Appendix C

Test Data

This appendix gives the test positions with which most of the reported test results were computed. (The extra positions that were used to verify that the base test set did not cause anomalies are not shown.) Furthermore we give the absolute node counts (the best in bold) for each position for the deepest search depth.

C.1 Test Results

Checkers

Cumulative Leaf Nodes Checkers Depth 17

position	Alpha-Beta	NegaScout	SSS*	DUAL*	MTD(f)
1	126183	111189	106907	**98465**	114964
2	177188	155517	192163	136168	**128615**
3	271082	285198	301536	302170	**232238**
4	945249	888190	779443	**771386**	794280
5	1978773	1884569	2213865	1869080	**1661477**
6	1368018	**1228123**	1504601	1350407	1283644
7	544271	**481183**	550118	538703	510826
8	905571	917252	1034249	794801	**746069**
9	1518870	1344296	1510397	1490632	**981401**
10	1763143	**1869436**	2260341	2176786	1998528
11	221754	193222	**190221**	194031	199732
12	207108	**189654**	206880	197521	195524
13	203402	182482	192235	217626	**178357**
14	253300	261241	248463	**212910**	239799
15	265731	217568	268320	228979	**205280**
16	248657	250896	248168	241268	**238638**
17	357382	**320275**	398641	382976	383503
18	718949	672121	767435	726969	**623981**
29	1319426	1040648	1244843	**815568**	946250
20	1159464	1066905	1106151	1632830	**886752**

Cumulative Total Nodes Checkers Depth 17

position	Alpha-Beta	NegaScout	SSS*	DUAL*	MTD(f)
1	413369	**367200**	570840	398806	459440
2	462424	417435	1193339	**405075**	412199
3	620027	667162	1052940	728422	**539190**
4	2352550	2253635	2926647	2426232	**2016395**
5	4800897	4716967	7103273	5598219	**4124889**
6	3227618	**2937729**	5584087	4074537	3124792
7	1321635	**1191009**	1982897	2074539	1305613
8	2173069	2217950	3041809	3097442	**1903700**
9	3658536	3346953	4208761	5059490	**2587216**
10	3916120	**4130046**	6597076	7265863	4554377
11	567607	**503305**	633484	531527	523338
12	535462	**507324**	736516	585877	535851
13	511587	**470443**	641281	602930	482941
14	681776	697866	833239	709308	**634044**
15	707039	611411	970302	864961	**540321**
16	656466	658201	977425	901367	**639200**
17	906151	**844337**	1279247	1227917	1018729
18	1820759	**1738552**	2528449	2711356	1755457
29	3290314	2680018	4024730	3266939	**2491371**
20	3124797	2870023	3197680	6197403	**2690201**

Othello

Cumulative Leaf Nodes Othello Depth 10

position	Alpha-Beta	NegaScout	SSS*	DUAL*	MTD(f)
1	1077545	1002150	**756286**	1044572	973214
2	342372	309981	400052	309283	**291823**
3	469632	422933	482805	435760	**410908**
4	810910	748961	**594689**	774421	754279
5	554011	499434	528925	507417	**493501**
6	533061	**481959**	487469	506341	496562
7	511596	**455207**	499995	472456	459245
8	550836	505633	577386	509321	**502990**
9	443277	**365431**	606806	419831	394294
10	541548	519187	545360	512457	**504142**
11	675550	660471	**463393**	681217	466876
12	734587	609609	719514	**570924**	635436
13	578096	**489623**	517986	536282	495934
14	517719	479973	462101	447383	**407302**
15	684021	595341	738158	583758	**558692**
16	2103805	1874684	2336257	2146225	**1785653**
17	444027	**381167**	497447	387313	381482
18	693612	665237	**610446**	618819	660550
19	643278	562910	596583	577897	**518339**
20	816195	**700857**	768269	707928	704796

Cumulative Total Nodes Othello Depth 10

position	Alpha-Beta	NegaScout	SSS*	DUAL*	MTD(f)
1	1720270	1617060	**1531266**	1768573	1588262
2	580163	541031	884386	564478	**524143**
3	779481	715389	996805	781187	**699880**
4	1380704	**1300157**	1377430	1361942	1310286
5	955789	**881531**	1283857	960307	882869
6	975970	**900137**	1099004	961814	927423
7	766394	**687075**	1037853	775328	688037
8	936839	**863573**	1265701	944988	871360
9	783713	**668933**	1244449	807264	723717
10	1006877	973282	1329432	971021	**940991**
11	958764	941033	764296	1004557	**679615**
12	1241744	1033213	1503985	**1022343**	1094600
13	963782	**845619**	1292204	943211	873842
14	856701	807066	896673	780930	**661439**
15	1105961	986293	1513070	1019654	**915995**
16	3207698	2902247	4565011	3552642	**2753854**
17	769704	**662209**	1277545	693966	666419
18	1104089	**1059736**	1359768	986829	1092532
19	1015573	896343	1281957	982266	**834850**
20	1375433	**1164485**	1670091	1236846	1181879

Chess

Cumulative Leaf Nodes Chess Depth 8

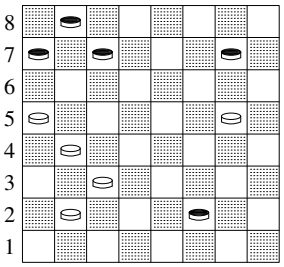
position	Alpha-Beta	NegaScout	SSS*	DUAL*	MTD(f)
1	2139803	1985777	**1785412**	1978323	1812787
2	2644826	2476699	2789442	**2084553**	2204018
3	2579806	2427222	2605278	2543878	**1772911**
4	2981122	2534212	3068148	2622208	**2186732**
5	2704505	2384329	2581678	2417116	**2306988**
6	3144654	2608290	2959795	2619766	**2593478**
7	1519760	1477958	**1467838**	1504933	1473132
8	5341059	5317246	5008482	**3414294**	3862095
9	4886358	4053813	5356186	3906343	**3722252**
10	7567304	6327725	5662936	5934283	**5413685**
11	2604254	**2424632**	2930218	2568160	2433724
12	3751738	3383563	2420545	3321493	**2205522**
13	2751157	2660323	2396603	2604666	**2064121**
14	2970794	2517235	3161045	**2362827**	2697990
15	1301380	1210901	1213741	1308549	**1174032**
16	1256342	1224924	1402361	1207203	**1178989**
17	1120616	1111323	1161968	**1065096**	1118400
18	1287345	1238906	1277886	1278149	**1173362**
19	2560676	2363614	2540931	2393803	**2132042**
20	2095458	1977936	2220139	**1951231**	1970067

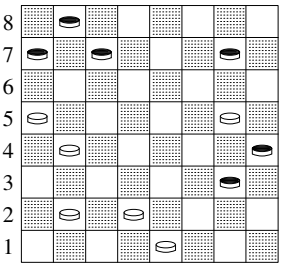
Cumulative Total Nodes Chess Depth 8

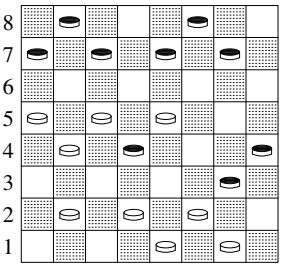
position	Alpha-Beta	NegaScout	SSS*	DUAL*	MTD(f)
1	3303219	3103360	5902747	3485589	**2920250**
2	3867251	3648085	6695953	3318056	**3267966**
3	3970801	3723289	7834576	3958079	**2882594**
4	4670576	4031181	8728375	4283256	**3546285**
5	4393422	3863494	6477649	4041426	**3742236**
6	4937220	**4178390**	10703081	4298577	4188882
7	2731907	2682243	3948657	2993329	**2665386**
8	7604601	7487371	12764983	**5498919**	5728846
9	7160185	6056626	14830764	6217694	**5588940**
10	10339575	8620155	21572998	8714449	**7470636**
11	4068559	**3819434**	11293758	4140659	3907065
12	5625271	5062261	8174419	5292912	**3464844**
13	4319258	4178469	9141174	4243100	**3309548**
14	4518683	3837605	9609051	**3782715**	4175020
15	2107983	1988196	2616457	2475369	**1951313**
16	2240408	2187733	4827452	2315079	**2127931**
17	1980620	**1973707**	4868220	2046282	2110399
18	2164189	2110233	7863155	2226773	**2020108**
19	4011716	3708911	12487591	3905568	**3389902**
20	3447220	**3272595**	12443353	3407857	3276117

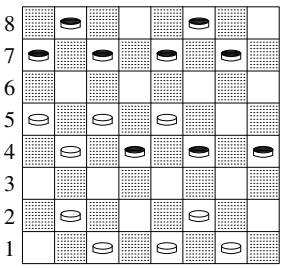
C.2 Test Positions

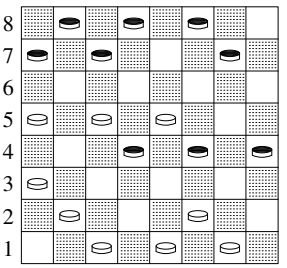
Checkers

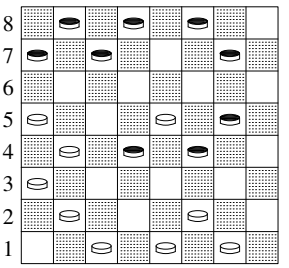

Position 1, Black to move

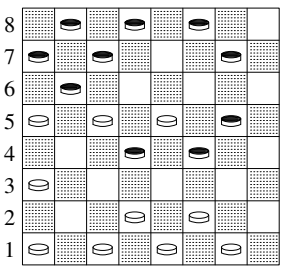

Position 2, Black to move

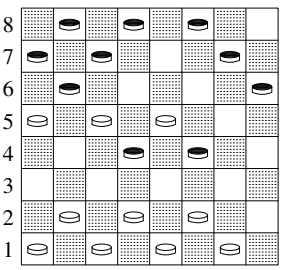

Position 3, Black to move

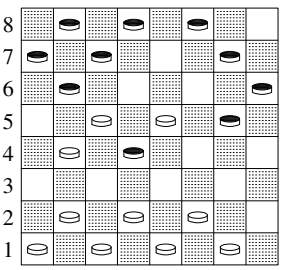

Position 4, Black to move

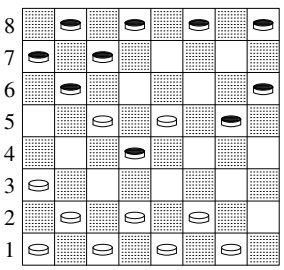

Position 5, Black to move

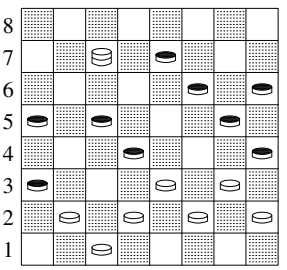

Position 6, Black to move

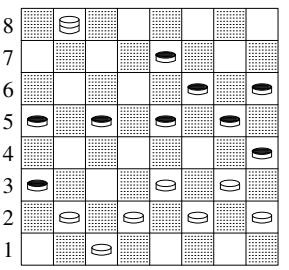

Position 7, Black to move

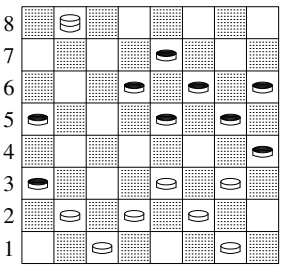

Position 8, Black to move

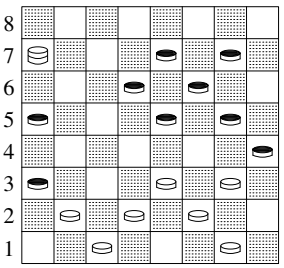

Position 9, Black to move

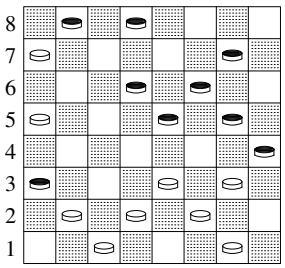

Position 10, Black to move

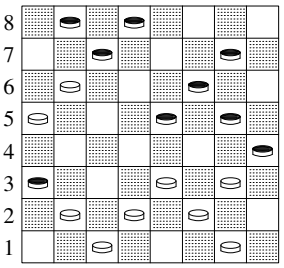

Position 11, White to move

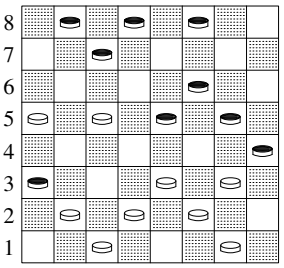

Position 12, White to move

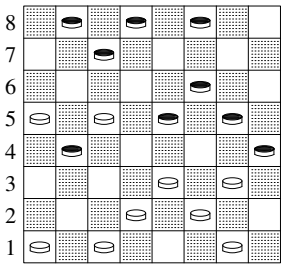

Position 13, White to move

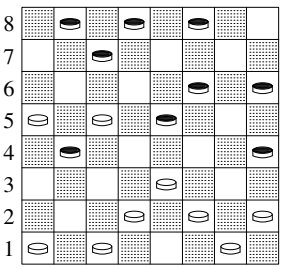

Position 14, White to move

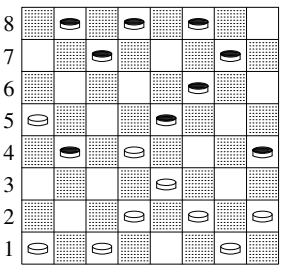

Position 15, White to move


Position 16, White to move

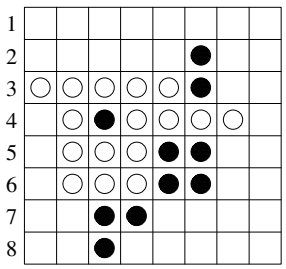

Position 17, White to move

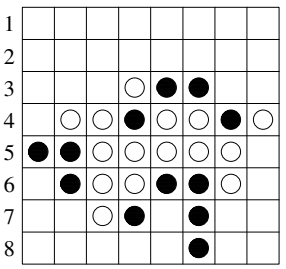

Position 18, White to move

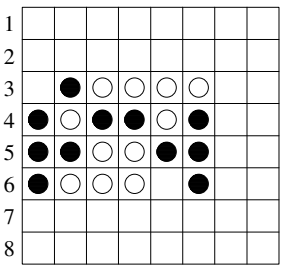

Position 19, White to move

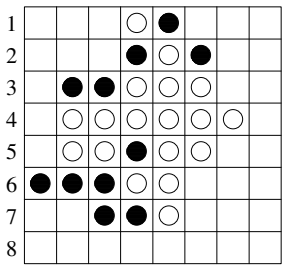

Position 20, White to move

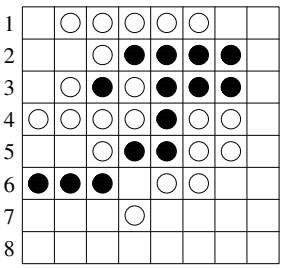
Othello

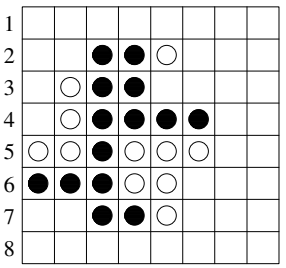

Position 1, Black to move

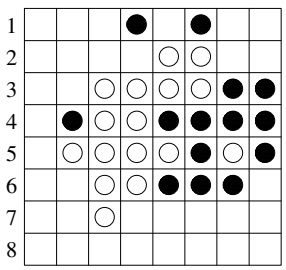

Position 2, White to move

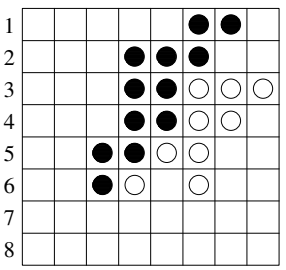

Position 3, Black to move

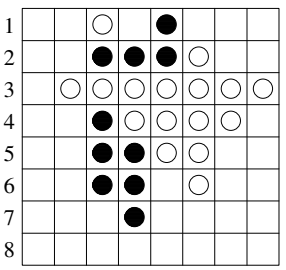

Position 4, White to move

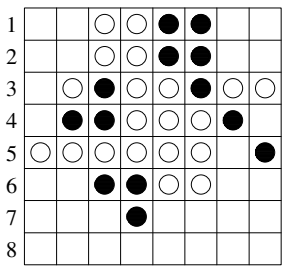

Position 5, Black to move

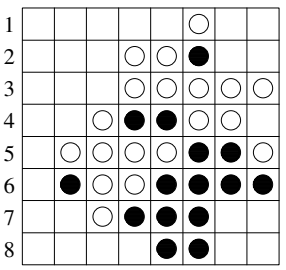

Position 6, White to move

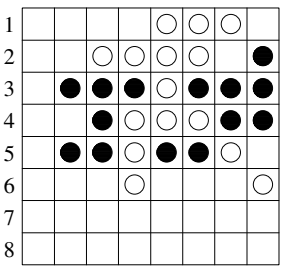

Position 7, Black to move

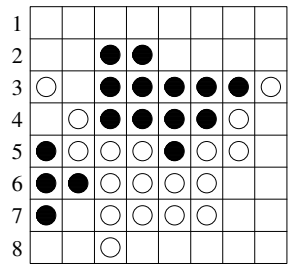

Position 8, White to move


Position 9, Black to move

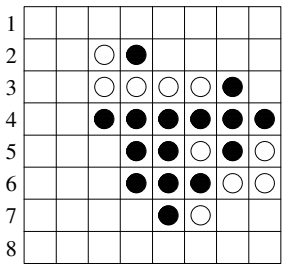

Position 10, White to move


Position 11, Black to move

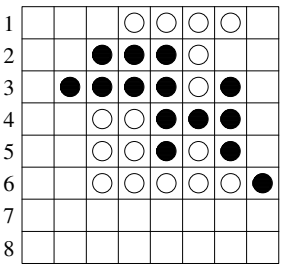

Position 12, White to move



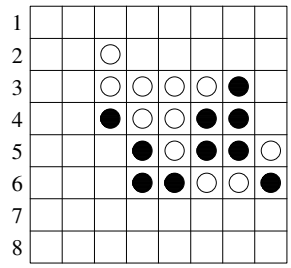
Position 13, Black to move



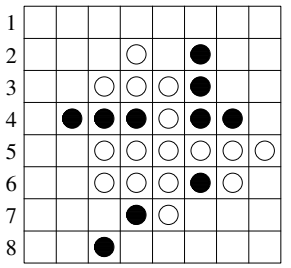
Position 14, White to move



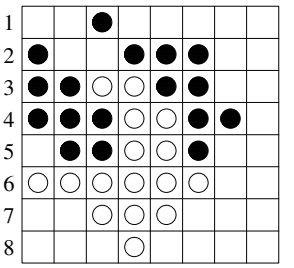
Position 15, Black to move



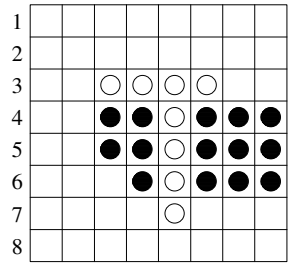
Position 16, White to move



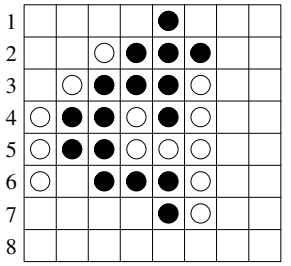
Position 17, Black to move



Position 18, White to move



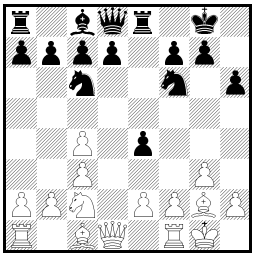
Position 19, Black to move



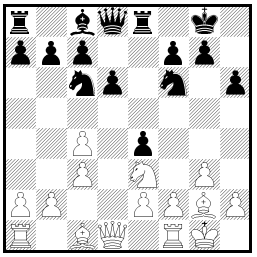
Position 20, White to move

Chess

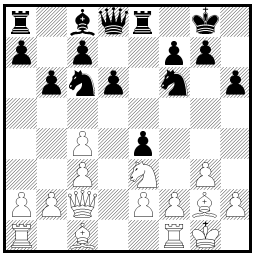
For all 20 positions: White to move.



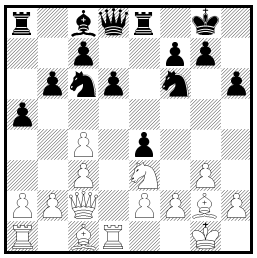
Position 1



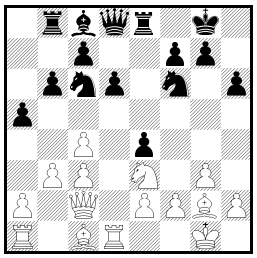
Position 2



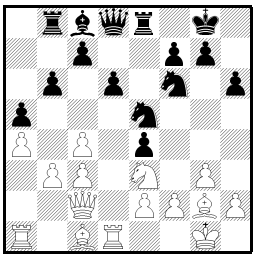
Position 3



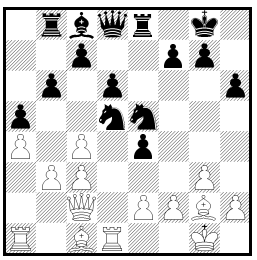
Position 4



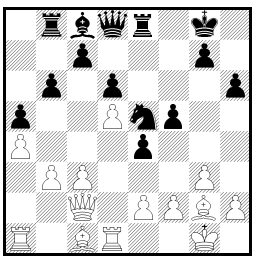
Position 5



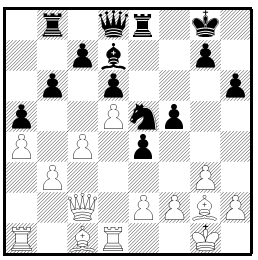
Position 6



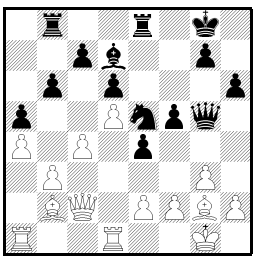
Position 7



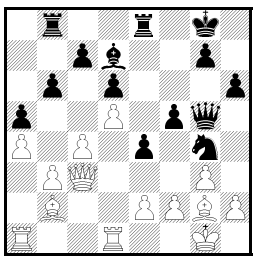
Position 8



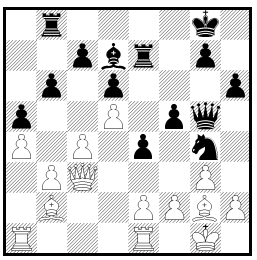
Position 9



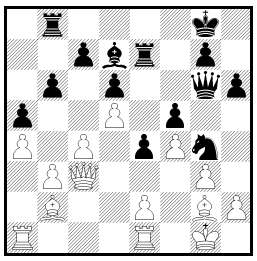
Position 10



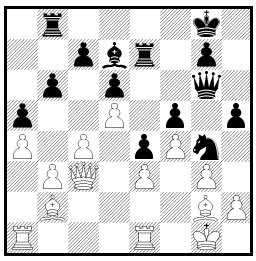
Position 11



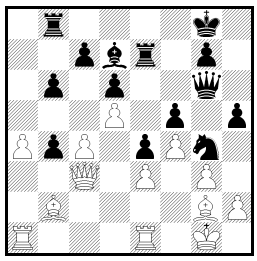
Position 12



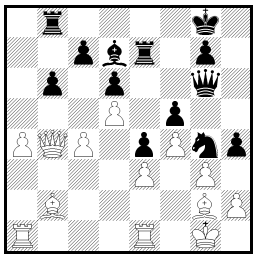
Position 13



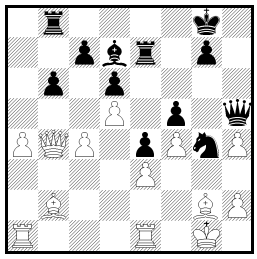
Position 14



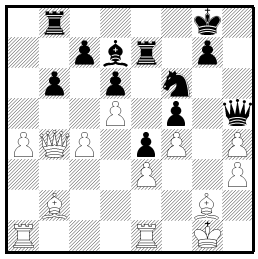
Position 15



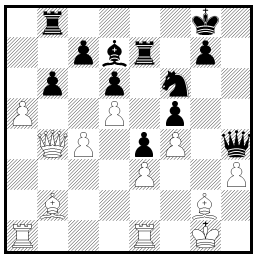
Position 16



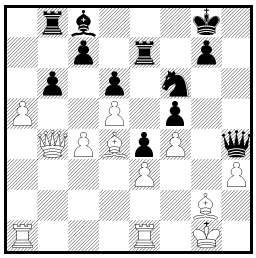
Position 17



Position 18



Position 19



Position 20