EPOCH WELL LOGGING, INC.

Bakersfield, CA (805) 397-7472
Ventura, CA (805) 658-7708
Anchorage, AK (907) 561-2474

COMPANY	NAHAMA & WEAGANT ENERGY CO.
WELL	ADAMS ~~BEAVER CREEK~~ 31-34-75
FIELD	MIST
LOCATION	575' East and 556' West from the North E corner of Section 34 T7N, R5W, W.M.
COUNTY, STATE	Columbia, Oregon
API WELL INDEX NO.	36-009-00261
ELEVATION	1626' GL. 1637' KB.
DATES	6-21-92 TO 6-28-92
DEPTHS	50' TO 3414'
SPUD DATE	6-21-92
DRILLING CONTRACTOR	Taylor Drilling RIG # 7
COMPANY GEOLOGIST	Jeff Vaughan
COMPANY DRILLING SUP.	Rob Lucas
MUD COMPANY	Beaver Drilling Fluids
MUD TYPE	Gel/Polymer
LOGGING UNIT #	9
LOGGING GEOLOGISTS	Jim Eastes John Riddle

ABBREVIATIONS

NB	NEW BIT (MILL TOOTH/INSERT)	MW	MUD WEIGHT
PDC	PC DIAMOND CUTTER	VIS	FUNNEL VISCOSITY
RRB	RERUN BIT	PV	PLASTIC VISCOSITY
RTB	RETIP BIT	YP	YIELD POINT
CB	CORE BIT	FL	FLUID LOSS
TG	TRIP GAS	CL	PPM CHLORIDE ION
SG	SURVEY GAS	Rm	MUD RESISTIVITY
WG	WIPER GAS	Rmf	FILTRATE RESISTIVITY
CG	CONNECTION GAS	LAT	LOGGED AFTER TRIP
KG	KELLY CUT GAS	LAS	LOGGED AFTER SURVEY
WOB	WEIGHT ON BIT	NR	NO RETURNS
RPM	ROTARY REV/MIN	PR	POOR RETURNS
PP	PUMP PRESSURE	LCM	LOST CIRC. MATERIAL
SPM	STROKES/MIN	CO	CIRCULATE OUT

CASING RECORD		
9.625"	TO	501'

HOLE SIZE		
13.75"	TO	501'
8.5"	TO	3414'

SAND	CLAYSTONE	LIMESTONE	TUFF
SANDSTONE	CLAY	DOLOSTONE	FOSSIL
SHALE	DIATOMITE	VOLCANICS	MICA
SILTSTONE	CONGLOMERATE	BASALT	LIGNITE
GLAUCONITE	PYRITE	Marl	

PENETRATION — ANALYSIS OF RETURNS — REMARKS

DRILL RATE (FT/HR) drilling data | DEPTH | LITHOLOGY | OIL (TRACE, STRONG TRACE, SHOW, STRONG SHOW) | GAS — UNITS: DITCH — TOTAL GAS; CUTTINGS GAS; CALIBRATION 100 units = 2% methane by volume | CHROMATOGRAPH — PPM: METHANE, C-1; ETHANE, C-2; PROPANE, C-3; BUTANES, C-4; PENTANES, C-5

Modifiers in Accessory Mineral Column are referenced to the count of a mineral in a standard sample tray:
Rare.........1-5 counts
Occasional....5-10 counts
Common........10+ counts
Abundant......present thru entire sample

Note Pump Output
#1-5½X14 .115bbls/stk
#2-5½X14 .115bbls/stk

REMARKS

LITHOLOGIC DESCRIPTION
MUD PROPERTIES
SURVEYS, OTHER TEST DATA

All colors referenced to the GSA Rock Color Chart. All survey, connection and wiper gases reported as units above background; trip gas reported as maximum units recorded. All gas detecion equipment calibrated to SPWLA standards.

Soil: lt to dk yelsh or, yelsh gry, clr to cloudy sand grs, blu gry volc, rust color'd hem cem; heavily iron oxidzd; tr pyr; tr organics; incr sol clay cont w/depth; com mica @ 50'; noncalc.

Clay: yelsh wht; med to dk yelsh or, rust; sl plub; lumpy ctngs; mod sticky and hi cohes; sandy; micaceous; tr org; noncalc; pr to mod sol.

Note: color change to med to dk gry clay w/abd poorly sort fn to crs gr sand 85'. Temp Col chng

Conglomerate: pl to dk yel-or overall w/clasts of dk grnish gry, loc hvy Hem stain; v fn to crs, w/com Pbl (sltst clasts), poss Pittsburg debris; sbang to rndd; mod spher; pr srtd; friable; lithic arkose - qtz and fspr w/com volv lithics; com wht to dk gry smokey qtz; abd Musc, mnr Biot; com tr amph, intbds of tuff/ash; occ to loc com fn to crs woody frags; abd Hem stain f/180' w/decr Pbly clasts.

Note: Formation Chng @approx 215'

Sandstone: dk gry w/blsh to grnsh hues; v fn, u to crs, u, pred fn, to med; sbang to sbrnd; lo spher; pr - mod srtd; friable; grain supported w/tr clay/silt in Mtrx; arkosic; spty pl bl and gn clasts; v com fn to crs lig debris; loc com anhd 2ndry pyr; v com to abd Musc, occ Biot; tr volcs.

Sandstone: dk grysh gn: v fn to med, l; sbang; lo spher; mod to wl srtd; friable; grain packed; decr clay in Mtrx; arkosic; com Musc, tr biot, Chlor; spo.ty lt to dk grn clasts, alt volc - celadonite, poss Glauc f/280' - incr Chlor; **pervasive organics; loc tuffaceous, grad to sltst.**

Siltstone: olv gry, dk gn-gry; mod ind, crumbly, sli friable; dl Lstr, sli waxy; fnly abrasive Tex; arenaceous, intbd w/ & grad to fn ss; lo density; non to sli calc; micaceous; com v fn med to dk grn alt volc(celadonite) and/or Glauc; com fn organic debris

Sandstone: grysh gn; v fn, l to fn, u; sbang; wl srtd: friable; arkosic; com mica; v com fn, rndd glauconite; tr pl to dk or volc frags; occ appears ltr colored, tuffaceous.

Siltstone: olv gry, sli incr grnsh hue; mod ind, sli friable; arenaceous grad to v fn ss; gritty Tex; sli to mod calc; v com mica; com Glauc; incr com fnly disseminated org debris, loc imparting brn hue to ctgs; Bdg lineation exhibited by organics.

Sandstone: dk grysh gn, dk olv gry; v fn, l to fn, u, silty; sbang; wl srtd; friable - sli less than above due to incr Mtrx clay; non to wkly calc; cldy Qtz and Fspr w/com v fn Glauc, organic & woody debris(occ v crs); tr org volc frags; spotty mica.

Siltstone: dk grysh gn; mod ind, crumbly to sli tough; ea Lstr; gritty tex - arenaceous grad to fn ss; noncalc; com v fn organic debris, com Glauc; spty volv frags

Shale: (tf mdst) yelsh olv gry; mod wl ind, tough; sbrsns Lstr; trnsl on thin edges; smooth Tex; noncalc; assoc w/pebbly Sltst w/ v fn to v crs rndd volc clasts, Glauc and lignite.

Sandstone: med gry brn to grnsh gry w/brnsh hue; fri to occ mod ind; very silty; lower vfn to tr upper vcrs; dom vfn gr; mod well to well sort; grain supp; tr calc; cloudy qtz and fspr; tr v crs dism qtz grs; rom grn stng from prob hi glauc content; tr to loc com volc debris.

Claystone: pl grnsh gry to grysh grn; frm to mod well ind; irreg sml to lrg blocky ctgs; smooth tex; waxy lus; noncalc; tr vfn org inclns; tr glauc.

Note: Abd clay @ 720', thick pasty consistency; mod sol; v **sandy w/pebbly sz grs; abd to com volc, shell frags, and glauc.**

Sandstone: @ 752'; tough, overall gry wht; multicol'd grs, grn, blk, brn, wht, clr, or; vfn to granule; dom fn to med gr; ang to well rndd; prly sort; abd qtz and fspr; com to abd mica and glauc; com volc debris; tr shell frag; com calc.

Sand/Sandstone: overall pl to med gry, blk, cloudy to clr, grn, org, silvery, blu, fri to prly ind; vfn to occ granule; tr upper grn to pebbly; ang to well rndd basalt; dom ang to sbang; lo to gd spher; v prly sort; dom qtz and fspr w/mnr volc; tr to loc com glauc; abd mica; tr shell frags; mod calc; up to 65% clay support.

Note: Decr clay content @ 885', abd lrg ctngs; occ lt gry claystone @ 995'; calc sandstone bone @ 903'.

Siltstone: med to dk grybrn; tough to mod ind; irreg ang to blky ctngs; fnly abrasive tex; fn sparkly lus; sl calc; tr mica com organics.

Siltstone: med to lt gry brn, sl frm to frm; very clay rich; rndd ctngs; grad to arenaceous mudstone; noncalc; smooth to grainy tex; dull to fn spkly lus; tr mica and organics.

Mudstone: dk olv gry, sl sft to frm; very silty; dull to fn sparkly lus; earthy grainy to gritty tex; sl calc; grds to siltstone; sl to mod arenaceous; tr mica, organics, and glauc; occ shell frags.

Sandstone: dk grysh gn, dk olv; v fn, l to fn, u, silty grad to Sltst; ang to sbrnd, pred sbang; low sphericity; wl srtd; prly ind, friable, crumbly; arkosic/lithic; com mica, Glauc, spty or volc clasts; tr abraded shell frags.

Siltstone: dk olv gn; mod ind, sli crumbly; dl, ea Lstr, sli waxy; fnly abrasive Tex, variably arenaceous; noncalc; micaceous w/tr v fn Glauc, occ crs, rndd volc clasts; tr abraded shell frag.

Clay: dk olv grv; v sft; thin pasty **consistency; easily soluble; low plasticity and adhesion; silty; appr assoc w/incr v fn ss.**

Sandstone: med to dk olv gry, gnsh gry; v fn, l to fn, u, silty; ang to sbrnd, pred sbang; lo spher; wl srtd; friable; noncalc; grain supported grad to arenaceous Sltst: arkosic w/v com mica; com fn Glauc/celadonite, organic debris; occ abrades shell frag.

Sandstone: f/1204'; med olv gry - ltr than above w/decr silt; v fn to fn, u; wl srtd; cloudy Qtz & Fspr w/com mica, Glauc, or volc frags and v fn lignite/organics.

Siltstone: dk olv gry, decr gn hue; mod ind, sli brtl; gritty tex - arenaceous; noncalc; micaceous w/com fnly disseminated lig/organic debris; incr clay rich(overall incr solu clay).

Clay: dk olv gry; v sft; thin pasty, bcmg sli more plastic w/ incr adhesion; mod soluble; silty; wkly expansive.

Sandstone: med to dk olv gry; tr gry wht w/lt olv hue; v frbl to prly ind; incr tough w/calc content; abd silty; lower vfn to occ med lower gr; dom vfn gr; ang to occ sbrndd; dom sbang to ang; lo spher; mod to well sort; dom qtz and fspr; com mica and fnly dism blk grs-pms glauc; tr or specs-volc tuff/ash.

Mudstone: lt to med olv gry; sft to mod ind; ndy ctgs; w/silty to sl aren; dull to fn sparkly lus; grainy to sl gritty tex; grds to v cly rich siltstone; sl calc; tr fossils; rr volc; tr to mnr mica.

Sandstone: overall pl olv gry, brn, or, grn, to blk, clr, lt grnsh cast, incrs in brn hue; v frbl to com ind; lower vfn to occ crs upper gr; dom vfn gr; ang to rndd; dom sbang; lo to gd spher; dom qtz & fspr w/com mica and glauc; tr org and shell frags; com or volc debris.

Siltstone: med olv gry to olv brn, com blk and grn inclns; frm to mod well ind; crunchy; v sandy; fn to sl gritty tex; sl to loc mod calc; com mica, abd dism glauc; tr pyr; tr shell frags.

Tuff: pl yelsh brn; frm to tough; blky ctgs; silty; sl calc.

Clay: lt to mod olv gry to lt olv brn; sft to sl frm from heavy silt content; com sandy; smooth gritty tex; readily to mod sol; v sticky and coh; pr plast; abd glauc; com pyr @ 1566'; tr vol ash/tuff; com mica; tr shell frags

Sandstone: overall pl yelsh brn w/ hue: mod ind, sli friable: arenaceous grad to v fn ss; tr blush grn volc clasts; tr free calcite; com fn sand; tr or volc ash; tr mica + org.

Sand: @ 1650'; med gn-gry; v fn to med, l; ang-sbang; mod srtd; ark w/v com Glauc, volc, shl frag.

Siltstone: f/1660', yel-brnsh gry-brn; crumby - mod ind; sli waxy; arenaceous; abd lig/organic debris and fn mica; grad to/intbd w/fn org rich sand/ss.

Sand/Sandstone: f/1790', pl grysh brn; v fn, l to fn, silty; ang - sbang; wl srtd; fri; ark w/occ mica and fn Glauc; com or volc clasts, organics; tr fn Glauc, rndd calc clasts f/1715'-1724' (Cgl) - incr volc, gn & or; loc com Shl frags.

Siltstone: bcms pl olv @ 1760'; mod ind, brtl to sli sectile; waxy Lstr; tuffaceous, pyr, dissem brn organics, tr or volc and Glauc; intbd w/fn, Ark, Glauc sands.

Sandstone: (bone) med brnsh gry; v fn - fn, argil; wl srtd; sli calc; com mica, loc v com glauc; tr Shl frag.

Clay: pl yel-brn, grysh brn; v sft; thin pasty consistency; mod solubility; incr plastic; sandy w/v fn to occ crs grains; abd organic rich; com loose mica, pyr.

Sand: clr, cloudy; v fn, l to occ crs, u, pred fn; ang to sbrnd; lo spher; mod srtd; pred loose w/ sml frs ss ctgs; ark - skark; com Musco, sbhd pyr aggs and abraded shell frags; tr euhd Qtz.

Clay: pl yel-brn, brnsh gry; v sft; incr thick pasty consistency; pr solubility; sandy; occ ss intbds; tr yel-or tuff

Tuff: orsh brn, grysh brn; tough to mod well ind; hackly app; sl silty; dull luster; sucrose tex; sl calc, tr shell frag, pyr.

Sand: overall pl gry, blk, lt clr to cloudy, tr grn; vfn to occ crs gr; dom vfn to (lower med gr); ang to well rndd basalt grs; lo to gd spher; prly to mod sort; unconsol i.p.; clay supp; tr marly; cont org blky tuff; tr pyr and shell frags; mn rto com dism mica, intbd yelsh brn siltstone; dom med grysh brn plastic clay.

Siltstone: grnsh gry, brnsh gry w/olv hue; tr or, blk, and grn inclns; fri to mod ind; sparkly lus; fnly abrasive tex; mod to v sandy; non to sl calc; grds to fn gr sandstone; rr volc; tr org; tr agg pyr; scat shell frags.

Note: Formation change to med to dk olv gry claystone @ 2038'.

Claystone/Siltstone: med to dk olv gry, yelsh gry brn w/faint olv hue; irreg sbrndd to blky ctgs; frm to mod ind; crncy; waxy to vfn sparkly lus; smooth to sl gritty tex; mod to hi calc; occ marly tuff lams; loc com glauc.

Sandstone: hard streaks; pl olv gry wl ind; med to v crs, rndd, multi-colored basalt clasts in silty, calc, tuffaceous matrix - matrix supported; ocom glassy shards; tr mica.

Siltstone: dk olv gry, gry-gn; mod ind - crumbly to loc tough; dl, sli waxy Lstr; gritty Tex, loc arenaceous; occ to loc com fn glauc; persistent fn or volc debris and mica; non to wkly calc; rr v fn framboidal pyr; cont'd tr med - crs volc clasts (loose).

Clay: med olv gry; v sft; thin pasty consistency; mod soluble; lo - mod adhesion; % solu clay incr w/addtion of drispac & Polymer - larger % than normal for this section.

Siltstone: dk olv gry, sli yelsh hue; mod ind - incr ind f/above; bkly ctgs w/dl, sli waxy Lstr; smooth to loc gritty Tex; grad to mdst; noncalc; spty fn Glauc. mica, tr organics; rr Shl frag; loc tuffaceous w/occ thin yel-or tuff lams.

Mudstone: dk olv gry w/incr ornsh **hue; mod to wl ind, sli sectile to brtl; incr waxy lstr; smooth tex - decr silt; loc sli trnsl.**

Mudstone: dk yel-brn, brnsh olv; mod to mod wl ind; brtl to occ sectile; dl waxy lstr, espc when scored; smooth to extr fn grainy Tex; noncalc; ctgs exhibit sli trnsl, espc where waxy; spotty microfossil and rr shell frags; occ lam organics and flaky fis.

Mudstone: dk yel brn w/mnr, but incr olv hue; mod ind, sli more crumbly; ea to sli waxy lstr - subtle incr solu clay; decr trnsl quality; noncalc; dissem organics; spty - com extrm fn pyr; tr parting lineation; hydrates; tr or tuff.

Clay: gryish brn; v sft; thin pasty consistency; easily soluble; lo adhesion; derived f/hydrating mudstone; smooth tex - no plastic nodules.

Mudstone: dk yel brn; pr to mod ind, crumbly to sli brtl; dl ea Lstr, waxy when scored; extrm fn tex, silty in part; organic rich; tr to occ v fn sbhd pyr ag and dissem in ctgs; tr microfossil; rr v fn sand; rr thin Shl frag.

Clay: med to dk grysh brn; pasty to sl gelatinous consistency; lo plast; mod to lo adhes, strgly cohesive; readily sol in water; smooth tex; waxy lus; sl to noncalc.

Sand: clr to cloudy, dk grn to blk, rr or; vfn to occ lower med gr; dom vfn; ang to sbrndd; mod to mod well sort; occurs dism in spl; mod calc; dom qtz fspr; tr mica and pyr; tr fossil frags and glauc

Tuff: pl yelsh brn, tr redsh stks; frm to mod ind; silty; sucrosic tex; sl calc; seems assoc w/ pl yelsh brn ply sol ashy clay; tr org inclns; scat pyr, glauc, shell frags, and micromica.

Siltstone/Mudstone: pl yelsh brn to med grysh brn, dusky brn; frm to sl frm; smooth to sl gritty tex; waxy to vfn sparkly lus; mod calc; com fn dism sand; scat fossils; glauc, and pyr; com tuffaceous.

Note: inc in sandy siltstone @ 2727'; incr in agg pyr, glauc, and volcs, decr ind of sltstn.

Sand: clr to wht, cloudy, blk, grn; vfn to occ lower crs gr; dom vfn; ang to rr rndd; dom sbang; lo to gd spher; wl srtd; dom qtz and fspr; tr aragonitic shell frags; gr to agg pyr + fram pyr; tr glauc; clay supp w/com sandy siltstone; scat mica; tr wht ash + com pl yelsh brn tuff.

Mudstone: dk yel-brn; prly ind, crumbly, pasty; ea Lstr; silty; organic rich; occ mica; bulk sol v calc - v com foram; assoc w/ pasty, brnsh gry clay, v fn sand.

Sand: pl gnsh gry w/pred cloudy grains; v fn, l to crs, u, pred v fn to med, l; ang to sbang, abd sbhd Fspr; pr srtd; v loose (fri ss); feldspathic w/v com pl gry & gn-gry volc ash - waxy smectitic claystone; tr pyr, incr com mica(Mucs)

Ash: pl - dk gry; v sft; sectile to sli brtl; waxy w/trnsl quality; streaked lineation; scat euhd Fspr; expansive.

Sand: pl gry; v fn, l to occ crs, l, pred fn; ang to sbang; lo spher com sbhd-euhd Fspr; mod to wl srtd; loose sand w/tr calc cmts ss; bulk spl mod - v calc: arkosic - feldspathic, abd Fspr; v com - abd mica, pred Musc, com - abd fn sg sbd-euhd pyr; spty volc ash, forams, abrades Shl frags; persist fn or volc.

Conglomerate/Breccia: v dk blsh-gry; v fn to gran; ang to sbrnd; pr srtd; wthd ash, basalt & msst in Sd/Ss mtrx; calc/pyr cmt; occ Shl frag; com cherty clasts.

Basalt: dk gry to blk; hd; ang to blky ctgs; sparkly to vitre lus; granular to crpxln tex; tr calcic; incr density w/depth; tr euh pyr, tr lt gry to bluish gry volc.

Sand/Sandstone: v pl blsh gry, w/pred cldy Grs; v fn, u to v crs, l; ang to rndd, pred sbang; lo-hl spher; pr-mod srtd; loose/fri w/spty calc cmt; feldspathic w/scat med to crs pl grn to wht volc clasts; occ, incr com mica; occ sbhd fn pyr; intbd w/dk gry-brn, brnsh olv arenaceous sltst.

Sand: lt gry, clr - cldy; v fn - crs, pred fn-med; sbang; mod wl srtd; abd Fspr, incr Qtz; com mica

Siltstone: yel brn to olv gry-brn; mod ind, brtl to occ tough; ea Lstr; rough, abrasive Tex; com sandy; spty mica & volc debris; tuffaceous in part, occ exhibits sbrsn Lstr; wkly calc; scat foram.

Sand: lt gry, clr; v fn to crs, l, pred fn, l to med, u; sbang - sbrnd, lo spher; mod srtd; unconsol w/pl gry to wht cly in Mtrx; feldspathic, bcmg arkosic f/3140' - 70% Fspr, 20%Qtz, 10% volc clasts com Musc; com pyr; occ Shl frag.

Clay: med olv gry, bcms dk gry @ 3240' w/incr Sltst; sft; thin pasty consist; mod solu and adhesion; lo plasticity.

Sand: lt gry; v fn, l to med, l, pred fn; ang - sbrnd, pred sbang; lo-mod spher; wl srtd; loose sand w/assoc pl gry clay in mtrx; arkosic w/60-70% Fspr; tr volc f/3263'; abd Musc; tr pyr.

Sand: lt gry, clr, cldy; v fn to med, l; fn to crs @ 3288-3297' w/ scat rndd volc clasts; sbang to sbrnd; wl srtd; unconsol; arkosic w/abd Fspr, Musc; tr & com lig 3330'-3350' w tr pn mcst.

Siltstone: olv gry, yelsh grn; wl ind; tough; sli waxy; gritty tex; tuffaceous volc incl; abd pyr & freah basalt assoc w/congl above.

Sand: lt gry; v fn to incr crs; ang-rnd; mod wl srtd; ark, incr Fspr, volc clasts; extrm plastic clay w/sand @ 3400'; crsns downward to congl is w/pred basalt clasts("rubble zone"/lag deposit).

Basalt: blk; hd; v fn grained w/com plag laths; occ dk yel-grn volc glass; loc 2ndry pyr.

Note: Run Schlumberger E-Logs, Run #1; DIL-BHC-GR-CAL, Run #2; SHDT.