

1277 **A RESULTS OF BUG ISOLATION FOR**  
 1278 **DEFECTS4J**

1279 **A.1 Chart**

BID	P <sub>Vn</sub> V <sub>p</sub>	P <sub>D4J</sub>	OP <sub>DDP</sub>	OP <sub>DDJ</sub>	C <sub>DDP</sub>	C <sub>DDJ</sub>	R <sub>DDP</sub>	R <sub>DDJ</sub>	
1281	6	85	65	60/85	43/43	4	7	1.000 (7/7)	1.000 (5/5)
1282	9	10	8	8/8	8/8	5	2	1.000 (8/8)	1.000 (4/4)
1283	10	32	3	3/3	3/3	10	6	1.000 (9/9)	1.000 (8/8)
1284	11	6	2	2/2	2/2	4	2	1.000 (7/7)	1.000 (5/5)
1285	18	75	21	20/25	8/13	8	8	1.000 (8/8)	1.000 (8/8)
1286	20	6	6	6/6	1/2	6	2	1.000 (6/6)	1.000 (4/4)
1287	21	238	201	2/25	198/223	32	3	1.000 (9/9)	1.000 (4/4)
1288	22	444	300	206/528	30/103	6	27	1.000 (20/20)	0.744 (35/47)
1289	23	207	87	86/175	87/87	6	13	0.562 (9/16)	1.000 (7/7)
1290	24	2	2	2/2	2/2	5	3	1.000 (9/9)	1.000 (4/4)
1291	26	22	8	8/19	8/8	2	3	0.800 (4/5)	1.000 (4/4)

1292 **A.2 Closure**

BID	P <sub>Vn</sub> V <sub>p</sub>	P <sub>D4J</sub>	OP <sub>DDP</sub>	OP <sub>DDJ</sub>	C <sub>DDP</sub>	C <sub>DDJ</sub>	R <sub>DDP</sub>	R <sub>DDJ</sub>	
1293	2	41	17	17/38	0/6	2	4	0.800 (4/5)	1.000 (4/4)
1294	4	37	4	2/2	2/2	5	4	0.750 (6/8)	1.000 (5/5)
1295	6	87	72	38/79	38/79	4	4	0.833 (5/6)	1.000 (8/8)
1296	9	12	12	9/9	9/9	2	2	1.000 (4/4)	1.000 (4/4)
1297	10	114	2	1/114	1/18	4	4	0.230 (3/13)	1.000 (5/5)
1298	12	92	45	45/89	0/2	2	4	0.800 (4/5)	1.000 (4/4)
1299	13	17	10	1/17	1/17	1	3	1.000 (3/3)	1.000 (5/5)
1300	16	88	55	50/85	50/85	3	8	0.571 (4/7)	1.000 (5/5)
1301	21	288	128	4/228	1/5	3	12	1.000 (4/4)	1.000 (5/5)
1302	22	288	208	34/228	0/5	3	12	1.000 (4/4)	1.000 (5/5)
1303	23	42	33	28/42	26/27	1	7	1.000 (3/3)	1.000 (5/5)
1304	26	34	28	12/12	12/12	5	5	0.750 (6/8)	1.000 (4/4)
1305	27	37	37	18/18	4/4	3	4	0.857 (6/7)	1.000 (7/7)
1306	28	44	19	0/4	19/19	4	8	0.857 (6/7)	1.000 (6/6)
1307	30	62	51	15/15	14/14	5	7	0.933 (14/15)	1.000 (8/8)
1308	32	183	111	78/165	0/9	3	7	0.714 (5/7)	0.875 (7/8)
1309	34	262	37	0/16	15/18	5	10	1.000 (5/5)	1.000 (6/6)
1310	35	234	94	94/94	0/27	5	6	1.000 (5/5)	1.000 (6/6)
1311	36	25	14	14/25	14/14	1	2	1.000 (3/3)	1.000 (4/4)
1312	38	19	4	3/19	4/4	1	2	1.000 (3/3)	1.000 (4/4)
1313	41	50	44	14/15	14/15	5	3	1.000 (6/6)	1.000 (5/5)
1314	43	119	89	37/37	71/84	9	7	0.384 (5/13)	1.000 (6/6)
1315	45	41	31	18/18	10/10	4	5	0.833 (5/6)	1.000 (4/4)
1316	46	98	90	5/98	84/93	1	2	1.000 (3/3)	1.000 (5/5)
1317	47	33	23	23/23	2/3	5	7	0.888 (8/9)	1.000 (8/8)
1318	48	66	36	36/36	26/38	5	3	1.000 (8/8)	1.000 (7/7)
1319	49	144	143	0/65	70/131	4	8	1.000 (6/6)	0.636 (7/11)
1320	50	42	36	36/42	6/16	2	4	1.000 (5/5)	1.000 (7/7)
1321	51	30	6	6/6	6/6	2	2	1.000 (4/4)	1.000 (4/4)
1322	54	218	40	0/51	28/30	6	10	1.000 (5/5)	1.000 (7/7)
1323	55	32	8	0/2	0/2	5	5	0.875 (7/8)	0.714 (5/7)
1324	56	55	29	23/55	26/57	1	2	1.000 (3/3)	1.000 (4/4)
1325	57	33	6	6/33	6/14	1	3	1.000 (3/3)	1.000 (5/5)
1326	60	185	20	14/23	14/23	12	5	0.583 (7/12)	1.000 (6/6)
1327	69	64	50	50/50	50/50	3	4	0.857 (6/7)	1.000 (6/6)
1328	72	207	22	3/3	19/19	6	10	0.666 (6/9)	0.555 (5/9)
1329	74	242	63	8/189	0/4	4	5	0.333 (5/15)	1.000 (5/5)
1330	75	65	14	12/12	12/12	3	4	1.000 (4/4)	0.666 (4/6)
1331	76	326	194	95/121	115/144	3	13	1.000 (4/4)	0.333 (10/30)
1332	78	26	24	12/26	6/19	2	3	0.800 (4/5)	1.000 (5/5)
1333	79	18	10	8/18	8/18	3	2	1.000 (9/9)	1.000 (5/5)
1334	84	141	134	32/39	25/25	2	5	1.000 (4/4)	1.000 (6/6)
1335	85	151	125	2/9	2/9	3	5	1.000 (6/6)	0.800 (4/5)
1336	87	96	77	68/96	70/70	4	3	0.230 (3/13)	1.000 (5/5)
1337	88	45	39	39/45	11/12	2	5	0.600 (3/5)	1.000 (6/6)
1338	90	18	4	4/4	4/7	2	2	1.000 (4/4)	1.000 (4/4)
1339	95	172	45	0/2	45/45	5	9	0.571 (4/7)	1.000 (7/7)
1340	96	50	22	20/50	8/10	1	3	1.000 (3/3)	1.000 (6/6)
1341	98	176	97	39/110	39/110	8	4	0.193 (6/31)	1.000 (4/4)
1342	99	55	48	42/55	34/42	2	5	1.000 (5/5)	1.000 (6/6)
1343	100	284	42	41/77	26/37	33	43	1.000 (17/17)	1.000 (19/19)
1344	101	26	10	10/10	2/3	3	4	1.000 (7/7)	1.000 (5/5)
1345	102	29	10	0/11	10/10	4	3	0.857 (6/7)	1.000 (4/4)
1346	103	49	41	41/47	41/41	3	4	1.000 (8/8)	1.000 (12/12)
1347	104	10	7	7/7	7/7	2	9	1.000 (5/5)	1.000 (6/6)
1348	107	44	7	7/7	7/7	4	6	0.857 (6/7)	1.000 (7/7)
1349	109	34	29	0/2	0/2	2	2	0.800 (4/5)	1.000 (4/4)
1350	110	155	117	64/67	64/67	7	12	0.857 (6/7)	1.000 (5/5)
1351	112	51	30	30/45	30/30	2	4	0.800 (4/5)	1.000 (5/5)
1352	114	17	15	15/15	15/16	3	3	1.000 (4/4)	1.000 (4/4)
1353	117	125	124	62/125	62/125	2	3	0.600 (3/5)	1.000 (3/3)

BID	P <sub>Vn</sub> V <sub>p</sub>	P <sub>D4J</sub>	OP <sub>DDP</sub>	OP <sub>DDJ</sub>	C <sub>DDP</sub>	C <sub>DDJ</sub>	R <sub>DDP</sub>	R <sub>DDJ</sub>	
1335	118	30	10	10/30	10/10	2	6	1.000 (5/5)	0.714 (5/7)
1336	121	76	13	13/13	10/13	3	2	1.000 (4/4)	1.000 (4/4)
1337	122	39	33	14/36	14/36	2	2	0.800 (4/5)	1.000 (4/4)
1338	123	12	5	4/12	0/2	1	3	1.000 (3/3)	1.000 (5/5)
1339	124	20	8	8/19	8/11	2	4	1.000 (5/5)	1.000 (6/6)
1340	125	5	4	4/4	4/4	2	2	1.000 (5/5)	1.000 (5/5)
1341	131	18	16	16/18	8/8	1	3	1.000 (3/3)	1.000 (7/7)
1342	133	29	4	0/2	0/2	5	5	1.000 (6/6)	1.000 (9/9)

1343 **A.3 Lang**

BID	P <sub>Vn</sub> V <sub>p</sub>	P <sub>D4J</sub>	OP <sub>DDP</sub>	OP <sub>DDJ</sub>	C <sub>DDP</sub>	C <sub>DDJ</sub>	R <sub>DDP</sub>	R <sub>DDJ</sub>	
1343	3	27	16	0/6	7/8	3	4	0.833 (5/6)	1.000 (5/5)
1344	5	463	421	328/463	84/193	1	20	1.000 (3/3)	0.681 (15/22)
1345	8	50	16	7/50	0/11	4	5	0.357 (5/14)	1.000 (4/4)
1346	12	83	50	49/83	49/54	3	9	1.000 (6/6)	1.000 (18/18)
1347	13	136	130	62/63	7/7	4	13	0.833 (5/6)	1.000 (6/6)
1348	14	71	43	40/71	0/11	2	3	1.000 (5/5)	1.000 (4/4)
1349	15	116	40	6/6	6/6	3	8	0.714 (5/7)	1.000 (4/4)
1350	17	107	40	14/107	4/32	1	12	1.000 (3/3)	0.714 (10/14)
1351	19	133	98	70/70	61/61	5	7	0.833 (5/6)	1.000 (9/9)
1352	20	70	46	4/70	4/70	3	4	1.000 (8/8)	1.000 (8/8)
1353	23	155	152	144/144	41/41	3	4	0.714 (5/7)	1.000 (5/5)
1354	30	1144	636	439/1182	252/477	6	32	0.863 (19/22)	1.000 (36/36)
1355	31	108	58	58/108	50/77	1	9	1.000 (3/3)	0.875 (7/8)
1356	32	106	102	16/16	27/27	5	6	0.833 (5/6)	1.000 (5/5)
1357	34	47	19	4/47	4/47	2	1	0.600 (3/5)	1.000 (3/3)
1358	35	65	26	6/40	16/25	3	3	1.000 (4/4)	1.000 (4/4)
1359	37	86	53	53/86	53/53	1	2	1.000 (3/3)	1.000 (4/4)
1360	41	185	146	55/55	85/85	4	9	0.909 (10/11)	1.000 (12/12)
1361	56	29	23	2/2	1/1	3	5	0.833 (5/6)	1.000 (5/5)
1362	58	50	25	25/25	0/8	2	8	1.000 (5/5)	1.000 (7/7)
1363	61	13	4	3/13	3/13	1	2	1.000 (3/3)	1.000 (4/4)
1364	64	140	134	134/134	53/53	4	5	0.857 (6/7)	1.000 (6/6)

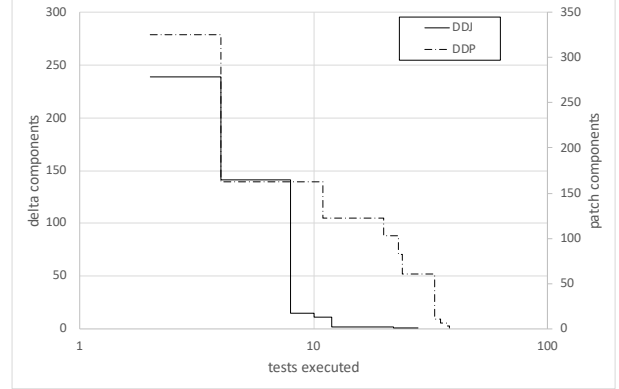
1362 **A.4 Math**

BID	P <sub>Vn</sub> V <sub>p</sub>	P <sub>D4J</sub>	PO <sub>DDP</sub>	PO <sub>DDJ</sub>	C <sub>DDP</sub>	C <sub>DDJ</sub>	R <sub>DDP</sub>	R <sub>DDJ</sub>	
1362	1	44	34	34/34	34/34	5	4	1.000 (9/9)	1.000 (12/12)
1363	7	123	122	22/22	1/2	3	10	1.000 (4/4)	0.916 (11/12)
1364	8	33	23	21/33	20/24	2	4	0.800 (4/5)	0.875 (7/8)
1365	9	29	13	7/29	6/6	1	3	1.000 (3/3)	1.000 (5/5)
1366	13	110	65	0/42	65/65	4	5	0.666 (4/6)	1.000 (5/5)
1367	14	105	35	34/37	6/9	4	4	0.666 (4/6)	1.000 (4/4)
1368	16	243	224	90/116	91/120	3	12	0.833 (5/6)	1.000 (11/11)
1369	19	98	92	92/92	0/2	3	3	0.857 (6/7)	1.000 (5/5)
1370	20	42	14	0/2	0/2	3	4	1.000 (6/6)	1.000 (7/7)
1371	21	194	169	126/140	10/10	3	19	0.777 (7/9)	1.000 (8/8)
1372	23	41	37	7/7	7/7	6	6	0.833 (5/6)	1.000 (6/6)
1373	24	88	14	14/88	7/7	3	3	0.857 (6/7)	1.000 (4/4)
1374	25	18	15	15/15	15/15	4	2	0.857 (6/7)	1.000 (4/4)
1375	28	29	24	14/19	14/14	2	3	1.000 (5/5)	1.000 (6/6)
1376	30	10	2	2/10	2/2	1	3	1.000 (3/3)	1.000 (7/7)
1377	31	490	316	204					

BID	$P_{V_n V_p}$	$P_{Dj}$	$OP_{DDP}$	$OP_{DDJ}$	$C_{DDP}$	$C_{DDJ}$	$R_{DDP}$	$R_{DDJ}$	
1393									
1394	84	65	62	49/54	3/8	3	6	0.714 (5/7)	1.000 (5/5)
1395	88	247	86	37/241	18/167	2	5	0.800 (4/5)	1.000 (5/5)
1396	90	25	23	23/25	23/25	1	2	1.000 (3/3)	0.600 (3/5)
1397	91	93	28	20/93	20/93	1	2	1.000 (3/3)	1.000 (4/4)
1398	93	214	63	32/47	24/36	4	6	0.833 (5/6)	1.000 (7/7)
1399	95	28	10	10/28	7/14	1	5	1.000 (3/3)	1.000 (4/4)
1400	97	111	82	79/111	47/48	11	5	1.000 (11/11)	1.000 (7/7)
1401	99	114	209	36/102	194/209	5	12	0.727 (8/11)	1.000 (12/12)
1402	102	136	132	124/136	43/43	3	9	1.000 (6/6)	1.000 (5/5)
1403	103	54	51	51/51	51/51	2	2	0.800 (4/5)	1.000 (4/4)
1404	104	4	2	2/2	2/3	2	2	1.000 (5/5)	1.000 (4/4)

## B RESULTS OF DD RUNS

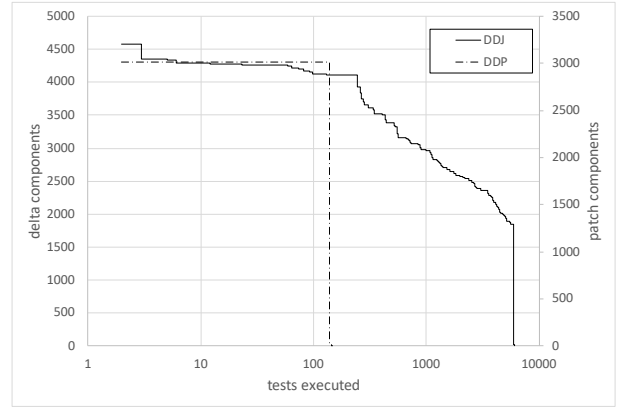
### B.1 ANTLR-1543



### A.5 Mockito

BID	$P_{V_n V_p}$	$P_{Dj}$	$PO_{DDP}$	$PO_{DDJ}$	$C_{DDP}$	$C_{DDJ}$	$R_{DDP}$	$R_{DDJ}$	
1410									
1411	2	66	33	5/5	5/5	4	4	0.833 (5/6)	1.000 (4/4)
1412	3	222	160	58/79	124/216	4	12	0.625 (5/8)	0.941 (16/17)
1413	4	102	21	21/59	6/13	9	11	0.583 (21/36)	1.000 (24/24)
1414	5	5	2	1/5	1/5	2	2	0.800 (4/5)	1.000 (4/4)
1415	6	129	126	36/36	36/36	22	21	1.000 (69/69)	1.000 (55/55)
1416	7	15	11	11/11	11/11	2	3	1.000 (5/5)	1.000 (4/4)
1417	10	77	57	54/54	7/7	5	9	0.666 (6/9)	1.000 (8/8)
1418	11	76	40	38/70	35/40	2	6	1.000 (5/5)	1.000 (8/8)
1419	14	104	24	21/21	21/21	5	5	0.833 (5/6)	1.000 (5/5)
1420	15	434	19	15/22	16/16	12	5	0.275 (11/40)	0.666 (4/6)
1421	16	76	36	10/18	6/6	11	9	0.073 (3/41)	0.266 (4/15)
1422	17	218	41	38/40	38/40	13	15	0.333 (11/33)	0.266 (8/30)
1423	18	345	309	309/309	309/309	5	7	1.000 (8/8)	1.000 (8/8)
1424	19	118	118	115/115	77/78	7	5	0.160 (4/25)	1.000 (5/5)
1425	20	388	15	13/245	1/31	5	15	0.888 (8/9)	0.818 (9/11)
1426	21	163	135	133/163	46/68	1	9	1.000 (3/3)	0.692 (9/13)
1427	23	388	91	70/70	4/4	13	27	0.888 (8/9)	1.000 (6/6)
1428	25	2190	221	134/275	70/150	12	22	0.368 (7/19)	0.529 (9/17)
1429	26	231	10	10/183	0/3	3	16	0.857 (6/7)	1.000 (7/7)
1430	27	132	32	30/132	30/40	3	5	0.666 (6/9)	0.692 (9/13)
1431	28	126	8	8/113	3/5	5	14	0.833 (5/6)	1.000 (6/6)
1432	29	12	6	6/6	6/6	2	2	1.000 (5/5)	1.000 (4/4)
1433	30	11	7	7/7	1/2	25	6	0.722 (13/18)	0.727 (8/11)
1434	31	102	28	24/45	0/4	3	6	0.857 (6/7)	1.000 (8/8)
1435	33	94	86	81/94	79/79	1	2	1.000 (3/3)	1.000 (4/4)
1436	34	64	6	6/6	6/6	8	8	0.428 (6/14)	0.312 (5/16)
1437	35	93	31	31/31	31/31	12	12	0.833 (10/12)	0.769 (10/13)
1438	36	80	22	19/19	19/19	9	9	0.625 (5/8)	0.714 (5/7)
1439	37	150	46	46/46	18/18	12	12	0.333 (5/15)	0.555 (5/9)
1440	38	64	6	6/6	6/6	8	8	0.428 (6/14)	0.294 (5/17)

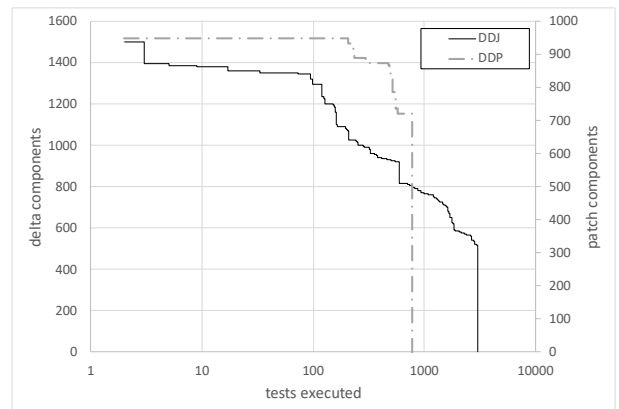
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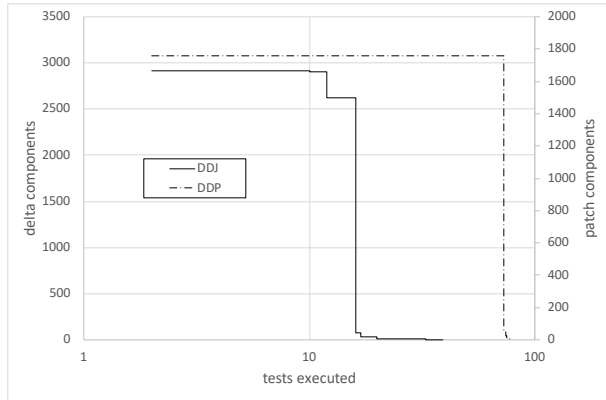
### A.6 Time

BID	$P_{V_n V_p}$	$P_{Dj}$	$PO_{DDP}$	$PO_{DDJ}$	$C_{DDP}$	$C_{DDJ}$	$R_{DDP}$	$R_{DDJ}$	
1440									
1441	2	57	11	11/11	11/11	4	4	1.000 (7/7)	1.000 (6/6)
1442	5	337	97	97/337	4/7	1	12	1.000 (3/3)	1.000 (6/6)
1443	6	174	171	102/102	86/86	6	5	0.875 (7/8)	1.000 (11/11)
1444	7	23	23	13/20	13/20	3	2	1.000 (7/7)	1.000 (5/5)
1445	9	75	58	58/58	44/44	6	7	0.888 (8/9)	1.000 (8/8)
1446	12	126	126	48/62	36/46	10	8	0.900 (18/20)	1.000 (8/8)
1447	15	35	21	21/33	21/21	2	4	1.000 (5/5)	1.000 (5/5)
1448	16	10	7	7/7	7/7	3	2	1.000 (7/7)	1.000 (5/5)
1449	17	136	118	110/136	13/15	2	11	1.000 (5/5)	1.000 (5/5)

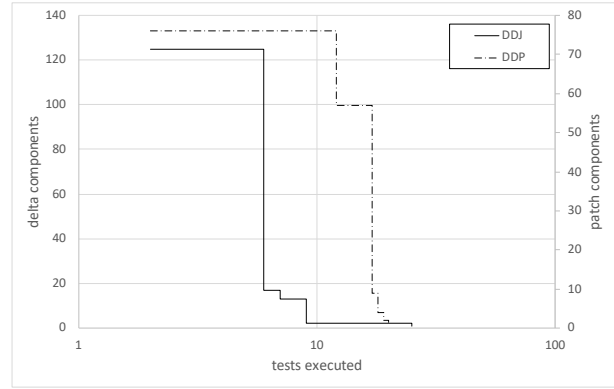
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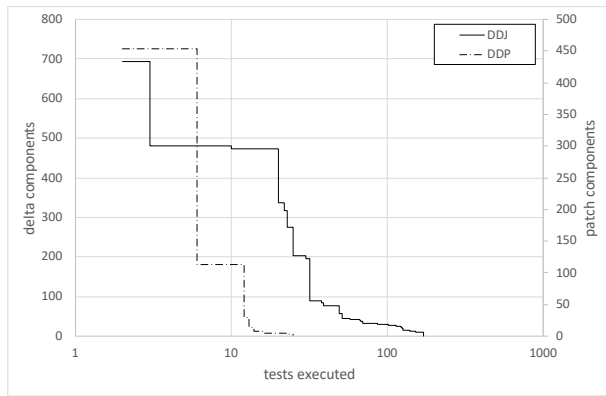
### B.4 HSQLDB-1454



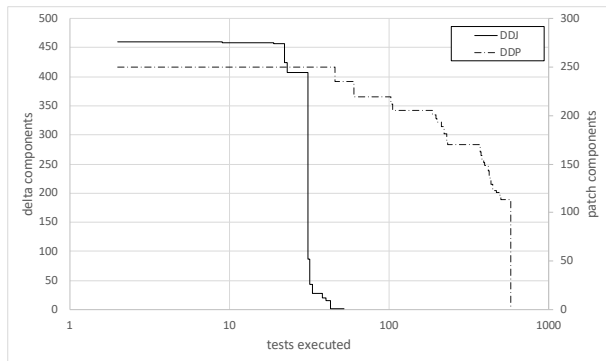
### B.7 JSOUP-926



### B.5 JEDIT-3517



### B.6 JSOUP-920



### B.8 LOGBACK-1183

