Biax Experiment *(rev. 27 June 2019)*

Exp. Name: P5346WG1nOsc
Operator: Wood, Manogharan
Example name: PXXXXBttMatNN

Date/Time: 10 Sept 2019
Hydraulics start: _____
Hydraulics end: _____

Sample Block Thickness w/ no gouge:
___ Steel 5x5 cm, _____mm
___ Titanium 5x5 cm, _____mm
___ Steel 10x10 cm, _____mm
___ Titanium 10x10 cm, _____mm

___Vessel (Small Single Direct)-Frits: _____
___Vessel (Large Single Direct)
___Vessel (5x5 Grooved)-Frits: _____
Vessel Side Blocks: _____Empty Block + frits: _____

For Current Calibrations see: ~gpfs/group/cjm38/default/Calibrations/

Layer Thickness (total on bench): _____mm Under Load: _____mm@sample_____
Material (Qtz, Granite, ?): WG, Intact
Particle Size, Size Distribution: _____

Load cells:

Contact area: 0.002233036 m²

Load cell name	*Calibrations (mV/kN)*		*Target stress (MPa)*	*Init. Voltage*	*Volt. @ load*
62 mm H	LG: 18.561	HG: 172.1	*Hor:* 1, 5, 10, 15, 20	0.68377	0.96
44 mm H	LG: 12.3	HG: 123.9	*Calibration: (V/MPa)* 0.2767		
22 mm H	Gain: 773.6				
62 mm V	LG: 19.73	HG: NA	*Vert:*		
44 mm V	LG: 32.3	HG: 309	*Calibration: (V/MPa)*		
22 mm V	Gain: 732.1				

Vessel Pressure:

Pore Fluid: _____

Calibrations (V/MPa)		*Pressures (MPa)*	*Initial Voltage*	*Voltage @ Load*
LG: 0.147	HG: 1.52	*PpA:*		
LG: 0.146	HG: 1.48	*PpB:*		
Gain : 0.1456		*Pc:*		
LG: NA	HG: NA	*Pdiff:*		

Data Logger Used: Ecan _____ Control File

Horz. DCDT: __ Long rod ✓ Short rod
(LR - HG: 0.622 mm/V LG: 1.27 mm/V
SR - HG: 0.64 mm/V LG: 1.32 mm/V)

Vert. DCDT: ____ TT 2" Gain: High/Low
(HG: 0.57 mm/V LG: 2.85 mm/V)

Purpose/Description: _____

Acoustics blocks used L-block, SDS

Temperature (°C): ____ Relative Humidity (%): ____

@ Hyd. Power Supply (HPS)
14. Tank Temp (°C): _____
15. Temp. Out (°C): _____
16. Pres. Out (psi): _____

Chilled water at HPS
1. Temp In (°F): ____
2. Pres. In (psi): ____
3. Temp Out (°F): ____
4. Pres. Out (psi): ____
5. Flow (lpm): ____

Chiller Unit
6. Panel Temp (°F): ____
7. Panel Pres. (psi): ____
8. Near Pres. In (psi): ____
9. Near Pres. Out (psi): ____

Process water at Chiller
10. Temp In (°F): ____
11. Pres. In (psi): ____
12. Temp Out (°F): ____
13. Pres. Out (psi): ____

load to ~1MPa, check WFs, ↗ ~2MPa, ↘ ~1MPa, lock, leave overnight

Piezo Stack Calibration (3.75)

#60818 plug in "Amp Out"

#61550 @ 5MPa, ↘ 1MPa, plug in PZT, ↗ 5MPa

#62000 check Piezo calibration.

#122690 ↗ 10kHz, RUN1. grounding issue w/ R59.

90's Rod time b/w oscillation

Part 1

#110 @ ~1MPa

#330 @ 5MPa

#500 ↗ 10kHz, RUN1

#~~7~~ 2020000 ↗ 100Hz Run 1.

#135750700 ↗ 200Hz Run 1.

#203705A3 ↘ 1Hz, ↗ 10kHz, RUN2

#25410000 F2; Run 2

#30110600 ↘ 1Hz, ↗ 10kHz, RUN3

#41026735 ↘ 1Hz, ↗ 100Hz, RUN4

#41379570 ↘ 1Hz, ↗ 100Hz, RUN5

#41~~4~~6~~5~~000 ↘ 1Hz, ↗ 100Hz Run6

#41640360 ↘ 1Hz

Part 2

#150 @ 10 MPa

#~~C~~ 350 ↗ 10kHz, RUN7

#20950343 ↘ 1Hz, ↗ 10kHz, RUN8

#31180376 ↘ 1Hz, ↗ 10kHz, RUN9

#43160407 ↘ 1Hz, ↗ 10Hz, RUN10

#43517590 ↘ 1Hz ↗ 100Hz Run11

#43638000 ↘ 1Hz ↗ 100Hz Run12

43771490 ↘ 1Hz

Part 3

#340 @ 15 MPa

#560 ↗ 10kHz, RUN13

#21380609 ↘ 1Hz, ↗ 10 kHz, RUN14

#33810784 ↘ 1Hz, ↗ 10kHz, RUN15

#40410816 ↘ 1Hz, 100 Hz, RUN16

#40793541 ↘ 1Hz, ↗ 100Hz, RUN17

→ locked due to some relief.

#46899600 Re-Run 17

#4700350 ↓1Hz, ↗100Hz, Run 18

Part 4

104 @ 20 MPa

#150 ↗10kHz, Run 19

#2047000 ↓1Hz ↑10kHz Run 20

#30755000 ↓1Hz ↑10Hz Run 21

#4221030 ↓1Hz, ↗100Hz, Run 22

#4258T000 ↓1Hz ↑100Hz Run 23

#42692080 ↓1Hz ↑100Hz Run 24

#4283327 ↓1Hz, reduce (os) to ~1MPa

Oscillations Protocol

Piezo-Stack Oscillations
Amp1 = [0.2, 0.4, 0.6, 0.4, 0.8, 0.4, 1.0]MPa @ 10 Hz
Amp2 = [0.2, 0.4, 0.6, 0.4, 0.8, 0.4, 1.0]MPa @ 100 Hz
Amp3 = [0.2, 0.4, 0.6, 0.4, 0.8, 0.4, 1.0]MPa @ 200 Hz
F1 = [10, 50, 100, 200, 250]Hz @ 0.4 MPa
F2 = [10, 50, 100, 200, 250]Hz @ 1.0 MPa
Biax Oscillations
Amp4 = [0.2, 0.4, 0.6, 0.4, 0.8, 0.4, 1.0]MPa @ 10 Hz 0.1 Hz
Amp5 = [0.2, 0.4, 0.6, 0.4, 0.8, 0.4, 1.0]MPa @ 10 Hz 1 Hz
Amp6 = [0.2, 0.4, 0.6, 0.4, 0.8, 0.4, 1.0]MPa @ 10 Hz
F3 = [0.1, 1.0, 10]Hz @ 0.4 MPa
F4 = [0.1, 1.0, 10]Hz @ 1.0 MPa

Experiment			
Run1: Amp1, Amp2, Amp3	***Run7:*** Amp1, Amp2, Amp3	***Run13:*** Amp1, Amp2, Amp3	***Run19:*** Amp1, Amp2, Amp3
Run2: F1, F2	***Run8:*** F1, F2	***Run14:*** F1, F2	***Run20:*** F1, F2
Run3: Amp2, F2	***Run9:*** Amp2, F2	***Run15:*** Amp2, F2	***Run21:*** Amp2, F2
Run4: Amp4, Amp5, Amp6	***Run10:*** Amp4, Amp5, Amp6	***Run16:*** Amp4, Amp5, Amp6	***Run22:*** Amp4, Amp5, Amp6
Run5: F3, F3	***Run11:*** F3, F3	***Run17:*** F3, F3	***Run23:*** F3, F3
Run6: Amp5, F4	***Run12:*** Amp5, F4	***Run18:*** Amp5, F4	***Run24:*** Amp5, F4