APPENDIX III

GEL T1 AND T2 REFERENCE VALUES

for various

FIELD STRENGTHS

and

TEMPERATURES

AGAROSE GEL SAMPLES

The Gel Samples enclosed in the Tubes with TO5 are made from Agarose doped with Gadolinium. This represents an ideal test material for MR Imaging Studies since it is possible, by varying the composition, to produce gels of any desired T1 and T2.

Additionally, their method of preparation is so well controlled that a mathematical model has been developed of the relaxation process. Thus it is possible to predict the T1 and T2 at all frequencies and temperatures within the imaging range.

The data presented in this section comes from this model, but each gel has been subject to rigid quality control and the relaxation times have been checked at a spot frequency (8MHz).

If values are required for fields other than those stated (and temperatures) please contact Diagnostic Sonar Ltd for information.

APPENDIX III

GEL T1 AND T2 VALUES

Imaging field 0.02 Tesla

Temperature (K)						
	292	296	300	292	296	300
Tube No	T1 (ms)			T2 (ms)		
1	87	92	97	41	40	39
2	132	140	148	59	56	55
3	137	145	154	83	82	81
4	185	193	202	47	44	42
5	201	213	224	79	75	72
6	211	224	238	117	116	114
7	267	281	295	83	78	75
8	280	296	313	114	109	105
9	343	361	380	103	97	92
10	358	379	401	134	128	123
11	425	448	471	123	115	110
12	883	944	1008	347	333	322
13	500	530	562	192	184	177
14	510	538	566	150	141	134
15	607	643	680	192	181	173
16	668	706	744	186	174	166
17	644	679	714	168	157	149
18	719	756	791	162	151	142

Estimated accuracy = ±3%

APPENDIX III

GEL T1 AND T2 VALUES

Imaging field 0.15 Tesla

Temperature (K)						
	292	296	300	292	296	300
Tube No	T1 (ms)			T2 (ms)		
1	118	124	130	45	43	42
2	180	189	198	65	61	59
3	180	189	198	94	92	90
4	275	289	304	50	46	43
5	276	290	306	86	81	77
6	277	291	307	132	128	125
7	376	397	419	89	83	78
8	378	399	421	123	117	112
9	483	510	540	109	102	96
10	485	512	542	145	137	130
11	595	631	670	130	121	115
12	1108	1193	1282	367	350	337
13	660	702	746	206	196	187
14	703	748	796	158	148	140
15	816	871	930	202	190	180
16	912	976	1045	195	182	172
17	893	956	1023	176	164	155
18	1020	1097	1178	169	156	147

Estimated accuracy = ±3%

APPENDIX III

GEL T1 AND T2 VALUES

Imaging field 0.28 Tesla

Temperature (K)						
	292	296	300	292	296	300
Tube No	T1 (ms)			T2 (ms)		
1	158	165	172	50	47	45
2	237	249	261	70	66	63
3	238	249	261	106	102	100
4	357	377	396	52	48	45
5	359	378	397	91	86	81
6	361	379	398	146	140	136
7	482	510	537	93	86	81
8	485	512	539	131	124	118
9	609	646	684	114	106	100
10	611	648	685	153	143	136
11	739	787	836	135	125	118
12	1284	1388	1496	382	363	348
13	813	867	921	217	205	195
14	860	919	979	164	153	144
15	983	1054	1126	210	196	186
16	1085	1167	1251	200	187	176
17	1065	1145	1227	181	168	158
18	1197	1293	1391	172	159	149

Estimated accuracy = ±3%

APPENDIX III

GEL T1 AND T2 VALUES

Imaging field 0.50 Tesla

Temperature (K)						
	292	296	300	292	296	300
Tube No	T1 (ms)			T2 (ms)		
1	188	202	217	52	49	47
2	282	304	326	72	69	66
3	281	304	326	112	109	107
4	422	456	490	53	49	46
5	422	456	490	94	88	84
6	422	456	491	153	148	144
7	562	608	656	95	88	83
8	562	609	657	136	128	122
9	702	762	823	116	108	102
10	703	763	824	157	147	140
11	843	917	993	137	127	120
12	1395	1531	1674	389	370	356
13	918	1000	1084	222	210	201
14	970	1058	1148	166	155	147
15	1097	1198	1303	213	200	189
16	1202	1315	1432	203	189	178
17	1183	1294	1409	183	170	160
18	1318	1444	1576	173	160	151

Estimated accuracy = ±3%

APPENDIX III

GEL T1 AND T2 VALUES

Imaging field 1.00 Tesla

Temperature (K)						
	292	296	300	292	296	300
Tube No	T1 (ms)			T2 (ms)		
1	198	219	241	52	50	48
2	296	327	360	73	69	67
3	294	326	359	113	111	109
4	449	496	546	53	49	46
5	443	490	540	94	89	85
6	441	488	538	154	150	147
7	592	654	721	95	89	84
8	589	651	718	136	129	124
9	738	816	900	116	108	102
10	734	813	896	157	149	142
11	883	978	1079	137	128	121
12	1433	1591	1760	390	373	358
13	954	1057	1167	223	212	203
14	1013	1122	1238	167	156	147
15	1139	1263	1395	214	201	190
16	1249	1385	1530	203	190	179
17	1233	1366	1508	183	171	161
18	1375	1524	1683	174	161	151

Estimated accuracy = ±3%

APPENDIX III

GEL T1 AND T2 VALUES

Imaging field 1.50 Tesla

Temperature (K)						
	292	296	300	292	296	300
Tube No	T1 (ms)			T2 (ms)		
1	199	221	245	52	50	48
2	298	331	367	73	70	67
3	295	329	365	113	111	110
4	455	506	560	53	49	46
5	446	496	550	94	89	85
6	442	492	546	154	151	147
7	597	664	736	95	89	84
8	592	659	731	136	129	124
9	745	828	918	116	108	102
10	739	822	911	157	149	142
11	892	992	1099	137	128	121
12	1440	1603	1779	390	373	359
13	959	1068	1184	223	212	203
14	1023	1137	1260	167	156	148
15	1149	1278	1416	214	201	191
16	1261	1403	1555	204	190	180
17	1246	1385	1535	183	171	161
18	1392	1547	1714	174	161	151

Estimated accuracy = ±3%

APPENDIX III

GEL T1 AND T2 VALUES

Imaging field 2.00 Tesla

Temperature (K)						
	292	296	300	292	296	300
Tube No	T1 (ms)			T2 (ms)		
1	199	222	247	52	50	48
2	298	333	370	73	70	67
3	296	330	367	113	111	110
4	459	511	566	53	49	46
5	448	499	554	94	89	85
6	443	494	549	154	151	148
7	600	669	743	95	89	84
8	594	662	736	136	129	124
9	749	834	926	116	109	103
10	741	826	918	157	149	142
11	897	999	1109	137	128	121
12	1444	1609	1787	390	373	359
13	962	1073	1191	223	212	203
14	1028	1145	1271	167	156	148
15	1154	1285	1427	214	201	191
16	1268	1412	1567	204	190	180
17	1253	1395	1548	183	171	161
18	1403	1561	1731	174	161	151

Estimated accuracy = ±3%

APPENDIX III

GEL T1 AND T2 VALUES

Imaging field 3.00 Tesla

Temperature (K)						
	292	296	300	292	296	300
Tube No	T1 (ms)			T2 (ms)		
1	200	223	249	52	50	48
2	299	334	372	73	70	67
3	296	331	368	113	111	110
4	463	516	574	53	49	46
5	450	502	559	94	89	85
6	444	496	552	154	151	148
7	604	674	750	95	89	84
8	596	666	741	136	129	124
9	754	841	935	116	109	103
10	745	831	924	157	149	142
11	903	1007	1120	137	128	121
12	1448	1615	1796	390	373	359
13	966	1078	1199	224	212	203
14	1034	1153	1282	167	156	148
15	1160	1293	1437	214	201	191
16	1276	1422	1581	204	190	180
17	1262	1407	1563	184	171	161
18	1415	1576	1750	174	161	151

Estimated accuracy = ±3%