TABLE 3. EXPERIMENTAL DATA FOR COLD HYDROSTATIC EXTRUSION OF 7075 ALUMINUM ROUNDS[a]

Die Angle ------- 45 degrees Fluid -------- Castor oil

Item	Trial	Extrusion Ratio	Stem Speed, ipm	Billet Surface Finish microinches, rms	Billet Lubrication	Extrusion Pressure, 1000 psi				Length of Extrusion, inches	Comments
						Breakthrough		Runout			
						Stem	Fluid	Stem	Fluid		
1	251	20.0	20	50	L11	199.0	174.0	--	--	--	Small P_b peak; severe stick-slip
	250	20.0	20	110-130	L11	180.0	160.0	--	--	30 1/2	Small P_b peak; severe stick-slip
	249	20.0	20	270	L11	149.0	136.0	142.0	130.0	87 5/8	Small P_b peak; P_r uniform
	297	20.0	20	300	L11	146.0	133.5	140.0	128.0	49 1/2	Small P_b peak; severe stick-slip
	298	20.0	20	350	L11	142.0	130.0	141.5	129.5	40	Small P_b peak; severe stick-slip
	299	20.0	20	400	L11	146.5	134.0	137.0	125.0	44	Small P_b peak: severe stick-slip
	256	20.0	20	Grit[b]	L11	173.0	157.0	--	--	22 3/8	Severe stick-slip
	273	20.0	20	Grit	L11	165.0	161.0	--	--	26 9/16	Severe stick-slip
	283	20.0	20	Grit	L11	155.0	142.0	147.0	134.5	30	Moderate P_b peak; severe stick-slip
	255[c]	20.0	20	300	L17	162.0	159.0	--	--	0	P_b not reached
	271[c]	20.0	20	350	L17	239.0	225.0	--	--	0	P_b not reached
	272[c]	20.0	20	400	L17	274.0	248.0	--	--	0	P_b not reached
2	308	20.0	20	35-50	L17	199.0	186.5	--	--	17	Severe stick slip
	309	20.0	20	100-250	L17	167.0	153.0	139.0	124.5	50	Severe stick slip
	329	20.0	20	350	L17	148.0	135.0	143.0	131.0	41	Severe stick slip
	330	20.0	20	500	L17	149.0	136.0	147.0	134.5	51	Severe stick slip
	281	20.0	20	Grit	L17	(d)	149.0	(d)	130.0	43	Severe stick-slip
	282	20.0	20	Grit	L17	(d)	149.0	(d)	131.5	46	Severe stick-slip
3	310	20.0	80	100-120	L17	167.0	153.0	139.0	127.0	79	High P_b peak; P_r uniform
	317	20.0	80	60 on taper 260 on rest	L17	160.0	146.5	144.0	127.5	64	High P_b peak; P_r uniform
	311	20.0	20	Grit	L17	167.0	150.0	141.5	125.0	80	High P_b peak; P_r uniform
4	318	40.0	20	45-65	L17	197.0	180.0	157.0	142.5	90	High P_b peak; severe stick-slip
	319	40.0	20	Grit	L17	195.0	180.0	161.0	142.5	88	High P_b peak; severe stick-slip
5	327	60.0	6	Grit	L17	239.0	216.5	173.0	156.0	60	High P_b peak; severe stick-slip
	322	60.0	20	Grit	L17	217.0	202.0	171.0	153.0	81	High P_b peak; severe stick-slip
	324	60.0	20	60-100	L17	222.0	201.5	167.0	147.0	90	High P_b peak; severe stick-slip

Footnotes on following page.

Footnotes for Table 3

(a) The 7075 Al billets were in the annealed condition, except where noted.
(b) "Grit" refers to a billet surface obtained by grit blasting followed by vapor blasting.
(c) Trials 255, 271, and 272 were attempted with 7075 Al billets in the T6 condition.
(d) Stem load cell recorder did not function.