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Tulsa, Oklahoma 74136-6378

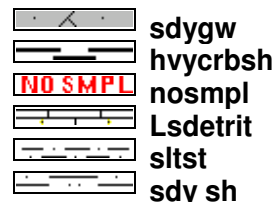
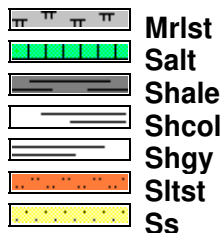
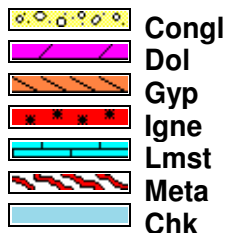
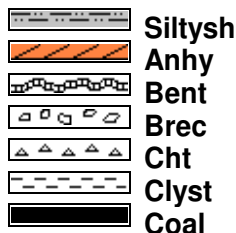
phone 918.925.9739

fax 866.534.4559

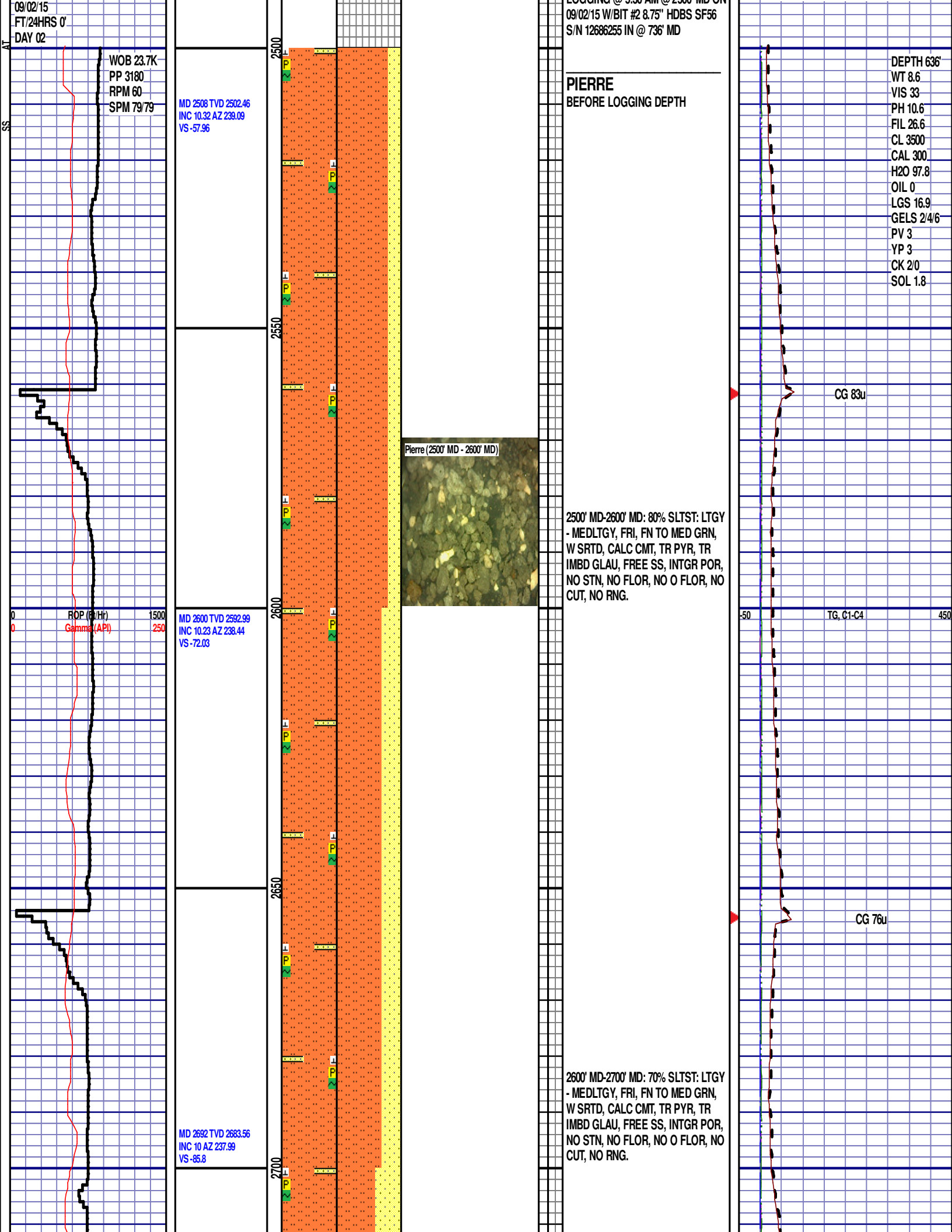
WWW.HZMUD.COM

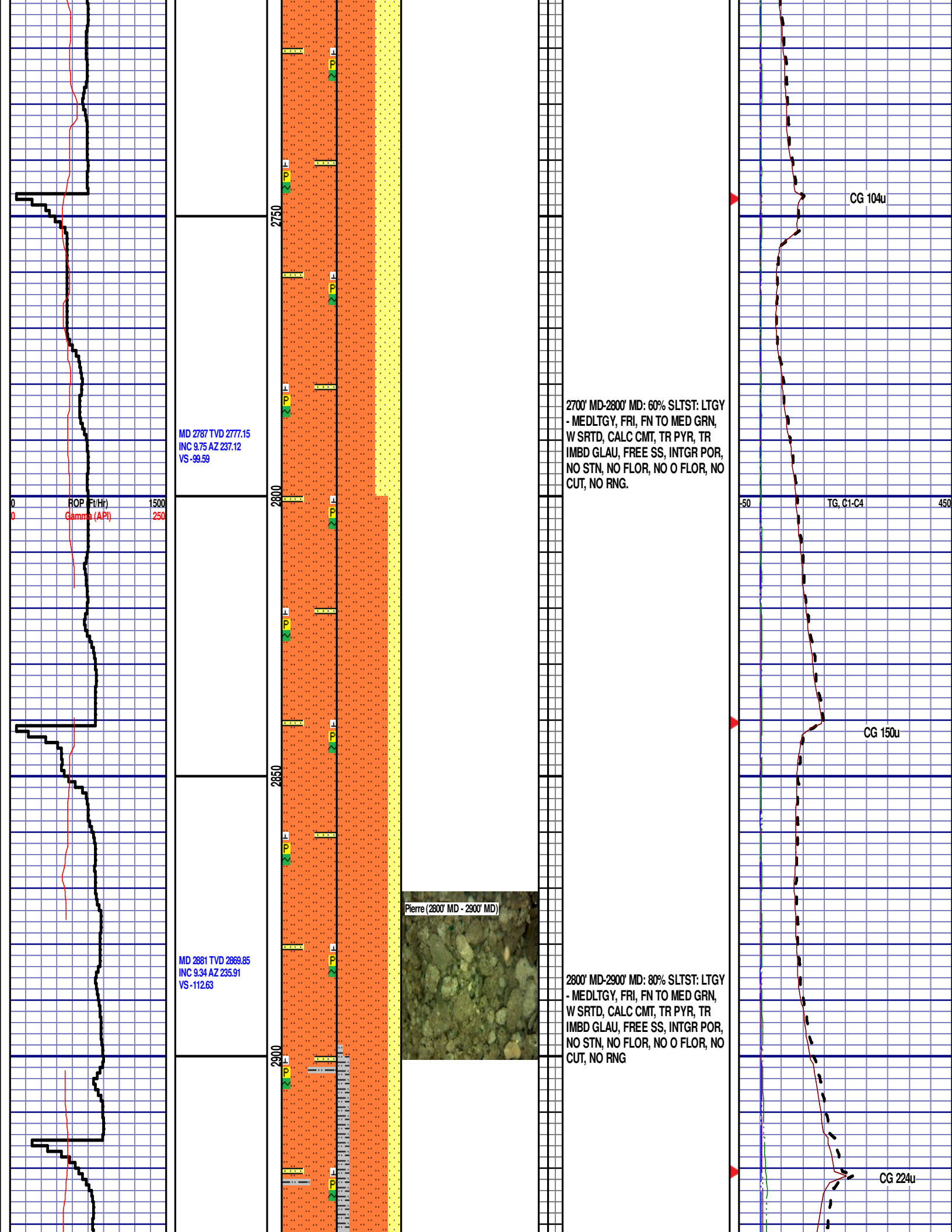
Customer Information	Well Information
<p>Operator: Noble Energy Inc. 1625 Broadway Suite 2200 Denver, Colorado 80202</p> <p>Geologist: Renee Clackler Noble Energy Inc.</p>	<p>Well Name: Wells Ranch AE32-655</p> <p>Location: 32-T6N-R62W 2047' FNL, 650' FWL</p> <p>County: Weld State: Colorado</p>
Mud Logging Details	
<p>Logger: Sam Stelzer & Adam Tross</p> <p>Log Interval: 2500' MD to 6500' MD</p> <p>Start Date: September 1, 2015</p> <p>Release Date: September 6, 2015</p>	<p>Drilling Rig: H&P 321</p> <p>Total Depth: 16000' MD</p> <p>TD Date: September 6, 2015</p> <p>Formation: Niobrara B</p> <p>KB Elevation: 4727'</p> <p>GR Elevation: 4757'</p> <p>API Number: 05-123-41730-0000</p>

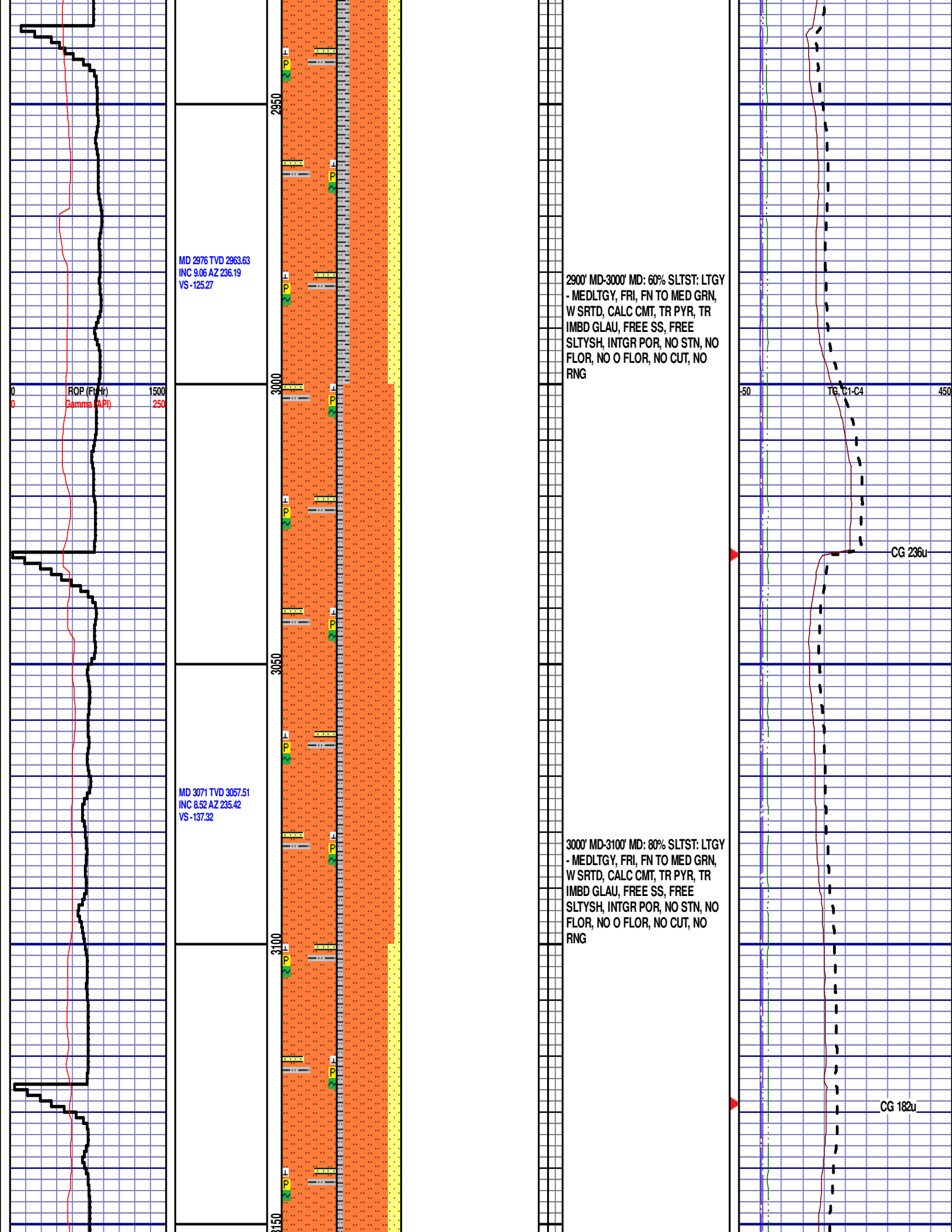
ROCK TYPES



ROP (Ft/Hr) Gamma (API)	Drill Depth v. Time	Survey Data	Depth	Lithology	Lithology Percentages	Sample Photographs	Porosity	Geological Description	TG (1-8) C1 (units) C2 (units) C3 (units) C4 (units)	Total Gas, C1-C4
ROP (Ft/Hr) Gamma (API)	1500 250		24					NOBLE ENERGY INC. WELLS RANCH AE32-655 32-T6N-R62W 2047' FNL, 650' FWL WELD CO., CO	50	450
SLIDE=RED ROTATE=WHITE								H&P 321 LOGGERS: SAM STELZER ADAM TROSS CALLED OUT BY COMPANY MAN @ 5:00 PM ON 09/01/15. COMMENCED LOGGING @ 5:30 AM @ 2500' MD ON		
ROP SCALE: 0 TO 1500 GAMMA SCALE: 0 TO 250 (GAMMA DATA AS RECEIVED)									CONNECTIONS ARE MARKED WITH RED TRIANGLES	
-12:01 AM									GAS SCALE: -50u TO 450u (50 UNITS/DIVISION)	
									DRILLING ON WATER-BASED MUD	







MD 3165 TVD 3150.52
INC 8.11 AZ 238.06
VS -148.72

ROP (Ft/Hr)
Gamma (API)

1500
250

3200

3250

MD 3260 TVD 3244.49
INC 8.79 AZ 240.86
VS -160.78

3300

3350

MD 3355 TVD 3338.4
INC 8.55 AZ 232.79
VS -172.79

Pierre (3100' MD - 3200' MD)



3100' MD-3200' MD: 70% SLTST: LTGY
- MEDLTGY, FRI, FN TO MED GRN,
W SRTD, CALC CMT, TR PYR, TR
IMBD GLAU, FREE SS, FREE
SLTYSH, INTGR POR, NO STN, NO
FLOR, NO O FLOR, NO CUT, NO
RNG

3200' MD-3300' MD: 80% SLTST: LTGY
- MEDLTGY, FRI, FN TO MED GRN,
W SRTD, CALC CMT, TR PYR, TR
IMBD GLAU, FREE SS, FREE
SLTYSH, INTGR POR, NO STN, NO
FLOR, NO O FLOR, NO CUT, NO
RNG

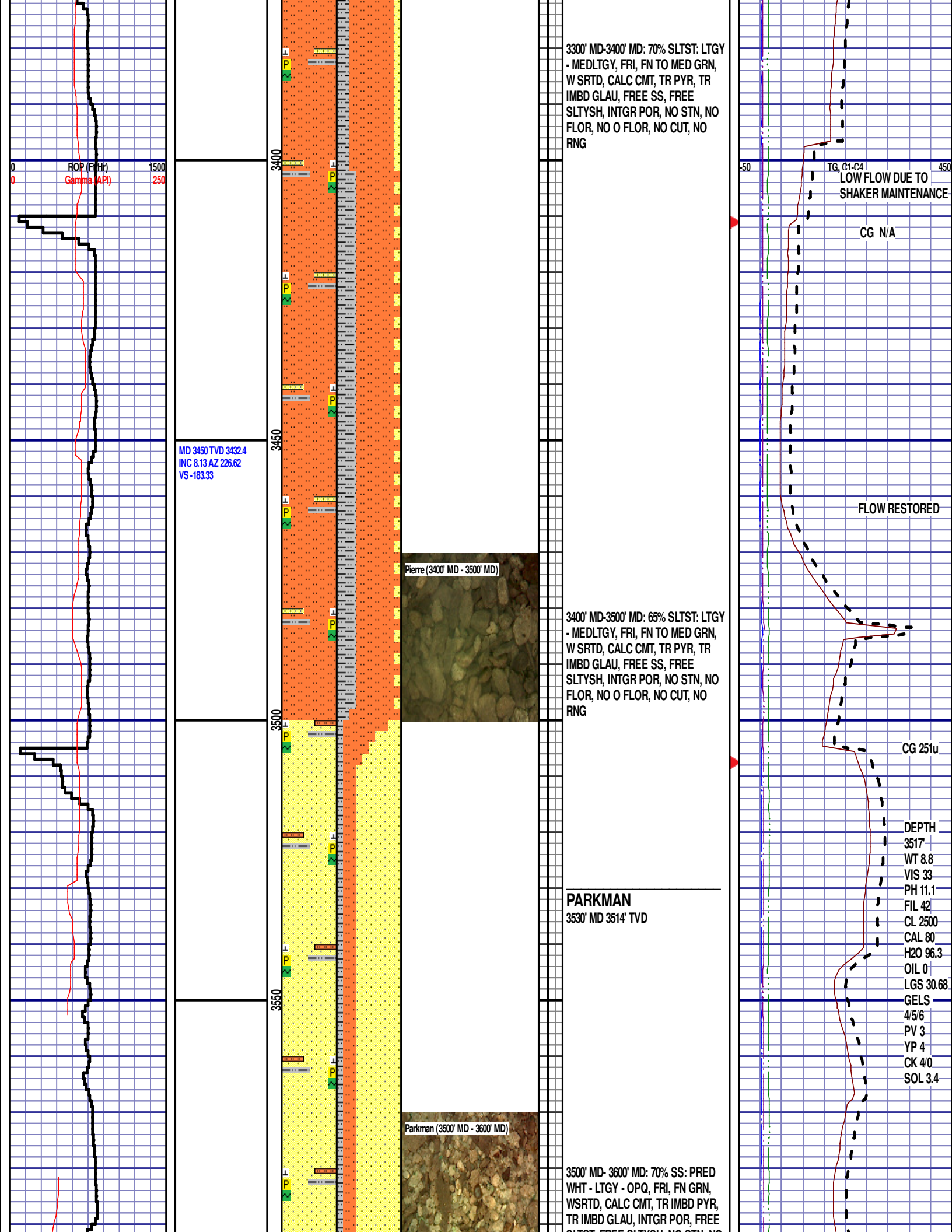
-50

TG, C1-C4

450

CG 129u

CG 196u



3300' MD-3400' MD: 70% SLTST: LTGY
- MEDLTGY, FRI, FN TO MED GRN,
W SRTD, CALC CMT, TR PYR, TR
IMBD GLAU, FREE SS, FREE
SLTYSH, INTGR POR, NO STN, NO
FLOR, NO O FLOR, NO CUT, NO
RNG

TG, C1-C4
LOW FLOW DUE TO
SHAKER MAINTENANCE

CG N/A

FLOW RESTORED

Pierre (3400' MD - 3500' MD)

3400' MD-3500' MD: 65% SLTST: LTGY
- MEDLTGY, FRI, FN TO MED GRN,
W SRTD, CALC CMT, TR PYR, TR
IMBD GLAU, FREE SS, FREE
SLTYSH, INTGR POR, NO STN, NO
FLOR, NO O FLOR, NO CUT, NO
RNG

CG 251u

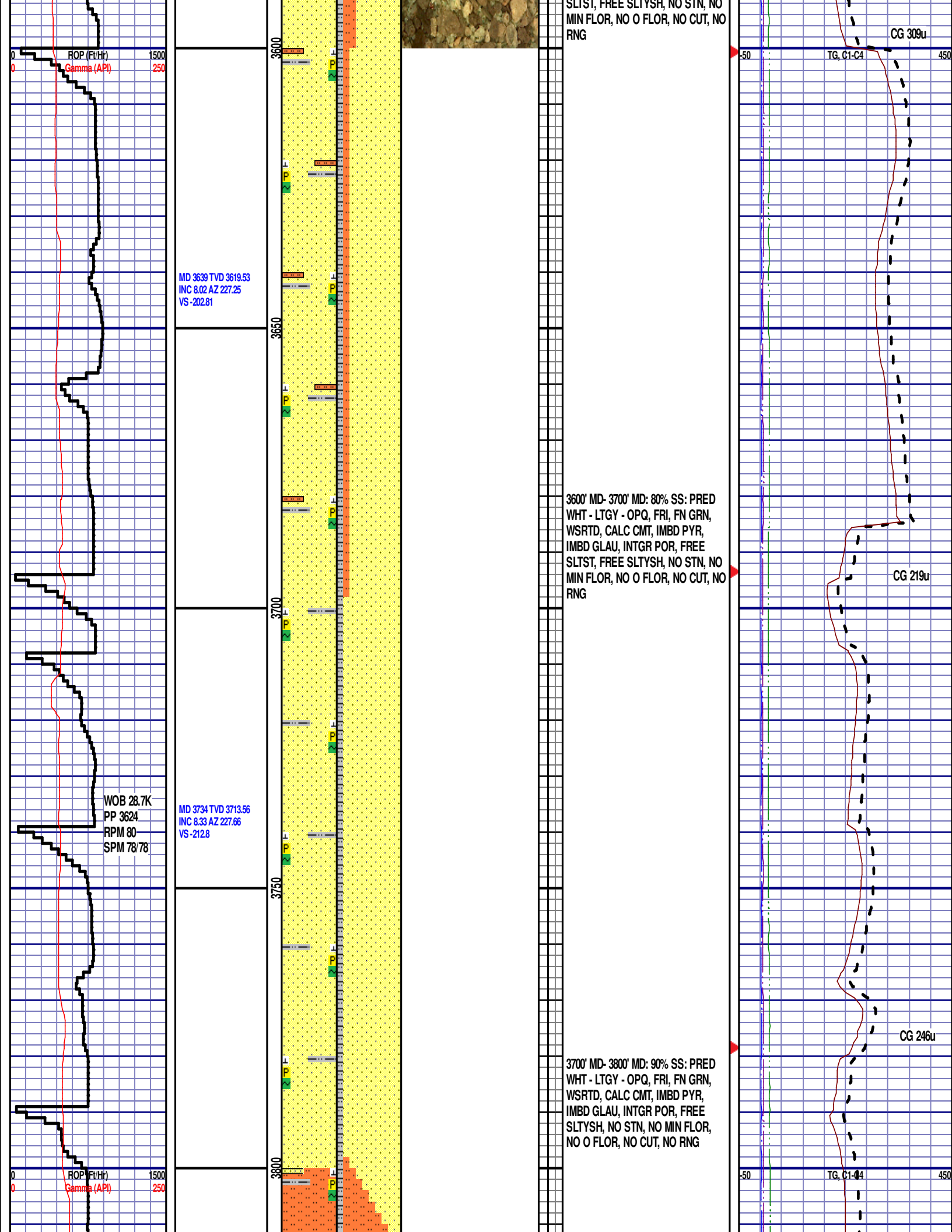
PARKMAN

3530' MD 3514' TVD

DEPTH
3517'
WT 8.8
VIS 33
PH 11.1
FIL 42
CL 2500
CAL 80
H2O 96.3
OIL 0
LGS 30.68
GELS
4/5/6
PV 3
YP 4
CK 4/0
SOL 3.4

Parkman (3500' MD - 3600' MD)

3500' MD- 3600' MD: 70% SS: PRED
WHT - LTGY - OPQ, FRI, FN GRN,
WSRTD, CALC CMT, TR IMBD PYR,
TR IMBD GLAU, INTGR POR, FREE
SLTST, FREE SLTYSH, NO STN, NO
FLOR, NO O FLOR, NO CUT, NO
RNG



MD 3828 TVD 3806.53
INC 8.7 AZ 227.6
VS -223.12

3850

3900

MD 3923 TVD 3900.44
INC 8.63 AZ 227.73
VS -233.75

3950

4000

MD 4018 TVD 3994.32
INC 8.99 AZ 231.43
VS -244.86

Parkman (3800' MD - 3900' MD)



3800' MD- 3900' MD: 70% SLTST:
LTGY - MEDLTGY, FRI, FN TO MED
GRN, W SRTD, CALC CMT, SANDY,
TR PYR, FREE SS, FREE SLTYSH,
INTGR POR, NO STN, NO FLOR, NO
O FLOR, NO CUT, NO RNG

CG 262u

3900' MD- 4000' MD: 80% SLTST:
LTGY - MEDLTGY, FRI, FN TO MED
GRN, W SRTD, CALC CMT, SANDY,
TR PYR, FREE SS, FREE SLTYSH,
INTGR POR, NO STN, NO FLOR, NO
O FLOR, NO CUT, NO RNG

CG 363u

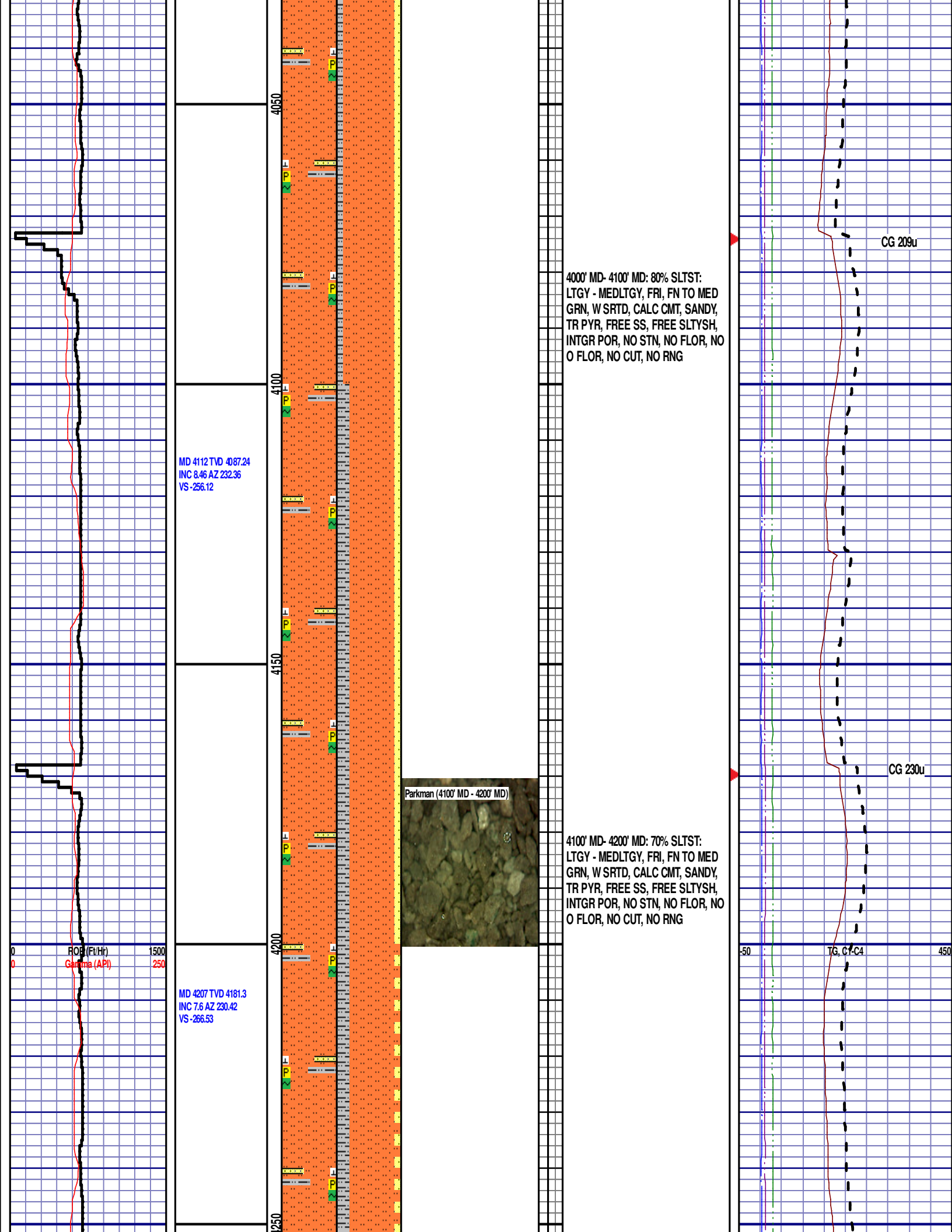
RO (Ft/Hr)
Gamma (API)

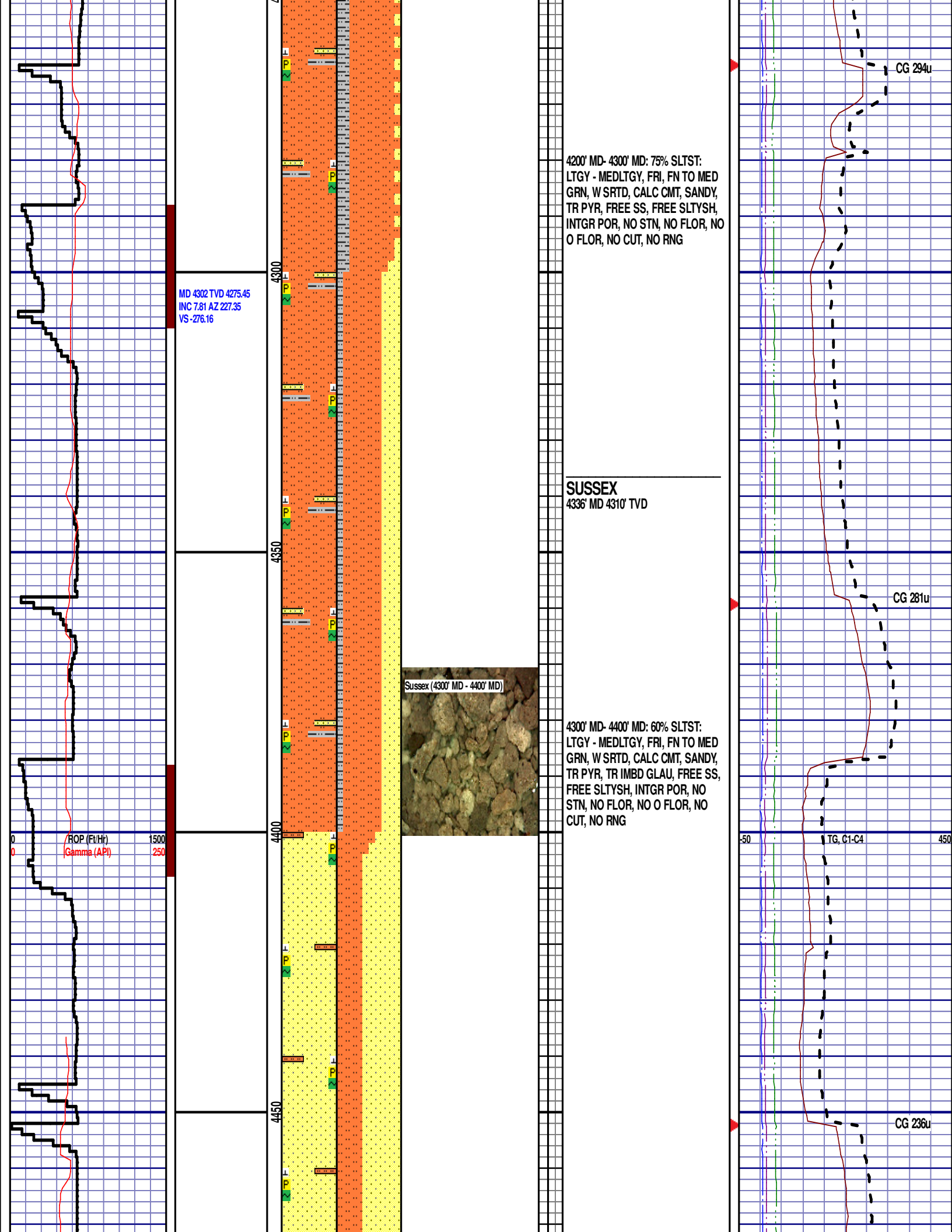
1500
250

-50

TG, C1-C4

450





MD 4491 TVD 4462.36
INC 9.23 AZ 233.54
VS -297.87

MD 4586 TVD 4556.28
INC 8.05 AZ 233.02
VS -309.35

MD 4680 TVD 4649.38
INC 7.83 AZ 233.01
VS -319.76

4500' MD- 4600' MD: 60% SS: PRED
WHT - LTGY - OPQ, FRI, FN GRN,
WSRTD, CALC CMT, FREE SLTST,
IMBD PYR, IMBD GLAU INTGR POR,
NO STN, NO MIN FLOR, NO O
FLOR, NO CUT, NO RNG

4500' MD- 4600' MD: 80% SLTST:
LTGY - MEDLTGY, FRI, FN TO MED
GRN, W SRTD, CALC CMT, SANDY,
TR PYR, FREE SS, FREE SLTYSH,
INTGR POR, NO STN, NO MIN
FLOR, NO O FLOR, NO CUT, NO
RNG

Shannon (4500' MD - 4600' MD)



SHANNON

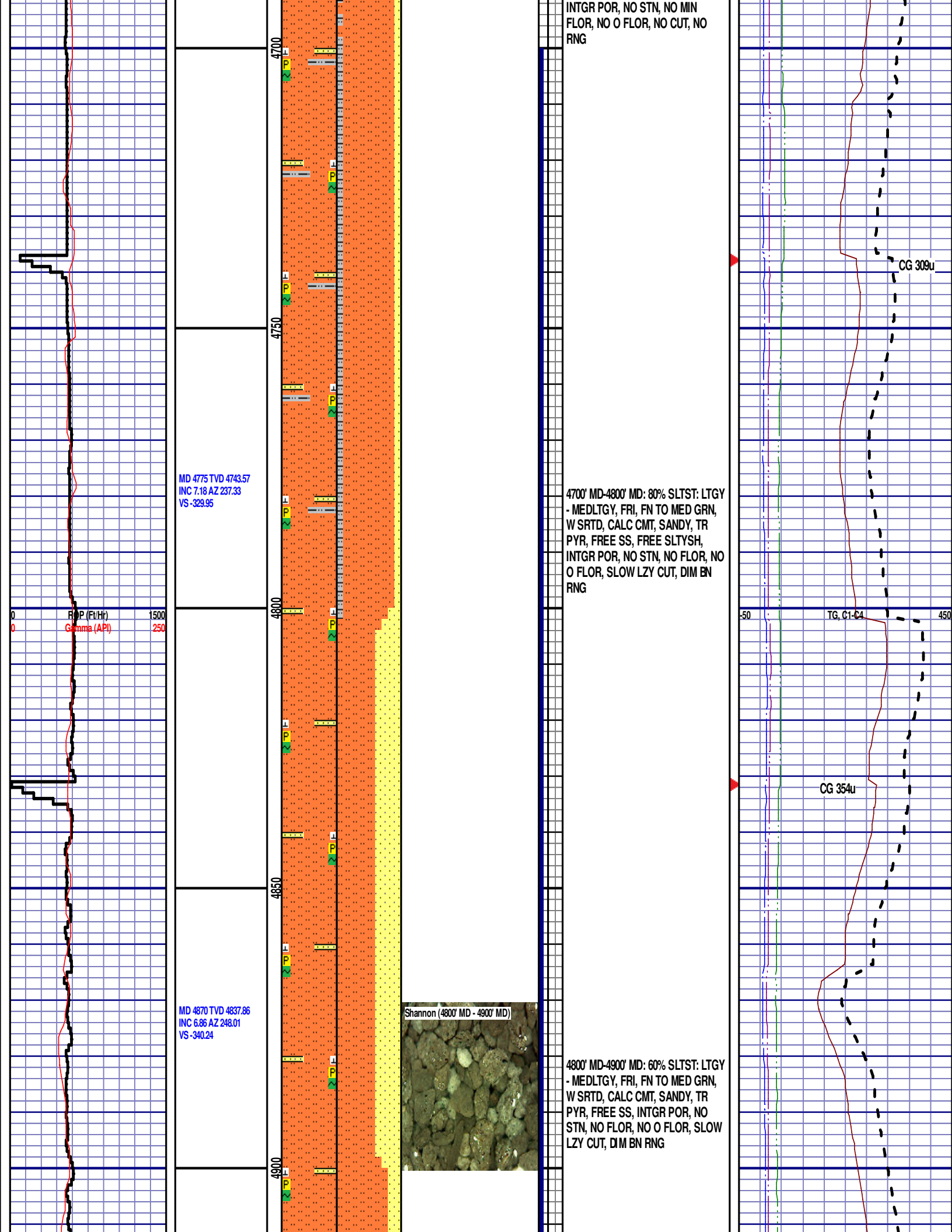
4583' MD 4550' TVD

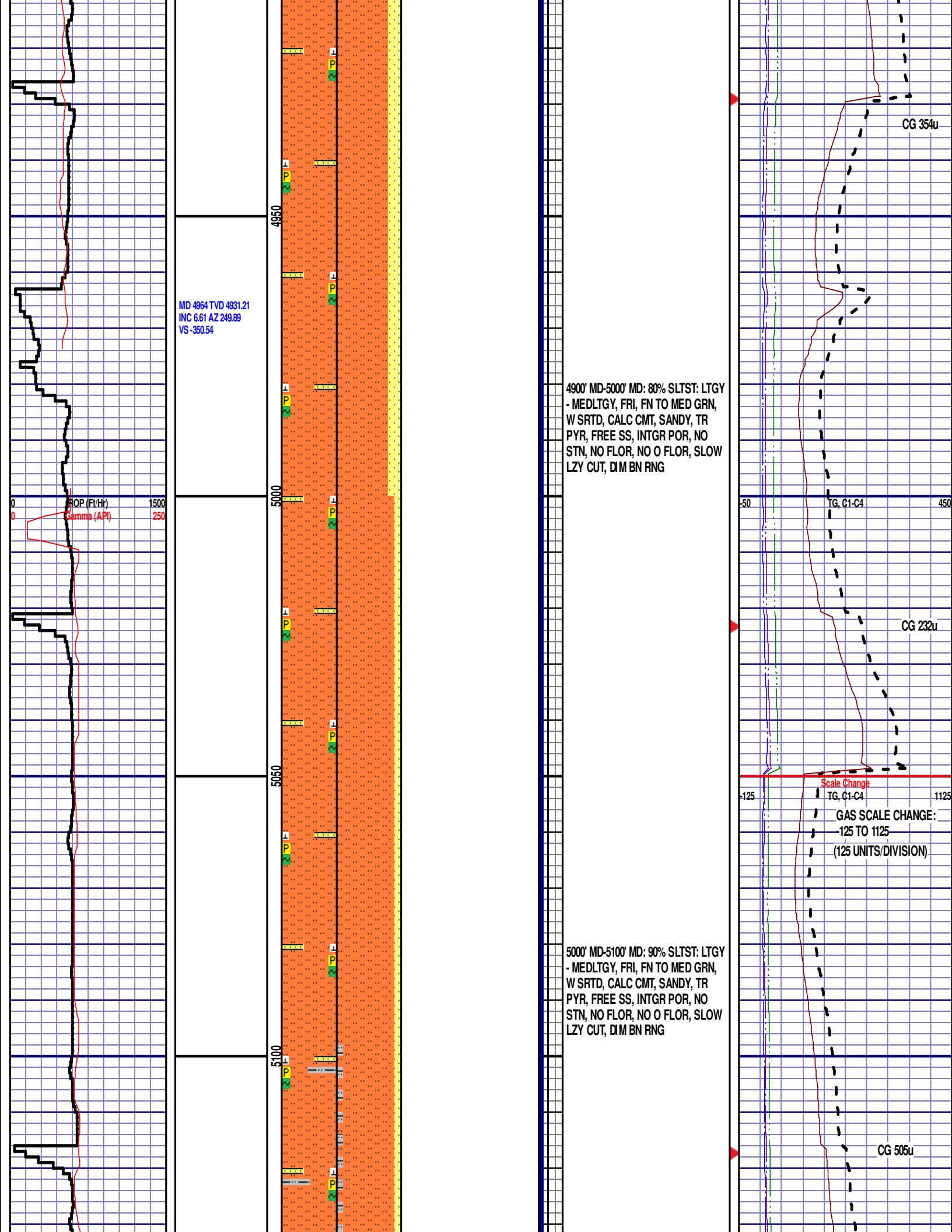
4600' MD- 4700' MD: 85% SLTST:
LTGY - MEDLTGY, FRI, FN TO MED
GRN, W SRTD, CALC CMT, SANDY,
TR PYR, FREE SS, FREE SLTYSH,

CG 326u

TG, C1-C4

CG 347u





MD 5154 TVD 5120.07
INC 5.94 AZ 242.74
VS -369.58

Shannon (5100' MD - 5200' MD)



5100' MD-5200' MD: 85% SLTST: LTGY
- MEDLTGY, FRI, FN TO MED GRN,
W SRTD, CALC CMT, SANDY, TR
IMBD PYR, TR FREE SLTSH, FREE
SS, INTGR POR, NO STN, NO FLOR,
NO O FLOR, SLOW LZY CUT, DIM
BN RNG

5200' MD-5300' MD: 75% SLTST: LTGY
- MEDLTGY, FRI, FN TO MED GRN,
W SRTD, CALC CMT, TR IMBD PYR,
FREE SS, FREE SLTYSH, INTGR
POR, NO STN, NO FLOR, NO O
FLOR, SLOW LZY CUT, DIM YLW
RNG

MD 5343 TVD 5308.39
INC 3.9 AZ 218.1
VS -382.29

CG 770u

CG 406u

