1-5

BELCO PETROLEUM CORPORATION OF PERU

Belco

mchavez

WORKING FILE GEOSCIENCES

GEOLOGICAL LOG

LITHOLOGICAL AND PALEONTOLOGICAL LOG

WELL Z2A-21-575-D-L06 (L06-21) WELL FILE

GEOLOGISTS: GEOPET Julio Ortiz N.
Ricardo Morante N.

PALEONTOLOGIST:
PALINOLOGYST:

BELCO PETROLEUM CORP. OF PERU
DPTO. TECNICO
20 SET. 1984
RECIBIDO

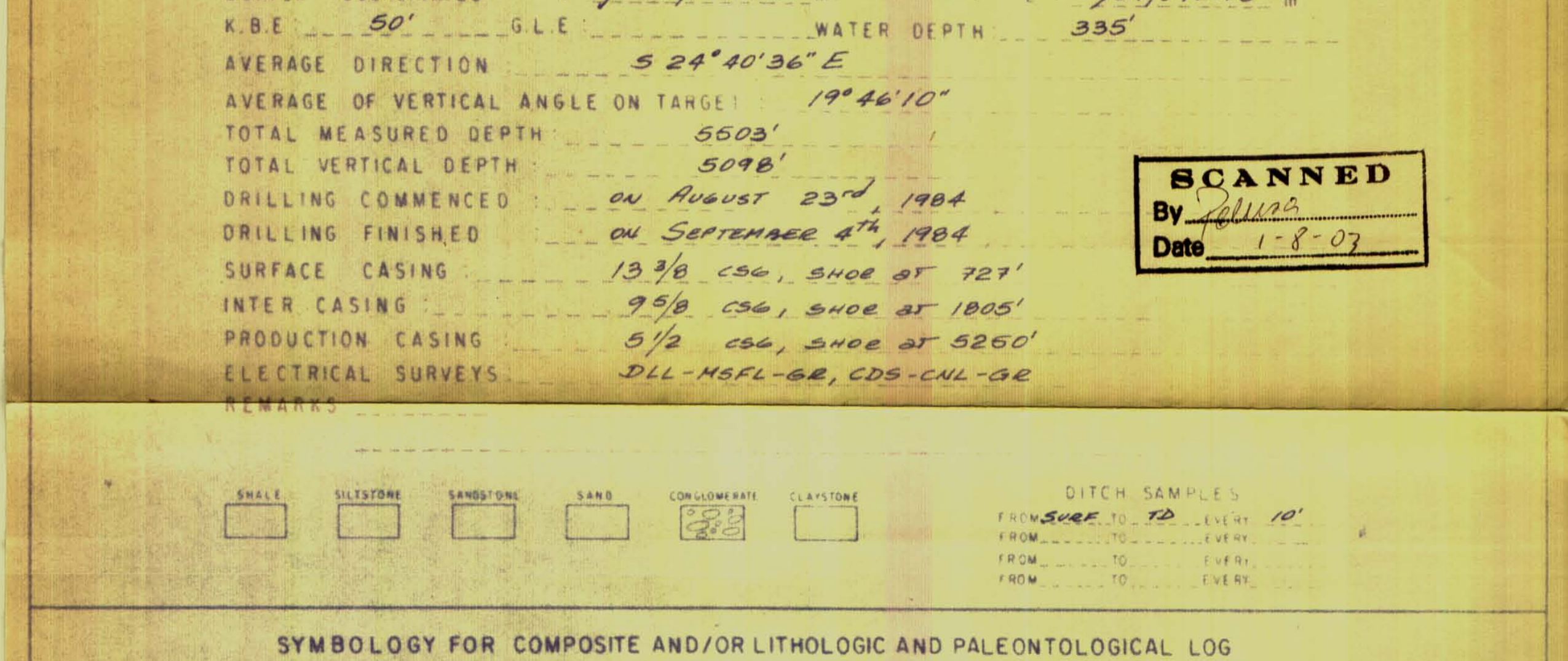
PETRO-TECH PERUANA S.A.
GEOLOGIST WELL FILE

WORKING FILE GEOSCIENCES

AREA: Lobitos offshore
BLOCK: Z2A PARCEL: 21
PLATFORM: "L06"
RIG CONTRACTOR: Storm Drill III
TYPE OF WELL: Development
SURFACE COORDINATES: N 1'598,626.04 m E 124,669.58 m
BOTTOM COORDINATES: N 1'598,118.55 m E 124,892.75 m
K.B.E. 50' G.L.E.: WATER DEPTH 335'
AVERAGE DIRECTION: S 24° 40' 36" E
AVERAGE OF VERTICAL ANGLE ON TARGET: 19° 46' 10"
TOTAL MEASURED DEPTH: 5503'
TOTAL VERTICAL DEPTH: 5098'
DRILLING COMMENCED: on August 23rd, 1984
DRILLING FINISHED: on September 4th, 1984
SURFACE CASING: 13 3/8 csg, shoe at 727'
INTER CASING: 9 5/8 csg, shoe at 1805'
PRODUCTION CASING: 5 1/2 csg, shoe at 5260'
ELECTRICAL SURVEYS: DLL-MSFL-GR, CDS-CNL-GR
REMARKS:

SCANNED
By Palma
Date 1-8-07

DITCH SAMPLES
FROM Surf TO TD EVERY 10'
FROM ___ TO ___ EVERY ___
FROM ___ TO ___ EVERY ___
FROM ___ TO ___ EVERY ___


SHALE
SILTSTONE
SANDSTONE
SAND
CONGLOMERATE
CLAYSTONE
SYMBOLOGY FOR COMPOSITE AND/OR LITHOLOGIC AND PALEONTOLOGICAL LOG
IGNEOUS METAMORPHIC & SEDIMENTARY ROCKS
SHALE
CLAYSTONE
SILTSTONE
SANDSTONE
CONGLOM.
LIMESTONE
CALCAREOUS SHALE
SILTY SHALE
SANDY SHALE
CALCAREOUS CLAYSTONE
SILTY CLAYSTONE
SANDY CLAYSTONE
CALCAREOUS SILTSTONE
SANDY SILTSTONE
CALCAREOUS SANDSTONE
SILTY SANDSTONE
SANDY LIMESTONE
DOLOMITIC LIMESTONE
CALCILUTITE
CALCARENITE
DOLOMITE
QUARTZITE
SCHIST
CHERT
SLATE
GNEISS
INTRUSIVE
EXTRUSIVE
TUFF
AGGLOMERATE/BRECCIA
NO SAMPLE
POROSITY TYPES
INTERGRANULAR I
VUGGY VU
FRACTURED FR
LEACHED L
CHALKY C
UNDETERMINED U
ACCESORIES
PYRITE
GLAUCONITE
DOLOMITE
CALCITE
GYPSUM
SHELL FRAGS
SLICKENSIDES
COAL / LIGNITE
MICA
MICROFOSSILS
CAVING
FAUNE AND ACCESORIES ABUNDANCE
> 30 V/abundant
21 30 Abundant
11 20 Common
6 10 Rare
0 5 V/rare
CASING
LOST CIRC.
D.S.T.
8000'
8080'
CONV. CORE
7100'
REC 20'
66 %
7130'
S.W.C.
8025'
RECOVERY (FILL THE CIRCLE FOR SHOWS)
8036'
NO RECOVERY
HOLE DEVIATION
CEMENT PLUG

DRILLING RATE MIN/FT
40 20 10 5 1 0
INTERPRETATIVE GRANULOMETRICAL CURVE
CGL+VC
C+M
F+VF
SH+SLTST
SS AND SD
BIT LOST CIRC GAS CUT MUD
SURVEYS TEST CORES
POROSITY TYPE GRADE
DEPTH
LITHOLOGY
TENTATIVE FM TOPS
ACCESORIES
FLUORESCENCE
COLOR & CUT OF FLUOR
NON DRILLING SAMPLE WITH SEA RETURNS WATER
13 3/8 CASING SHOE AT 727'
366' - 11:30 HRS 31.8'/HRA
751'
#2 - 7 7/8
#3 - 12 1/4
HTC - J-?
AUG 24TH 1984 AT 751
TALARA GROUP AT 751 FEET
372' - 04:30 HRS 82.6'/HRA
1123'
#4 - 12 1/4
HTC - X3A
715' - 09:00 HRS 79.4'/HRA
AUG 26TH 1984 AT 1403
9 5/8 CASING SHOE AT 1805'
AUG 27TH 1984 AT 1838
CHACRA FM AT 2030 FEET
AUG 29TH 1984 AT 2678'
AUG 30TH 1984 AT 3394'
AUG 31ST 1984 AT 4073'
RIO BRAVO SDY AT 3960 FEET
SEPT 1ST 1984 AT 4315'
SEPT 2ND 1984
4698'
#9 - 7 7/8
HTC-J3
SEPT 3RD, 84
5048'
#10 - 7 7/8
HTC-J3
455' - 18 hr 25.2'/hr
MW: 10.7
VISC: 46
WL: 3.8
PH: 11.5
sd: 1/8%
CHL: 96,000
5193' - 25° - S 8° E - 4819'
S: 1533
E: 748
RPM 90
WOB 45
SPM 105
SEPT 4th 84
5503' - 26° - S 7° E - 5098'
S: 1665
E: 765
DRILLING STOPPED ON SEPTEMBER 4th 1984 at 17:00 Hrs
TD 5503'
WHSLYEL'SH VSLBRI FLUOR SLOW STRMG CUT (IN RESID RING)
SLOW STRMG CUT WH'SH/SLYEL'SH ON CUT
WHYEL'SH SLBRI FLUOR SLOW-Mod CUT. WHSLYEL'SH ON CUT
WHYELSH SLBRI FLUOR SLOW STRMG CUT WH'SH ON CUT
wh sl bri fluor slw sl wk Gn'sh wh (on res ring)
Yell dull sl Gold fluor slw sl wk wh yelsh
Yell dull dim slw wk cut wh yelsh (on crushed)
Wh yelsh sl bri fluor slw wk cut wh yelsh (on res. ring)
A/A.
wh pale to sl bri fluor fr/slw wk cut wh yelsh (on res ring)
wh slyelsh fluor slw sl wk cut wh gnsh (on crushed)

L06-21

LITHOLOGICAL DESCRIPTIONS	PALEONTOLOGICAL DETERMINATIONS	PALYNOLOGICAL DETERMINATION

DRILLING SPUDDED ON AUG. 23rd 1984 AT 03:00 HRS.

NOTE: NON SAMPLE RETURNS DRILLING WITH SEA WATER.

SH: BRN'SH, GYBRN'SH, V SLMICROMIC, V-SLMICROCARB, SLCALC-CALC IN PT, SL ROUGH ON SURF, MASS, SBBLKY, SLFRM-SLSFT

SLTST: LTGY'SH, GY'SH, V-SLMICROMIC, V SLMICROCARB, SLCALC, GRAD TO SS, W/OCC CARB MAT & CALC INCL, FRM

SS: LTGY'SH, OCC WHGY'SH, W/GN & DK GRAINS, F50%, F-M 40%, M10%, SBANG, CALC CMT, MAINLY SHY MTX, W/CALC, OCC DOL & CARB MAT INCL, P-VIS POR, P-FR SRT, Hd

SH: BRN'SH, V SLMICROMIC, VSL [illegible] SL CALC, SL SLTY IN PT, SL ROUGH ON SURF, SLFRM-SLSFT SBBLKY.

SLTST: LTGY'SH, SLMICROMIC, SLMICROCARB, SLCALC, GRAD TO SS IN PT, W/CARB MAT & CALC INCL, FRM-SLFRM.

SH: BRN'SH, GYBRN'SH, VSLMICROMIC, V.SLMICROCARB, SLCALC, SL ROUGH SURF, W/OCC DOL INCL, SLFRM-SLSFT, SBBLKY

SH: BRN'SH, GYBRN'SH, VSL MICROMIC, SLMICROCARB, SL CALC, SLROUGH SURF, SL FRM-FRM, MASS, SB BLKY.

SLTST: GY'SH, LTGY'SH, SLMICROCARB, SLCALC, W/OCC CALC, GN GRAINS & CARB MAT INCL SLFRM-FRM.

SH: BRN'SH, OCC LTBRN'SH, V SLMICROMIC, SLMICROCARB, VSL-NON CALC, SMOOTH ON SURF W/V OCC LAM CARB INCL, SL FRM. SBBLKY.

SH: BRN'SH, VSLMICROMIC, V. SLMICROCARB, SLCALC, SLSLTY, SMOOTH-SLROUGH SURF W/V. OCC LAM CARB INCL, SL FRM, SBBLKY

SLTST: LTGY'SH, OCC GY'SH, VSL MICROMIC, SLMICROCARB, VSL-SLCALC, W/OCC GN GRAINS CALC & OCC DOL INCL, SLFRM

SH: BRN'SH, OCC GYBRN'SH, V. SL-SLMICROMIC, V.SLMICROCARB, VSL-SLCALC, BENT IN PT, SMOOTH SURF, SL FRM-FRM IN PT, SBBLKY.

SLTST: LTGY'SH, VSLMICROMIC, SLMICROCARB, SL CALC, W/OCC CARB MAT & CALC INCL. SL FRM-SLSFT IN PT.

SH: BRN'SH, OCC GYBRN'SH, V. SLMICROMIC, V.SLMICROCARB, MASS, SL SLTY IN PT SMOOTH SURF, FRM-SL SFT, SBBLKY

SH: BRN'SH, GYBRN'SH, OCC GY'SH, VSL MICROMIC, V SLMICROCARB, VSLCALC, SL SLTY IN PT, MASS, FRM, SBBLKY.

SLTST: LTGY'SH, GY'SH, VSL MICROCARB, SLCALC, GRAD TO SS IN PT, W/OCC CALC, GN GRAINS & DOL INCL, SL FRM.

SH: GYBRN'SH, BRN'SH, GY'SH SLMICROMIC, SLMICROCARB VSL CALC, MAINLY SMOOTH SURF, Mod SFT, SBBLKY-SBPLTY IN PT.

SH: GY'SH, LTGY'SH, SLMICROMIC, SLMICROCARB, VSL-NON CALC, MAINLY SMOOTH SURF SL-Mod SFT, SBBLKY-SBPLTY IN PT.

SS: WH'SH, OCC WHGY'SH, W/SOME GN GRAINS, VF-F 40%, F 50%, F-M 10%, SBANG CALC CMT, SLTY MTX, P-VIS POR, FR SRT, SL Hd.

SD: WH, HY, QTZ, F30%, F-M 30%, M40%, SBANG-ANG FR SRT.

SH: GY'SH, LTGY'SH, SLMICROMIC, SLMICROCARB, VSL CALC, MAINLY SMOOTH SURF SLFRM, SBBLKY.

SH: GY'SH, LTGY'SH, OCC GYBRN'SH, SLMICROMIC SLMICROCARB, VSL CALC, SMOOTH SURF, SL-Mod SFT SBBLKY - OCC SBPLTY.

SH: GY'SH, GYBRN'SH, MICROMIC, SLMICROCARB, VSL-NON CALC, SL SLTY IN PT, SMOOTH-SLROUGH SURF, SLFRM-SLSFT SBBLKY.

SLTST: LTGY'SH, VSLMICROMIC, VSLMICROCARB, SLCALC W/GN GRAINS, CALC & CARB MAT INCL., SL FRM.

SH: GY'SH, LTGY'SH, SLMICROMIC, SLMICROCARB, VSL-NON CALC, SL SLTY IN PT, SMOOTH-SLROUGH SURF, SLFRM-SLSFT SBBLKY.

SH: GY'SH, GYBRN'SH, VSL MICROMIC, SLMICROCARB, VSL-NON CALC, SL SLTY IN PT, SL SFT, SBBLKY, OCC SB PLTY.

SLTST: LTGY'SH, OCC GY'SH, VSL MICROMIC, SLMICROCARB SL CALC, W/OCC CARB MAT, DOL & CALC INCL, SL FRM.

SH: GY'SH, OCC GYBRN'SH, SL MICROMIC, SLMICROCARB, VSL-NON CALC, MAINLY SMOOTH SURF, SLSFT, SB BLKY.

SLTST: WHGY'SH, LTGY'SH, SLMICROCARB, SLCALC, GRAD TO SS IN PT, W/CARB MAT CALC & OCC DOL INCL, FRM, SL FRIAB IN PT.

SS: WHGY'SH, LTGY'SH, W/GN GRAINS VF-F 30%, F30%, F-M 40%, SBANG CALC CMT, SHY MTX, SLDRTY W/CARB MAT, CALC & MIC INCL P-VIS POR, FR SRT, SL FRIAB

SH: GY'SH, GYBRN'SH, OCC BRN'SH, VSL-SLMICROMIC, VSL MICROCARB, NON CALC SL SLTY IN PT, MAINLY SMOOTH SURF, SL-Mod SFT, SB BLKY-SBPLTY.

SH: GY'SH, SLMICROMIC, SLMICROCARB, NON CALC SMOOTH SURF, SL SFT, SB BLKY.

SS: WHGY'SH, LTGY'SH, OCC WHSLYEL'SH, W/DK MINLS, VF-F 30%, F50%, F-M 20%, SBANG, CALC CMT SLTY MTX, SLDRTY-DRTY, W/CALC, CARB MAT & DOL INCL, P-VIS POR, FR SRT, SL Hd-SL FRIAB.

SLTST: LTGY'SH, OCC GY'SH, SLMICROMIC, SL CALC, GRAD TO SS, W/CARB MAT & OCC MIC INCL, SL Hd-SL FRIAB IN PT.

SH: GY'SH, GYBRN'SH, SL MICROMIC, SLMICROCARB NON CALC, SL SLTY IN PT, SMOOTH-SLROUGH, SL SFT SLFRM IN PT, SBBLKY.

SLTST: WHGY'SH, LTGY'SH, V. SLMICROMIC, SLMICROCARB, SLCALC, GRAD TO SS, W/OCC CARB MAT INCL, SLFRM-SL FRIAB.

SH: GY'SH GYBRN'SH, BRN'SH, V.SLMICROMIC, VSLMICROCARB, VSL-NON CALC, SMOOTH SURF, SL FRM-SL SFT, SBBLKY.

SLTST: LTGY'SH, SLMICROCARB, SLCALC, GRAD TO SS IN PT, W/CALC & CARB MAT INCL SL FRM-SL SFT

SS: WHGY'SH, LTGY'SH, W/GN GRAINS, VF-F 60%, F 40%, SBANG, CALC CMT SHY MTX IN PT, W/CARB MAT, CALC & MIC INCL, SL DRTY, P-VIS POR, FR SRT SL FRIAB

SLTST: LTGY'SH, GY'SH, VSL MICROMIC, SLMICROCARB SLCALC, GRAD TO SS IN PT, W/GN GRAINS, OCC CARB MAT & CALC INCL, SL Hd-SL FRIAB IN PT

SH: GY'SH, GYBRN'SH, OCC BRN'SH, SLMICROMIC, SL MICROCARB, VSL-NONCALC SL SLTY, SMOOTH-SLROUGH SURF, SLFRM-SLSFT.

SLTST: GY'SH, LTGY'SH, VSLMICROMIC, VSL-SLMICROCARB, SL CALC, W/OCC GN GRAINS, CALC & CARB MAT INCL, SLHd

SS: WHGY'SH, LTGY'SH, W/GN GRAINS, VF-F50%, F50%, SBANG, CALC CMT, SLTY MTX, W/CARB MAT & CALC INCL, P-VIS POR, FR SRT, SL Hd-SL FRIAB.

SD: WH, HY, WHGN'SH, QTZ W/DK GRAINS, F50%, F-M 30%, M10%, M-C10%, SBANG, P-FR SRT

SS: WH'SH, WHGY'SH, W/GN & DK GRAINS, VF-F 40%, F30%, F-M30%, SBANG CALC CMT, SLTY MTX, W/CARB MAT INCL, FR VIS POR, SL FRIAB-FRIAB.

SD: WH, HY, GN'SH, QTZ, W/V OCC DK GRAINS, F40%, F-M 20%, M 20%, C10% SBANG P-FR SRT.

SS: WHGY'SH, LTGY'SH, W/SOME DK & GN GRAINS, VF-F 30%, F50%, F-M 20%, SBANG, CALC CMT, SLTY MTX SLDRTY IN PT, W/OCC CALC & CARB INCL, P-VIS POR, FR SRT SLHd-SL FRIAB.

SD: Why, Hy, occ Milky, Qtz grs, M 70%, C 30% grs, sb-rd/ang/sb-rd/ang, p. srt.

SS: Whysh, Wh-Gysh in pt, Qtz grs, F-M grs, p. vis por, p srt, fr calc cmt, sl drty, sl fri/mod. hrd.

SD: Why, Hy, Qtz grs, M 70%, C 30% grs, sb-rd/sb-ang, ang, p. srt, as above.

SS: Whysh, Wh-Gysh in pt, Qtz grs, F-M grs mainly, p. vis por, p/fr srt, calc cmt, sl drty, w/DK gn grs incls, sl fri/hrd.

SLST: Lt Gy, Gy-brnsh in pt, Frm, sl mic-mic, mod. mic-carb diss, calc, sb-bky/bky.

SS: Wh-Gysh, Qtz grs, UF 30%, F 50%, M 20% grs, grdg to slty in pt, p. vis por, p. srt, abnt calc cmt, sl hrd.

SH: Pred. Gy, sft/mod. frm, mic-carb diss, sl slty in pt, sb-fis, mod smooth on surf, sb-plty/plty.

SS: Whysh, Qtz grs, UF 30%, F 40%, M 30% grs, p. srt, p/fr vis por, abnt calc cmt, sl drty, hrd/occ sl fri

SD: Wh, Hy, Qtz grs, M 80%, C 20% grs, sb-rd/sb-ang/occ ang, v.p. srt.

SLST: Lt Gy, frm/sl hrd in pt, mic, occ mic-carb diss, VF grs, grdg to ss, blky.

SS: Wh-Gysh, Whysh in pt, Qtz grs, occ mic-pyr diss, UF 30%, F 50%, M 20% grs, v.p. vis por, p. srt, grdg to sdy slty, fr calc cmt, TT, sl hrd.

SLST: Wh-Gysh, Lt Gy, frm/occ hrd, mic-carb diss, VF grs, grdg to ss, calc, rough on surf, sb-blky.

SH: Gy, Lt Gy, sft/sl frm, mod. mic-carb, non calc, sl rough on surf.

SS: Whysh, Wh-yelsh in pt, Qtz grs, F 60%, M 40% grs, p. srt, fr vis por, mic-carb diss, mod. calc cmt, sl cln, loose/v. fri.

SD: Wh, Hy, occ Milky, Qtz grs, F 20%, M 60%, C 20% grs, sb-rd/sb-ang, occ ang, p. srt.

SLST: Wh-Gysh, Lt Gy in pt, frm, VF grs mainly, grdg to ss, mod. calc, sb-blky/bky.

SH: Lt Gy, Gy, sft, mic-mic, sl mic-carb diss, non calc, sb-plty, smooth on surf.

SS: Whysh, Wh-Gysh in pt, Qtz grs, F-M grs mainly, fr/p. srt, fr/p. vis por, fr calc cmt, sl drty, sl fri

SLST: Lt Gy, Wh-Gysh in pt, frm, sl fri, mic-carb diss, v. calc, w/mica incls, rough on surf, sb-blky.

SH: Gy, DK Gy, sft/sl frm, mic-carb diss, sl calc, mod. smooth on surf, sb-plty/plty.

SLST: Lt Gy, frm, UF grs, grdg to ss, calc, sb-blky/blky.

SH: Gy, Gy-brnsh, sft/sl frm, mic-mic, sl calc, sb-plty.

RAN GOWELL
DLL-MSFL-GR, CDS-CNL-GR