

<u>Section II</u>											
264	3.3	6	C2	L17	214	200	206	197	C4	2	
286	3.2	6	C2	L17	202	186	200	180	C4	6	
362	3.3	6	C2	L31	248	226	226	206	B1	9	
363	3.3	20	C2	L31	250	226	224	203	B1	11	
373	3.3	20	C2	L49	226	213	208	203	B1	11	
358	3.3	6	C2	L34	242	221	232	211	D3	5	
359	3.3	6	C2	L35	238	216	230	209	D3	5	
360	3.3	6	C2	L45	242	222	221	197	B1	10	
361	3.3	20	C2	L45	241	222	219	201	B1	11	
370	3.3	20	C2	L50	249	228	223	211	B3	10	
<u>Section III</u>											
379(e)	3.3	6	C5	L8	272	245	--	--	--	--	$P_b$ not reached
378	4	6	C5	L8	275	247	--	--	--	--	$P_b$ not reached
368	3.3	6	C5	L17	230	211	219	201	C1	8	
374	3.3	6	C5	L17	223	207	207	196	B1	10	
369	3.3	20	C5	L17	228	213	218	202	B3	11	
376	4.0	6	C5	L17	271	244	242	224	D3	9	Small transverse cracks on extrusion
487	4.0	20	C5	L17	266	228	240	207	B1	13	Compound angle nose, $A = 1.2(f)$
450	3.3	6	C5	L31	250	222	220	196	C4	6	
466	4.0	6	C5	L31	285	250	--	--	--	--	$P_b$ not reached
427	4.0	6	C5	L33	291	245	--	--	--	--	$P_b$ not reached
426	3.3	6	C5	L38	232	204	216	192	B4	6	
372	3.3	6	C5	L45	243	218	216	203	B1	9	
<u>Section IV</u>											
367	3.3	6	C6	L17	257	230	230	207	D3	5	Extrusion and die broke during runout

(a) Ratios of 3.2:1 were attempted using dies whose orifices were remachined to remove score marks obtained when extruding at 3.33:1.

(b) Billet coatings listed in Table IV; billet lubricants listed in Table III.

(c) Billet surface was roughened by grit blasting followed by vapor blasting.

(d) Fluid used was polyphenyl ether.

(e) Billet used in Trial 378 was used in Trial 379.

(f) See page 41 for details of compound-angle nose.

TABLE XX. EXPERIMENTAL DATA FOR HYDROSTATIC EXTRUSION OF Ti-6Al-4V ROUNDS AT 400 AND 500 F

Die angle - 45 degrees (included)      Billet surface finish - 60 to 120 microinches      Billet diameter - 1-3/4 inch

Trial	Extrusion Ratio	Stem Speed, ipm	Type of <sup>(a)</sup> Stem Seal	Billet Lubricant (Details in Table III)	Extrusion Pressure, 1000 psi				Type of Curve (Fig. 26)	Length of Extrusion, inches	Comments
					Breakthrough		Runout				
					Stem	Fluid	Stem	Fluid			
					Extrusion Temperature 400 F		Fluid - Silicate Ester				
415	3.3	6	2t	L33	178	170	177	168	A2	8	
416	4.0	6	2t	L33	212	198	206	194	B2	8	
496	4.0	20	1t + 1r	L33 <sup>(b)</sup>	210	195	198	187	B2	12	Compound-angle nose, A = 1.2 inches <sup>(c)</sup>
					Extrusion Temperature 500 F		Fluid - Polyphenyl Ether				
400	3.3	6	1t	L30	205	210	--	--	--	2	P <sub>b</sub> not reached
402	3.3	6	1t	L30	201	199	189	184	C4	3	
395	3.3	6	1t	L33	190	196	185	184	B2	10	
396	3.3	20	1t	L33	181	192	177	182	B2	11	
419	4.0	6	2t	L33	225	195	206	185	C1	10	
421	4.0	6	2t	L33	210	184	201	181	C1	12	
398	3.3	6	1t	L38	175	185	170	182	B3	8	
403	3.3	6	1t	L40	211	213	--	--	--	2	P <sub>b</sub> not reached
404	3.3	6	1t + 1r	L43	191	182	188	181	C4	2	
405	3.3	6	1t + 1r	L44	226	216	--	--	--	2	P <sub>b</sub> not reached

(a) 1t = 1 PTFE O-ring; 2t = 2 PTFE O-rings; 1t + 1r = 1 PTFE plus 1 rubber O-ring.

(b) Anodized coating applied.

(c) Details of compound-angle nose given on p 41.