HORIZON WELL LOGGING

COMPANY: NAHAMA & WEAGANT ENERGY CO.
WELL: "KING" LF #31-36-65
LOCATION: 2450'W and 958'S from the NE corner of Section 36, T6N, R5W W., W. M
ELEVATION: 754.46' G.L. 764.46' K.B.
FIELD: MIST
COUNTY: Columbia, Oregon
API NUMBER: 36-009-00303
SPUD DATE: 7-23-93
LOGGING DATES: 7-23-93 to 8-2-93
LOGGING DEPTHS: 40' to 3987'
GEOLOGIST: Jeff Vaughan
COMPANY MAN: Rob Lucas
CONTRACTOR: Taylor Drilling Inc.
RIG: 7
LOGGING GEOLOGISTS: Jim Eastes, Dan Cross
BIT SIZE: 12.25" to 504'; 7.875" to 3987'
CASING: 8.625" to 503'

CALIBRATION: 2% METHANE = 100 UNITS

ABBREVIATIONS

CO	Circulate Out
LAT	Logged After Trip
LAS	Logged After Survey
CG	Connection Gas
KC	Kelly Cut gas
WG	Wiper Gas
TG	Trip Gas
SG	Survey Gas
WR	Wiper Run
	CORE INTERVAL
	WOB (100,000# full scale)
	TRIP

SYMBOLS

PEBBLES >2mm, SAND, SANDSTONE, SILTSTONE, MUDSTONE, SHALE, MARL, CLAY, CHERT, DOLOSTONE, LIMESTONE, VOLCANICS, TUFF, BASALT

DRILL RATE	LITHOLOGY	MINERAL	GASES	CHROMATOGRAPH	REMARKS
ROP 0; WOB 100K 0		GLAUCONITE, PYRITE, MICAS, LIGNITE, SHELL FRAGS, TUFF	DITCH GAS, OFFSCALE, CUTTINGS GAS, OFFSCALE (20 40 60 80)	METHANE, ETHANE, PROPANE, BUTANE, PENTANE (1000 10000 100K)	DESCRIPTIONS, SURVEYS, MUD CHECKS, MISCELLANEOUS

MINERAL COLUMN (HIGHLIGHTS)

SPUD @ 1700hrs 7-23-93

PITTSBURG BLUFF

Noticable mud loss @ 70', circ, build mud volume, add LCM

Conglomerate: pl to dk gry-grn overall; fnU to granule; ang to wl rndd pred sbang-sbrnd; lo spher; prly srtd; unconsol - fri; arkosic w/ 10-20% grn to dk gry lithics, pred volc, occ rndd Sltst, Clyst clasts, volc clasts pred altrd to clyst; spty hvy mnrls; tr abradec shell ...

[illegible]

... bslt, poss slough, arksc w/abd Fspr spty mica & hvy mnrl; occ fn anhd. Pyr, loc sli tffcs

Mudstone: v dk yel-brn; firm, sli brtl; earthy to dl silky Lstr; v fn grainy Tex; v carb rich w/incr -bd lig(sbvit, brtl); occ wht waxy tuff; tr shell debris.

Tuff: pl blush wht, pl grn; mod - mod wl ind; sli brtl; waxy to loc sli rsns Lstr; rough gritt Tex; crystal-lith tuff w/tr aphanitic waxy ash; washed spls appr "sandy" w/com loose Fspr & tuff frags.

Lignite: brn-blk, mod hd, tab - blky w/laminated apprnc, erthy & sbvit; hackly - occ sbconch frac; tr Pyr.

Volcaniclastic: red grnsh gry overall w/pl gry, blu-gry, wht, violet dk grn & rd volcs; pred lithic & xtl-lithic tuffs w/tr wthrd scorriated bslt, fresh bslt; 3-10% fn to crs arkse ss, f. sbhurl pyr.

Basalt: dk brnsh grn; v hd, tough; blky(sli rndd!) ctgs, aphanitic to v fn grained w/scat .02-.5mm augite phenos; sparkling sbvit Lstr(wet); rough gariny Tex, sim to bslt abv.

Volcaniclastic: pred dk grn, rndd basalt clasts w/minor but dist occurrence of mottled rdsh-or & gry tffcs clasts, bslt apprs equi. to that abv.

Basalt: dk grn, v dk yelsh grn; hd, tough ctgs as abv but more ang; apprs to be in place w/thin rubble zones - ctgs appr more rndd, sli grayer & incr tffcs clasts.

MW 10.2 VIS 39 PV 15 YP 15 pH 7
FL 6.9 Sol 14 Gel 3/29 Sd 1/4%
Cl 700ppm

Mudstone: grysh yel brn, firm, sli brtl, micacs w/vis carb debris; variably tffcs.

Tuff; pred pl blu-gry & wht w/pastel grns; pred hd, trnsl, xtln ctgs w/aphan Tex; gd tr fn wht ss f/ 3925'; decr bslt rubble.

Sandstone; wht; v fnU to fnL; ang to sbang; mod spher; v wl srtd; mod ind - varies f/fri to infreq wl ind; grain-packed; clean; vari calc cmt; arksc(?) w/spty Biot & Chlor; no vis lithic to hvy mnrl inclusions.

S @ 3987' 25° N37E
TVD 3625' 1202'N 816'E

Run Schlumberger DIL/Sonic

Run 4.5" casing to 1393'