Project No. _____

TITLE _____ Book No. _____

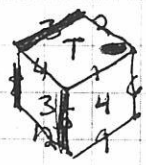
From Page No. ___ 3/21/2013 : San_308 : Deformation of Dry Olivine

Conical slit widths: front (upstream) 50 μm, back 40 μm, done by Whitaker et al.
Anvils: sintered diamonds in #1 & #4; both have a crack in them.
Spot size: estimated by previous lead user (Li, Weidner) as 40×40 μm

0250: SAN_308_0001.mcd Al_2O_3 E+2G Calibration, 1200s
x-centering is beautiful.

#1

.005" of shims top + bot of each block



		mm:		
B-T: 5.711 mm	1: 1.031	5: 1.353	9: 1.343	
1-3: 5.485 m	2: 1.270	6: 1.046	10: 1.301	
2-4: 5.544 mm	3: 1.447	7: 1.077	11: 1.284	
	4: 1.231	8: 1.263	12: 1.394	

#2

added .002" to bot of #2, bot + top of #3

B-T: 5.716 mm	1. 1.062	5. 1.234	9. 1.341
1-3: 5.422 mm	2. 1.253	6. 1.087	10. 1.290
2-4: 5.531 mm	3. 1.332	7. 1.030	11. 1.320
	4. 1.150	8. 1.203	12. 1.236

a little better, still not perfect, go with it.

To Page No. _

Witnessed & Understood by me,	Date	Invented by:	Date

Project No. _____
Book No. _____ TITLE _____

From Page No. ___ 3/21/13 : San 308 Continued

~0630 Beam dump during setup for Open Press Olivine - Fill LN_2

0001.tif image #1

1006 0002.med mid olivine open press. Using new Ken Baldwin GUI z=23.70, y=0.053, y range 0.1, z range 0.4 1200s; x centering checked several times beforehand, is excellent

1107 Close press -- surprised to see no gap in x-ray image, & responses at (some) DVRTs & oil P, also immediate response to McP. Somebody adjusted something

Logger started

McP fwd gingerly at 12%

1118 ~~.0002.tif image #2~~ .. concerned about symmetry of anvils & beam & center of sample - oops, never mind - was looking at piston!

1140 3T .0002.tif image #2 -- A-ok. Head for 20T

1202 4T McP to 20%

6.8T P vs t is concave downwards. Suspect Am still closing the big Al block & top of press -- ~~it was~~ & did push it in by hand, although it was very tight fit. This is clearly so: sample is climbing in x-ray beam but anvils aren't closing much

1224 McP to 50%

1233 At 15T stop. Is beam bridged -- something screwy

1236 P = 11T. Ok -- what did & forget to close... Ans: Al block w/ air P. Oops.

1258 Used ~30% of McP stroke; restroke; gap opens at bottom of sample column -- suspect possible line-of-sight blockage at top initially, based also on (too short) length of top machinable alumina.

1310 Gap does appear at top as McP continued to restroke, so no sight blockage.

1320 OK, start all over. McP restroked to 5%, top gap closed w/ electric pump, McP fwd at 20%.

1324 During this whole exercise, the sample compressed ~ -20μm & lengthened (just now) by ~ +12μm. It is now getting shorter for sure...

1536 Now at 1100°C. ~~Sample really strained a lot (!), maybe ~12%~~ [uncertain because pixels not

1546 Oops -- That was the piston. Sample A-ok, shortened < 2% yet calibrated]

1554 Calibrate image: 484 pixels/mm, using ~~mon~~ monitor, ruler, & table-3; ~130 mm/mm on monitor

To Page No. ____

Witnessed & Understood by me,	Date	Invented by:	Date
		Recorded by:	

Project No. _____

TITLE _____ Book No. _____

From Page No. ____ 3/21/13 San 308 (cont)

1610 Jogging diff rams ahead, 1 of 3 bad DVRTs just kicked in (Ch16)

1614 So jogged in ~~only~~ < 2.5mm on each ~~rampl~~ ram, & can see sample shorter on screen. Guess we're ready to go...

1623 rams fwd at 0.0006 mm/s 20T, 1373 K Start step (1)
start top & bot rams at 4.5mm disp. Hoping for 20%/~~to~~ 8 hrs

1627	image #10 mid ol			l_{ol} = 1.058 mm
1658	#11 "			
1717	.0003.med mid ol, using KB GUI (20.35, -0.446, 0.4, 0.1)	image #12		l_{ol} = 1.035
1741	.0004.med " " "	13		1.021
1804	.0005.med " " "	14		1.014
1821	.0006	15		1.002
1837	.0007	16		1.000
1853	.0008	17		0.992

2022	Image #18 l_{ol} = 0.955			
2034	Check beam centering -- acceptable, not perfect. Det10 ineffective			
2040	.0009.med mid ol,	(20.50, -0.512, 0.4, 0.1	19	l_{ol} = 0.948
2100	.0010.med mid ol,	(20.60, " " "	20	l_{ol} = 0.946
2118	.0011.med "	("	21	l_{ol} = 0.940
2139	.0012.med "	(20.7 " " "	22	l_{ol} = 0.928
2158	.0013.med	(	23	l_{ol} = 0.921
2218	.0014.med	(20.8, -767	24	l_{ol} = 0.915
2238	.0015.med	(20.9, -0.746 "	25	l_{ol} = 0.907
2257	.0016.med	(21.0, -0.755 "	26	l_{ol} = 0.893
2314	.0017	(	27	l_{ol} = 888
2335	.0018.med	(21.2, -0.929	28	l_{ol} = 0.882
2353	.0019.med	(21.1, -0.952	29	l_{ol} = 0.868
3/22 0013	.0020	(21.2, -1.022	30	l_{ol} = 0.860
0032	.0021	(21.3, -1.072	31	l_{ol} = 0.853
0055	.0022	(21.4, -1.139	32	l_{ol} = 0.847
0125	.0023	(21.4, -1.179	33	l_{ol} = 0.83[illegible]
0140	Stop diff Rams End Step (1)		34	l_{ol} = 0[illegible]

To Page No. ____

Witnessed & Understood by me,	Date	Invented by:	Date
		Recorded by:	

Project No. _____

Book No. _____ TITLE _____

From Page No. ____ 3/22 Scan 308 Continued

0150 McP to 8%, Target 70T
0156 24.2T McP to 6%
0245 43.5T McP to 5%
0317 54.4T to 4%

0423 @ 70T Begin heating to ~1100°C, ~285 W
0438 @ 1100°C
0457 Center in x, still ~19.5
0512 .0024 mid ol (21.15, -1.207, 0.4, 0) image #35 l_{ol}=.808

0536 Diff Rams Forward; Start Step (2), 0.001 mm/s, 70T, 1373K

0544 .0025 mid ol. (21.2, -1.267 " ") #36 l_{ol}=.802
0603 ~~.0026 " (21.23, -1.307 " "~~ #37 l_{ol}=.798
0603 Beam dump.
0639 Quick eyeball of x centering .. looks ok
0640 .0026 med mid ol (21.3, -1.307, 0.4, 0.0) image #38 l_{ol}=0.787 mm
0658 ~~y ens~~ spot ends up well off y center, have to move it 80 μm
0701 .0027 mid ol (21.4, -1.390, 0.4, 0.1) note - was unintentional #39 0.777
!!
0712 .. discover ✓ dropped a "0" from closed slit z, -0.2 instead of -0.02, stop at 200s
!! - stop at 620s, but SAVE. MED FILE! Det 10 is strong + fabric obvious + consistent
0718 .0028 (21.4, -1.420, 0.2, 0.0) #40 0.775
0738 .0029 21.6 ~~21.5~~, -1.56 " " ~~#45~~ #41 0.767
- can even see during scan that spot drifts into r.h. anvil. Don't really want to turn off ± Δz though..
0801 .0030 21.8, -1.700 " " start y far left; ends up ~ OK #42 0.760
0825 .0031 21.9, -1.812 " " " , ends up OK again #43 0.750
0844 .0032 22.05 -1.831, no scan - spot stays put! #44 0.744

0856 ~~not gett~~ strain rate not quite keeping up; ↑ ram speed 0.0010 → 0.0012 mm/s

0904 .0033 22.15, -1.900, 0.2, 0.0 #45
- hardly any z or y "drift"!

To Page No. ____

Witnessed & Understood by me, | Date | Invented by: | Date

Recorded by:

Project No. _____

TITLE _____ Book No. _____

From Page No. ____ 3/21/13 San 308 (cont)

Heater log

t	T(°C)	W	mΩ	
				following bits of 292, 289 (287 + 282, 282
1520	~400	101	68	20 T
1525	500	120	63	
1526	600	136	60	
1527	700	155	56	
1529	800	175	53	
1530	900	192	50	
1531	1000	211	48	
1533	1100	240	46	
1542	"	"	45	
1625	"	"	44	short step (1)
1803	"	"	44	
3/22 0145		Lunch		
0428	~400	112	49	
0429	~600	140	47	
0430	~800	183	44	
0436	~1000	244	40	
0438	1100	285	39	
0712	"	285	38	
1153	"	285	37	
1217		285		
1217:30		24		
1218:00		200		
:30		150		
:45		0		

To Page No.

Witnessed & Understood by me,	Date	Invented by:	Date
		Recorded by:	

Project No. _____

Book No. _____ TITLE _____

From Page No. ____ 3/22/13 San308 (cont.)

0925 .0034.med 22.10, -1.900, 0.2, 0.0 image #46
- a little bit of drift

0944 .0035.med 22.15, -1.940, 0.2, 0.0 -- spot starts a bit to the left of center #47
- apparent fabric of earlier still apparent, but seems to grade more smoothly from det to det. Earlier, dets 4-6 had had ~~been~~ almost the same overwhelming peak 7, while 3 & 8 (+beyond) had ~similar high peak 6. Biggest jump is still 4→3 and 6→7, just not as extreme as ~~to~~ in beginning of step (2).

- stripTool note: every since the speed change at 0856 hrs, the noise in the two diff ram P xducers has dropped (+stayed) way down.

1003 .0036.med 22.20, -1.96, 0.2, 0.0 (spot didn't drift much; start again slightly l.o.c) #48
1022 .0037.med 22.25, -1.978 " " " " #49
1039 .0038 no changes (!) #50
1055 .0039 " #51
1111 .0040 " #52
1129 .0041 " #53
1145 .0042 " #54
1201 .0043 " #55

1217 #56
1217 ~~Start~~ Stop rams, start cooling (see table on p83) End step (2)
1219 Quenched
1220 68.4T MCP to -4%
Note: diff ram pramps reached 51.1 mm
1225 63.4T Diff rams to -0.002 mm/s. Watch sample length w/ fine fiducials on monitor
1228 61.5T MCP to -5%
1234 56T rams to -0.003 mm/s
1244 48T MCP to -6%
1314 23T MCP to -8%; 1327 -10%; 1344 4.T MCP -20%, diff rams ~~-15~~ -0.004 mm/s
1358 1.2T to -50%, -0.05 mm/s
1400 0.7T clamp, stop diff rams, image #57
1432 .0044 open press, ~~and~~ wedges out mid of, beam centered; -, ", 0.4, 0.1 #58
1452 image #59 -- rotate 90°
1510 .0045 Al_2O_3, 600s.

To Page No. ____

Witnessed & Understood by me,	Date	Invented by:	Date
		Recorded by:	