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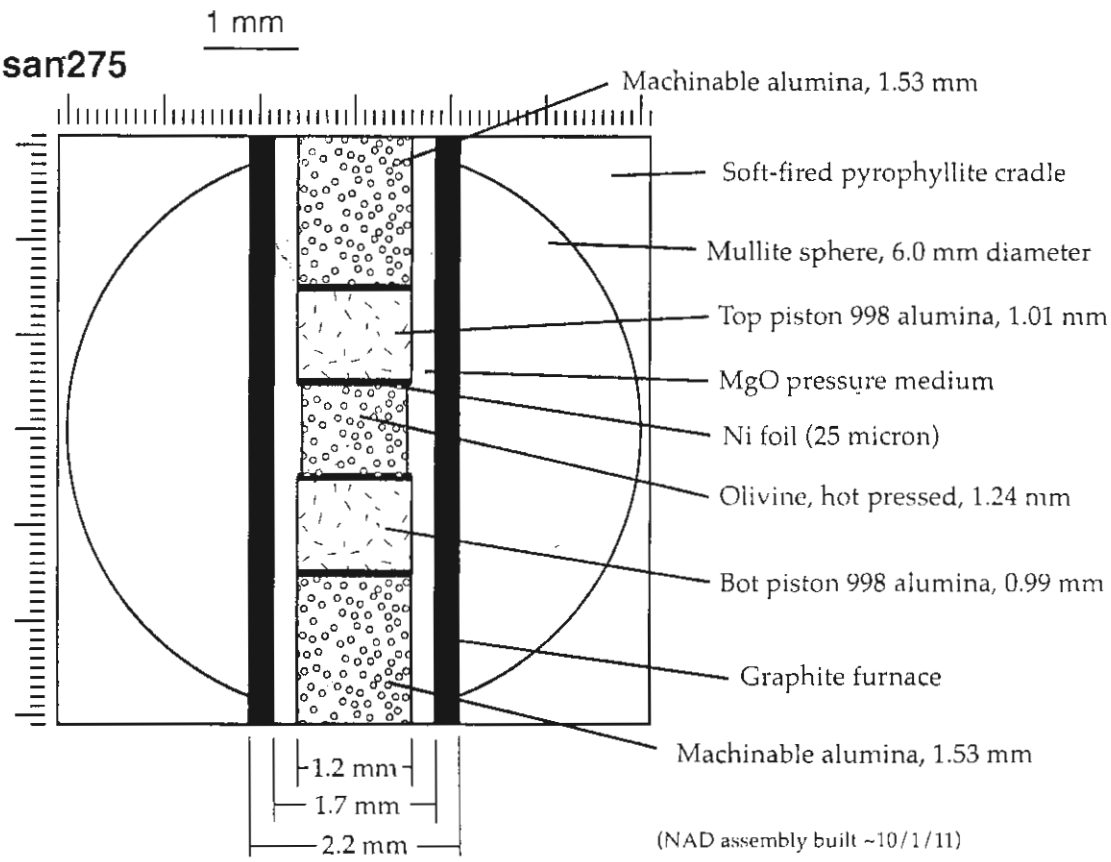
10/4/2011 San_275



[redacted]

More on sintered diamond: it is the last of the Rungwood Abrasives straight cut (as opposed to "tapered") anvils

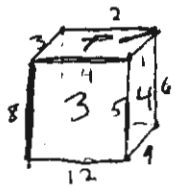
[redacted]

San_275_0001.med.

1838: 600s scan of Al_2O_3 standard E and 2θ calibration.

Bottom WC anvil and cBN replaced. Transparent anvil now SD

LLX measures Cu cube



T-B: 5.851 mm
1-3: 5.439 mm
2-4: 5.475 mm

1. 1.361	5. 1.312	9. 1.200	
2. 1.235	6. 0.884	10. 1.047	
3. 1.356	7. 0.971	11. 1.281	
4. 1.185	8. 1.266	12. 1.358	

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10/4/2011 San_275 (Continued)

2133 Open Press Olimice: imaging and diffraction scan. Prosilica
17.4, 17.4, 0, 0.2, 0.2 → 600s
Image saved: San_275_0001.tif

Press moved way off during diffraction. Delete .0002.med and rebuy

Have to use real "y" ~~and~~

2202 .0002.med (17.4, 17.4, -14.48, 0.2, 0.2)
.0001a.tiff taken

2252 Press closed McP to 20%, target 30T

2315 4.4T Logger started, 10s intervals. Playing with press ϕ to get transparent anvil out of image

2351 15.4T
2355 18.3T McP to 10% Diff rams closed, jogged.
0/5
0017 19.9T ← 20T was the setpoint, reset to 30T
0034 30T Begin heating to 1100°C according to San_274

Center in x looks like ~ -8.1

Gog Diff rams to build pressure

0147 .0003.med Take hydrostatic diffraction 600s
im #2 (11.7, 11.7, -14.3, 0.4, 0)

200 Diff Rams Forward. Begin Step (1): 30T, 1100°C, 0.001 mm/s

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10/5/2011 San_275 (Continued)

Heating

t	T (°C)	W	mΩ	
0039	0	0	0	30T
0044	400	131	51	
0047	600	178	47	
0049	800	217	42	
0051	1000	258	39	
0052	1100	281	38	
				281 / 3 22/03
1031	~100	30	46	100T
1038	~400	136	39	
1041	~600	188		
1044	~800	232	35	
1047	~1000	275	33	
1051	1100	303	32	
1131	"	303	32	

~1145 Beam recentered on x, otherwise ok, det 1 a bit poor, most others v. good, gap ~3x spot size

1520	"	303	31
1658	"	303	31
1826	"	303	31
1827	1000	275	32
1831	800	233	33
1834	600	189	35
1842	400	133	38

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1/5/2011 San_275 (Continued)

204	0004.med, 600s	(11.7, 11.7, -14.3, 0.4, 0)	image #3	
234	0005.med, 600s	(", ", -14.4, ", ")	image #4	b_{ss} 109mm
248	0006.med, "	(12.0, 12.0 ")	image #5	109mm
302	0007.med "	(12.5, 12.5, 14.5 " ")	image #6	108.5mm

Strange that the press position is moving so much.

Check x centering, still around -8.0

326	0008.med	" (13.0, 13.0, ", 0.2, 0)	image #7	106.5mm

hoping reduced z range helps buff

43	0009.med	" (13.55, 13.55, -14.6, ", ")	image #8	106mm
59	0010.med	" (14.2, 14.2, -14.7, 0.4, ")	#9	105mm

Patterns still sharp but not as consistent

check x-position again. patterns are rough, hard to tell. Try -8.9

425				
[illegible]	0011.med	" (14.85, 14.85, ", ", ")	0418 ⇒ #10	103.5mm
[illegible]	0012.med.	" (15.35, 15.35, ", ", ")	0428 #11	102.5mm
441			⇒ #12	101.5mm
454	0013.med	" (15.9, 15.9, ", ", ")	#13	100.0mm
507	0014.med	" (16.5, 16.5, -14.8, ", ")	#14	99.0mm
523	0015: med	" (17.2, 17.2, -14.8, ", ")	#15	98.5mm

Imaging computer crashes, restart and recenter in x still centered around x = -8.1, although det 1 is ambiguous and may disagree

612	0016.med	" (17.8, 17.8, -14.9, ", ")	#16	95.0mm
625	0017. med	" (18.25, 18.25, -14.9, ", ")	#17	94.5mm
637	0018. med	" (18.70, 18.70, -14.9, ", ")	#18	93.5mm
657	diff runs stop	End step (1)		
6	[but: 1 applies to 0657 hrs]			
700	image #19		#19	93.0mm

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10/5/11 San 275 (cont)

0720 Htr off, quenched over ~5 min

0724 McP to 6%. Set temporary target of 60T
0738 36T McP to 5%
0826 51T " " 6%. P target 100T
0905 72T " " 5%
0952 90T 4.5% l_{ol} = 93 mm; diff shows good ol on ~all detectors
1017 100T l_{ol} ~92, diff not so great anymore
~1145 Heated to 1100°C, recenter bean
1147 mid ol 0019.med Imaging_and_diffraction_scan_prosilica, 19.05, 19.05, -15.0, 0.4, 0.1 (compound z photo, comp. z diff, press y (not x-ray y!), ΔZ ± 0.2, ΔY ± 0.05)
image #20 l_{ol} = 92 mm

1202 diff ramsfwd at 0.001 mm/s 100T, 1100°C Start step (2)

1207	mid ol 0020.med, same scan params	#21	l_{ol} = 92
1221	mid ol 0021.med, "	#22	l_{ol} = 91
1235	" 0022.med, "	#23	l_{ol} = 91
1250	" 0023.med, "	#24	l_{ol} = 91
1302	" 0024.med, "	#25	l_{ol} = 90.5
1317	" 0025.med "	#26	l_{ol} = 90.5
1336	" 0026.med, manual operation, no scan	#27	l_{ol} = 90.0
1359	" 0027.med, manual again, no scan	#28	l_{ol} = 90.0
1414	" 0028.med, d+d scan working again (19.1, 19.1, —)	#29	l_{ol} = 89.5 (better exp)

IDL routine was just fixed by KJB to slow ΔZ velocity to the old slow speed. Has been at regular manual speed since San 273.

1429	mid ol	0029.med,	(19.2, 19.2, —)	#30	l_{ol} = 88.5
1444	"	0030.med,	(19.3, 19.3, —)	#31	l_{ol} = 88.5
1459	"	31	(19.35, 19.35, —)	32	l_{ol} = 88.0

- Just noticed tiny blip on striptool of Ps + DVRTs and heater at ~1456 hrs

1514	"	32	(19.4, 19.4, -15.06, —)	33	l_{ol} = 87.5
1529	"	33	19.45, 19.45, —	34	l_{ol} = 87.5
1544	"	34	19.5, 19.5, —	35	87.0
1559		35		36	86.5
1614		36		37	86.5
1631		37	19.6, 19.6, 15.14, —	38	85.5

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10/5/11 san275 (cont)

1644	mid of 0038.med	19.7, 19.7, -15.16 —	Image #39	l_{ol} = 85.5 mm
1659	39	19.75, 19.75 —	40	85.0
1714	40	19.85, 19.85, -15.2 —	41	84.5

recheck x centering of beam. Det 1 too weak to help, 5+9 ~ ok, ⇒ no change in x

1734	41	19.9, 19.9, -15.21 —	42	83.5
1746	42	20.0, 20.0, -15.25 —	43	83.0
1759	43	20.1, 20.1, -15.27	44	82.5
1814	44	20.25, 20.25, -15.31	45	82.0

1825 Image #46 l_{ol} = 82.0 mm
Stop diff rams End step (2)

1827 Cool to 1000°C
1831 800°C start McP at -3.5% (no movement at 3%)
1847 91 T heater off
1853 88 T diff rams to -0.0005 mm/s
1856 87 T McP to -4%
1901 84 T diff rams to -0.001 mm/s sample a hair short
1905 (now) 70 T blowout -- sample shortens to 70 mm
1909 McP to -5%, diff rams to -0.002 mm/s

1952 logger stopped

2013 26 T McP to -6%, diff rams to -0.004 mm/s
2253 0 T Press Open, taking open images

Image #47 and 48 (rotated 90°)

Post mortem: PCD anvil shattered. Others a-ok.

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