



ROCKY MOUNTAIN GEO-ENGINEERING CORP.
 2450 Industrial Boulevard
 Grand Junction, CO 81505 U.S.A.
 (970) 243-3044

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OPERATOR: NORTHWEST NATURAL GAS COMPANY
WELL: O/M12-22-65 SIDETRACK
LOCATION: SECTION 22, T6N, R5W
COUNTY: COLUMBIA COUNTY
STATE: OREGON
SPOT: 2642.28'S&1224.03'W OF NW1/4
ELEVATION: KB 565' GL 525'
FIELD: CALVIN CREEK GAS STORAGE FIELD

SPUD DATE: AUGUST 25, 1997
DATE: SEPTEMBER 9, 1997
DATES LOGGED: 8/25/97 - 9/9/97
DEPTHS LOGGED: 50' - 2337'
LOGGERS: ED PERRY, ERIC HELLER
DRILLING FLUID: LOW SOLIDS POLYMER
DRILLING RIG: TAYLOR RIG #7

LOG TYPE: MUD LOG **SCALE:** 1:240 (5.0 INCH/100 FT)

REMARKS:

LITHOLOGIES

SANDSTONE	SILTSTONE	SHALE	COAL	BENTONITE
LMESTONE	DOLomite	ANHYDRITE	CHERT	SALT
CONGLOMERATE	TUFF	ALLUVIUM	METAMORPHIC	CLACIAL TILL
DARK CHERT	WELDED TUFF	ARGILLACEOUS LIMESTONE	LIME MUDSTONE	CRYSTALLINE LIMESTONE
LIME BOUNDSTONE	LIME GRANSTONE	LIME PACKSTONE	LIME WACKSTONE	DOLOMITIC LIMESTONE
CALCAREOUS DOLOMITE	ARGILLACEOUS DOLOMITE	DOLOMITE MUDSTONE	CRYSTALLINE DOLOMITE	DOLOMITE BOUNDSTONE
DOLOMITE GRANSTONE	DOLOMITE PACKSTONE	DOLOMITE WACKSTONE	SHALY SANDSTONE	CLAYSTONE
GRAY CLAYSTONE	COLORADO CLAYSTONE	VOLCANICS	BRIGHT COAL	INTERMEDIATE COAL
DULL CDAL	COALY SHALE	NON COAL	GRANITE	BRECCIA
MARL	DOLOMITE MARL	CARBONACEOUS SHALE	CHALK	GYPSEUM
UNABLE TO INTERPRET	NO SAMPLE	BLACK SHALE	COLORADO SHALE	GRAY SHALE
SILTY SHALE	SILTSTONE			

MODIFIERS

ANHYDRITE STRINGERS	ALGAE LAMINATED	ALGAE NON-DESCRIBED	ALGAE DOT/DOT	ALGAE SKELETAL	AMPHIPHORA
ANHYDRITE	ARGILLACEOUS	ARGILLITE GRAIN	BELEMNITE	BENTONITE	BIOCLAST/FRAGMENTAL LIMESTONE
BRACHIOPOD	BRECCIA	BRYOZOA	CALCAREOUS	CARBONACEOUS FOALS	CEMENTING FIBROCLASTS
CEPHALPOD	CHELT DARK	CHELT LIGHT	CHELT TRIPOLITIC	CHORINID	CORAL
CRINOID	CRYSTALS	DOLOMITE STRINGERS	DOLOMITE	DYSPISM DYSFORMS	FELDSPAR
FERRUGINOUS	FERRUGINOUS GRAINS	FERRUGINOUS STRINGERS	FERRUGINOUS	FORAMINIFERA	FOSSILS
FRACTURES	GASTROPOD	GLAUCONITE	GYPSEFEROUS	MARLSTONE	HEAVY/DARK MINERALS
INTRACLASTS	KAOHLIN	LIMESTONE STRINGERS	LIMONITE	MARLSTONE, CALCAREOUS	MARLSTONE, DOLOMITE
MICACEOUS	NODULARS	ODOLITES	OSTRACOD	PEBBLES	PELECYPOD
PELLETS	PHOSPHATE PELLETS	PISOLITE	PLANT REMAINS	PYRITE	SALT CRYSTALS/INFILL
SAND GRAINS	SANDSTONE STRINGERS	SANDY	SCAPHOPOD	SHALE LAMINAE	SILICEOUS
SILTSTONE STRINGERS	SILTY	SLICKENSIDE	SPORES	STROMATOPOROID	STYLOLITE
TUFFACEOUS					

POROSITY/SORTING/ROUNDNESS SYMBOLS

X INTERCRYSTALLINE INTERGRANULAR	V VUGGY	F FRACTURE	◇ INTERDOLITIC	P PINPOINT	Ω ORGANIC
Q MOLDIC	* EARTHY	□ FENESTRAL			
A ANGULAR	o SUBANGULAR	R ROUNDED	r SUBROUNDED		
W WELL	M MEDIUM	P POOR			

ENGINEERING SYMBOLS

BIT CHANGE	LOST CIRCULATION	CASING	CASING	SIDEWALL CORE	SIDEWALL CORE
WIRELINE TEST	WIRELINE TEST	↑ GAS TO SURFACE	↑ OIL TO SURFACE	WATER TO SURFACE	EVEN STAINING
SPOTTED STAINING	DEAD OIL	○ QUESTIONABLE	● OIL SHOW	GAS SHOW	OIL AND GAS SHOW
CONNECTION GAS	TRIP GAS	⊖ MIDNIGHT DEPTH	⊖ MIDNIGHT DEPTH	CONNECTION	OFF BOTTOM
NORMAL FAULT	REVERSE FAULT	⤴ OVERTURNED STRATA			

ABBREVIATIONS

CB - CORE BIT	DST - DRILL STEM TEST	NR - NO RETURNS	RRM - REVOLUTIONS/MIN
CG - CONNECTION GAS	DTG - DOWNTIME GAS	NS - NO SAMPLE	RR - RE-RUN
CO - CIRCULATE OUT	LAT - LOGGED AFTER TRIP	PP - PUMP PRESSURE	SLM - STEEL LINE MEASURE
SPM - STROKES/MIN	TC - TRIP GAS	WOB - WEIGHT ON BIT	

