gry BSLT w/ f gr equigran or aphyric tex; r tr m-c gr subhed feld or px pheno in clstrs; @ 120 mud to red in color</p>	0-50% vesicles lined w/ wh-lt gry cly				0-80%	
				<p>5/18-19</p>	<p>RHY TUFF: tan-wh-redorng; v hd; both f-m gr gran &amp; crptoxin tex; loc eutaxitic; tr enclosed ang bslt lithics; tr m-c gr subhed-euhed feld pheno in vit type; assoc RHY: m gry molt wh or lt brn-rose-tan; pred aphyric loc sl porph w/ lt gry feld laths &amp; tr eqnt qtz xls; 1-2% gry-blk obsid frags; intbd w/ dk gry-blk BASALT</p>	most ves w/ 10-80% wh cly; tr hem amygd and micro vng; tr yelorg anhed mnrsl linings amygd assoc w/ wh cly			0-25%	
200				<p>BASALT: gen brn-gry occ redbrn; v hd; pred aphyric tex; loc glassy fabric; pred dull apr; tr subhed-euhed feld pheno; overall dull apr; 5-30% pores in VES type; one ctg w/ obsid+feld clstr in f mx; mnr glassy orng-blk scoria frags</p>	clear and mnrld ves; up to 10-50% wh cly fill as linings in ves; tr buff cly				0-50%	

WELL: "TCH 88-21"

KB ELEVATION: 6269'

LOG DATE: 5/20-25/95

FIELD: Newberry

LOCATION: 120' N, 53' W fr SE cor Sec. 21, T.21S-R.12E, Deschutes County, OR

LOGGED BY: Fred Pulka

D	ROP (ft/hr)	%R	LITHOLOGY	DESCRIPTION	ALTERATION	Breccia #/ft	Vein Density	Pore Fill %	MRT/BHT Az/Drift
300				BASALT; gry mott wh & com yel; f equigran tex; about 60% feld 40% mafics w/ distinct gr; non ves; tr c gr subhed-euhed grn px pheno; mostly fresh unalt apr except for yel occ wh intgran mnrlzn	yel sulfur? mnrlzn as repl of feld & in intgran pore space; mnr wh marg-perv kaolzn			5-25%	
	5/20-22 5/23		NO RETURNS	260'. No returns. Gained returns after 3 LCM pills 268'. No returns. Drill blind to 308'. Set 20 sack cement plug at 308' (#1). No mud returns after WOC. Set 20 sack CalSeal plug (#2) at 308' then tag at 247'. Drill 308-309' then lost returns. Set 20 sack cement plug (#3) at 309'. Tag at 234'. Drill to 314' and lost returns. Set 22 sack plug (#4) at 314'. Tag at 264'. Drill cement to 314' w/ occasional returns. Set 27 sack plug (#5) at 306'. Tag at 238'. Drill 314-333' and lost returns. Drill blind to 334'. Set 20 sack plug (#6) at 326'. RIH to 334' without tagging. Regained returns w/ LCM and drilled ahead.				0-5%	
400	5/24			DIABASE: spkld gry & blk w/ overall gry apr to ctgs; vf-f equigran tex; no ves but loc open vugs; pred pred fresh unalt apr; tr m-c gr subhed-euhed feld or mafic pheno; no vis fol or banding	loc marg-perv wh kaolzn				Ti 63.3 To 60.5
				RHYODACITE: m gry spkld gry-clr-blk; f equigran tex; 70-80% feld+qtz w/ 20-30% mafic mnrls; 2-5% vl gr brn anhed sl trnsf vit hbd?; tr 1-3mm wh euhed feld pheno & v r brn hbd pheno	com marg-perv kaolzn				
500	5/25			org-blk glassy SCORIA	incr wh perv kaolzn in GRANITE; tr wh cty lining in ves			< 5%	
				RHYODACITE: lt-m gry; f-m gr equigran tex; 80-90% clr-lt gry feld+qtz w/ 10-20% anhed-subhed blk px; 1-3% brn sl trnsf vit anhed-subhed hbd; tr c gr clr-wh subhed-euhed feld pheno; tr grn subhed px pheno	com marg-perv kaolzn w/ repl of feld+qtz				
				424' & 434'. 20 bbl mud losses.	incr to 25% marg-perv kaolzn			< 5%	Ti 57.9 To 57.6
				incr com tr wh subhed-euhed feld pheno					
				f gr equigran non ves DIABASE; com tr 1-4 mm wh subhed-euhed feld pheno in RHYODACITE					
				OBSIDIAN: m gry; hd sharp ang ctgs; conchoid frac; vit apr; sl-mod trnsf; tr attached aphanitic RHY org & blk glassy scoria & aa BASALT	tr yel/org orpiment vng; sme wh cty linings in vugs			< 5%	Ti 60.2 To 60.2
				460'. 10 bbl mud loss.					
				RHYOLITE: rose-lt gry-sl grnsh cast loc; aphan; grads to & imbedded w/ OBSIDIAN; abnt spher & perlitic fabric; loc altern dk/lt gry OBSID or aphan RHY w/ OBSID bands; loc open vugs					

# CALIFORNIA ENERGY COMPANY, INC.

WELL: "88-21 ICH KB ELEVATION: 6269'

FIELD: NEWBERRY  
 LOCATION: 120' N, 53' W fr SE cor Sec. 21, T.21S-R.12E, Deschutes County, OR

LOGGED BY: Jess McCulloch

D	ROP (FT/HR)	%R	LITHOLOGY	DESCRIPTION	ALTERATION	Breccia	Vein	Pore	MRT/BHT
						#/ft	Density	Fill %	Az/Drift
500	5/26-6/1	->		510'. Lost returns. Set two 30 sack plugs (#1.2) @ 510'. Tag at 480'/then 420'. Drill out to 500'. Ran 7" casing tight to 420' and had no returns circ. L?D casing. Open hole to 9 7/8" to 500'. Ran 11 lbs 7" 26# BTC casing to 500'. HOWCO led w/ 110cuff G 1:1 perlite then tail of 70cuff G. No returns after 2bbl cement to surface. 28cuff top job. Test 7" BOPE. OK. Lost returns at 517' drilling out. Set 20 sack cement plug @ 522'. Drill 6 1/8" hole.	Rare vugs w/ buff clay linings.			<5%	
	6/2	->		<b>OBSID:</b> m-dk gry, v ang ctgs; sl-mod frst; com banded w/ <b>RHYOL</b> : lt-m gry occ rose-buff; gen cryptoxln; occ varcol bands of rose gry; aphyric; tr clr-lt gry f-m gr qtz/feld pheno; loc dk mafic zones & bands; tr anhed mafic rosettes w / sme all he.; <b>OBSID</b> @ 60-70% 500-540' to 5-10% @ 572'	Local sl-marg kaolzn of RHYOL			<5%	
600	6/3	->		<b>RHYODACITE:</b> lt-m gry; hd; ang ctgs; cryptoxln; molt wht-lt gry; mnr wht banding; r clr feld pheno, r dk mafic mnrl-hnbl?; com r-org Fe stain.	Local kaolzn				
		->		<b>RHYODACITE:</b> A/A incr banding					
700	6/4	->		<b>RHYODACITE:</b> lt-m gry; hd; cryptoxln; wht-gry banding; r clr feld pheno; com org hem? staining ass w/ whl bands.					
		->		<b>RHYODACITE:</b> A/A; lr olive grn mnrl-chlor? ass w/ whl banding.					
		->	LOST CIRC. @ 720', Pumped 20 bbls LCM. Regained Full circulation.						
		->		Clay: m gry, slky, soluble.					
		->		744': Sample suspect, (sump contaminated)					

← Tin 70  
Toul 72.5

WELL: "88-21 TCH

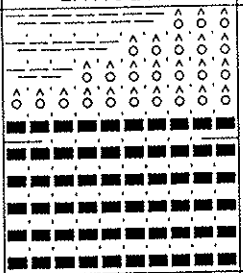
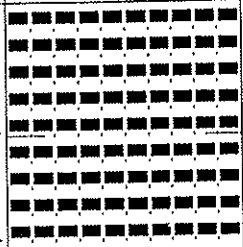
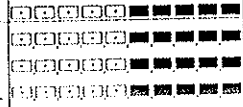
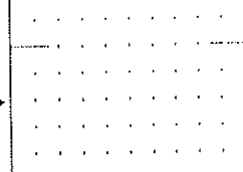
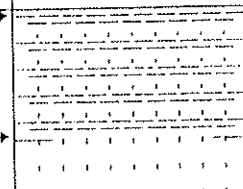
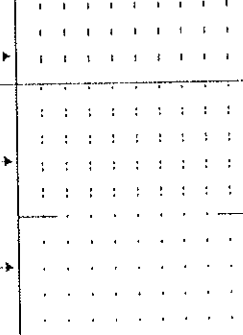
KB ELEVATION: 6269'

LOG DATE: 6/4-5

FIELD: NEWBERRY

LOCATION: 120' N, 53' W fr SE cor Sec. 21, T.21S-R.12E, Deschutes County, OR

LOGGED BY: Jess McCulloch

D	ROP (FT/HR)	%R	LITHOLOGY	DESCRIPTION	ALTERATION	Braccio #/ft	Vein Density	Pore Fill %	WRT/BHT At/Drift
800				<p><b>TUFF:</b> lt gry-ll olive grn; soft-mod hd; subhed clgs; erthy; v fn Qtz &amp; Feld pheno; wht-ll grn crptoxln matrix; occ vgy.</p> <p><b>SCORIA BASALT:</b> Dk gry-dk brn; hd; aphyric; dull app; lr clr-brn botryoidal glassy silica on Basalt; tr vugs w/ ll grn-blu clay on vug surfs.</p>	com kaolzn of ASH				
				<p><b>BASALT:</b> dk gry-dk brn; hd; aphanitic; com ves; com subhed-euhed clr-wht feld pheno; mnr limonite stain; r lith frags.</p>					
900				<p><b>ANDESITE-BASALT:</b> med-dk gry; v hd; aphanitic; mnr Basalt w/ ves.; mnr-com olivine, r euh pyr.</p>					
				<p>Samples f: 884'-1044' suspect; smpls contaminated from using sump as a mud pit; smpls reflect all above lithologies.</p>	com Fe staining				
1000	6/5			<p><b>CLAY:</b> dk gry, sol; mud-bentonite?</p>					
				<p>Abun LCM in samples, 99% LCM</p>					

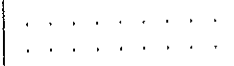
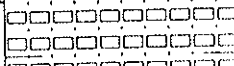
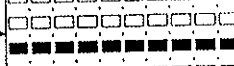
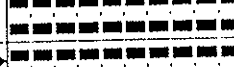


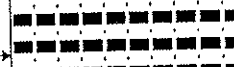

WELL: "88-21 TCH

KB ELEVATION: 6269'

LOGGED BY: Jess McCulloch

FIELD: NEWBERRY

120' N, 53' W fr SE cor Sec. 21,  
LOCATION: T.21S-R.12E, Deschutes County, OR

D	ROP (FT/HR)	%R	LITHOLOGY	DESCRIPTION	ALTERATION	Draculo #/ft	Vein Density	Pore Fill %	MRT/BHT Az/Drift
1000				<p>Samples f: 884'-1044' suspect; smpls contaminated from using sump as a mud pit; smpls reflect all above lithologies.</p> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;"> <p>LOST 50% circulation @1050' Pump LCM sweep, regain full circ.</p> </div>					<p>← Tin 63.3 Tout 64.1</p>
1100				<p>RHYOLITE: dk gry-dk brn; med hd; cryptoxln; dull erthy lstr; com qtz phen; r feld pheno, tr euh pyr; r loc argillic alt; v r calc vng; r Basalt lith frags.</p>	r loc argillic alt v r calc vng				<p>← BHT 68</p>
				<p>RHYOLITE: dk brn; hd; micro-cryptoxln; com qtz pheno; loc glassy.</p>					
				<p>ANDESITE-BASALT: dk brn; hd; pred cryptoxln; com glassy matrix; com v fn feld pheno; r lt grn olivine; tr milky silica coating on ctg surfs; r vugs.</p>					<p>← BHT 77</p>
				<p>1144' sample suspect</p>					
	6/6			<p>BASALT: m gry; v hd; ang ctgs; aphyric; occ glassy; loc vesicular; com lt grn chloritization; mnr ASH/TUFF buff-lt gry; vesicular.</p>					<p>← BHT 78</p>
				<p>DEBRIS FLOW: lt-m grn, olive grn; fri; fn-med gr lith frags, com qtz &amp; feld xtls; com lt grn argillic clay mtrx.</p>	com argillic alt				<p>Air 31.3 ← Tin 54.3 Tout 56.3</p>
1200				<p>BASALT: lt-m grn, gry, mnr rose-brn; hd; dull apr; 20% SCOR w/ wht clay/mnrl vug fill; tr euhed feld pheno, r olivine.</p>	2% wht cly/mnrl fill in ves				
	6/7								

WELL: "88--21 TCH"

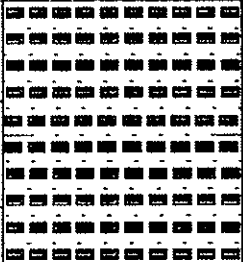
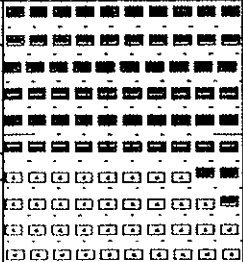
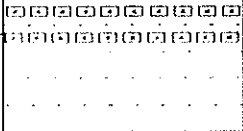

KB ELEVATION: 6269'

LOG DATE: 6/11/95

FIELD: Newberry

LOCATION: 120' N, 53' W fr SE cor Sec. 21, T.21S-R.12E, Deschutes County, OR

LOGGED BY: Fred Pulka

D	ROP (ft/hr)	%R	LITHOLOGY	DESCRIPTION	ALTERATION	Breccia	Vein	Pore	MRT/BHT
						#/ft	Density	Fill %	Az/Drift
1300				BASALT: dk gry-blk loc orng-redbrn-brn; f equigran & aphan tex; 10-20% ves tex; mxed fresh & marg alt gndmas in ctgs; aphyric but loc porph w/ 1-2mm clr-lt gry subhed-euhed feld & r px pheno; cly psmorphs after feld gr	sl-perv wh kaolzn w/ blue opal; tr euhed adularia; tr dissemin pyr; r orng ankerite psmorph after feld; tr chlor amygd; tr pumpellyite amygd; tr qtz vng; r calc vng & repl of feld; tr redbrn hem vng			0-75%	
				BASALT: m-dk gry-blk unalt; wh-lt brn-lt gry alt; both f gr equigran tex & aphan; loc porph w/ clr-lt gry lath-subhed eqnt .5-1mm feld pheno; com kao psmorphs after feld; tr grn chlor psmorphs after mafic gr; 20-35% sl-perv kaolzn  ANDESITE: dk brn; crptoxln grndmas; pred aphyric; loc 5-10% .5-1mm clr feld & tr grn px & tr brn hbd? pheno; decr to 5% ves & vugs	abnt mxed kaolzn+opal alt; com chalky apr to alt ctgs; tr dissemin pyr; tr chlor; tr kao/chlor slicks;  15-35% kaolzn; wh-lt blue opal vng/amygd; tr pump+chlor amygd; tr red brn hem; com tr calc vng			0-40%	1337' 16.25 89.5 86 F
1400				1357'. Total depth well for intermediate casing. Ran 37jts 4 1/2" 11.6# K55 BTC casing to 1357' Halliburton cemented w/ 314cuft 35#/sk spher lead & 33cuft "G" tail. 70 linear ft top job. Test BOPE. Core ahead with "HQ" size.					
									

WELL: "88-21 TCH"

KB ELEVATION: 6269'

LOG DATE: 6/18/95

FIELD: Newberry

LOCATION:

120' N, 53' W fr SE cor Sec. 21,  
T.21S-R.12E, Deschutes Co., OR

LOGGED BY: F.Pulka

D	ROP (ft/hr)	%R	LITHOLOGY	DESCRIPTION	ALTERATION	Breccia #/ft	Vein Density	Pore Fill %	MRT/BHT Az/Drift
1300									
20									
40									1337' 16.25 89.5
60				<p>Tricone 6 1/8" hole to 1357'. Ran 37 jts 4 1/2" 11.6# K-55 BIC casing to 1357'. Full returns during cement job with spherulite lead and "G" tail. 70 linear feet top job. Nipple up 4 1/2" casing head and BOPE. Test BOPE. OK. Leak off test OK also. Core ahead drilling a 3.895" (HQ) hole and 10' core barrel.</p>					
60				<p>DEBRIS FLOW: lt grngry spkld wh &amp; dk brn-blk; non welded; prly srted; 40-60% pum/lith lpli; pred pum @ shoe grdg to pred lithics to 1367.5'; lithics include bslt blk scoria &amp; sme flow banded rhy; gen sd &amp; gvl sized lpli w/ max of 1/2" diam</p>	<p>marg-perv kaolzn of pum w/ wh cty in ves; loc sl chlortzn</p>	none	none	99% F 1% O	
80				<p>DEBRIS FLOW: m grn mott wh spkid blk; 40-50% relict pum lpli; 10% blk ang bslt lpli; sme tan banded rhy lpli; gvl lpli to 5" blks</p>	<p>marg chlortzn 1368-73' then loc strong chlortzd mtrx; most pum kaolzd; com tr calc; tr dk grn pump; gen mixed kao/chlor mtrx</p>			90% F 10% O	
80				<p>com embayed gr bd for wh pum that blends in w/ grn chlortzd mtrx; some open pore space within relict banded rhy lpli; bslt lpli ves open or filled w/ cty; bslt lpli fresh or alt to dk gry cty; 1-3" blks w/ bslt blks up to 12"; blks/lpli fit in mtrx</p>	<p>tr chlor rim on mafic lpli frac @ 1392' @ 40 w/ lat mvmt on chlor slicks decr chlortzn w/ none below 1392'</p>	none	none	<5% O 5-50% O lpli	
1400				<p>TUFF: wh mott lt gry loc spkid blk; fltg lpli of 25% blk bslt gry rhy wh pum and sme xls of qtz/feld powdery-waxy mtrx</p>	<p>brn cty+kao mtrx</p>				

CB#2 BLY, HQ  
904'

6/11-14/95

8/15/95

10/10 BOX #1  
10/10 BOX #2  
10/10 BOX #3  
10/10 BOX #4  
10/10 BOX #5



WELL: "88-21 TCH"

KB ELEVATION: 6269'

LOG DATE: 6/18/95

FIELD: Newberry

LOCATION: 120' N, 53' W fr SE cor Sec. 21,  
T.21S-R.12E, Deschutes Co., OR

LOGGED BY: F.Pulka

D	ROP (ft/hr)	%R	LITHOLOGY	DESCRIPTION	ALTERATION	Breccia		Pore Fill %	MRT/BHT Az/Drift
						#/ft	Density		
1400				<p>DEBRIS FLOW: lt-m gry mott wh 10% spkld blk-brn; pred gvl size pum/lith lpli; bks up to 6"; sme lith concn up to 20%; mxed waxy grn &amp; gran gry mtrx; dominant wh relict pum 1410-14'; altntg gry grn &amp; wh shades in mtrx</p> <p>gen m gry loc lt grn cast; aprox 10% gvl size-2" ang-sbang wh pum fltg in f gr tuff mtrx; mas w/ no bedding &amp; prly strtd; loc concn of lith/pum lpli</p>	<p>most pum kaolzd &amp; pores filled w/ kao; pred smect/kao sme chlor alt; com tr intsl calc; cam pyr; 1405' cly slicks @ 65 chlor psmorphs after maf liths; abnt intsl kao; open sp @ gr bd &amp; ves in lpli</p>	none	tr calc	5-20% Open	
20				<p>WELED DEBRIS FLOW: m gry spkld dk gry-wh occ red brn; pred gry aphyric subrd-ang rhy lpli w/ crptoxln apr &amp; intact wh glassy pum; prly strtd; abnt f-c gr subhed feld xls; gen gran mtrx w/ sd-lpli up to 1"; tr poikilitic tex; sme lpli w/ embayed gr bd blends into mtrx; aprs devit in pt; unalt apr</p>	<p>1424' cly slicks @ 70 lateral disp</p> <p>up to 5% vugs in lpli w/ com wh cly linings w/ approx 10% fill</p> <p>1441' slicks @ 10 &amp; 70 1444' gry cly slicks @ 70</p>	none	none	1% 0	
40				<p>1449-49' pred cly alt TUFF w/ 5-10% pum lpli up to 1/2" and fewer lith lpli up to 1/4" w/ most sd size; com pum/lith strgrs; most lpli similar comp as TUFF @ up to 40-50% loc; 1349-52' 1-2" dk brn ang lith lpli w/ 1-2% wh-gry cly filled ves; gen gran opr to mtrx w/ abnt intsl cly</p>	<p>perv chlortzd mtrx 1439-45' w/ chlortzd lpli; 1447' gry cly slicks @ 70 w/ vert disp</p>	none	none	1-2% Open	
60				<p>1460-62' 80% tightly packed gray rhyodacite lith lpli; overall 5-25% lithic lpli w/ tr orng scoria lpli</p> <p>DEBRIS FLOW: lt-m gry 10-30% gry ang-sbrd lpli; loc concn of lithic lpli looks almost breccia-like; poss gry-brn conv water escape vng @ 63.5'; wkly consol cly rich zn 66-69'</p>	<p>1470' sharp change to perv chlortzn across frac denoted by chlor slicks @ 40 w/ lat disp cly/chlor flooded pore space</p> <p>strong chlortzn of mtrx 1471-80' 1479.5' chlor slick @ 40 w/ lat displacement</p> <p>decr chlortzn w/ incr kao/gry cly</p>	none	tr calc	0% Open	
80				<p>mxed maroon-brn cly to chlortzn of lith lpli; sme pum lpli w/ chlor core and kao rrim</p>					
1500				<p>RELICT TUFF: f lam lt gry &amp; dk gry; perv cly alt; trace fltg lith/pum lpli; parts along bdg which is @ approx 35 degrees; relict crptoxln apr under scope; loc brecciated w/ calc vng</p>	<p>perv kao/gry cly alt</p>		tr calc	5% calc @ brecc	0% Open

w 8.5  
v 45  
pH 8.5  
s 100  
sol 1%  
sd tr  
fc 1/32  
f 8.0

10/10  
10/10  
10/10  
10/10  
9/9  
10/10  
10/10  
10/4  
10/4  
10.3/10.5  
10/10  
10/9.7  
10/10  
10.2/10.2  
10.1/10.1

BOX #6  
BOX #7  
BOX #8  
BOX #9  
BOX #10  
BOX #11  
BOX #12  
BOX #13  
BOX #14  
BOX #15

WELL: "88-21 TCH"

KB ELEVATION: 6269'

LOG DATE: 6/19/95

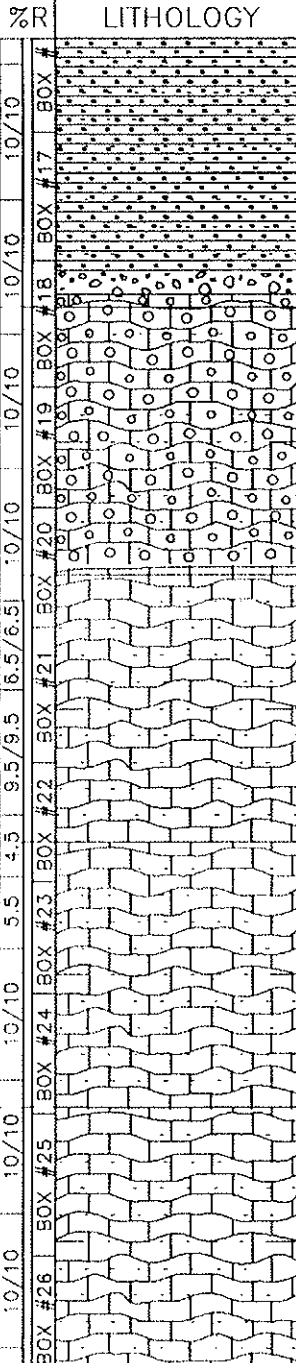
FIELD: Newberry

LOCATION: 120' N, 53' W fr SE cor Sec. 21  
T.21S-R.12E, Deschutes Co., OR

LOGGED BY: F.Pulka

D	ROP (ft/hr)	%R	LITHOLOGY	DESCRIPTION	ALTERATION	Breccia #/ft	Vein Density	Pore Fill %	MRT/BHT Az/Drift
1500				gen lt gry cly rich relict TUFF w/ loc cly repl of ang gry lith lpli; decr dk gry lams to nil below 1507' w/ an overall mas apr	pred kao/smect alt	none	tr calc	99% F	1510' 16.25 88.0 126 F
20	6/16/95			1517-19' sharp incr wh pum up to 1" & gry-brn lith lpli fltg in marg-perv chlortzd mtrx	1512-19' marg-perv chlortzn of mtrx & sme lith/pum lpli		tr-1% calc		
40				VES/AMYGD BASALT: brn gry; 10-20% ves; mxed filled amygd and lined ves; dull aphyric gndmas; low angle ctct @ t/ w/ cly slicks; decr fill in amygd w/ depth sme ves up to 1/2"	amygd of calc+wh chalc+pk laum chlor+blue opal+wh cly +buff qtz para chlor>laum+calc loc botry bulforng silica	none	tr calc tr chi	50% F	
40				VES/AMYGD BASALT: dk brngry; gen sl-marg wh-brn cly alt w/ waxy apr to mtrx; 10-40% ves w/ 10-20% fill; 1538-40' change f/ eqnt to elong ves & vugs @ up to 2" w/ mainly linings in pores.	ves linings of calc+wh cly +/- pk laum +/- chlor + bl opal 1539' bl opal frac surf @ 60 1540' wh cly frac surf @ 65 1544' frac @ 40 1/2" halo 1545' frac @ 70 1/2" alt halo 1547' grn silt+wh cly @ 60 1547.5' xfrac @ 52 3/4" halo 1549' wh cly frac surf @ 49 1550' chlor+wh cly frac @ 30 1553' chlor+wh cly frac @ 50 1553.5' 1/2" vug w/ opal+ornng botry silt+wh cly ff 1555' wh cly frac @ 70 3/8" halo 1556' wh cly frac @ 70			20% F	
60				1540' Lost mud returns. Pump LCM pill and regain 50% returns. Lost 10bbis at 1561'. Good returns thereafter.					
60				BASALT: dk gry-bik spkld lt gry; f gr equigran tex; fresh unalt mott vit apr; pred blk mafics w/ 5-15% lt gry subhed plag xls w/ loc marg wh cly alt; abnt frags w/ gry cly alt halo's @ 1/2-3/4" in width	1558' brn sil frac @ 52 1566.5' brn sli frac @ 40 1569.7' wh cly frac @ 58 1" halo com tr intstf blue-wh opal+wh cly tr vugs w/ ornng botry silt+opal +wh cly	none	tr-2% opal/sil	1-10% Open	
80				DIABASE: blk; gen m gr; 70-80% blk mafics; 20-30% feld; equigran tex; loc blk subhed px pheno @ up to 1/4"; 10-15% vis subhed-euhed feld xls on dry surf; mott vit apr; sme mafics in thin black bonds spaced 1/2-3" apart	decr frac density & less alt	none	1% opal chlor	1-5% Open	
1600				BASALT/DIABASE: blk; f-m gr; equigran tex; gen 80-90% anhedral-subhed mafic gr; 10-20% clr-lt gry subhed-euhed plag; mnr c-vc gr subhed-euhed px; fresh unalt apr; tr w rdd sil incl xls; thin mafic bands @ 1/2-2" spacing @ a dip of 25-35	tr lt gry hairline qtz vns; tr brn sil vns; tr vug zns w/ wh opal	none	tr opal sil	0% Open	

w 8.5  
v 37  
pH 8.0  
s 70  
sol 1%  
sd, tr  
fc 1/32  
f 10



WELL: "88-21 TCH"

KB ELEVATION: 6269'

LOG DATE: 6/19/95

FIELD: Newberry

LOCATION: 120' N, 53' W fr SE cor Sec. 21, T.21S-R.12E, Deschutes Co., OR

LOGGED BY: F.Pulka

D	ROP (ft/hr)	%R	LITHOLOGY	DESCRIPTION	ALTERATION	Breccia	Vein	Pore	MRT/BHT
						#/ft	Density	Fill %	Az/Drift
1600				dk mafic bands at 25-40 degrees and spaced inches apart	1610.5' frac @ 71.5 w/ no disp in mafic bands w/ oblique stria on frac surf w/ hd blue botry ff 1613' frac @ 40 1618' tr calc vng	none	tr gry sil opal calc	70-99% F @ Fracs	1607' 16.5 88.0 121 F
20	6/17/95			BASALT/DIABASE: blk; mott vit unalt apr; m gr; equigran tex; pred anhedral-subhedral mafics & 10% subhedral-euhedral feld; mafic bands at 1-2mm thick and spaced 1/2-6" apart; tr glom clots of feld	1626' frac @ 60 w/ 1/4-1/2" alt halo w/ disseminated pyr & 70% fill of lt grygrn botry silica 1632' hd sil @ frac @ 50 1633' frac @ 80 w/ hd blgry botry opal ff  tr f calc/qtz vng	none	tr calc qtz pyr	80-99% F @ Fracs	
40				mafic bands roughly planar or in sl curves w/ incr spacing & fewer bands; 1st apr grn c gr mafics; 10-15% distinct feld equigran w/ maf	1646' frac @ 40 w/ wh-lt brn cly	none	tr brn sil	70-99% @ Fracs	
60	w 8.5 v 38 pH 8.5 s 70 sol 1% sd tr fc 1/32 f 12.2			incr gran apr of BASALT/DIABASE w/ incr to c-vc gr & equigran tex; loc vugs f/ alt then removal of grn px & feld xls	loc cly rrim on mafic/feld xls sil+pump in vugs com tr thin gry sil vng tr discontinuous opal/calc vng 1673' brn botry & smooth frac surf @ 65; 50% fill 1675.5' frac @ 80 w/ hd smooth & botry silica surf @ 60% fill	none	tr brn sil calc opal	60-99% @ Fracs	
80				1673'. Partial returns at 60-70%. Lost 40bbls @ 1698'. Core ahead with 30% returns.					
1700				dk thin mafic bands at 1/2-6" spacing	1693' xcut vng w/ tan-wh sil + bl opal+blgrn cly+tr chlor; many botry sil mnrts com tr v f qtz vng every 1/2' @ planar-irreg  1696' parallel fracs @ 75 w/ botry sil+smooth sil frac surf @ 50%  tr-1/2" gry cly alt @ fracs	none	tr opal chlor tan/wh sil  no calc	50-90% @ Fracs	

WELL: "88-21 TCH"

KB ELEVATION: 6269'

LOG DATE: 6/20/95

FIELD: Newberry

LOCATION: 120' N, 53' W fr SE cor Sec. 21, T.21S--R.12E, Deschutes Co., OR

LOGGED BY: F.Pulka

D	ROP (ft/hr)	%R	LITHOLOGY	DESCRIPTION	ALTERATION	Breccia #/ft	Vein Density	Pore Fill %	MRT/BHT Az/Drift
1700		5/5 10		incr gry planar sil vng @ 1-3mm wide w/ incr assos w/ grn chlor; r calc vng	1707.5' unalt frac w/ chlor+ soft opal+hd brn sil 1710' frac @ 50 w/ sme brn sil 1712' prox marg--perv cly alt w/ chlor+brn botry sil @ 25% 0 frac 1719' frac @ 40 ctd w/ opal +lt gry botry sil+grn chlor	none	tr gry/brn sil opal chlor	50-90% F @ Fracs	1708' 18.75 90.0 90 F
20		9.7/9.7		1728'. Cored 1673-1728' w/ partial returns. Set 8 sxs cement plug @ 1728'. Tag @ 1578'. Core ahead w/ full returns. DIABASE/BASALT: blk spkld 10-15% lt gry; rough gran apr; equigran tex; gen m gr w/ loc c gr plug/px; 10-15% clr--lt gry subhed--euhed plug; pred blk eqnt anhed--subhed mafics; fresh unalt apr away f/ fracs; no mafic bands	1721' planar qtz vn @ 58 1721.5' planar qtz vn @ 70 5% 0 1727' vng @ 70 w/ hd brn botry sil & 50% open loc 1/4" gry cly alt @ fracs 1741.5' 1.5" vug 50% filled w/ tan botry sil & wh calc 1742' frac @ 75 w/ chlor	none	com tr chlor brn sil	50-90% F @ Fracs	
40	6/18/95	9/9		VES/AMYGD BASALT: dk gry; approx 20% ves/amygd; dect gr size to f-m gr w/ ophanitic @ base; mostly filled ves @ 1740' grdg to 20% filled @ base; wavy irreg ctct @ base	amygd of tan/orng sil+bl opal+ r calc+r chlor+r pump basal BASALT strongly chlortzd	none	com tr calc chlor	100% F 0% 0 20% F 80% 0	
40		10/10		BEDDED TUFF: lt gry--m grngry banded m gry; perv cly alt; approx 60% lt lams w/ 40% dk bands; gen parallel lams loc conv @ 52-53'; no lpli vis; bdg in lams @ 25-35	pred kao/smect alt	none			
60	6/19/95	10/10		BEDDED/MASSIVE TUFF: lt-m gry; lams diminish f/ ft @ 1773' to barely vis @ 1881.5' & mas; fri cly rich core; no vng present	marg--perv chlortzn 1762.5-66' perv kao/smect alt of TUFF	none	tr calc vng	0% 0	
80		8/8		MASSIVE TUFF: gen mott grngry--wh; sharp change @ 1781.5' to perv grn chlortzn w/ vis fltg xls/lith lpli @ m-c gr & loc strgrs of vc gr-f gvl brn--dk grn mafic lith lpli; up to 5% instl brn vit--grsy mnrl; firm w consol core	strong perv chlortzn of mtrx/lpli	none	r tr calc	0% 0	
1800		10.3/10.4/10.7							1796' 15.25 87.0 132 F

WELL: "88-21 TCH"

KB ELEVATION: 6269'

LOG DATE: 6/20/95

FIELD: Newberry

LOCATION: 120' N, 53' W fr SE cor Sec. 21, T.21S-R.12E, Deschutes Co., OR

LOGGED BY: F.Pulka

D	ROP (ft/hr)	%R	LITHOLOGY	DESCRIPTION	ALTERATION	Breccia	Vein	Pore	MRT/BHT
						#/ft	Density	Fill %	Az/Drift
1800		10.3/10.3		MASSIVE TUFF: gry grn; incr fltg lithic lpli & incr m-c gr mtrx; mxed chlortzn/smectite alt	perv chlortzn to 1808' w/ mxed chlor/smect 1808-17' then pred smect below 1817'	none	tr opal red sil	5% 0	
20		10.3/10.3		continued incr lith then sharp change @ 1819' to 70-80% lith/pum lpli across frac dipping 30 w/ gry cly @ ctct; lpli comp change across frac @ 1821'; basalt wedge @ 28 between lpli gvl/tuff @ 1822.5'; poss fault splay; bsit blocks over 1'	pred gry smect+wh kao alt			70% 0 @ Frac	
40	w 8.5 v 38 pH 8.5 s 100 sol 1% sd tr fc 1/32 f 12.0	9.1/9.1		DEBRIS FLOW: varcol gry-brn-blk-orng-wh-grn in a gry cly mtrx; 60-80% lpli/blks fltg in a cly alt tuff mtrx; gen prly strd; mxed comp of blk aphyric bsit sme scoria abnt pum and gry tan-orng gran dacite loc; no mnrlzn @ fracs	one lge vug in blk w/ 25% fill of botry silica pred smect/kao alt	none	none	25-75% fill lith ves	
60	6/20/95	10/10		WELDED DEBRIS FLOW: m gry spkld lt gry-ft lt grygrn loc dk brn-dk gry lith lpli; pred eqnt-elong pum lpli fltg in gry ash mtrx; less alt apr; sl-mod welding	incr ft grn sl chlortzn abnt intstl chlortzn & marg alt of mtrx	none	none	10-50% fill lith pum blks & lpli	
80		10.2/9.7		1844.5-45.5' ves bsit blk; 1860-61' lt gry f banded m gry tuff blk w/ mic fault @ 50 w/ 1/4" of normal displacement	strong chlortzn @ base welded zn 1869' chlor frac surf @ 46 1870.5' cly fill @ brec blk wh cly/blue cly repl of pum tr wh subhed-euhed stibnite? in ves; intstl chlor 1872.5-73.5'		tr chlor	10-40% fill ves in lith & pum	
100		10.2/10.2		DEBRIS FLOW: blk-brn-dk gry-wh w/ lt-m gry mtrx; v prly strd; sd+cly sized mtrx; gen pum/lith lpli gvl w/ blks up to 2' diam; pred dk ang bsit & subrd pum lpli/blks; gen fresh-marg cly alt lith lpli/blks	ll blue-wh cly marg-perv alt of pum; pred gry smect alt mtrx w/ loc ft chlortzn tr calc vng in blk but not extending to mtrx gen incr open ves @ blk/lpli cores	none	tr calc	10-30% fill in ves	
1900		10/10		lpli comp of 20-30% bsit, 20-80% pum, 5-30% brn rhy; pred gry mtrx					

WELL: "88-21 TCH"

KB ELEVATION: 6269'

LOG DATE: 6/20/95

FIELD: Newberry

LOCATION: 120' N, 53' W fr SE cor Sec. 21  
T.21S-R.12E, Deschutes Co., OR

LOGGED BY: F.Pulka

D	ROP (ft/hr)	%R	LITHOLOGY	DESCRIPTION	ALTERATION	Breccia #/ft	Vein Density	Pore Fill %	MRT/BHT Az/Drift
1900		6		DEBRIS FLOW: varcol dk gry to blk-brn-wh-orng in a gry-wh f-c sd to c gvl pum+clay mtrx; gen ang lpli/blks of bsit+pum+brn rhy; approx 80% pum w/ 10-20% blk-brn bsit & 5% brn rhy lpli/blks; 1900.5-01' 10" bsit blk; 1907-7.8' bsit blk; 1919-20' pum blk gen unalt w/ open ves; 1906' wh clay rrim on gry pum blk	pred gry+wh kao+smect mtrx alt com lt blue-wh clay pum repl & pum ves fill tr orng limonite rrim on bsit lith	none	none	0-50% Fill in ves	1903' 15.25 89.0 144 F
20				approx 90% pum mtrx/lpli/blks w/ loc zns w/ mxed comp concn of pum+bsit+rhy; 1926-27' ang pum blk; 1917-18' 1' pum blk; 1929.6-30' 7" bsit blk	com kaolzd pum & pum ves com filled w/ wh kao tr chlor rims on pum; com lt blue clay repl of pum	none	none	tr-20% fill in pum ves	
40				1938-44' huge brn banded hbd/feld porphyry					
60	w 8.5 v 34 ph 10 s 100 sol tr sd tr fc 1/32 r 8.5'			incr abnt brn banded rhy blks/lpli w/ less bsit RHY BLKS: lt orng mott wh spkid clr & blk; crptoxln v hd gndmas w/ conchoid frac; .5-2mm eqnt-elong clr-alt wh feld pheno @ 5-10%; tr-5% blk-brn rect euhed sl trns hbd	1946' frac w/ no mnrlzn @ 68 1949' frac @ 58 polished smooth w/ gry sil mnrlzn kao+smect+blue clay alt mnr chlortzn of mafic gr w/ sme chlor amygd in pum contd wh clay-lt blue alt of pum in mtrx w/ waxy apr; marg-perv kaolzn of feld in blks/lpli	none	none	90- 95% clay fill n mtrx 80% open ves in lge pum	
80				DEBRIS FLOW: lt gry-wh w/ brn-gry-blk-wh lithic/pum blks/lpli; blks up to 2' diam w/ most @ 6-8"; gry-wh waxy relict pum mtrx; overall 60% pum + 35% rhy & 5% bsit comp; 1962-64' pred pum lpli sandwiched between blk rich zns; @ 1969.7' dk grybrn mtrx w/ fltg pum/rhy lith lpli w/ irreg ctct @ base w/ 1.5' pum blk	tr chlor vng @ mafic blk bd & intsl in pum lpli mtrx loc about 1/2 pum unalt w/ open ves w/ others perv wh kao alt or sl blue clay alt loc	none	tr chlor	gen 0-10% open intsl space in mtrx	
2000	6/21/95			abnt brnblk crptoxln andesite either mas or ves w/ open ves or wh clay linings brn/wh lith/pum lpli/blks flt in redbrn clay mtrx; 60% brnblk andesite+5-10% pum+trnr scoria 30-40% mtrx brecciated and blk 1996.5-2001' w/ sme cracks filled w/ pum and probably frac @ emplacement	1981.5' tr br grn intsl chrysocole like clay incr whblue clay mtrx w/ wh spots 1993-2005.6' perv redbrn clay alt mtrx poss colored by alt cinders tr blue clay frac surf tr poss dissolution @ calc vng	none	tr chlor chryso calc	0-10% open ves & intsl	

WELL: "88-21 TCH"

KB ELEVATION: 6269'

LOG DATE: 6/21-22/95

FIELD: Newberry

LOCATION: 120' N, 53' W fr SE cor Sec. 21, T.21S-R.12E, Deschutes Co., OR

LOGGED BY: F.Pulka

D	ROP (ft/hr)	%R	LITHOLOGY	DESCRIPTION	ALTERATION	Breccia #/ft	Vein Density	Pore Fill %	MRT/BHT Az/Drift
2000		10/10		mainly frac dk gry andes blks w/ strong lt gry clay alt halo's creating fltg ang blk frags; reddbrn scoria-rich mtrx mx'd w/ pum/lith lpli; approx 60% andes+30% mtrx+5-10% scoria+mnr-5% pum	alt gry/reddbrn clay alt mtrx				2004' 15.0 88.0 164 F
20		10.3/10.5		DEBRIS FLOW: lt gry w/ wh-gry-dk brn blks/lpli; 25-30% brngry sandy clay alt ash rich mtrx; loc intbd w/ SCORIA: 40-50% br reddbrn-brn scoria lpli & blks w/ staining of clay mtrx to reddbrn; assoc 10-20% brn andes lpli/blks & 20-30% ves/mas bslt	com blue rims w/ wh kao cores on pum lpli loc reddbrn clay f/ scoria alt tr intslt & vn chlor	none		tr-50% fill in ves	
40		10.4/10.9		mx'd brn andesite blks up to 2.5' and pum blks up to 1'; gry mott wh clay mtrx; incr mnrlzn @ gr bd w/ tr chlor+wh botry sil+/-blue opal	pred smect/kao alt loc tr intsl chlor; chlor alt of smaller chlor lpli and tr vng mx'd open pum pores w/ wh clay lined or whbrn clay filled	none		tr-1% chlor wh sil in pum ves	
50		10.3/10.3		incr to 65% pum blks/lpli & 30% and blks/lpli w/ 5% bslt+scoria; about 35% mtrx w/ 65% blks/lpli; gen brn sd sized pum/lith+wh clay mtrx	abnt marg chlorlzd mtrx 2066-67 w/ lge instl vng @ blk gr bd gen wh/lt blue clay repl of pum wh-gry sil in breccia as vng f/ 2077' incr pum w/ fzy gr bd			tr-1% chlor in lge pum brecc 60% open	
80		10.1/10.1		2084-85.5' br red brn mtrx/lpli scoria zn	2083-84' brecc brn andes blk w/ wh sil & brn clay mtrx/vng			tr wh sil 70-90% fill in lge pum	
2100		10.4/10.4		DEBRIS FLOW: brngry w/ dk gry-dk brn-lt gryblue-wh occ reddbrn blks/lpli; sand size gran mtrx; incr dk brngry mtrx @ 30-40%; gen 40% dk gry-brn andes blks/lpli w/ 30% wh-gry-bluegry pum & 5% scoria & mnr ves andes; w rdd pum 2096-98'	pred wh kaozd pum & dk clay alt lith lpli in mtrx which blends				

w 8.7  
v 36  
ph 9.5  
s 60  
sol 1 1/2%  
sd 1/32  
f 9.6

BOX #70  
BOX #71  
BOX #72  
BOX #73  
BOX #74  
BOX #75  
BOX #76  
BOX #77  
BOX #78  
BOX #79  
BOX #80

WELL: "88--21 TCH"

KB ELEVATION: 6269'

LOG DATE: 6/23/95

FIELD: Newberry

LOCATION: 120' N, 53' W fr SE cor Sec. 21,  
T.21S--R.12E, Deschutes Co., OR

LOGGED BY: F.Pulka

D	ROP (ft/hr)	%R	LITHOLOGY	DESCRIPTION	ALTERATION	Breccia #/ft	Vein Density	Pore Fill %	MRT/BHT Az/Drift
2100	6/22/95	10.2		DEBRIS FLOW: grybrn-grn w/ lt-dk gry to redbrn blks & lpli; cly alt brngry mtrx; 40% mas-ves andes 25% pum 5% scoria 30% mtrx; loc fri core; blks up to 2'; andes gry equigran-ophan ves	com tr calc amygd in blks/lpli incr lt blue opal cly alt mtrx; com koo & incr chlortzd mtrx loc 2113--13.5' hd blue opal vug fill 2114' chlortzd frac @ 50	none	tr-1% wh qtz opal	70% fill in ves in blks/lpli	2106' 15.0 86.0 168 F
20		10.3		approx 60% gry-dk gry pum blks/lpli w/ 40%; dk gry - blk andes/bslt & mnr cinders	pred lt blue cly repl of mtrx pum & as vng; assos wh kaozn blue opal loc sl trnsf & hd 2130' half open calc vng 2131' extreme chlorzn @ frac @ 50 strong chlortzn loc	none	1% opal+ calc+ chlor	65% fill in pum ves	
40		10.3		gen 30% pum+30% bslt+mnr scoria fitg in 40% gry mtrx; decr lith blk size to 6" w/ one pum blk @ 1.5' w/ pred gvl sized lpli	decr blue opal cly mtrx @ 2142' w/ mnr-10% & pred gry mtrx sme chlor alt mafic lpli cly fills instl pores pred wh koolzd pum lpli	none	com tr calc vng	70-80% fill in pum	
50	w 8.7 v 38 ph 9.5 s 60 sd 1.5% sd tr fc 1/32 f 8.0	10.10		approx 45% mtrx+25% pum+20% blk-brn bslt+10% redbrn scoria blks/lpli	2172--78' marg chlor+kao alt mtrx 2172--82' perv chlortzd mtrx	none	tr calc qtz	50-80% pum fill 30-70% pum fill	
80		10.3		sharp change @ 2176' to pred pum blks/lpli	2181' dual frac 2" apart w/ smooth chlor+kao surf @ 30/40 2186' bl opal frac @ 71 wh cly+gry cly+chlor in pum ves mxd chlor+kao+lt blue cly alt of mtrx 2190.5--93' perv chlortzd mtrx	none	5% chlor	90-100% fill in pum & instl	
2200		9.9		2190--96' mxd amygd bslt/pum blks/lpli	2196--99' extreme kaolzn of mtrx/lpli/blks w/ relict kaolzd pum distinct f/ kao mtrx	none	1-5% calc qtz chlor		



WELL: "88-21 TCH"

KB ELEVATION: 6269'

LOG DATE: 6/23-24/95

FIELD: Newberry

LOCATION: 120' N, 53' W fr SE cor Sec. 21,  
T.21S-R.12E, Deschutes Co., OR

LOGGED BY: F.Pulka

D	ROP (ft/hr)	%R	LITHOLOGY	DESCRIPTION	ALTERATION	Breccia #/ft	Vein Density	Pore Fill %	MRI/BHT Az/Drift
2200		5.2 B/S		BASALT: dk gry-blk; vf gr aphan gndmas; 5% elong euhed clr 1-2mm feld pheno; 2204-07' loc glassy w/ spider-web like perlitic tex surrounding dk gry-blk obsidian; loc tr mnrldz vugs	tr vugs filled w/ tan botry sil & calc  abnt hairline calc/gry sil vng	none	tr-1% vf calc qtz	100% fill	2208' 15.5 87.0 184 F
20	6/23/95	10/10		BASALT: blk; mott vit apr; glassy-aphan mtrx; conchoid frac; approx 5% .5-3mm clr subhed-euhed feld pheno; tr brn subhed .5-2mm hbd pheno; loc dull-sil trnsd glassy incl zns	fresh BASALT @ 2230' grd to gry cly alt 31-32' to banded gry cly/chlor 32-33' then chlor brecc		tr-30% chlor calc opal	>80% fill 95% fill brecc	
40	CB#4-BLY HQ 1120'	10/10		2232.5-35.5' flow breccia in BSLT w/ mxed amygd mas frags	amygd of calc+chlor+wh sil+opal +tan sil+pump; para opal>calc  chlor+pump+calc+opal brecc				
60	w .8.6 v .42 plt 9.0 s .60 sol 1% sd, tr fc 1/32 f .8.8	7.3/7.6		DEBRIS FLOW: lt-dk gry to gry brn; tightly packed blks/lpli w/ most @ 1/2-6"; one 2' pum blk; 75% pum+25% amygd bsll	gen chlor alt to 2251' changing mxed bluegry & gry cly alt of mtrx w/ depth		10% chlor  2-3% calc chlor opal	70% fill vng 75% fill pum 90% fill amygd	
80	6/24/95	10.3/10.3		DEBRIS FLOW: m-dk gry to bluegry; gvl-2' relict pum blks @ subang-wrdd; dk gry silfd mtrx; mxed pum amygd bsll comp	2265' lat disp opal sks @ 20 2265.9' opal+chlor+calc @ 40  gen marg-perv silifen w/ blgry opal/sil; loc intsti & rrim chlor	none	2-4% calc opal chlor	95-100% fill pum amygd	
2300		10/10		DEBRIS FLOW: m-dk gry w/ gry-blk occ brn blks/lpli; w consol firm/hd core; mxed 75% relict pum; 25% amygd/mas bsll; gvl-1.5' diam ave 2-4"	abnt silfen of mtrx; decr to loc dk gry cly alt pum	none	1-2% opal chlor calc	95%+ intsti pum amygd fill	



WELL: "88-21 TCH"

KB ELEVATION: 6269'

LOG DATE: 6/25-26/95

FIELD: Newberry

LOCATION: 120' N, 53' W fr SE cor Sec. 21, T.21S-R.12E, Deschutes Co., OR

LOGGED BY: F.Pulka

D	ROP (ft/hr)	%R	LITHOLOGY	DESCRIPTION	ALTERATION	Breccia #/ft	Vein Density	Pore Fill %	MRT/BHT Az/Drift
2400	6/25/95	10/10		DEBRIS FLOW: lt-dk gry w/ gry-dk brn blks; sbang-sbrd apr of blks/lpli; approx 80% relict pum & 20% bsit; up to 1" gry opaline cly rrims @ bsit gr bd; gry alt halo's @ fracs in bsit blks; discontinuous-parallel blk-brn marcasite vng thru alt halo's in pum & occ thru mtrx	pyr+marc+calc+wh zeo+opal irreg dk marc/pyr vng in discon parallel segments 2-10% dissem-intstl & vn f-m gr pyr/marc gen filled ves loc w/ wh-clr anhed-asbestiform mnrl (zeo?) strong gry alt @ gr bd & fracs  pred hd silicifd core	none	5-10% 80-100% F gr bd  100% F ves  70-90% F gr bd	2408' 15.5 83.0 202 F	
20		10/10		incr gry silicifd alt of bsit liths making it difficult to tell pum from bsit blks/lpli; sme lger bsit blks w/ .5-1" smect rrims & unalt cores; hd dense w consol; gen hd crptoxln apr  open spaces gen instl assoc w/ wh mnrl  mixed gry mott lt blue/wh silky lstr w/ loc hder crptoxln zns; original comp of < 6" blocks not apparent because of perv lt gryblue alt	com tr-3% pyr/marc @ gr bd & vng; sme marc vns radiate inward from gr bd on blks tr redbrn hem rrim @ bsit blk gen hd silicifd crptoxln mtrx  frac @ 2432' @ 45 w/ opal cly incr to 3-5% fri wh mnrl in mtrx; wh mnrl occ botry or asbest & assoc w/ pyr/marc	none	1-3% wh zeo 100% ves  3-5% pyr marc tr-1% calc 10% O mtrx  3-5% wh mnrl		
40	w 8.8 v 36 ph 8.5 s 60 sd 3.5% sol 1/8 fc 1/32 f 8.8	10/10		most lith/blks perv alt lt bl gry w/ dk gry rrims & vng in segments that radiate inward from rrims; unalt bsit cores seen only in 3-4 blks 6-8" in size; gry elong strks in bsit lpli/blks poss relict omygd; gen relict gvl/sd sized mtrx	contd strong lt bluegry silifcn  wh soft powd mnrl assoc w/ pyr gen instl & @ lpli/bik bdries  open spaces instly assoc w/ wh mnrl poss f/ dissol f/ wash	none	3-10% wh zeo 10-20% O mtrx  5-15% wh zeo pyr calc		
60		10/10		poss WELDED TUFF w/ relict elong lpli					
80		10/10		SCORIA: redbrn mtrx & lpli; upper 4" mxed gry & redbrn lpli; gvl sized scoria lpli to blks up to 1"; fri limonite/hem rich mtrx	most scoria w/ calc amygd mnrl chlor/wh opal scoria amygd	none	1-10% Pyr 100% F ves  tr-2% calc 90-100% F vng  tr-2% calc		
2500		10/10		DEBRIS FLOW: lt gry blks w/ blgry mtrx; mstly gvl lpli & blks up to 8"; mott bl-wh crptoxln silicifd mtrx is v hd; no dk gry rims on blks/lpli below SCORIA; can't distinguish original comp of blks/lpli	loc calc concn as bands in mtrx  decr intstl/vng pyr then sharp incr 2490-2500' as intstl & erratic hairline vns; loc 1/8-1/2" wide pyr vns  most lpli perv alt gry & v hd pyr assoc w/ calc+wh opal	none	3% calc 95-100% F mtrx  2% pyr  0-18% Pyr 50-100% F vng  1% calc		

WELL: "88-21 TCH"

KB ELEVATION: 6269'

LOG DATE: 6/26/95

FIELD: Newberry

LOCATION: 120' N, 53' W fr SE cor Sec. 21,  
T.21S-R.12E, Deschutes Co., OR

LOGGED BY: F.Pulka

D	ROP (ft/hr)	%R	LITHOLOGY	DESCRIPTION	ALTERATION	Breccia #/ft	Vein Density	Pore Fill %	MRT/BHT Az/Drift
2500		10/10		DEBRIS FLOW: blue gry-gry w/ dk gry-blk & tan blks mxd bslt w/ tan banded blk rhyol & pum lpli/blks; tan rhyol lpli com concn in strgrs or beds; sharp change across frac to dist lpli comp & gr bd & decr in pyr; mxd bluegry & tan cly alt @ frac; frac wedges w/ unalt & perv bluegry opal cly alt pts	2502.5-2505.5' frac @ 60 one w/ lat disp slks in cly sharp decr pyr across frac incr alt of lpli/blks @ 2509' w/ .5-1' bands alt perv tangry & less alt zns w/ 1/8-1.5" rrrms	gouge	2-5% calc opal pyr	80-100% frac	2508' 15.5 85.0 208 F
20		9.7/10		2518-20' gry cly alt; a 2" thick cly filled frac @ 2518.5'; 2-3" chlor+kao gouge @ 2519' @ 45 then broken core to 2520.5' changing to perv chlortzn	2517.5' lge blue opal vng w/ adj bluegry cly alt; pred whgry cly alt 2516-18'; cly gouge 2518-20'	gouge		95-100% vns	
40	6/26/95	7.2/10		DEBRIS FLOW: lt-dk grn w/ fltg wh-lt gry lpli/blks; mott lt-dk grn marg-perv chlortzd mtrx; gen relict lt grn chlortzd-wh kaolzd ang-subang lpli lpli alt & not disting; lger blks w/ concn gry alt bands; com chlortzd lpli to 2535'	2523' frac perv chlortzd @ 60 2520.5-2528' perv chlortzn then marg chlortzn+bluegry cly+/- wh kao to 2535'; pred bluegry cly alt + kaolzn below 2535' no pyrite pred bluegry opal cly alt	none	1-3% calc	100% frac	
30		5.7/8		incr hd compeltant core below 2544' w/ incr bluegry alt mtrx w/ bluegry & wh fltg lpli/blks & incr homogenous apr	2542/2543' cly frac @ 48 most gvl sized lpli perv alt bluegry w/ silicfn & loc wh kao open sp @ lpli/blk bdries loc 1-3% dissem/vng pyr 1-3% intstl/vng calc	none	tr-3% pyr 1-3% calc	90-95% F mtrx	
80		10/10		DEBRIS FLOW: lt-dk bluegry mott wh; sd-gvl sized relict lpli & blks up to 5"; v hd; crptoxln mtrx lpli/blks from silicfn; 15-20% wh intstl powd mnrl com assoc w/ dissem/vn pyr; lpli & blks getting hard to distinguish from mtrx; cannot decipher original comp of blks/lpli	2565/66' frac set @ 45 w/ dk gry & wh cly gouge w/ a smooth waxy frac surl loc liths up to 2" repl by marc tr-1% dissem pyr throughout mxd lt-dk bigry mtrx	gouge none	tr-2% calc pyr	85-100% F mtrx	
2600		10/10		HORNFELS: blue mott wh; incr hd; perv crptoxln tex; can only rarely distinguish lpli/blks from mtrx; xcut by irreg branching pyr vng & 1-3" pyr patches; mxd v hd wh/gryblue & firm wh core	2578-83' kaolzn flanks cly-rich frac @ 2581' pred v hd silicfn w/ lenses of kaolzn 1st apr wh mlky qtz vng loc clr qtz ff no trace calcite	none	tr-10% diss vn pyr tr qtz	95%+ mtrx	

WELL: "88-21 TCH"

KB ELEVATION: 6269'

LOG DATE: 6/26-27/95

FIELD: Newberry

LOCATION: 120' N, 53' W fr SE cor Sec. 21, T.21S-R.12E, Deschutes Co., OR

LOGGED BY: F.Pulka

D	ROP (ft/hr)	%R	LITHOLOGY	DESCRIPTION	ALTERATION	Breccia #/ft	Vein Density	Pore Fill %	MRT/BHT Az/Drift
2600		10/10		HORNFELS: med bluegry mott wh in bands & patches; v hd core; 2605.5-2606.5' distinct relict lpli w/ bluegry lpli cores & lt gry rims & dk blue gry mtrx; 5-15% parallel disc wavy pyr vng to 2606' then more braided pattern; strong bluegry alt prox to pyr vns fading to lt blue gry-wh away f/ vns (=relict lpli/blks?)	loc tr calc vng perv silicifd w/ 5-20% wh kao after lpli? braided/parallel pyr vng & f dissem; loc pyr in 1" micxln clstrs pyr+blue opal breccia fill		5-15% pyr tr calc tr wh qtz	95%+ F mtrx	2608' 16.25 84.5 222 F
20		10/10		HORNFELS: med bluegry banded wh or lt gry w/ wh patches; indist lpli/blk bdries; sme fzy wh or m blue patches poss relict lpli/blks; homog apr of poss relict mtrx/lpli/blks; 10-20% braided or parallel pyr vng in micxln clstrs; pyr vng .5-5mm in width; m gry-wh bands between pyr vng; pyr/marc patches up to 5cm poss repl of lpli	abnt braided/parallel pyr vng w/ sme in lams gry cht-like & wh qtz vng decr pyr to tr f/ 2629' 2639-40.5' marg chlortzn & vng		5-15% pyr 15% sil/ qtz no cc tr chlor	95%+ F mtrx vng	
40		10/10		HORNFELS: m bluegry strkd/banded/patches of wh; v hd; approx hzontal dk gry wavy sil vng spaced 1/8-1/2" & com braided; perv silicifd w/ f micxln bluegry & powd wh firm zns; bands wrap loc dist lpli defining ougen tex; loc grn marg chlortzn 2650-52' banded blue/wh HORNFELS separated by inactive 80 frac from distinct lpli alt blue gry-wh lpli & dk blue gry mtrx	dk gry sil bands subhzon & braided 2645-46' 10% open vugs w/ botry tan-wh sil lf 2640-48' loc marg chlortzn in patches/vns loc brn marg alt cores on dist lpli w/ bluegry rrim	none	tr chlor tr-1% wh qtz tr pyr no cc	95%+ F vng mtrx	
60	6/27/95	10/10		incr distinct relict blks/lpli w/ blue rrim & wh cores 2672' distinct chlortzd/dk blue relict lpli in a clayey mtrx across low angle frac @ 18 soft chlor/blue opal cly mtrx hd bluegry zns w/ abnt blue sl trnsl vns @ 2676.5' & 80'	subhzon & erratic wh-blue vng assoc w/ pyr vng frac @ breccia @ 65 tr chlor vng in hd HORNFELS 2570-72' 1-2" marc vng along frac @ 80 decr pyr in chlor zns to tr		1-5% diss vn pyr tr chlor 1-8% pyr	loc 40% O frac 95%+ F vng mtrx	
80		10/10		v hd silicifd blks/lpli flt in mas grn chlor+blue opal cly mtrx; blks up to 8" most lith gvl sizes	chlor/opal vng in silicifd zns para chlor>opal in vng	none	1-3% calc qtz tr-1% pyr	85-95% F mtrx	
2700		10/10		HORNFELS w/ wavy cont apr is mostly wh w/ bluegry strks/patches about able to decipher comp of blks/lpli w/ strong chlor+bluish opal cly loc gry mtrx	loc kaolzd relict pum lpli silicifd zns intbd w/ those w/ dist lpli hd & chlor+blue mtrx				

WELL: "88-21 TCH"


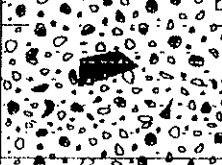
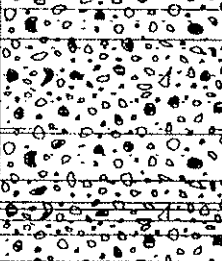
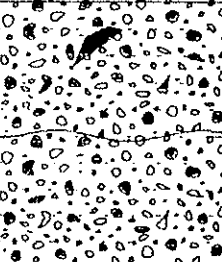
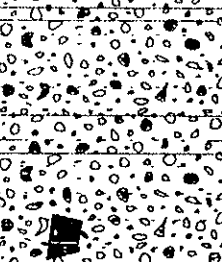
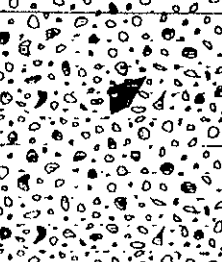
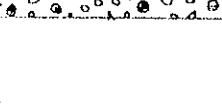
KB ELEVATION: 6269'

LOG DATE: 6/27-28/95

FIELD: Newberry

LOCATION: 120' N, 53' W fr SE cor Sec. 21, T.21S--R.12E, Deschutes Co., OR

LOGGED BY: F.Pulka

D	ROP (ft/hr)	%R	LITHOLOGY	DESCRIPTION	ALTERATION	Breccia #/ft	Vein Density	Pore Fill %	MRT/BHT Az/Drift
2700		10/10		RELICT BASALT/DIABASE: gry w/ blk mott vit strks; blk zns unalt w/ 35% 1-3mm wh subhed feld xls fltg in a glassy mtrx; blk unalt bsit & brn cly strks in a mas gry firm cly mtrx	poss devit glassy flow then alt to gry cly w/ intact unalt lens				
20		10/10		top DEBRIS FLOW an irreg ctct marked by grybrn lam	2704' slicks @ 40 w/ vert disp 2706' frac @ 65	none	tr-1% calc	85-95% F mtrx	2708' 16.5 85.0 228 F
40		10/10		pred gvl sized tightly packed relict lpli w/ 20% alt lt brn 45% chlortzd grn w/ 35% lt-m grn chlortzd mtrx; one 4" marg alt bsit blk	marg-perv chlortzd mtrx & 50-60% of lpli		tr diss pyr		
40		10/10		incr dk grn w/ incr dist lpli bdries @ 10-20% w/ sme sl-marg alt brn-dk brngry bsit	5-10% wh intstl qtz 2720' frac w/ slks @ 53 lat disp				
60		10/10		1st apr f brn chlor/opal cly lams spaced @ inches to several feet apart in DEBRIS FLOW; loc gvl sized lpli lags between lams but pred poor-mod strd; mxed perv chlortzd lpli & 5-15% sl-marg alt bsit lpli w/ cam chlor rrims; blks loc up to 5"; intbd sand sized relict ash/lpli w/ dk lams & gvl sized lpli fltg in chlortzd mtrx	1-8% intstl qtz; no calc open spaces gen @ lpli/blk bdries 2730' chlor slks @ 46 vert disp no pyr	none	tr-1% qtz	70-90% F mtrx	
60		10/10		incr able to id bsit/pum lpli @ 30-60% below wavy ctct @ 2750'; dom mas & sme porph bsit lpli & dk pum lpli; 5" aphyric bsit blk w/ 1/2 open vugs infilled w/ botry lt tan sil; pum ves range f/ 20-80% filled; gray rrims on many lpli	qtz vng gen @ lpli bdries 5-10% intstl qtz decr to 1-3% below 2750' no calc or pyr dk grn chlortzd lpli w/ dk grybrn chlortzd mtrx	none	1-2% qtz	20-80% F pum	
80		10/10		DEBRIS FLOW: m-dk grn w/ brn-gry occ orng lith lpli blks up to 3" loc; gen gvl sized p-mod srtd; gen tightly packed w/ gr-gr ctct; incr dk in color f/ 2767' w/ incr brn vng/lams & repl of lpli; mxed comp of blk-brn-dk gry bsit gry pum & sme orng scoria; decr frequency of subhzon lams w/ change to limonite/hem in comp	20-50% sl alt w/ vis comp of lpli brn hem/lim & grn chlor alt hem/limonite repl of lpli com open mtrx @ lpli bdries loc	none	tr calc tr-1% qtz	70-90% F pum	
2800		10/10		DEBRIS FLOW: dk grn spkld 5-15% brn; gen gvl sized lpli w/ loc bsit blks up to 10"; most mafic lpli perv repl by hem/limon; loc intact cores of mafics w/ FeOx rrims; most lpli grn & perv chlortzd; pred grn chlor mtrx w/ loc redbrn patches	1-3% intstl qtz pred perv chlortzd mtrx/lpli marg-perv chlortzn of mtrx/lpli w/ hem/limon repl of lpli/mtrx loc; tr botry qtz ff hd hem vng/lams & sbhzon/vert vng & mtrx is com 2798-2800' abnt hem vng & repl of lpli w/ 35-40% redbrn mtrx	none	tr calc tr-1% qtz 3-5% hem	75% F vng 95% F mtrx vng	

w . 8.8  
v . 39  
ph . 8.5  
s . 120  
sol 3.4  
sd . 1/4  
fc . 1/32  
f . 9.0

WELL: "88-21 TCH"

KB ELEVATION: 6269'

LOG DATE: 6/28/95

FIELD: Newberry

LOCATION: 120' N, 53' W fr SE cor Sec. 21, T.21S--R.12E, Deschutes Co., OR

LOGGED BY: F.Pulka

D	ROP (ft/hr)	%R	LITHOLOGY	DESCRIPTION	ALTERATION	Breccia #/ft	Vein Density	Pore Fill %	MRT/BHT Az/Drift
2800		10/10		mott lt grn mtrx w/ dk grn & brn lpli; sme relict scoria seen; 10-15% dist bslt lpli w/ most marg-perv repl by hem; blchd sl lt gry mtrx 2817-18' then patchy below 2817'	1-3% intstl qtz com open spaces @ lpli bdries 5-15% hem mtrx/vng to 2805' then 4-7% to 2813.5'  25-85% perv chlortzd lpli w/ mst mafic lpli marg-perv repl by hem	none	3-5% hem 1-3% qtz no calc	80-90% F mtrx	2808' 16.5 81.5 230 F
20		10/10		DEBRIS FLOW: lt-m grn to blchd apr lt gry loc; incr dk grn 2828-31.5' then brn apr 2826-28'; mstly dk gry & less dk redbrn lpli; pred gvl sized lpli; mod srtld & tightly packed; 65-75% of lpli marg-perv chlortzd w/ 25-35% repl by redbrn hem; pred grn chlortzd mtrx w/ loc redbrn zns  5 x 8" dk brn v hd marg hem repl blk @ 2836'	dom chlortzn w/ hem; blchd wh zns poss kao rich  abnt intstl qtz; 1st apr wh mlky qtz vng	none	2-5% qtz 1-6% hem	85-95% F mtrx	
40		10/10		gen grn gvl sized chlortzd lpli fltg in chlortzd mtrx; mod w srtld  DEBRIS FLOW: dk grn spkld 5-20% brn; perv chlortzd mtrx & most lpli; about half mafic lpli marg-perv repl by hem	incr chlortzn & decr redbrn hem to mnr; perv chlortzd mtrx/lpli loc subhzon hem vns 2849.5' @ 45 w/ 3/4" calc vns  pred intstl irreg disc qtz loc blchd wh patches w/ abnt qtz	none	tr-1% hem 3-6% qtz tr-1% calc	95%+ F mtrx	
60	6/28/95	10/10		bslt comp vis in lpli; sme mafic lpli half alt to chlor or w/ redbrn hem rrim; mod w srtld gvl sized lpli w/ sme up to 1-2"  5-15% dk brn hem repl lpli & one 5" blk incr prop of relict sd sized mtrx & incr prly srtld loc hd distinct sparsely porph aphan bslt lpli	perv chlortzn 80-90% of core incr thick calc vns sharp decr qtz & incr calc as dom intstl mnrl braided subhzon/vert hem vns	none	tr-1% hem 1% calc 3-6% qtz 3-4% hem 3-6% calc 1% qtz	95%+ F mtrx	
80		10/10		DEBRIS FLOW: m grn w/ dk grn lpli & 5-10% brn relict lpli; m grn chlortzd mtrx; most lpli perv chlortzd dk grn; 5-10% sl-perv hem repl of mas/amygd bslt; prly srtld relict lpli @ sd/gvl sized w/ none over 1/2"	perv chlortzn is dominant incr intstl calc & vng w/ sme zns w/ mtrx flooded by calc 2889' hem/calc slks @ 43 vert disp tr-3% wavy subhzon discon 1/8-1/8" hem vng open space @ lpli bdries	none	3-10% calc 1-3% hem no qtz	95%+ F mtrx	
2900		10/10							

WELL: "88-21 TCH"

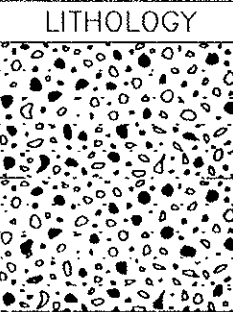
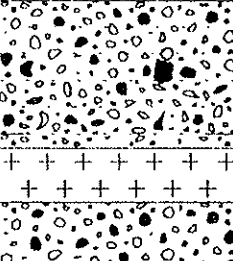
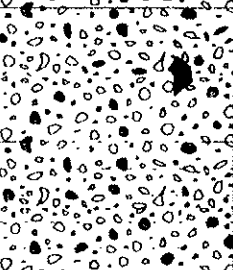
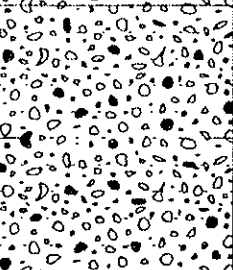
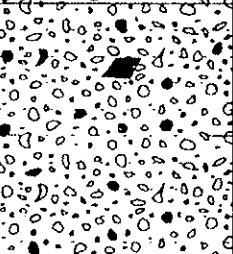
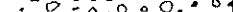
KB ELEVATION: 6269'

LOG DATE: 6/28-29/95

FIELD: Newberry

LOCATION: 120' N, 53' W fr SE cor Sec. 21,  
T.21S-R.12E, Deschutes Co., OR

LOGGED BY: F.Pulka

D	ROP (ft/hr)	%R	LITHOLOGY	DESCRIPTION	ALTERATION	Breccia #/ft	Vein Density	Pore Fill %	MRT/BHT Az/Drift
2900		10/10		gen prly strtd <u>DEBRIS FLOW</u> w/ sd-gvl sized relict lpli; 2-3" ang blk @ 2911 and 2912' w/ mas wavy dk grn & m grn intstl chlor & no lpli in mtrx; gen dk grn relict lpli & m grn mtrx	2-6% intstl calc pred perv chlortzn of lpli/mtrx low-high angle hem vng 5-10% dk marg hem alt lpli 2916.5' lge 1" thick euhed calc vng @ low angle frac @ 25 2919' frac @ 15	none	1-3% calc 1-3% hem	90-98%+ F mtrx	2908' 16.5 81.5 250 F
20		10/10		<u>RHYO DACITE INTR</u> : gry overall; spkld clr-lt gry-blk; 65-75% subhed feld sme qtz w/ 25-35% blk-dk gry mafics; f-m gr equigran tex; mafic frac com marg chlortzd; sme calc repl feld; ti-1% vf dissem opa; sparse pheno/vugs; calc+sil+chlor vug fill; one 2mm eqnt calc repl feld pheno; frac bounded top (60) and bottom (46); chilled banded brn/gry obsid @ top 2" & bottom 4"; pheno aligned @ same orien as bounding frac; 1/4-1" eqnt <u>DEBRIS FLOW</u> incorp into base	<u>DEBRIS FLOW</u> alt dk bluegry 5" above INTR & incr hd; blue opal cly & lower/upper frac; upper frac w/ vert slks; no calc in host rk 1' above/below <u>INTR</u> w/ abnt intstl qtz vugs filled w/ wh-pk qtz/calc/blue botry opal 3-5% intstl calc	none	tr-1% calc tr-1% qtz opal lr hem	95%+ F mtrx 60% F vugs 50-100% F frac	
40		10/10		mslty gvl sized lpli in <u>DEBRIS FLOW</u> w/ blk up to 2-3" loc; loc 4-6" beds dom by sd sized relict ash/lpli; most lpli alt dk grn fltg in m grn mtrx; 10-15% dk brn relict bsit/pum w/ half marg repl by hem @ rims; sme dk lpli sl alt w/ fzy bdries & comp of mas-ves bsit	pred chlortzn of lpli/mtrx marg-loc perv hem repl of lpli gen decr hem/calc vng 5-8% intstl calc most amygd in lpli calc+chlor	none	tr calc hem	95%+ F mtrx	
60		10/10		<u>DEBRIS FLOW</u> : m grn spkld 5-10% brn; alternating 2-4" relict sandy beds/lens w/ prly strtd lpli rich zns w/ loc f upward seq; dist dk gry-brn bsit lpli; one 5" blk w/ serrated gr bd blending into mtrx	planar & 1/8" braided calc vng v high & low angle braided hem vng up to 5% hem repl of lpli marg-perv chlortzn is dominant	none	tr-2% calc tr-3% hem	95%+ F mtrx	
80		10/10		2981.5 bedding along ptg in silt sized zn @ 30 continued alternating relict silt/sd/gvl sized layers @ .5-2' in thickness; r lpli up to 1-2"; 5-10% brn alt lpli many w/ dk gry cores & f calc amygd decr bedding w/ mslty prly strtd <u>DEBRIS FLOW</u>	2985' frac @ 65 w/ disp hem vn 2986' obliq slip frac @ 30 w/hem 85-95% of lpli perv chlortzd 3-7% intstl calc hem bands define bedding	none	tr-2% calc tr-1% hem	95%+ F mtrx	
3000		10/10							



WELL: "88-21 TCH"

KB ELEVATION: 6269'

LOG DATE: 6/29/95

FIELD: Newberry

LOCATION: 120' N, 53' W fr SE cor Sec. 21,  
T.21S-R.12E, Deschutes Co., OR

LOGGED BY: F.Pulka

D	ROP (ft/hr)	%R	LITHOLOGY	DESCRIPTION	ALTERATION	Breccia #/ft	Vein Density	Pore Fill %	MRT/BHT Az/Drift
3000		10/10		<p>DEBRIS FLOW: m-dk gm approx spkld aprox 10% brn; gen relict prly srtld sd-gvl sized sbang-ang lpli w/ bdries defined by dker grn color &amp; instl calc; brn-grn alt mafics w/ loc unalt cores of aphan bslt &amp; com f calc amygd or calc repl pheno; incr dker grn mtrx f/ 3009'</p>	<p>10% brn marg-perv hem repl lpli 3-7% instl calc 3014.5' frac @ 45 w/ poss lat disp in FeOx mnrlzn</p>	none	tr-1% calc tr hem	95%+ F mtrx	3008' 16.75 81.5 255 F
20	<p>w 8.9 v 4.2 pH 8.5 s 160 sol 4.4 sd 1/4 fc 1/32 f 9.0</p>	10/10		<p>pred dk grn perv chlortzd mtrx/lpli w/ 10-20% dk gry-dk brn sbang-sbrd mafic lpli; most lpli gvl sized w/ sme up to 2" loc</p>	<p>either perv hem repl of dk lpli or rrim gen incr dk lpli 5-7% instl calc 3035' chlor slks frac @ 35 w/ vert disp</p>	none	tr-1% calc hem 1-2% calc	95%+ F mtrx	
40		10/10		<p>only lger mafic lpli vis in pt w/ brn hd hem all rrim &amp; perv repl; 8-20% dk brn lpli; many dk lpli also half chlortzd; tightly packed sd-gvl sized lpli; dom chlortzd mtrx &amp; lpli @ 80-95%</p>	<p>3043-44.5' calc vn in disc 1/8" thick seg parallels core = east dipping frac 3-8% instl calc w/ gen incr in zns w/ cser gr lpli tr braided subhzon hem vng</p>	none	tr hem 1-2% calc	95%+ vng 98% F mtrx	
60		10/10		<p>up to 35% brn-dk gry lpli; loc zns mod w srtld; alternating .5-1.5' gvl lpli w/ sd sized lpli</p>	<p>up to 10% instl calc in gvl sized zns 3070.5' slks define lat-obliq slip; bldd wh lpli prox 3" 3071.3' chlor slks @ 30 sl obliq; wh+grn mosaic tex near frac</p>	none	tr calc chlor	95%+ F mtrx	
80	6/29/95	10/10		<p>f/ 3078' perv dull wh-lt tan silicifcn of bslt lpli that were dk in color prev</p>	<p>sharp change @ 3078' f/ dk lpli to wh-tan silicfd lpli</p>				
3100		10/10	<p>DEBRIS FLOW: m gm spkld wh-tan; lpli either bldd wh w/ silicifcn or perv chlortzd; 10-15% wh lpli w/ most gvl sized &amp; sme to 2"; wh lpli blend into chlortzd mtrx; 10-15% dk grn lpli; 3076-78' wh rrim on brn-dk gry bslt lpli w/ unalt cores; incr fzy bdries on wh lpli below 3095' and incr soft</p>	<p>sme open spaces @ lpli bdries still 80% chlortzn of mtrx/lpli 6-10% instl calc wh lpli f xln-crptoxln = silicfd chlortzd rrim on wh lpli change to wh-tan cly alt lpli &amp; sme mtrx w/ decr chlortzn</p>	none	1-3% calc	95%+ F mtrx		
				3098' bdg in sd sized 1" thick layer @ 30					

WELL: "88-21 TCH"

KB ELEVATION: 6269'

LOG DATE: 6/30/95

FIELD: Newberry

LOCATION: 120' N, 53' W fr SE cor Sec. 21, T.21S-R.12E, Deschutes Co., OR

LOGGED BY: F.Pulka

D	ROP (ft/hr)	%R	LITHOLOGY	DESCRIPTION	ALTERATION	Breccia #/ft	Vein Density	Pore Fill %	MRI/BHT Az/Drift
3100		10/10		DEBRIS FLOW: m grn w/ 10-40% dull wh-lt tan relict lpli; pred gvl sized lpli; sme blks up to 3"; gen m grn mtrx & m grn lpli w/ 25% dk grn; gen soft cly alt in wh-tan lpli; altg beds of gvl/sd sized lpli	tan-wh kaolzd lpli after bslt; half tan-wh lpli w/ serrated gr bdries that blend into chlor mtrx	none	1-3% calc	95%+ F mtrx	3108' 17.5 81.5 272 F
20		10/10		lighter colored mtrx & lpli	decr pale wh lpli to 5% w/ incr lt-m grn chlortzn		tr calc		
40		10/10		1/ 3125' tan mott wh mtrx w/ sharp decr chlortzn tan-lt gry DEBRIS FLOW w/ tan-gry lpli	blue xln qtz vn assoc w/ calc 3124-25.5' tan-dull grn chlor calc+pyr+qtz+opal in breccia rose calc+blue mott wh opal vn dissem/vn pyr & loc lpli repl		tr-3% calc tr qtz opal pyr	80% F breccia 95%+ F mtrx	
40		10/10		3137' pyr lam @ 50 defines bdg; loc ARG lams					
60		10/10		ARGILLITE: blk; f lam gry-tan; cly rich; brit; pts easily along bdg surf; pass carb rich; no petro odor when scratched; sme lams repl by pyr; cont bdg 3144-45'; bdg gen @ 20-23	3143' frac @ 25 w/ vert silks tr-1% dissem pyr abnt kaolzd lpli w/ gry mtrx loc calc repl pum	none	tr-1% calc tr pyr	85-95% F mtrx	
60		10/10		DEBRIS FLOW: S&P wh-tan & blk; gen gvl sized subang-rdd lpli; 65% wh-tan kaolzd pum & 35% blk-brn mas-amygd bslt; intbd w/ ARGILLITE: blk f lam brn or gry; firm; bdg @ 20; loc com conv bdg; pum fltg in cly loc; tightly packed lpli in DEBRIS FLOW	3154' frac @ 70, 3156' frac @ 40; 3159' frac @ 48				
80		10/10		intbd DEBRIS FLOW & gry-bikbrn ARGILLITE to 3171' w/ pum fltg in relict TUFF to 71.5'; gen cly mtrx in DEBRIS FLOW w/ buff eqnt-elong pum; decr lams in ARG & incr mas lt-dk gry	tr-1% dissem pyr strong kao/smect alt pum/mtrx sme calc repl lpli	none	tr calc pyr	75-95% mtrx	
80	6.5/1.5	10/10		TUFF: lt gry spotted wh; loc lt shades of rose or lt grn; soft-fri; dense w/ high angle fracs; one 3' oval w/ concen wh-rose bands & marcasite core; 3-8% wh eqnt-w rdd com elips calc repl fltg pum @ gvl sized w/ random dist; gen regular orientation of fracs; perv cly alt of TUFF	loc lt grn chlor patches assoc w/ oval micxln pyr 3184.5' vert silks @ 45; 3185' vert silks @ 52; 3186' vert silks @ 52; 3187.5' vert silks @ 53; 3191.5' vert silks @ 53; 3192.5' vert silks @ 53; 3193.5' marc vn @ 35; 3196.5' @ 55; 3197.5' vert silks @ 55; 3199.5' @ 55	none	tr-1% pyr marc	95%+ F	
3200		10/10			tr open sp @ pum bdries				

WELL: "88-21 TCH"

KB ELEVATION: 6269'

LOG DATE: 7/1/95

FIELD: Newberry

LOCATION: 120' N, 53' W fr SE cor Sec. 21,  
T.21S-R.12E, Deschutes Co., OR

LOGGED BY: F.Pulka

D	ROP (ft/hr)	%R	LITHOLOGY	DESCRIPTION	ALTERATION	Breccia #/ft	Vein Density	Pore Fill %	MRT/BHT Az/Drift
3200	w 9.0 v 35 pH 9.0 s .180 sol 4.8 sd 1/4 fc 1/32 f 9.5	10/10		incr wh pum strgrs starting @ 3205'  DEBRIS FLOW/WELDED TUFF: dull wh pum in lt gry mtrx; eqnt pum zns flank elongated subhzon pum zn; elong pum com w/ stretched apr into hzon convol bands that altern w/ gry cly lams; 3" pyr/marc elipsoid @ 3210' w/ long axis @ 18; sme lge pum bands @ 3-4" in length	1-2% pyr concn along elips 3-5% calc repl pum  3208' a 2" thick calc+pyr vn kaolzd pum & mtrx dom  incr com dissem pyr 3217' lat slip frac @ 59 f/ 3219' contd 3-8% calc repl pum fltg in cly alt TUFF	none	tr-1% calc pyr	95%+ F mtrx	3208' 17.5 80.5 272
20		10/10		TUFF: dull wh; gran apr; pred f-m gr sd sizes; marg-perv kaolzn; 4-8% fltg calc repl pum; massive w/ no bdg; com tr blkbrn subhed-euhed f gr biot xls; sme clr xls; fltg relict pum gvl in size w/ a sporad dist; no water lain open vugs	tr diss/vn pyr  3225' frac @ 65; 3226' @ 54; 3227' frac @ 45; 3228' @ 53; 3230' frac @ 55; 3230.5' @ 50; 3231' frac @ 50; 3231.5' @ 75; 3233.5' frac @ 65; 3240' @ 58  many hairline non mnrlzd fracs marg-perv kaolzd TUFF	none	tr-1% calc pyr	95% F  5% open sp @ pum	
40	6/30/95	10/10		TUFF: lt gry; waxy wh cly alt mtrx; tr-1% brn biot xls; relict f-m gr sd sized gran tex; contd 5% f-m gvl sized eqnt-rd fltg calc repl pum; bdg defined by pum strgs 3252-54'; 2-6" pum blks 3250-54'  DEBRIS FLOW: mxed m-dk gry to dull wh; mtrx gry-dull wh; tightly packed sd-qvl sizes w/ sme to 2"; 35% sbang-sbrd relict pum & 65% dk gry ang-sbang cly repl bslt lpli; erosive ctct w/ ARGILLITE w/ sme lpli penet seds (not lithfd when deposited); altg pum layers/cse & f TUFF in 1-2" layers @ top; perv alt of bslt lpli	3240.5' frac @ 61 w/ dissem pyr 3244' frac @ 56; 3245' @ 62; 3247' vert disp fracs @ 42/20; 3249' frac @ 64  com tr dissem pyr @ fracs gry cly smect repl of bslt lpli  cly filled ves/mtrx	none	tr calc pyr	95%+ F mtrx	
60		10/10		ARGILLITE: altg brn/gry lams to 3259' then blk w/ brn intlams to 3261'; soft-firm; easy bdg surf ptgs; parallel-wavy lams; loc ash/ash+lpli strgrs/beds; the base grads to sd sized pum cists w/ gry-marg chlortzd mtrx to 3263'  DEBRIS FLOW: m-dk gry to dull wh w/ loc arng lpli; sd-gvl sizes loc 2-6" blks; marg chlortzn to 3271' then perv chlortzn w/ embayed lpli bdries & unalt cores; top grads w/ sd sized bed	open sp in mtrx not mnrlzd  3269.3' oblique slip chlor @ 60  3271' vert slks chlor @ 52 sharp change f/ marg-perv chlortzn across frac @ 3271' 3277' lat disp chlor slks @ 70 tr dissem pyr; loc pyr repl pum	none	tr calc chlor pyr	85% F mtrx  95% F mtrx	
80		10/10		5-10% dull wh-lt brn gvl sized lpli to 4" blks w/ remainder & mtrx perv chlortzd; prly srted lpli in DEBRIS FLOW	intsl calc/chlor com tr dissem pyr perv chlortzd mtrx & 90-95% lpli  3291' vert disp chlor slks @ 60 3293.5' near vert obliq @ 65 3296-97' vert d chlor slks @ 65 w/ open in pt calc ff 3298-3301.2' high angle (80) 1/4" open in pt calc vn/ff	none	tr calc chlor pyr	98% F mtrx  95%+ F mtrx 80% F pum	
3300		10/10					1-3% calc		

WELL: "88-21 TCH"

KB ELEVATION: 6269'

LOG DATE: 7/1-2/95

FIELD: Newberry

LOCATION: 120' N, 53' W fr SE cor Sec. 21, T.21S-R.12E, Deschutes Co., OR

LOGGED BY: F.Pulka

D	ROP (ft/hr)	%R	LITHOLOGY	DESCRIPTION	ALTERATION	Breccia #/ft	Vein Density	Pore Fill %	MRI/BHT Az/Drift
3300		10/10		DEBRIS FLOW: dull wh-buff lpli/blks in a dk grn mtrx; ang-subang lpli up to 5" is tightly packed @ 75% of core; sme sd size relict particle seen; most lpli marg-perv alt & blend into mtrx	3306-08' obliq chlor slks @ 80 pum lpli/blks com kaolzd to 3308' then gen hd & silicfd w/ depth w/ chlor @ fracs & rirms			60% frac	
20		10/10		mxed grn & gry mtrx blks up to 1" diam & ang	3298-3307.5 three major open in pt high angle fracs w/ calc ff 5-8% calc repl lpli & intstl 3319' obliq chlor slks @ 65 w/ prox repl of lpli by calc	none	10% calc chlor	85% F pum 95% F mtrx	3318' 18.75 76.5 284 F
40	w 8.9 v 34 pH 8.8 s 200 sol 4.2 sd 1/4 fc 1/32 f 10.5	10/10		3323.8' sharp alt change across low angle ctct w/ lge blk w/ no lith change & assoc calc vn DEBRIS FLOW: dull m grn evergreen color w/ 5% dull wh marg alt dist pum; blks up to 4"; gen marg-perv chlortzn of liths/blks/mtrx; loc maroon soft clay patches & repl of lpli; relict prty srted apr	3323.8' incr chlortzn f/ 50-90% across ctct com tr dissem pyr esp in sl alt pum 3331' pred blue gry silicfen w/ repl mtrx/lpli & 10-15% chlor 10-15% intstl vn-like chlor loc bsit blks/lpli w/ calc amygd	none	tr-1% calc chlor pyr	95%+ F mtrx	3338' 18.75 76.5 284 F
60	7/1/95 CB#4 HOWL 351' LH	10/10		DEBRIS FLOW: bluegry spikd redbrn-dull wh; approx 80% relict silicfd pum / 5% hem repl scoria / 1-2% calc amygd bsit lpli/blks; blks up to 5"; 1-3% grn chlortzn pum; hd blue gry silicfd lpli/mtrx dom	light apr to mtrx incr m-dk blue gry silicfd pum/ mtrx w/ decr relict chlor lpli & decr intstl/mtrx chlor pyr only @ fracs 3354.5' frac @ 70 3357' dual fracs 1-2" apart w/ both @ 65 w/ vert sil slks & 2-3% dis pyr & chlor pum amygd	none	tr-1% calc chlor pyr 6-7% chlor	95%+ F mtrx	3358' 17.0 76.0
80		21/21		DEBRIS FLOW: gry-grn-loc redbrn; decr reddish mtrx & incr blue gry mtrx w/ loc dom grn chlortzn; sd-gvl-blks up to 2' w/ most 3-6"; sme pum blks silicfd & others w/ chlor/calc amygd; chlor/calc vns	decr reddish mtrx to tr @ 3367' 60.5' banded red clay frac @ 50 incr soft pum w/ incr loc chlortzn 2' blk hd silicfd pum com tr-1% dissem pyr loc	none	tr-2% calc tr pyr	95%+ F mtrx	
3400	7/2/95	20/20		DEBRIS FLOW: blue gry blks/lpli in a bluegry-grn; mtrx; mtrx loc dom by grn chlortzn near fracs; mxed relict lpli of lt gry pum & dk gry bsit w/ 15-20% alt scoria; blks up to 1' com; mtrx either silicfd in lger lpli or mxed sil+chlor+hem in finer frac; approx 75% blks & 25% mtrx	br red mnrl since 3357' poss cinabar? abnt micvng in blks gen calc sme chlor chlor com @ lpli bdries pred bluegry silicfen com hairline calc vns loc sl brecciated blks w/ calc+chlor vng	none	tr hem 2-4% calc tr-1% chlor tr-1% pyr	95%+ F mtrx	

WELL: "88-21 TCH"

KB ELEVATION: 6269'

LOG DATE: 7/3-4/95

FIELD: Newberry

LOCATION: 120' N, 53' W fr SE cor Sec. 21  
T.21S-R.12E, Deschutes Co., OR

LOGGED BY: F.Pulka

D	ROP (ft/hr)	%R	LITHOLOGY	DESCRIPTION	ALTERATION	Breccia #/ft	Vein Density	Pore Fill %	MRT/BHT Az/Drift
3400	w .8.5 v .37 pH .10.0 s .180 sol .2 sd tr fc .1/32 f .13.5	20/20		DEBRIS FLOW: gen bluegry to 3414.5' then mxed bluegry & grn to 3419'; hd silicfd blks/mtrx to 3414.5' then incr chlortzn of mtrx blks/lpli; sd-gvl sizes to blks up to 1.5' w/ most @ 3-4"; prly srtd apr; loc gry cly mtrx w/ wh kao & abnt pyr 3417-3417.5'; pred gry cly mtrx mott wh-dk gry f/ 3419' w/ abnt dissem pyr; one lge blk a bslt porphyry w/ dist feld/px pheno	3410.8' chlor+pyr frac @ 48 calc+gry sil vng tr red cin mtrx & loc vng to 3411' 5-15% dissem pyr in gry zns dk gry silica vng & intsl 3414-17.5' sheared rk begins @ 3419'	none	tr-1% cinn tr-2% calc 3-6% gry sil	95%+ F mtrx	
20	7/3/95			3416.5' 6" shear zn @ 78 w/ abnt dk gry sil/pyr STRAINED DEBRIS FLOW: m gry-wh & dk gry w/ pyr strks; fri busted up core w/ v hd zns loc; highly strained w/ closely spaced high angle (>60) fracs; perv wh kao & gry smect cly alt; 15-25% gry hd silica vng assoc w/ the 10-20% dissem/vn pyr; more coherent zns w/ com pyr repl lpli & dissem pyr; broken & strained into bands; this zn extends to somewhere between 3433-3443'; gry silica vng gen aligned along frac orient @ approx 65; coherent zn 3422.5-25.7' where a blk is alt to gry cly/kao w/ calc after pheno/amygd	perv gry smect/wh kaolzn v abnt gry silica vns/lens pore core recovery 4333.5-43' fracs gen cly filled		25% gry sil + pyr 5-15% calc	85% F frac	
40	w .8.7 v .33 pH .9.0 s .220 sol .2.8 sd 1/8 fc .1/32 f .9.5	10/10		mxed tan ang crptoxln rhyol lpli/blks w/ sme pum in a sd-f gvl sized chlor rich mtrx 3449'. Problems w/ inner core latch mechanism. POH.	hd bluegry alt lpli/mtrx another strained zn 3449-50' w/ 5-10% pyr+gry smect/wh kaolzn 3455' vert sil slks @ 58 rhyol blk brecc w/ calc vng & pyr w/ 10% open sp tr reddish bronze sulfide vn incr perv mtrx chlortzn		1-8% calc tr-10% pyr tr-1% calc	95%+ F mtrx 90% F brecc	
60	7/4/95	9/4.5		bslt blks w/ chlor mtrx f/ 3457' w/ loc pum blks	pyr only @ sme fracs @ tr-1% 3465' chlor+pyr vng frac @ 60 3470' 2" chlor vn @ 70 frac		1-8% chlor 1-3% blgry sil 1-2% calc tr-1% pyr	50-95% F vng	
80		20/20		DEBRIS FLOW: dk gry-blk w/ m-dk grn mtrx; 2" to 3' bslt blks; 20% olv grn chlor mtrx w/ fltg pum tan rhyol & sme bslt lpli @ sd-f gvl sizes 3476' no tan rhyol or pum between BASALT blks BASALT blk breccia	chlor+calc+qtz vng in breccia 3478.5' open in pl atz+calc ff				
3500		11.5/11.5		BASALT: dk gry; mas; loc vf amygd or feld xls; aphric; gen fresh unolt apr; 30-40% dk mafic gr & 30-40% feld gr; vf equigran tex	gryblue qtz vng buff-wh calc vng 3486.5' lge hzon calc+chlor vn strong chlortzn 3485-85.25' & 3489-90' w/ none below 3490' chlor mtrx in breccia 3489-90' up to 20% calc+qtz in brecc 3496' calc+qtz ff w/ dissem pyr		1-4% calc 1-4% qtz tr pyr	98%+ F 65-90% F frac brecc	

WELL: "88-21 TCH"

KB ELEVATION: 6269'

LOG DATE: 7/5/95

FIELD: Newberry

LOCATION: 120' N, 53' W fr SE cor Sec. 21  
T.21S-R.12E, Deschutes Co., OR

LOGGED BY: F.Pulka

D	ROP (ft/hr)	%R	LITHOLOGY	DESCRIPTION	ALTERATION	Breccia #/ft	Vein Density	Pore Fill %	MRT/BHT Az/Drift
3500	w 8.6 v 33 pH 9.0 sp 290 sol 2.8 sd tr fc 1/32 f 8.0	18.5 13/13		BASALT: dk gry blk loc grngry @ thick calc vng; aphyric; vf equigran tex under scope; highlighted by abnt high-angle hairline and thick irreg buff-wh calc vng; brecciated zns w/ frags fitg in calc & loc up to 40% open spaces; loc assoc qtz ff prisms up to 1/4"	loc clr qtz ff/vng breccia fill tr pyr dissem along vngs 3-15% buff-wh calc vng/ff tr hd bluegry sil vng loc brecc 3515' chlor+calc frac @ 63		3-15% calc 1-2% qtz	60-95% F lge vns 98%+ F away f/frac	3509' 17.5 78.0 295 F
20		12.5/12.5		BASALT: blk; vf-f equigran tex; approx 70% blk maf & 30% lt gry feld; aphyric; mas w/ no flow banding; nearly conchoid frac; contd abnt high-angle hairline bluegry sil sme calc vng; loc brecciated zns 2-3" thick w/ calc+qtz vng; para @ 3530' pyr>qtz>calc(ff) vng buff-wh calc ff & qtz ff in partially open breccia	decr calc vng to 2-5% 3526.5' 1/4" vng w/ calc+qtz ff tr dissem pyr assoc w/ calc pred bluegry sil in hline vns 3533.5' calc vng/frac @ 65 1/8" th chlortzn @ lger vns 3537' calc vng frac @ 60		2-5% calc 1-7% sil/ qtz	95+% F 85% F loc vng 70% F brecc	
40	7/5/95	18/18		DIORITE PORPHYRY INTR: gry spkld wh; f-m gr equigran gndmas; subhed-euhed clr-ll gry feld laths up to 1/4"; approx 65% gry feld/25% brn maf; 10% blk maf in gndmas; 10-15% feld pheno; no vis qtz; blk aphan BSLI xenlits @ margins	brecc w/ str calc/qtz vng/ff qtz prisms up to 1/2" abnt wh kaolzn/ser of feld & chlor alt maf in INTR tr dk brn opa q hline vn		2-6% calc 1-3% sil/ qtz	90%+ F	
60		4/4		DIORITE PORPHYRY INTR: gry; 15% feld pheno; gran f-m gr gndmas; loc blchd lt gry w/ kao/ser alt; chlortzn @ margins	patchy kao/ser alt in DIORITE str calc vng in breccia		5-15% calc tr qtz	75% F brecc 90% F amygd	
80		12.5/12.5		RHYODACHIE: tan-dk gry or banded tan/gry; vf crptoxln apr; poss devit; aphyric; brecciated upper approx 70% felsic comp; banding @ approx 70; mini dikes of DIORITE in brecc @ 62.5-66' w/ marg marg-perv chlortzn; red AMYGD AND xenlits @ base ANDESITE PORPHYRY: dk brngry spkld clr-ll gry; 20-25% .5-2mm subhed-euhed feld pheno; com brn rns sl trnsf sbhed mafic pheno; crptoxln vf gr tex of gndmas; com calc repl feld pheno; DIORITE mini-dikes in reddish brn AMYGD ANDESITE	oxidized redbrn AMYGD AND calc+blgry sil+pk laum+chlor amygd many calc repl feld pheno 3582' calc vng frac @ 40 3583.5' calc vng frac @ 65		1-2% calc 2-5% bl sil opal 1% qtz	95%+ F mtrx 80-95%+ mtrx vng	
3600		20/20		DEBRIS FLOW: olv grn to 3598' then dk grn; dk gry mtrx upper 8"; lpli-blks up to 1' diam; gen mxed blue gry silicfn+chlortzn to 3598' then pred chlortzn of mtrx & most lpli; loc blue banded hd opal/sil vng @ 1/4-1" thick	sme lge clr qtz vng buff-sl orng calc vng 3590-91' salm calc+chlor vng loc 20% open vng in mtrx no pyr		none		

WELL: "88-21 TCH"

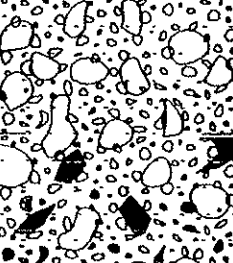
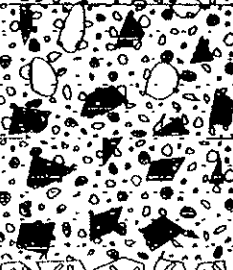
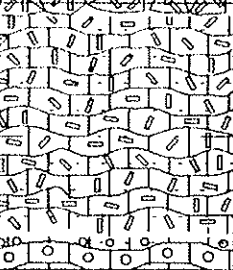

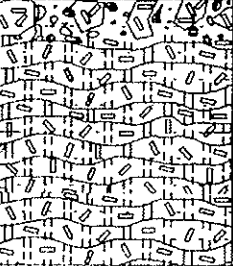
KB ELEVATION: 6269'

LOG DATE: 7/5-6/95

FIELD: Newberry

LOCATION: 120' N, 53' W fr SE cor Sec. 21,  
T.21S-R.12E, Deschutes Co., OR

LOGGED BY: F.Pulka

D	ROP (ft/hr)	%R	LITHOLOGY	DESCRIPTION	ALTERATION	Breccia #/ft	Vein Density	Pore Fill %	MRT/BHT Az/Drift
3600		20/20		contd olvgrn chlortzd blks/lpli w/ intstl blgrn opal/sil mtrx	chlortzd blks/lpli mtrx in pt strong blue sl trnsf intstl opal		3-8% opal		
				3610-36511.5' difficult to decipher mtrx f/ blks & lpli; vis lpli w/ embayed gr bdries	3611.5-13.5' subvert calc vn		1-3% calc	95%+ F mtrx	
20		20/20		incr dist comp of blks/lpli f/ 3617'	para calc>qtz ff in brecc w/ 20% open spaces 3618.5' vert disp frac @ 38			80% F brecc	3619' 16.0 -77.0 309 F
				<b>DEBRIS FLOW:</b> olvgrn-bluegry; mxed olvgrn-blue-salm mrx; gvl sizes to 8" blks; pred relict bsit sme porphyry blks/lpli; strong blue dull sl trnsf opal/sil vng throughout; decc olv grn mtrx f/ 3617'	chlortzd porphyry blks		3-10% opal		
40		20/20		3630.5-3639' pred aphan andesite blks gen marg alt waxy apr; intstl sp between blks filled w/ andesite lpli & sme relict pum w/ sil/chlor alt	incr blue gry silicfn below 3627' abnt intstl wh--salm calc 3628.5' calc vn frac @ 52 3629' calc vn frac @ 60 gen calc repl xls in porphyry		2-10% calc	95%+ F mtrx	
				3637-38' brecc aphan andesite w/ dk grn chlor+salm to wh calc fill no pum in flow brecc; homog porphyry blks	3635' frac @ 50		1-2% qtz	60-95% F brecc	
60	w 8.6 v 33 pH 9.0 s 320 sol 2.0 sd 1/8 fc 1/32 f 9.0	10/10		viol mtrx in flow brecc; irreg ctct w/ <b>DEBRIS FLOW</b>	3649-56' thick chlor vng		no pyr		
				<b>BASALT PORPHYRY:</b> dk gry; viol gry gndmas; 10-20% clr wh 1-3mm pheno; pheno subhed-euhed lath-eqnt feld; sme brn elong trnsf subhed 2-3mm hbd pheno occ attached to feld	marg chlortz w/ 1/2" halo's @ fracs		1-2% chlor		
80		20/20		euhed brn dull 2-3mm hbd pheno loc in <b>PORPHYRY</b> w/ vf equigran-aphan gndmas; pred subhed-euhed feld pheno	3657' opal+chlor vng in brecc 3657-58' flow breccia		9-15% chlor	85-90% F vng	
				waxy reddbrn alt in <b>AMYGD BASALT</b> w/ 10-25% 2-5mm calc+chlor amygd; approx 10% subhed-euhed relict-intact feld pheno	para chlor>calc; cinn>bl opal approx 80% calc 20% chlor amygd		10-15% chlor opal	90% F amygd	
3700	w 8.5 v 33 pH 8.9 s 320 sol 1% sd tr fc 1/32 f 7.8	20/20		3672-76' flow brecc w/ blks up to 6" intmxed w/ dist pum lpli gvl between blks; intstl chlor sharp change @ 3677' to brn andes porphyry blks & contd pum gvl in gry mtrx; subhzon ctct	3674' frac @ 60 perv intstl chlor in brecc 3676-77' mas chlor 5% fltg pum dk viol gry mtrx salm-wh calc			95% F brecc mtrx	
				<b>ANDESITE PORPHYRY:</b> brn; 15-25% feld pheno; vf xln brn gndmas; subhed-euhed 3-8mm ave 4mm feld pheno; marg chlortzn	tr red hairline cinn vng 3687.5' calc vng frac @ 50		1-2% opal		
		7/6/95		<b>ANDESITE PORPHYRY:</b> viol brn gndmas; 15-20% fltg feld pheno; f aphan xln gndmas; strong chlor & salm-wh calc vng in irreg pattern; com chlor/FeOx alt after maf pheno; tr qtz incl	20% chlor+calc vng; para chlor > calc tr dissem pyr acic brit calc vng loc gen marg chlortzn			90-95% F mtrx fracs	

WELL: "88-21 TCH"

KB ELEVATION: 6269'

LOG DATE: 7/13/95

FIELD: Newberry

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T.21S-R.12E, Deschutes Co., OR

LOGGED BY: F.Pulka

D	ROP (ft/hr)	%R	LITHOLOGY	DESCRIPTION	ALTERATION	Breccia #/ft	Vein Density	Pore Fill %	MRI/BHT Az/Drift
3700	7/7-12/95 CB#5 NQ 3.035" 1035'	20/20	AND PORPH: violbrn gndmas w/ 15-20% feld pheno; aphan gndmas; v abnt fri chlor & calc vng	3709'. Stuck after survey and RIH to bottom. Spot 118g mineral oil/pipe lax & work pipe. Pump air bubble and work pipe. R/U Dialog. 100% stuck @ 2750'. Back off at 2483'. RIH spear fish & jar. L/D spear/jars. Back off upper 750' rods & replace w/ used. RIH to 2483' & attempts to screw into fish failed. Set down rods on fish. core ahead w/ oversized "NQ" bit.	fri acic-asbestiform calc vng; abnt chlor vng & alt @ frags para chlor>calc tr hem repl mafic pheno chlor psmorphs after pheno loc com calc repl pheno salm-wh calc vng loc calc ff  abnt chlor in breccia		5-20% chlor 2-5% calc  20% chlor	75-90% F vng	3709' 15.5 78.0 318 F
20		14/14	ANDESITE PORPHYRY: brngry spkld clr-lt gry; f gr mott vit gndmas; 15-25% subhed-euhed .5-3mm feld pheno; loc marg-perv kaolzn of pheno w/ sme calc repl; loc com chlor repl of maf in mtrx; breccia zns w/ tightly packed frags & looks frac in-situ; overall decr frac density	3728-31' tr-1% dissem/vng pyr 3729' lge calc+chlor+pyr vng euhed calc w/ fringing pyr+chlor 3733.5' chlor frac @ 30	decr chlor alt/vng pred calc		5% calc 10% chlor tr-1% pyr	60-100% vng	
40	7/13/95	20/20	sucr-mott vit apr of gndmas w/ vf equigran brn-lt gry-clr maf/feld; 25% 1-3mm subhed-euhed plag laths; mnr brn eqnt hbd? pheno	3758-58.5' lge calc vng w/ fltg rk frags & frng chlor  chlor gen only @ lger vns	com disc .5-1mm calc vns w/ r planar vng	none	5-8% calc  tr chlor	100% f small vns 80% F lge vns	
60		20/20	AMYGDALOIDAL ANDESITE: dk brn gry; blchd m gry 3779-81.5' in patches; aphan below 3771.5' w/ wavy hem vng @ cctc; f mott vit apr; waxy apr when all redbrn; gen 5-15% wh amyg	3765-67' lge vn w/ calc+qtz ff	pred calc amygd to 3774' then mxed wh-clr banded chalcedony & calc blkgrn chlor fill @ breccia tr brn red chalcedony amygd 3779-81' patchy bigry sil alt		1% qtz 3-5% calc 1-3% calc 1% qtz	75% F lge vng 65-95% amygd	
80		20/20	AMYGDALOIDAL ANDESITE: lt brn-ll redbrn com dk gry f/ 3797.5'; 10-20% eqnt & elong 2-4mm eqnt-elong amygd; rubbly 3781.5-83.5' w/ dk blkgrn chlor sme calc fill; pred wh-buff-sil pk calc & loc blkgrn chlor amygd; f xln brn gndmas mott grn-wh where alt 3796.5' dk brn andes porphyry xenlit w/ embayed gr bd dk gry xenlits f/ 3797.5-3800.5'	open ves lined w/ chlor  pred calc & chlor amygd  lt redbrn alt 3781.5-90'  marg chlortzn 3790-95'			1-3% calc  1% chlor	98%+ F amygd  95% F amygd	



WELL: "88-21 TCH"

KB ELEVATION: 6269'

LOG DATE: 7/13-14/95

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LOGGED BY: F.Pulka

D	ROP (ft/hr)	%R	LITHOLOGY	DESCRIPTION	ALTERATION	Breccia #/ft	Vein Density	Pore Fill %	MRT/BHT Az/Drift
3800		20		grngry amygd in pt ANDESITE to 3802' then brn-grn-gry ANDESITE breccia to 3805' w/ amygd & mas blks & loc pum lpli  DEBRIS FLOW: dk brnviol w/ fltg bluegry relict pum lpli/blks & sme chlortzd lpli; pum blks up to 2'; v prly strd c sd-blk size; ang-w rdd lpli; approx 90% pum/10% maf w/ gen 50% mtrx  many pum w/ lt gry hd rims & dk gry softer cores	pred wh calc amygd  brn waxy hd mtrx  marg-perv bluegry silicfn of pum & perv chlortzn of maf lpli  3814.5' vert brn cly slks @ 50		tr calc	98+ pum mtrx	3808' 16.0 76.0 330 F
20		20/20		DEBRIS FLOW: wh-bluegry-dk gry-grn blks/lpli fltg in a gry mtrx; v prly strd; pred pum to 3832' then mstly amygd bsit blks/lpli to 38.5'; hd silicfd pum & soft koo/chlor repl pum; chlor repl lith & wavy vn-like bands in gry mtrx between lge blks	3828-32' strong chlortzn w/ dk grn relict lpli/lt grn mtrx  3834-38.5' v hd blue gry silicfn w/ decr chlor	none	5-30% chlor  tr calc	95+ mtrx pum  50-80% F amygd	
40		20/20		pred omygd bsit blks to 3846.5' then mixed pum & amygd bsit to 3855'; decr blks size to 3-4" to 3858' w/ lpli & prly strd; about 10% reddbrn-ornng relict scoria 3846.5-58'; gen hd silicfd pum  f/ 3846' hd brn silicfd mtrx	calc lqtz + chlor amygd  para chlor > calc in amygd  3848-52' 65% fill amygd calc + chlor + qtz & qtz ff  loc hd dk FeOx mtrx	none	tr-1% chlor  tr gry sil  tr-1% calc  tr hem	95% F amygd  100% F mtrx  65% F amygd	
60		20/20		DEBRIS FLOW: dk brn w/ lt gry blks & gry-ornng-grn lpli; v hd hem std silicfd mtrx; most lpli/blks silicfd bluegry; relict comp of 75% pum 15-20% maf & 5% scoria; one pum blk 1.5' w/ ves infilled w/ gry sil making them invis; 5-10% perv chlortzd maf lpli; pred gvl sized lpli; loc ang bsit blk; one pum blk w/ ornng concen limon rings; sme pum w/ embayed gr bdries	silicfd hd dk brn mtrx  loc patchy chlor mtrx  abnt intstl chlor/calc  sme pum w/ calc/chlor amygd	none	tr calc chlor  1-3% chlor 2-5% calc	95+ F mtrx ves	
80		20/20		decr brn mtrx  DEBRIS FLOW: m gryblue 5-10% dk lpli/blks; dk clsts maf/scoria; incr silicfn w/ ill defined gr bd; many relict pum w/ intstl chlor+calc @ bdries; silicfd pum hder than bsit lpli; tightly packed pum w/ loc brn hd mtrx; mstly gry mtrx  original comp of blks/lpli not clear mtrx flooded w/ gry sil	intstl vng @ blk/lpli margins 3880' chlor frac @ 40  calc amygd in bsit  3891.5' gry sil @ 40 chlor+calc & calc ff in brecc  chlor rrims on pum		3-6% calc 5% chlor tr gry sil 5% chlor	100% F mtrx pum  50-100% frac	
3900		7/20							

w 8.6  
v 45  
ph 8.5  
s 200  
sol 1%  
sd tr  
fc 1/32  
f 13.0

#265 BOX #266 BOX #267 BOX #268 BOX #269 BOX #270 BOX #271 BOX #272 BOX #273 BOX #274 BOX #275

WELL: "88-21 TCH"

KB ELEVATION: 6269'

LOG DATE: 7/14/95

FIELD: Newberry

LOCATION: 120'N, 53' W fr SE cor Sec. 21,  
T.21S-R.12E, Deschutes County, OR

LOGGED BY: Fred Pulka

D	ROP (ft/hr)	%R	LITHOLOGY	DESCRIPTION	ALTERATION	Breccia #/ft	Vein Density	Pore Fil %	MRT/BHT Az/Drift
3900	w 8.6 v 45 pH 8.5 s .200 sol 1% sd tr fc 1/32 f 13.0	20/20		<u>DEBRIS FLOW</u> : lt-m gry w/ gry-dk brn lpli/blks; pred gry silicfd mtrx; pum w/ com embayed gr bd; dist maf blks/lpli; approx 75% pum 25% maf lpli/blks; blks up to 1.5'; loc dk grn intstl chlor & vng thru blks/lpli; relict sd/gvl sized mtrx; crptoxln sil pum/mtrx	perv bluegry silicfd mtrx/pum approx 25% intstl/vng chlor web-like intstl chlor vng 3917.5' maf/pum lpli ctct @ 25	none	25% chlor	60-95% F mtrx vng	3908' 15.75 76.0 336 F
20	7/14/95	20/20		<u>DEBRIS FLOW</u> : gry w/ gry-blk blks/lpli then pred gry beyond 3922'; gry hd mtrx; dist maf gr bd; mod dist-indist pum gr bd below 3922'; approx equal pum/maf w/ sme amygd bsst; either perv silicfd maf or change to pred pum below 3922'; tightly packed lpli/blks w/ com embayed gr bd; gry hd silicfd mtrx	tr rose subhzon qtz vn gry hd to see sil vng 3930.3' hd gry sil frac @ 10 gry silicfd mtrx homog apr except intstl chlor +calc that defines lpli/blks	none	2-6% chlor 2-5% calc	90-100% F ves 90% F vng	
40		20/20		<u>HORNFELS</u> : bluegry homog apr; no vis maf; can't tell original comp; blks/lpli loc outlined by intstl chlor/calc; perv silicfd mtrx blks/lpli; v hd crptoxln apr f/ 3950' dist mtrx/lpli w/ rose qtz mtrx & fltg pum & sd-f gvl sized chlortzd lpli; dist mtrx aprs @ frac or blk bdry @ 68; approx 80% pum 20% maf gry mtrx decr rose w/ sd-gvl size lpli strgs & incr w bedded w/ loc size sorted	1-2% rose intstl subhzon qtz intstl & disc irreg calc vng 3951-54' f dissem pyr vng loc calc flood w/ fltg rk frags gen intstl chlor loc kaolzd pum	none	1-2% rose qtz 5-8% calc	90-100% F vng 100% F ves	
60		20/20		incr strong silicfd <u>DEBRIS FLOW</u> w/ dk gry relict blks/lpli w/ wh patchy striae & embayed gr bd; strong intstl/vng chlor m bluegry <u>DEBRIS FLOW</u> w/ gry silicfd pum blks/lpli w/ indist orig comp; sme well defined dk grn chlortzd lpli; 3976-79.2' mxed gry smect & silicfd mtrx w/ wh silicfd pum	decr calc to tr-1% 20-25% intstl chlor tr chlor amygd loc gry mtrx w/ silicfd pum smect+silicfd braided wh vf gr qtz vng	none	3-5% wh qtz 5-8% chlor 1% calc	95% F vng 100% F mtrx 100% F ves 98% F mtrx	
80		20/20		<u>DEBRIS FLOW</u> : brn-brngry w/ wh-brn-gry-dk grn occ redbrn lpli/blks; 60% mtrx 25% pum 10% flow banded rhyol 5% chlortzd maf; rhyol blks up to 1' w/ pum up to 8"; mstly gvl sized ang-sbrd lpli	1% calc repl pum; no vng loc soft wh kaolzd pum lpli tr grn chlortzd lpli w/ embayed gr bd into brn mtrx tr dissem f pyr	none	tr calc chlor qtz tr rose qtz	98% F vng 100% F mtrx ves	
4000		20/20							

WELL: "88-21 TCH"

KB ELEVATION: 6269'

LOG DATE: 7/14-15/95

FIELD: Newberry

LOCATION: 120' N, 53' W fr SE cor Sec. 21,  
T.21S-R.12E, Deschutes County, OR

LOGGED BY: Fred Pulka

D	ROP (ft/hr)	%R	LITHOLOGY	DESCRIPTION	ALTERATION	Breccia #/ft	Vein Density	Pore Fill %	MRT/BHT Az/Drift
4000		20/20		<p>DEBRIS FLOW: blue gry-redbrn w/ fltg wh-grn-blk-dk gry orng lpli/blks; pred gvl sized lpli; redbrn mtrx 4008-16' w/ 10-20% scoria lpli; 5-10% redbrn bslt lpli; com wh banded ong lpli/blks gen 3" or lger; sd sized mtrx to gen gry mtrx to 4019'; gen 50% mtrx 30% pum 20% bslt/scoria</p>	<p>4000-7.5' dk brngry hd mtrx w/ dissem pyr 4006' about vert obliq frac @ 40</p> <p>4010.5' half open frac @ 80 w/ chlor &amp; calc/qtz ff</p> <p>pred kaolzd wh pum lpli</p> <p>tr-1% loc dissem pyr</p>	none	<p>2-4% calc</p> <p>2-5% chlor</p> <p>tr qtz</p>	<p>90-100% F ves</p> <p>50% F frac</p> <p>95% F vng</p>	4008' 16.75 76.0 339 F
20		20/20		<p>DEBRIS FLOW: gry w/ bluegry-grn-redbrn blks/lpli; pum blks up to 1'; c sd to 1-2" gvl sized lpli; relict comp of 65% pum 35% maf; gry silicfd mtrx; loc com instl chlor in mtrx</p>	<p>25% marg chlor repl pum/maf lpl 4022.5' frac @ 30 4024.5' pyr/sil frac @ 30</p> <p>loc perv chlortzd blks</p> <p>4033' vert disp chlor slks @ 45</p> <p>tr-1% dissem/mnr vn pyr</p> <p>4038' vert chlor+pyr slks @ 40</p>	none	<p>tr-1% pyr</p> <p>2-4% calc</p> <p>tr qtz</p>	<p>60-100% F vng</p> <p>100% F ves</p> <p>95%+ F mtrx</p>	
40		20/20		<p>dist pum/maf lpli in gry silicfd in pt mtrx w/ gry to wh gry-grn-mnr redbrn lpli</p> <p>pred gvl sized lpli w/ loc 1' gry silicfd/chlortzd blks; one chlortzd blk w/ dk grn rim then brn grn then a lt grn core w/ sme open ves</p> <p>marg-perv gry silicfd mtrx w/ v hd patches; most maf lpli chlortzd w/ sme gry cly alt; approx 75% pum lpli 25% maf</p>	<p>mxed sil+kaol+chlor repl lpli/blks</p> <p>4046' near vert obliq chlor @ 40</p> <p>1-2% buff calc vng repl of pum</p> <p>4053.5' vert slks frac @ 45</p> <p>loc v lge calc vns @ blk bdries</p> <p>1-2% dissem pyr sme vng &amp; repl of lpli</p>	none	<p>2-4% calc</p> <p>1-2% pyr</p>	<p>95-100% F ves</p> <p>95%+ vng mtrx</p>	
60		20/20		<p>DEBRIS FLOW: dk gry w/ buff-brn-gry-lt grn lpli; prly srt'd; incr mtrx to 60%; gen gvl sized lpli w/ loc blks up to 1' w/ most 3-4"; gen decr chlortzd lpli; lpli fits in sd-sized mtrx; &gt;90% pum w/ sme brn pum</p>	<p>4062' vert slks frac @ 35</p> <p>mxed smect/silicfd mtrx</p> <p>kaolzd/silicfd lpli</p> <p>para calc&gt;chlor in blk ves</p>	none	<p>tr-1% pyr</p> <p>tr calc</p>	<p>90% F ves</p> <p>95% F mtrx</p>	
80		20/20		<p>pred sd-v gvl sized lpli mtrx; mod hd silicfd in pt gry mtrx w/ loc v hd zns; gen silicfd pum lpli; half of lge bslt blk blchd gry; 2-6" blks</p>	<p>mxed gry silicfd/smect mtrx</p> <p>5% calc repl pum lpli</p> <p>4092.5' lat bluegry cly slks @ 20</p> <p>5-8% chlortzd lpli</p> <p>1-2% dissem &amp; repl of lpli pyr</p>	none	<p>tr pyr</p> <p>tr calc</p>	<p>100% F vng</p> <p>95%+ F mtrx</p>	
4100		20/20							
		20/20							

WELL: "88-21 TCH"

KB ELEVATION: 6269'

LOG DATE: 7/15/95

FIELD: Newberry

LOCATION: 120' N, 53' W fr SE cor Sec. 21,  
T.21S--R.12E, Deschutes County, OR

LOGGED BY: Fred Pulka

D	ROP (ft/hr)	%R	LITHOLOGY	DESCRIPTION	ALTERATION	Breccia #/ft	Vein Density	Pore Fill %	MRT/BHT Az/Drift
4100		20		DEBRIS FLOW: gry w/ gry-brngry-lt grn-wh-occ redbrn blks/lpli; gvl sized lpli to 2-4" blks to 4110.5' then .5-1' blks to 4114' then 2-3" blks; gry cly-sd sized mtrx w/ sl-v hd zns; approx equal maf/pum lpli/blks; 25% chlortzd lpli/blks; prly strtd; 1' amygd and blk w/ oval lt rose calc or chlor>calc amygd; pum gen silicfd but loc koo & chlor repl	mxed silicfd/gry cly mtrx chlor+calc amygd in maf blks 4110.5' hd silicfd subhz frac loc blchd gry maf lpli/blks approx 10% tan chlor alt para chlor>pyr amygd  2-4% intstl/vn/amygd pyr	none	tr-1% pyr	70- 100% F amygd  90- 100% F pum  95%+ mtrx	4108' 15.75 75.0 350 F
20		20/20		pred pub blks w/ open in pt ves; mxed mafic-pum gvl lpli w/ mxed gry smect/sil alt; mafic lpli com blchd gry; 2-3% redbrn lpli	4127.5' pec 3" zn w/ wh spher silfd in pt rosettes w/ intstl chlor 4129-32' 10% open intstl sp incr intstl chlor vng & rose calc  tr-3% intstl/vn dissem pyr		1-3% pyr  1-2% calc  com tr pyr	50- 100% F pum  90% F mtrx  70- 100% F mtrx	
40		20/20		DIORITE PORPHYRY: dk gry; mott vit apr; m gr equigran gndmas; about equal blk subhed px & clr feid; 10-20% 1-3mm cir subhed-euhed feld pheno; com maig chlortzd gndmas esp in brecc zns l/b/	com calc repl pheno redbrn hem/tim mtrx @ 4154' w/ 2-3% redbrn alt bsit blks  salm calc amygd & breccia fill 100% F mtrx		5-10% calc  25% chlor  1-3% hem	70- 100% F amygd	
60		20/20		4153.6' fltg pum lpli in mtrx between aphan amygd bsit blks					
80		20/20		DEBRIS FLOW: gry-viol gry-grn blks lpli w/ grn mtrx; mxed aphan mas/amygd andes blks; intstl gvl sized pum/maf lpli; approx 80% blks 20% mtrx; pred grn chlortzd mtrx; fresh apr to aphyric andes w/ crploxln tex; amygd andes zns w/ elong amygd up to 1/2"	4162.4' lat hd siks @ 30 4164.5' dual obliq/sub vert 40/45 tr blue trnsil sil amygd abnt salm calc amygd/mtrx/pum repl w/ zns up to 2" wide 4170.5' salm calc ff @ 43  tr qlz ff w/ calc vng intstl & vng chlor	none	5-10% calc  tr-1% pyr  3-6% chlor	90- 100% F vng  70- 100% F amygd  100% mtrx	
4200		20/20		contd approx 80% andes blks 20% mtrx; 10-20% of maf blks amygd; mxed chlor/calc amygd; gen spher-ellips amygd up to 3/4"; waxy relict crptoxln tex of blks; mtrx pred chlortzd; wh pum+chlortzd maf lpli w/ mnr redbrn	com blchd gry blk margins calc/chlor amygd open chlor lined ves loc chlor vng thru blks & intstl  4197.5' frac @ 55	none	4-8% chlor  r tr pyr  4-8% calc	90- 95% F amygd  100% F mtrx  50- 100% F vng	

WELL: "88-21 TCH"

KB ELEVATION: 6269'

LOG DATE: 7/16/95

FIELD: Newberry

LOCATION: 120' N, 53' W fr SE cor Sec. 21,  
T.21S-R.12E, Deschutes County, OR

LOGGED BY: Fred Pulka

D	ROP (ft/hr)	%R	LITHOLOGY	DESCRIPTION	ALTERATION	Breccia #/ft	Vein Density	Pore Fill %	MRT/BHT Az/Drift
4200		20		RELICT WELDED TUFF w/ elong subhzon bands of chlor repl pum  pred pum lpli/blks	4206.5' chlor/pyr/calc @ 60  mxed hd silicfd pum lpli w/ marg-perv chlor 20-25% insttl chlor 4212.5-14' concn br redorn g banded pum blk; silicfd mtrx perv chlortzd mtrx	none	2-5% calc 5-10% chlor	80-90% F amygd 100% mtrx vng 95% F mtrx	4208' 15.75 73.0 348 F
20		20/20		DEBRIS FLOW: lt-dk gry to grn occ blk-redbrn; perv chlortzd mtrx to 4220.2' then mixed gry-grn-brn mtrx to 4234' w/ fri & v hd zns; incr vis pore sp in mtrx f/ 2% @ 4220.2' to 10-15% @ 4233'; open sp between sd-gvl sized lpli; pred gry banded brn or grn banded wh rhyol w/ gry sbang pum lpli; 5-20% chlortzd lpli; gen kaolzd pum w/ mnr sil repl; loc lge vugs up to 1" pred calc/qtz ff  incr abnt maf lpli/blks	mxed silicfd/smect mtrx 4224-33' 5-20% open mtrx 4230.4' frac @ 60 pred kaolzd pum sme silicfd 5-20% chlortzd lpli wavy chlor vns in mtrx	none	tr-1% hem 5-10% chlor 2-4% calc	80% F vugs 80-95% F mtrx 50-95% F amygd	
40		20/20		mxed maf/pum lpli/blks; gry hd mtrx com vugular; elong ves in dk gry lge blk w/ calc amygd+blue sil amygd & 50% open; incr chlortzd lpli 4252.5-54' @ 25%; tightly packed blks w/ sd/gvl sized mtrx; loc 5-10% open sp in vugular mtrx	2-10% insttl chlor dk brn banded gry aphyric blks  hd silicfd gry mtrx decr to loc 10% open vugs poss f/ dissol of a mnr component  loc grn chlor insttl mtrx pred hd silicfd pum lpli w/ mnr kaolzd; com chlor rims on pum	none	1-3% chlor 1-3% calc tr qtz ff vng	50-100% F amygd 100% F pum 90-95% F mtrx	
60		20/20		RHYODACITE: banded lt-m gry @ margins; dk gry interior; flow banded lt-dk; conv apr of bands w/ random arrangement; many bands along pum lpli xenlits; sme xenlits w/ dist lpli; approx 30% DEBRIS FLOW xenlits @ base; devit apr; upper ctct @ 40; incr silicfd DEBRIS FLOW @ t/ b/ w/ hd gry mtrx & 10-20% grn chlortzd lpli; no calc below t/ DEBRIS FLOW: lime grn w/ redbrn mtrx; gen gvl sized relict lpli & blks to 4"; v hd silicfd lpli/ mtrx; can't id original comp of lpli	hd silicfd pum mtrx @ ctct w/ dk grn chlor lpli & lt gry mtrx  no pore sp in RHYODACITE  r tr calc repl pum  calc ff in brecc half open			98%+ F  2-5% calc	
80		20/20		RHYODACITE: dk gry; crptoxin; vf sandy apr to lt-gry-wh bands; orgng wavy bands loc; mott vit vf gr gndmas w/ 10% anhed-subhed feld pheno; lime grn close to xenlits; wavy convoluted banding around xenlits; 4285-91' approx 50% pore space in 3-6" zns developed around lpli in xenlits; aprs as though some mtrx dissolved  rel unalt DEBRIS FLOW w/ amygd bslt blks up to 4" & chlortzd maf lpli w/ 25% pum lpli; gry hd silicfd mtrx; upper ctct @ 45; sharp ctct w/ cataclasis in bands starting @ 99'	4285-91' 3-6" zns w/ 30-50% open spaces in brecc/xenlit  pred calc sme qtz ff in brecc in v lge xls  brecc flow bands w/ red chalc calc fill		1-2% qtz 5-15% calc tr-1% pyr	50-70% F brecc	
4300		1/20							

w 8.6  
v 32  
pH 9.0  
s 250  
sol 1.5  
sd' tr  
fc 1/32  
f 12.8

7/16/95

BOX #307  
BOX #308  
BOX #309  
BOX #310  
BOX #311  
BOX #312  
BOX #313  
BOX #314  
BOX #315  
BOX #316  
BOX #317

WELL: "88-21 TCH"

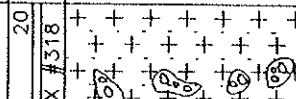

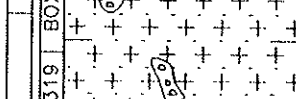

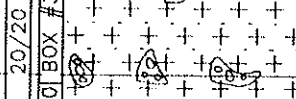

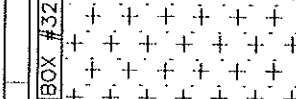












KB ELEVATION: 6269'

LOG DATE: 7/16-17/95

FIELD: Newberry

LOCATION: 120' N, 53' W fr SE cor Sec. 21,  
T.21S-R.12E, Deschutes County, OR

LOGGED BY: Fred Pulka

D	ROP (ft/hr)	%R	LITHOLOGY	DESCRIPTION	ALTERATION	Breccia	Vein	Pore	MRT/BHT
						#/ft	Density	Fill %	Az/Drift
4300		20	 RHYODACITE: gry banded lt gry-redbrn to 4312' then high-ang wavy dk gry-blk-redorng-loc wh bands to 4316'; banded bluegry-lt gry to 20.75'; many open vugs in dk gry zns gen along wh bands & could be ves; 4313' lge vug w/ qtz/calc ff 75% open; good porosity @ 10-15% 4311-15'; nice banded blue-gry red chalc on half of core 4305-6.6' w/ <u>DEBRIS FLOW</u> w/ red hem mtrx on other vert half; silicfd <u>DEBRIS FLOW</u> xenlits	4300-01' brecc w/ disp flow flow bands & 50% red chalc/gry botry sil fill 4301-2.5' vert frac w/ botry sil/red chalc 4312.9' qtz+opal+calc frac @ 55 75% open	 5-10% chalc  2-4% calc	30-80% F brecc vng  10-90% F vugs	4308' 15.0 70.0 353 F		
20		20/20	 banded dk grn & rose & wh w/ abnt spherul; viol qtz fills spher 20-100% ave 50% open; gry-wh-dk grn bands w/ wh spher 4325.3-4330' w/ marg-perv chlortzn; 10-15% porosity @ spher 4320-23' w/ little elsewhere; chlortzd lower 10' <u>RHYODACITE</u>	gry-viol qtz in spher sme w/ calc core; para sil>calc  chlortzd flow bands in <u>RDACITE</u>	 tr-2% calc qtz	20-100% F vugs spher			
40		20/20	 perv chlortzd flow bands in <u>RHYODACITE</u> grad to chlortzd lpli/mtrx in <u>DEBRIS FLOW</u>	vis lpli in perv chlortzd mtrx 4330-34.8' sl brecc w/ abnt calc vng	 3-8% calc	100% F mtrx vng			
60		20/20	 BASALT: dk gry-blk; v hd; crptoxln tex; conchoid frac; v brit; 1% blk subhed px pheno	loc marg chlortzn tr red chalc/gry sil vng	 tr chalc sil	99% F vng			
60		20/20	 BASALT: dk gry-blk; aphan; mott vit apr; v hd; brit; 1-3% blk subhed 1mm px pheno com chlortzd; blchd gry w/ blk unall patches near vng	gen calc brecc fill in hairline & lge vns	 3-6% calc				
80		20/20	 BSLI frags sunked into top of <u>DEBRIS FLOW</u> @ ctct	rk frags flt in calc in brecc	 tr chlor vng	98-100% F amygd			
80		20/20	 <u>DEBRIS FLOW</u> : mxed redbrn & dk gry lpli w/ redbrn then basal chlor mtrx; eqnt-v along gvl sized lpli; abnt scoria & top w/ pred pum base	viol brn cly mtrx then gry mtrx  calc+chlor+wh sil amygd lt gry alt near vns	 5-8% chlor				
80		20/20	 AMYGD BASALT: lt-m gry loc redbrn; 10-25% amygd; pred salm calc & chlor amygd; small brecc zns alt lt gry w/ chlor vng	para in amygd chlor>calc tr-1% dissem/vn pyr gen assoc w/ chlor vng	 tr-1% pyr	90% F amygd			
4400		20	 gry to alt lt gry aphan <u>BASALT</u> brecc w/ calc fill	100% salm calc fill flow brecc	 5-20% calc				
		20	 <u>DEBRIS FLOW</u> : gry w/ wh-lt gry-lt grn lpli; approx 60% pum 40% maf lpli; hd gry silicfd mtrx	4399' dissem pyr frac @ 60					

WELL: "88-21 TCH"

KB ELEVATION: 6269'

LOG DATE: 7/17/95

FIELD: Newberry

LOCATION: 120' N, 53' W fr SE cor Sec. 21, T.21S--R.12E, Deschutes County, OR

LOGGED BY: Fred Pulka

D	ROP (ft/hr)	%R	LITHOLOGY	DESCRIPTION	ALTERATION	Breccia #/ft	Vein Density	Pore Fill %	MRT/BHT Az/Drift
4400	8.6 31 8.8 260 1.5 tr 1/32 17.2	20		DEBRIS FLOW: gry w/ gry-wh-brn-grn lpli/blks; v prly srt'd; gen ang-sbang; mxed lpli/blks; pred gvl sized lpli; blks 2-8"; approx equal pum/maf lpli/blks; 5-15% lt-dk grn chlortzd maf/pum; sd sized v hd silicfd mtrx; most pum silicfd sme fri soft kaolzd pum	pred hd silicfd pum/mtrx 3-5% intstl calc & pum repl tr dissemin pyr 4413-15' approx 10% open mtrx	none	tr pyr 1-3% calc	100% F mtrx 40-90% F amygd	4408' 14.75 75.0 365 F
4420		20/20		incr maf lpli/blks to 60%; calc+pyr amygd in blchd gry amygd bslt loc; incr dist gr bd; gry rhyol blks/lpli w/ red flow bands; 10-15% chlortzd lpli	contd hd silicfd gry mtrx 5-6% intstl/pum repl calc loc vugs @ gr bd w/ qtz ff 4432.5' red chalc frac @ 58	none	tr-1% calc tr pyr chalc	60-100% F mtrx 95-100% F ves	
4440	7/17/95	20/20		DEBRIS FLOW: m gry w/ gry-bluegry-wh banded red & m-dk grn lpli/blks; v prly srt'd; pum blks 2"-2' gen subang @ 50-60%; 10-20% lt-dk gry to grn chlortzd mas/amygd bslt; 10% tan banded wh or wh banded red ang rhyol lpli/blks; mxed marg-perv chlortzd/silicfd pum; lge 2' blk marg chlortzd w/ calc+chlor amygd; sme pum repl by wh concn banded chalc	hd gry silicfd mtrx tr-3% dissemin/vn pum repl pyr 4438-60' 1st apr sil flooded in pt mtrx w/ wavy apr & pyr assoc 1-2% calc amygd pum repl 4459.5' chlor frac @ 50	none	tr-1% pyr com gry sil	95-100% F ves 99% F mtrx	
4460		20/20		incr hd silicfd DEBRIS FLOW w/ incr fuzy gr bd; wavy sil flooded mtrx to 4464'; approx 70% pum 20% maf 10% banded wh rhyol sharp ctct to banded HORNFELS @ frac @ 45 HORNFELS: wavy all lt gry-wh & olv grn bands; mixed sil/chlor bands; loc dist lpli/blks but r; wavy bands truncated @ blks/fracs; v strong silicfen @ fracs; altern v hd & soft bands	4467.5' frac near spotted lt-dk grn chlortzd lpli @ 47 v abnt calc vng @ ctct 4471-73' frac ctct @ 85 w/ banded HORNFELS/DEBRIS FLOW sides		1% calc tr-1% pyr 5% chlor	100% F mtrx ves	
4470		20/20		alternating HORNFELS w/ decr banded apr & pred chlor w/ hd sil lens & DEBRIS FLOW w/ dist lpli gr bd & hd silicfd mtrx; gen 1" dk grn chlor vns @ ctcts; 2" chlor vn @ base altern zn w/ abnt perv chlortzd lpli @ ctct; ctcts @ suhzon fracs	1% calc repl pum w/ sme intstl @ gr bdries tr-1% dissemin/vn/pum repl pyr chlor vngs @ frac ctcts mainly	none	5% chlor tr pyr	97-100% F mtrx 100% F ves	
4500		20		approx 75% pum 25% maf lpli/blks					

WELL: "88-21 TCH"

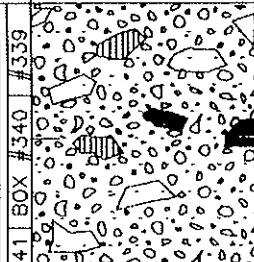





KB ELEVATION: 6269'

LOG DATE: 7/17-18/95

FIELD: Newberry

LOCATION: 120' N, 53' W fr SE cor Sec. 21,  
T.21S-R.12E, Deschutes County, OR

LOGGED BY: Fred Pulka

D	ROP (ft/hr)	%R	LITHOLOGY	DESCRIPTION	ALTERATION	Breccia #/ft	Vein Density	Pore Fill %	MRT/BHT Az/Drift
4500		20/20		mxed dk gry hd silicfd mtrx w/ sl hd gry cly to frags @ 4503.5' then v hd lt gry silicfd mtrx w/ indist-r dist pum lpli gr bd; incr com wh banded gry-red banded rhyol blks/lpli loc alt w/ faded bands & embayed gr bd; approx 75-80% pum+rhyol 20-25% maf lpli/blks	4503.5' frags @ 50/45 w/ marg chlortzn between frags pred silicfd mtrx/lpli 1-2% kaolzd lpli; 15-20% marg-perv chlortzd lpli/blks 1-3% pitted apr open mtrx sme poss dissol of pum loc r tr dissem pyr	none	tr calc tr-1% chlor tr grn sil	95%+ F mtrx 75-95% pum	4508' 14.5 77.0 368 F
20		20/20		DEBRIS FLOW: gry spkld grn-gry-wh; approx 70% gry silicfd pum 10% grn chlortzd pum/maf 5% rhyol 5% dk gry maf lpli w/ 10% mtrx; tightly packed lpli w/ com mosaic tex f/ suturing of gry pum/gry sil ovgrths; gen fuzy gr bd; pred inststl gry sil, chlor sme calc	4526.5' vert disp sil frac @ 65 4527.5' calc/pyr 20% open frac @ 50 4532.5' calc/pyr obliq frac @ 52 incr inststl gry sil/ovgths com inststl chlor/calc	none	tr-1% calc chlor tr sil tr pyr	100% F mtrx 80-95% frags 100% pum	
40		20/20		incr to 20% hd wh-buff ang-sbrd banded rhyol blks/lpli; mxed wh-gry pum w/ loc dk gry maf blks/lpli; hd silicfd gry mtrx gen sil flooded w/ com sutured lpli; 1-2% chlortzd lpli	1-2% inststl pum repl calc 1-2% inststl/vn chlor loc tr dissem pyr 4554' pyr/chlor frac @ 73 loc pitted @ pum lpli 3-6% open	none	tr-1% calc chlor	94-97% F mtrx 100% F pum	
60		20/20		DEBRIS FLOW: m gry w/ lt-dk gry-buff-loc grn blks/lpli; v prly srid; blks up to 1.25' w/ mast 3-4"; incr to 35% maf w/ one lge amygd bslt blks blchd lt grn w/ chlor+calc amygd & 50% open w/ chlor linings; 35% buff-wh banded gry-brn ang-sbrd rhyol lpli blks; 20% gry silicfd pum; 10% gry silicfd mtrx	1-5% chlortzd lpli 2-4% calc amygd & pum repl loc pitted mtrx @ f pum poss calc dissol? 4554.5' calc frac @ 53 loc tr dissem pyr	none	tr chlor calc	50-90% F amygd 95% F mtrx 60-100% F pum	
80		20/20		4573-82' 50-60% buff-wh-lt gry banded rhyol lpli/blks either gry w/ wh bands or buff w/ gry-brn bands & gen ang-sbang; assoc gry w rdd-sbang pum lpli/blks @ 20%; 5-10% chlortzd maf/pum; 10% mas amygd blchd lt-m gry bslt blks/lpli	4580.5' dissem pyr frac @ 55	none	tr chlor vng	90-95% F mtrx	
4600		14/14		5-15% banded rhyol w/ pred gry pum & 5-10% chlortzd lpli; 4589-91' 30% chlortzd lpli w/ mxed chlor/gry sil mtrx	4599-4600' busted up chlortzd core w/ high ang silks				



WELL: "88-21 TCH"

KB ELEVATION: 6269'

LOG DATE: 7/18-19/95

FIELD: Newberry

LOCATION: 120' N, 53' W fr SE cor Sec. 21, T.21S-R.12E, Deschutes County, OR

LOGGED BY: F.Pulka, J.McCulloch

ROP (ft/hr)	%R	LITHOLOGY	DESCRIPTION	ALTERATION	Breccia #/ft	Vein Density	Pore Fill %	MRT/BHT Az/Drift
4000			DEBRIS FLOW: gry w/ buff to m-dk gry & grn lpli/blks; gen v hd silicfd gry mtrx; approx equal amts wh banded rhyol, gry pum & gry maf lpli/blks; nearly 50% blks of pum & blchd m gry maf; contd 25% grn chlortzd maf/pum lpli; gen gvl sized lpli mtrx; fuzy gr bd on gry pum	pred silicfd mtrx loc gry cly mnr kaolzd pum 4610.5' gry sil ff in amygd calc amygd in bsst  25% chlortzd lpli 2-5% pits @ pum & tr open gr bd; tr vugs	none	tr calc qtz	95%+ F mtrx 80-100% F pum 50-100% F amygd	4602' 13.5 76.0 378 F
3500			HORNFELS: sharp change to wavy dk-olv grn to lt gry bands; bands com wrap mod dist pum/maf lpli; mxed chlor & v hd sil bands @ low-angle; max chlor 4625-27' w/ frac @ 26.5'; 4627-28' dist eqnt pum/maf lpli in DEBRIS FLOW then 1' zn w/ chlor/sil banding to 4629'	hd gry silicfd mtrx to 4622.2' & sharp ctct w/ HORNFELS 1-2% open pits in mtrx loc tr dissem pyr pyr com assoc w/ pum perv chlortzd mtrx 4639-40' vert disp silks @ 30	none	tr calc qtz	95%+ F mtrx	
3000			DEBRIS FLOW: lt grn-lt gry; hd; sft chlor mtrx to 4641' then silicfd mtrx; mxed ang bsst @ subrd pum lpli/blks; blks to 2"	silica mtrx				
2500			approx 50% pum 20% banded rhyol 20% bsst lpli/blks fltg in 10% gry silicfd mtrx; com calc amygd in bsst blks/lpli; flow banded rhyol com micro frac w/ calc vns; a calc vn 1-2mm wide w/ 20 dip	4648.5' rose-pk calc vn 4651' calc vn w/ 1mm open vugs  com calc vns assoc w/ rhyol	none	tr calc	95%+ F mtrx	
2000			4661.5' rhyol frags w/ < 1mm open vug w/ vf qtz ff	brn silica mtrx				
1500			4669.5-71' DEBRIS FLOW w/ open vert frac w/ bladed 1/2" calc ff xls	red silica mtrx		r 1mm calc vns		
1000			RHYOLITE FLOW: wh-lt gry; hd; com red (hem) bands parallel to core (vert); loc 1" breccia zn; tr vf dissem euhed pyr	frac @ 25 dip w/ bladed calc ff				
500			RHYOLITE FLOW: brecciated; 95% ang RHYOL lith frags; 5% red silica mtrx; 1% dk grn chlor vng assoc w/ calc incr % mtrx; com dk gry sulfides assoc w/ vf calc frags @ gr bdries ang unconformity ctct; few rhyol frags in ANDES	decr chlor red silica mtrx frac dip @ 28	none	(2) 1mm calc		
0			ANDESITE: lt-m gry; hd; porphyritic; calc amygd; silicfd	para calc>qtz ff; pyr>calc				

WELL: "76-15 TCH"

KB ELEVATION: 6269'

LOG DATE: 7/19-20/95

FIELD: Newberry

LOCATION: 120' N, 53' W fr SE cor Sec. 21  
T.21S-R.12E, Deschutes County, OR

LOGGED BY: Jess McCulloch

ROP (ft/hr)	%R	LITHOLOGY	DESCRIPTION	ALTERATION	Breccia #/ft	Vein Density	Pore Fill %	MRT/BHT Az/Drift
8.7		+	RHYOLITE FLOW: wh-lt gry; v hd; brecciated ang frags; lpli-4"; com red mtrx; silicfd; com vf euhed pyr assoc w/ frac surfs; 4705' change to gry silicfd mtrx		none	r tan calc		
38								
9.0								
280								
2%								
1.5/32								
22								
	21/21							
			4722.5' calc frac	4721-21.5' chlor mtrx kaolzd pum/ash				100% circ
			4730' 1-3mm open vert frac w/ bladed calc xls	chlor tzd andes	none	open frac		4728' 12.75 73.0 382 F
	25/20		DEBRIS FLOW: lt gry-lt grn; incr lt alt apr w/ depth; 50% grn (chlor) & andes/bslt frags 20% pum 20% rhyol; dist lpli/blk gr bdries	amygd andes/bslt w/ 80% calc amygd			80% f amygd	
			4643' lt grn <u>WELDED TUFF/ASH</u> lpli/blks @ .5-3"; mod hd-hd; aphyric; r 1-2mm calc vn @ 30	chlor mtrx?		(3) 1-2mm calc		
			DEBRIS FLOW: lt-med grn; hd-v hd; silicfd; ang lith frags; lpli-6" blks; incr % of lge rhyol lith frags; 70% chlor-andes 10% subang pum 20% rhyol	silicfd mtrx	none	(2) 1-2mm calc		
	21/21		90% rhyol lith frags			(4) 1-2mm calc		100% circ
			RHYOLITE FLOW: lt gry; v hd; com brecciated; flow banded; aphyric; com qtz pheno; com euhed pyr		none			
			RHYOLITE BRECCIA: lt gry; banded; ang frags; mtr frac surfs w/ calc; com euhed pyr on frac surfs	frac dips @ 40		(1) calc		
			incr chlor tzd andes/bslt frags; decr pum	incr intsl calc		(2) 2mm calc		
	21.2/21.2		DEBRIS FLOW: med grn; hd; chlor tzd; pred chlor andes; silicfd mtrx	30 frac dip w/ vert slks & calc xls	none			
			DEBRIS FLOW: lt grn; dist-indist lith frag bdries; com calc @ frag bdries; com lt-m grn aphyric tuff	incr lt grn chlor alt		(1) calc		

7/19/95  
CB#6 NQ  
127"

3.2/#5

BOX #361 BOX #362 BOX #363 BOX #364 BOX #365 BOX #366 BOX #367 BOX #368 BOX #369 BOX #370

TOU

WELL: "88-21 TCH"

KB ELEVATION: 6269'

LOG DATE: 7/20/95

FIELD: Newberry

LOCATION: 120' N, 53' W fr SE cor Sec. 21,  
T.21S-R.12E, Deschutes County, OR

LOGGED BY: Jess McCulloch

D	ROP (ft/hr)	%R	LITHOLOGY	DESCRIPTION	ALTERATION	Breccia #/ft	Vein Density	Pore Fill %	MRT/BHT Az/Drift
4800		15.5/17		DEBRIS FLOW/RHYOL BRECCIA: approx 90% lt-med grn ang lith rhyol frags; occ banded gry-lt grn; com euhed qtz+feld pheno; mnr vesic andes/bslt frags; r-mnr euhed pyr		none	(3) 1-2mm calc	80% F sil	4807' 12.25 73.0 401 F
20		17/17		incr % rhyol blks/lpli & incr blks size  banded rhyol lith frags; no bslt/andes lpli/blks; v ang frags	silicified breccia		none		
40	w 8.7 v 39 pH 9.0 s 200 sol 2% sd tr fr 1/32 f 12.0	20/20		RHYOLITE: wh-lt gry; v hd; aphan; mnr banded lt grn; frac surfs com w/ pyr  r pum frags	unal?  frac dips @ 30-40	none	(3) 1-2mm calc		
60	7/20/95	14/14		TUFF: wh-lt gry; crptoxln; silicfd; com euhed feld+qtz pheno; com euhed pyr; pyr+calc on frac surfs; loc mnr chlor alt of mafics	sl chloritzn kaol alt?	none	(1)	100% circ	
60		8.5/11		RHYOLITE BRECCIA: wh-lt gry; com banded; com bluegrn cly mtrx; mnr frac surfs w/ calc & pyr; r bslt lith frags	argillic alt bluegrn cly		(1) calc		
80		7/7		TUFF: wh-lt gry; hd; siliceous comp; crptoxln; r qtz/feld pheno; lt gry mtrx (kao); hzon frags w/ washed out pitted tex @ frac surfs; com euhed pyr	horizontal frags				
4900				TOTAL DEPTH @ 4876' July 20, 1995 Last 18' of core less than 1 7/8" (NQ) in diameter.					