

GEOLOGICAL WELL LOGGING

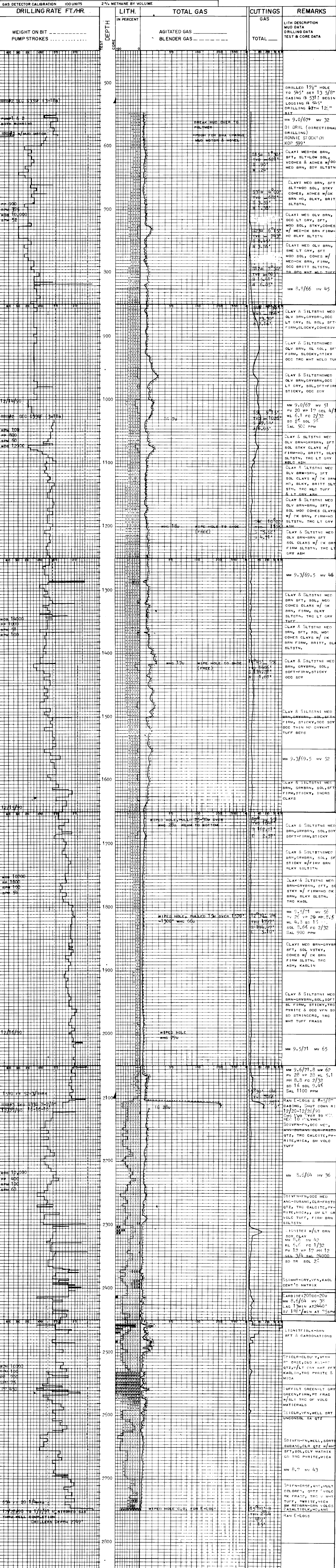
# strata-graphic CORP.

COMPANY NORTHWEST NATURAL GAS CO.  
 WELL L.W. 320-10  
 API WELL INDEX NO. 36-009-00270  
 FIELD MIST GRAVE  
 LOCATION 500.05' N, 2519.60' W FROM  
 E & CORNER SEC 10, T6N, R5W  
 ELEVATION: GL 790.25' KB 801.65'  
 COUNTY COLUMBIA  
 STATE OREGON  
 SPUD DATE 12/10/90 TIME 1:30PM  
 LOGGING DATE: FROM 12/13/90 TO 1/2/91  
 LOGGING DEPTH: FROM 531' TO 2749'  
 OP GEOL. & ENG. JACK MEYER TODD THOMAS  
 DRLG. FORMAN  
 DRILLING CONTR. TAYLOR DRILLING CO.  
 RIG NO. 5  
 TOOL PUSHER TONY MUELLER  
 MUD CONTR. BEAVER DRILLING FLUIDS  
 MUD ENG. RICK JONES  
 LOGGING GEOL. 1. JOHN HARRIS  
 2. JOHN LOKE  
 3. LEE FIELDER

ABBREVIATIONS		MUD DATA		LITHOLOGY		HOLE SIZE	
NEW BIT	NB	MUD WEIGHT	MW	SHALE	<input type="checkbox"/>	17 1/2"	TO 545'
RE-RUN BIT	RRB	MUD VISCOSITY	MV	CLAY	<input type="checkbox"/>	12-17/4"	TO 2115'
RE-TIP BIT	RTB	WATER LOSS	WL	SILTSTONE	<input type="checkbox"/>	7-7/8"	TO 2749'
CORE BIT	CB	SAND %	SD	SDY SLTSTN	<input type="checkbox"/>		
CHECK FLOW	CF	SALINITY	SAL	SAND	<input type="checkbox"/>		
CIRCULATE OUT	CO	RESISTIVITY	RM	CALCAREOUS	<input type="checkbox"/>		
TRIP GAS	TG	FILTRATE RESIS.	RF	SS SHELL	<input type="checkbox"/>		
CONNECTION GAS	CG	PLASTIC VISC.	PV	CONGLOMERATE	<input type="checkbox"/>		
WIPE HOLE GAS	WHG	YIELD POINT	YP	LIGNITE	<input type="checkbox"/>		
NO RETURNS	NR	SOLIDS	SOL	LIMESTONE	<input type="checkbox"/>		
LOG AFTER TRIP	LAT	PH	PH	DOLomite	<input type="checkbox"/>		
DRILL STEM TEST	DST			VOLCANIC	<input type="checkbox"/>		

SYMBOLS	
	CASING SHOE
	SIDEWALL CORE

GAS DETECTOR CALIBRATION		100 UNITS		2% METHANE BY VOLUME	
DRILLING RATE	FT./HR.	LITH.	IN PERCENT	TOTAL GAS	
WEIGHT ON BIT	-----			AGITATED GAS	-----
PUMP STROKES	-----			BLENDER GAS	-----



12/27/90 TO 1/2/91 WIPED GAS TAPED WELL COMPLETION DRILLERS DEPTH 2749'