Appendix A:

The analyses of all line data for Deneb in Table A1. The lines are sorted according to species; multiplet number, wavelength, the *gf*-value with its source, and the deduced abundance are listed. Equivalent widths are given per line in miliangstroms. Spectral lines that are significantly blended with other elements have been removed.

Table A1. The analyses of the metal lines.

Species	Mult	λ(Å)	log *gf*	Ref.	W_λ (m Å)	log N/N_T
C I						log $C/N_T = -3.82 \pm 0.20$
	6	4771.72	-1.87	WF	4	-3.60
	13	4932.04	-1.66	WF	2	-4.00
	14	4371.36	-1.96	WF	2	-3.87
C II						log C/N_T = -3.09
	4	3920.68	-0.23	WF	50	-3.09
N I						log $N/N_T = -3.15 \pm 0.28$
	6	4137.64	-2.54	WF	5	-2.83
		4143.43	-2.20	WF	9	-2.91
		4151.48	-1.98	WF	9	-3.14
	9	4914.94	-2.23	WF	2	-3.37
		4935.11	-1.89	WF	3	-3.48
N II						log $N/N_T = -3.72 \pm 0.28$
	5	4630.53	+0.09	WF	7	-3.52
	12	3994.99	+0.21	WF	8	-3.92
O I						log O $I/N_T = -3.40 \pm 0.30$
	14	4968.79	-1.28	WF	5	-3.72
	16	4772.45	-1.74	WF	8	-3.00
		4772.91	-1.70	WF	3	-3.44
		4773.75	-1.56	WF	5	-3.45
Mg I						log $Mg/N_T = -4.34 \pm 0.26$
	2	5172.68	-0.38	FW	120	-4.26
	3	3829.35	-0.19	WS	85	-4.66
		3832.29	+0.27	WS	144	-4.61
		3838.29	+0.49	WS	177	-4.49
	11	4702.99	-0.38	FW	21	-4.28
	15	4167.27	-0.79	JK	12	-4.10
	17	3986.73	-1.44	KX	4	-3.96
Mg II						log $Mg/N_T = -4.52 \pm 0.14$
	5	3848.21	-1.57	FW	48	-4.54
		3850.39	-1.88	FW	33	-4.44
	9	4427.99	-1.21	WS	26	-4.60
		4433.98	-0.90	WS	45	-4.60
	10	4390.58	-0.53	WS	95	-4.40
	19	4436.49	-0.89	KP	8	-4.66
	25	4851.09	-0.68	KP	9	-4.75
	27	4331.93	-1.26	KP	6	-4.39
	28	4193.47	-1.44	KP	5	-4.31
Al I						log $Al/N_T = -5.78 \pm 0.13$
	1	3944.01	-0.64	FW	53	-5.69
		3961.52	-0.34	FW	65	-5.87
Al II						log Al/N_T = -5.82
	2	4663.10	-0.28	FW	48	-5.82
Si II						log $Si/N_T = -4.63 \pm 0.21$
	1	3853.66	-1.44	LA	200	-4.72
		3862.59	-0.74	LA	333	-4.44
	3	4128.07	+0.38	LA	243	-4.58
		4130.89	+0.53	LA	251	-4.67
	3.01	4075.45	-1.40	SG	32	-4.63
	5	5041.02	+0.29	SG	179	-4.65

Table A1. (continued)

Species	Mult	λ(Å)	log gf	Ref.	W_λ (m Å)	log N/N_T
Si II	5	5055.98	+0.59	SG	176	-4.99
(continued)		5056.31	-0.36	SG	100	-4.64
	7.05	4621.48	-0.54	WS	15	-4.48
	7.06	4200.65	-0.67	KP	5	-4.89
	7.17	4187.18	-1.05	KP	8	-4.19
	7.26	4198.13	-0.30	KG	7	-4.69
S II						log $S/N_T = -5.13 \pm 0.25$
	7	4991.96	-0.25	WM	14	-4.83
		5009.56	-0.09	WM	9	-5.22
	9	4815.55	+0.18	WM	14	-5.28
	15	5014.04	+0.03	WS	8	-5.25
	43	4463.58	-0.02	WM	5	-4.88
	44	4142.25	+0.24	WM	5	-5.25
		4153.10	+0.62	WS	8	-5.35
		4162.70	+0.78	WS	8	-5.51
	48	4552.38	-0.10	WS	9	-4.79
	49	4294.43	+0.56	WM	11	-4.96
Ca II						log Ca/N_T = -5.24
	1	3933.66	+0.13	WM	1256	-5.24
Sc II						log $Sc/N_T = -9.08 \pm 0.18$
	5	4294.77	-1.39	LD	6	-8.89
	7	4246.83	+0.24	LD	117	-9.25
	14	4400.36	-0.53	LD	28	-9.09
Ti II						log $Ti/N_T = -7.03 \pm 0.23$
	11	3987.61	-2.73	MF	13	-7.16
		4025.13	-1.98	MF	103	-6.87
	17	4762.79	-2.71	MF	12	-6.95
		4798.52	-2.43	MF	11	-7.27
	18	4469.12	-2.87	KX	15	-6.66
		4518.33	-2.55	KX	20	-6.86
	19	4395.03	-0.66	MF	257	-7.09
		4443.80	-0.70	MF	218	-7.28
		4450.49	-1.45	MF	95	-7.18
	20	4287.89	-2.02	MF	61	-6.84
		4337.88	-1.13	MF	113	-7.38
	21	4184.33	-2.46	KX	22	-6.88
	29	4865.61	-2.61	MF	5	-7.45
	30	4545.14	-2.78	KX	14	-6.77
	31	4468.49	-0.60	MF	216	-7.36
		4501.27	-0.75	MF	194	-7.34
	34	3882.28	-1.71	MF	47	-7.22
		3913.46	-0.53	MF	285	-6.90
		3932.02	-1.78	MF	88	-6.81
	39	4609.26	-3.26	MF	4	-6.81
	40	4417.72	-1.43	MF	124	-6.97
		4441.73	-2.41	MF	18	-6.98
		4464.46	-2.08	MF	57	-6.78
		4470.86	-2.28	MF	25	-6.98
	41	4300.05	-0.77	MF	266	-6.85
		4301.93	-1.16	MF	132	-7.19
		4312.86	-1.16	MF	158	-7.05
	41	4330.71	-2.04	MF	29	-7.12
	48	4763.88	-2.45	KX	20	-6.90
	49	4708.65	-2.21	MF	21	-7.09
	50	4563.76	-0.96	MF	193	-7.07
	51	4394.06	-1.59	MF	61	-7.19
		4399.77	-1.27	MF	116	-7.13
		4418.34	-2.40	MF	36	-6.63
	59	4719.53	-3.22	KX	3	-6.95

Table A1. (continued)

Species	Mult	λ(Å)	log gf	Ref.	W_λ (mÅ)	log N/N_T
Ti II	60	4544.02	-2.40	MF	9	-7.26
(continued)		4568.31	-2.65	MF	6	-7.23
	61	4391.03	-2.75	MF	15	-6.70
		4395.85	-2.17	MF	41	-6.79
		4409.51	-1.84	KX	15	-7.59
	70	5154.07	-1.92	MF	62	-6.67
		5188.68	-1.21	MF	95	-7.14
	71	5013.68	-1.94	KX	13	-7.36
	82	4529.46	-2.03	MF	46	-6.68
		4549.62	-0.45	MF	260	-6.97
		4571.97	-0.53	MF	242	-7.01
	86	5129.15	-1.39	MF	54	-7.06
		5185.91	-1.35	MF	62	-7.03
	87	4028.33	-1.00	MF	112	-6.96
	92	4779.99	-1.37	MF	62	-6.89
		4805.09	-1.10	MF	95	-6.91
	93	4421.95	-1.77	MF	19	-7.02
	94	4316.81	-1.42	MF	34	-7.10
		4330.24	-1.51	MF	24	-7.18
		4350.83	-1.40	MF	40	-7.04
	103	5211.54	-1.36	KX	8	-7.51
	104	4367.66	-1.27	MF	44	-6.79
		4386.84	-1.26	MF	51	-6.71
	105	4163.64	-0.40	MF	129	-7.02
	106	4064.37	-1.61	KX	7	-7.27
	113	5010.21	-1.34	KX	11	-7.08
		5069.09	-1.39	MF	4	-7.44
		5072.28	-0.75	MF	27	-7.24
	114	4874.01	-0.79	MF	36	-7.07
	115	4411.08	-1.06	MF	46	-6.64
		4456.65	-1.41	KX	9	-7.05
		4488.32	-0.82	MF	72	-6.65
	H	4129.16	-1.40	KX	19	-7.48
		4158.27	-0.46	KX	3	-6.97
		4188.98	-0.59	KX	3	-6.96
V II						log $V/N_T = -7.89 \pm 0.27$
	9	3973.64	-1.07	BG	26	-8.19
		3997.12	-1.23	BG	33	-7.91
	10	3916.42	-1.05	BG	38	-8.03
		3929.73	-1.59	BG	10	-8.12
		3951.97	-0.78	BG	46	-8.18
	20	3875.66	-2.03	BG	3	-8.11
	25	4178.39	-1.56	BG	39	-7.37
		4190.41	-2.11	KX	7	-7.63
		4204.21	-2.45	MF	6	-7.36
		4209.76	-1.94	KX	6	-7.86
	32	4005.71	-0.52	BG	76	-7.95
		4008.17	-2.07	BG	2	-8.12
		4023.39	-0.69	BG	62	-7.91
		4035.63	-0.77	BG	50	-7.96
		4036.78	-1.59	BG	7	-8.26
		4039.57	-2.40	BG	3	-7.58
	33	3884.85	-1.41	BG	11	-8.04
	56	4528.50	-1.10	BG	27	-7.66
		4564.59	-1.39	BG	15	-7.65
		4600.19	-1.52	BG	6	-7.93
	156	3847.32	-0.61	KX	9	-8.32
Cr I						log $Cr/N_T = 5.97 \pm 0.19$
	1	4254.35	-0.11	MF	40	-5.69

Table A1. (continued)

Species	Mult	λ(Å)	log gf	Ref.	W_λ (m Å)	log N/N_T
Cr I	1	4274.80	-0.23	MF	11	-6.16
(Continued)		4289.72	-0.36	MF	11	-6.05
	7	5204.51	-0.21	MF	6	-5.92
		5206.04	+0.02	MF	6	-6.15
		5208.42	+0.16	MF	16	-5.83
Cr II						log Cr/N_T $= -6.31 \pm 0.29$
	18	4111.01	-1.82	KX	69	-6.80
		4112.54	-3.02	KX	6	-6.75
		4217.06	-2.81	KX	6	-6.90
	19	4053.43	-3.37	KX	7	-6.28
		4087.59	-3.22	MF	6	-6.51
	24	5153.47	-2.70	KX	28	-5.97
		5153.50	-2.70	KX	7	-6.57
		5210.86	-2.94	KX	13	-6.10
	26	4086.14	-2.42	KX	15	-6.52
		4179.42	-1.77	KX	124	-6.09
		4207.35	-2.47	KX	8	-6.70
	30	4812.34	-1.80	MF	55	-6.48
		4824.13	-1.22	MF	228	-6.22
		4836.23	-2.25	MF	60	-6.00
		4848.23	-1.14	MF	189	-6.45
		4856.19	-2.26	MF	59	-6.00
		4864.33	-1.37	KX	113	-6.55
		4884.61	-2.08	MF	46	-6.30
	31	4252.62	-2.02	KX	73	-6.11
		4261.92	-1.53	KX	117	-6.34
		4269.28	-2.17	KX	43	-6.22
		4284.21	-1.86	KX	73	-6.28
	39	4539.62	-2.53	MF	26	-5.98
	44	4555.02	-1.38	MF	122	-6.35
		4558.66	-0.66	MF	313	-6.30
		4588.22	-0.63	MF	273	-6.50
		4592.05	-1.22	MF	130	-6.47
		4616.63	-1.29	MF	116	-6.47
		4618.80	-1.11	MF	208	-6.27
		4634.07	-1.24	MF	175	-6.27
	129	3911.32	-2.06	KX	11	-6.28
	130	3866.00	-2.35	KX	10	-6.06
		3866.52	-2.07	KX	34	-5.75
	162	4145.77	-1.16	KX	63	-6.16
		4224.85	-1.73	KX	53	-5.67
	165	4098.40	-1.47	KX	7	-6.85
	176	4761.43	-2.54	KX	4	-5.85
	177	4697.60	-1.88	MF	8	-6.22
	179	4362.92	-1.89	KX	7	-6.25
	183	3979.50	-0.73	KX	67	-6.34
	190	4901.66	-0.83	KX	7	-6.82
		4912.46	-0.95	KX	11	-6.49
	191	4465.73	-1.18	KX	3	-6.85
	193	4070.84	-0.75	KX	34	-6.17
	D	4306.92	-1.18	KX	17	-6.42
	K	4546.62	-1.18	KX	6	-5.78
		4876.40	-1.46	KX	157	-6.27
		4952.79	-1.44	KX	13	-6.05
		5024.52	-1.54	KX	6	-6.29
Mn I						log Mn/N_T = -6.67
	2	4034.49	-0.81	MF	3	-6.67
Mn II						log Mn/N_T $= -6.43 \pm 0.27$
	2	4205.39	-3.38	KX	42	-6.33

Table A1. (continued)

Species	Mult	λ(Å)	log gf	Ref.	W_λ (m Å)	log N/N_T
Mn II	5	4730.39	-2.15	KX	10	-6.07
(continued)		4738.29	-2.24	KX	8	-6.07
		4755.73	-1.24	KX	28	-6.47
		4764.73	-1.35	KX	34	-6.26
		4806.82	-1.56	KX	5	-6.95
	7	4206.37	-1.57	KX	8	-6.69
		4244.24	-2.40	KX	6	-6.04
	I	3897.60	-1.70	KX	7	-6.66
		4104.98	-1.35	KX	5	-6.66
		4251.74	-1.06	KX	15	-6.45
		4282.49	-1.68	KX	10	-6.41
		4283.77	-2.20	KX	11	-5.93
		4292.25	-2.23	KX	7	-6.10
		4345.59	-2.16	KX	3	-6.60
		4348.39	-1.50	KX	9	-6.73
		4363.25	-1.91	KX	6	-6.39
		4365.22	-1.35	KX	2	-6.76
		4379.67	-1.85	KX	5	-6.63
		4393.38	-2.32	KX	3	-6.33
		4478.64	-0.95	KX	10	-6.48
		4847.61	-1.81	KX	9	-6.41
Fe I						log Fe/N_T $= -4.29 \pm 0.30$
	2	4325.76	-0.01	MF	109	-4.30
		4427.31	-3.04	KX	3	-4.04
	4	3859.91	-0.71	MF	101	-4.64
		3886.28	-1.08	MF	38	-4.78
		3895.66	-1.67	MF	35	-4.20
		3899.71	-1.53	MF	34	-4.37
		3920.25	-1.75	MF	8	-4.78
		3922.91	-1.65	MF	27	-4.39
		3927.92	-1.59	MF	31	-4.34
	16	4994.13	-3.08	MF	2	-3.72
	20	3840.44	-0.51	MF	57	-4.54
	20	3878.02	-0.91	MF	42	-4.32
		3887.05	-1.14	MF	9	-4.82
		3917.18	-2.16	MF	5	-4.05
	22	3850.82	-1.73	MF	11	-4.12
	39	4602.94	-1.95	BK	4	-4.04
	41	4383.54	+0.20	MF	97	-4.67
		4404.75	-0.14	MF	62	-4.55
	42	4250.79	-0.71	MF	9	-4.89
		4271.76	-0.16	MF	74	-4.47
	43	4005.25	-0.61	MF	30	-4.42
		4045.82	+0.28	MF	125	-4.54
		4063.59	+0.07	MF	77	-4.61
		4071.74	-0.02	MF	66	-4.57
		4132.06	-0.65	MF	63	-3.97
	45	3827.82	+0.06	MF	77	-4.57
		3841.05	-0.05	MF	57	-4.60
		3966.07	-1.64	MF	12	-3.79
	68	4430.62	-1.66	MF	5	-3.82
		4442.34	-1.26	MF	9	-3.94
		4447.72	-1.34	MF	3	-4.27
		4459.12	-1.28	MF	5	-4.17
		4494.57	-1.41	MF	7	-3.91
	71	4352.74	-1.26	MF	8	-3.95
		4282.41	-0.81	MF	10	-4.36
	72	3949.95	-1.16	MF	5	-4.26
		4009.71	-1.20	MF	5	-4.22

Table A1. (continued)

Species	Mult	λ(Å)	log gf	Ref.	W_λ (m Å)	log N/N_T
Fe I	114	5049.82	-1.42	MF	3	-4.29
(continued)	152	4187.04	-0.55	MF	9	-4.46
		4191.44	-0.74	KX	7	-4.37
		4210.35	-0.87	MF	5	-4.37
		4222.22	-0.97	MF	6	-4.22
		4235.94	-0.34	MF	16	-4.44
		4250.12	-0.40	MF	9	-4.64
		4260.47	-0.02	MF	40	-4.35
		4271.16	-0.35	MF	14	-4.48
		4299.24	-0.46	KX	10	-4.53
	175	3859.21	-0.68	MF	10	-4.32
		3873.76	-0.79	MF	4	-4.58
	217	4078.36	-1.50	MF	3	-3.95
		4095.97	-1.40	MF	2	-4.26
	276	3998.05	-0.84	MF	3	-4.56
	278	3956.68	-0.58	KX	12	-4.14
		4021.87	-0.66	MF	7	-4.30
	280	3907.94	-1.11	MF	5	-4.00
	318	4871.32	-0.41	MF	39	-3.72
		4872.14	-0.60	MF	8	-4.26
		4878.21	-1.01	MF	2	-4.53
		4890.75	-0.43	MF	9	-4.38
		4891.49	-0.14	MF	16	-4.42
		4903.31	-1.08	MF	2	-4.39
		4920.50	+0.06	MF	33	-4.29
		4957.60	+0.13	KX	46	-4.21
		5006.12	-0.77	KX	5	-4.29
	350	4466.55	-0.59	MF	6	-4.39
	354	4107.49	-0.73	MF	3	-4.62
		4156.80	-0.62	MF	3	-4.64
		4175.64	-0.67	MF	4	-4.50
		4181.75	-0.18	MF	6	-4.81
	355	4154.50	-0.48	KX	7	-4.43
	357	4134.68	-0.49	MF	4	-4.68
	359	4044.61	-1.08	MF	5	-4.00
	364	3925.65	-1.32	KG	5	-3.72
		3925.95	-0.86	KX	5	-4.14
		3942.44	-0.98	MF	6	-3.98
	383	5068.76	-1.23	MF	3	-3.98
		5191.45	-0.66	KX	9	-4.03
		5192.34	-0.52	KX	6	-4.43
	429	3871.75	-0.78	MF	14	-3.71
	482	4267.82	-1.11	MF	5	-3.77
	522	4199.10	+0.25	MF	13	-4.75
	524	4074.79	-0.97	MF	1	-4.66
	527	4017.16	-0.92	MF	5	-3.97
	529	3839.26	-0.25	MF	3	-4.90
	554	4707.27	-1.08	MF	2	-4.06
	559	4067.98	-0.43	MF	4	-4.49
	562	3941.28	-1.01	MF	4	-3.88
		3948.10	-0.26	KX	4	-4.64
		3957.03	-0.59	MF	5	-4.14
		3966.50	-0.83	KX	9	-3.68
	597	4285.44	-0.85	MF	4	-4.01
	661	3951.16	-0.38	MF	4	-4.49
	664	3846.80	+0.01	MF	6	-4.67
	689	4224.18	-0.41	MF	5	-4.29
	695	4153.91	-0.27	MF	5	-4.40
		4157.79	-0.56	KX	3	-4.39

Table A1. (continued)

Species	Mult	λ(Å)	log *gf*	Ref.	W_λ (m Å)	log N/N_T
Fe I	695	4158.79	-0.67	MF	3	-4.26
(continued)	698	4054.81	-1.01	KX	1	-4.32
		4084.50	-0.59	MF	3	-4.38
		4133.87	-1.30	MF	1	-4.05
	755	4547.85	-0.78	MF	5	-3.82
	800	4219.36	+0.12	MF	7	-4.57
	801	4118.55	+0.28	MF	8	-4.67
	828	4401.29	-0.92	MF	2	-4.02
	830	4388.41	-0.59	MF	2	-4.51
	976	4276.68	-1.21	MF	1	-3.91
	984	5005.71	-0.18	KX	3	-4.42
	1066	4983.86	-0.07	KX	2	-4.54
	1067	4982.52	+0.14	KX	4	-4.49
		4983.27	-0.16	KX	2	-4.44
	1089	5162.92	+0.02	MF	6	-4.23
	1090	5090.77	-0.40	MF	2	-4.12
		5125.11	-0.14	MF	3	-4.25
	1092	5133.68	+0.14	MF	4	-4.45
		5142.54	-0.17	KX	6	-3.95
	1094	5065.01	-0.13	KX	8	-3.87
	1103	4112.97	-0.33	MF	9	-3.63
		4132.54	-0.80	KX	2	-3.80
Fe II						log Fe/$N_T = -4.46 \pm 0.27$
	3	3914.50	-4.05	MF	134	-4.39
		3938.29	-3.89	MF	151	-4.45
	22	4124.79	-4.20	MF	41	-4.47
	25	4648.94	-4.51	KX	17	-4.59
		4670.18	-4.10	MF	75	-4.24
	26	4580.06	-3.65	KX	78	-4.66
	27	4128.74	-3.77	MF	103	-4.33
		4273.32	-3.34	MF	131	-4.51
		4303.17	-2.49	MF	314	-4.01
		4385.38	-2.57	MF	277	-4.20
		4416.83	-2.60	MF	288	-4.09
	28	4087.27	-4.71	MF	17	-4.35
		4122.66	-3.38	MF	153	-4.39
		4178.86	-2.48	MF	278	-4.38
		4258.16	-3.40	MF	111	-4.58
		4296.57	-3.01	MF	206	-4.34
		4369.40	-3.67	MF	89	-4.43
	29	3872.76	-3.31	KX	123	-4.57
		3974.16	-3.51	MF	102	-4.53
		4002.08	-3.37	KX	78	-4.80
	30	4833.19	-4.78	MF	12	-4.43
		4839.99	-4.90	MF	8	-4.49
	32	4314.31	-3.47	KX	189	-4.02
		4384.33	-3.50	MF	207	-3.89
		4413.60	-3.87	MF	45	-4.68
	37	4472.92	-3.43	MF	97	-4.58
		4489.18	-2.97	MF	197	-4.39
		4491.40	-2.70	MF	235	-4.37
		4515.34	-2.48	MF	300	-4.08
		4555.89	-2.29	MF	352	-3.87
		4629.34	-2.37	MF	340	-3.93
		4520.22	-2.60	MF	292	-4.05
		4582.84	-3.10	MF	152	-4.54
		4666.75	-3.33	MF	142	-4.39
	38	4508.28	-2.21	MF	333	-4.09
		4522.63	-2.03	MF	394	-3.81

Table A1. (continued)

Species	Mult	λ(Å)	log gf	Ref.	W_λ (m Å)	log N/N_T
Fe II	38	4541.52	-3.05	MF	193	-4.31
(continued)		4576.33	-3.04	MF	195	-4.32
		4583.83	-2.02	MF	501	-3.20
		4620.51	-3.28	MF	131	-4.51
	39	4088.76	-4.82	KX	10	-4.35
	42	4923.93	-1.32	MF	566	-3.59
		5018.44	-1.22	MF	516	-3.92
	43	4601.34	-4.40	KX	14	-4.59
		4731.44	-3.36	MF	144	-4.32
	44	4663.70	-4.26	KX	55	-4.06
	126	4046.81	-4.09	KX	3	-4.63
	141	4147.26	-3.64	KX	8	-4.60
	151	4031.44	-3.11	KX	8	-5.05
	152	3863.38	-2.87	KX	16	-4.95
		3863.95	-2.53	KX	61	-4.63
	153	3827.08	-2.64	MF	104	-4.16
	167	5127.86	-2.53	KX	55	-4.20
		5160.85	-2.64	KX	49	-4.16
	169	4810.74	-3.22	KX	7	-4.51
	170	4610.59	-3.54	KX	5	-4.38
	171	4474.19	-3.07	KX	7	-4.68
	172	4041.64	-3.11	KX	8	-4.58
		4048.83	-2.14	KX	79	-4.38
		4051.21	-3.11	KX	9	-4.53
	173	3906.04	-1.83	KX	154	-4.11
	186	4625.91	-2.22	KX	27	-4.66
		4635.33	-1.65	MF	123	-4.31
	187	4446.24	-2.58	KX	8	-4.87
	188	4111.88	-2.29	KX	13	-4.94
	190	3938.97	-1.85	MF	85	-4.42
	191	3975.03	-2.02	KX	28	-4.85
	205	5074.05	-1.97	KX	27	-4.43
	212	3960.90	-1.41	KX	38	-4.59
	213	4354.34	-1.74	KX	30	-4.16
		4507.10	-1.87	KX	24	-4.07
	219	4631.90	-1.82	KX	5	-4.82
	220	4318.22	-1.93	KX	6	-4.58
		4319.68	-1.69	KX	12	-4.53
		4321.34	-1.76	KX	6	-4.78
	222	4431.64	-1.93	KX	8	-4.44
		4449.66	-1.60	KX	11	-4.62
	D	3844.79	-0.92	KX	11	-4.69
		3894.64	-1.82	KX	5	-4.94
		3898.62	-1.66	KX	14	-4.67
		3922.04	-1.07	KX	4	-5.02
		4319.41	-2.11	KX	6	-4.54
		4487.50	-2.12	KX	12	-4.18
		4418.98	-1.97	KX	7	-4.46
		4436.08	-3.50	KX	4	-4.16
	G	3924.84	-1.14	KX	4	-4.57
		4213.52	-2.24	KX	4	-4.55
		4377.34	-2.75	KX	3	-4.62
	J	4093.24	-2.90	KX	9	-4.09
		4263.90	-1.64	KX	10	-4.76
		4357.58	-2.10	KX	56	-4.33
		4361.25	-2.08	KX	43	-4.47
		4402.88	-2.75	KX	26	-4.06
		4451.54	-1.82	KX	66	-4.49
		4455.26	-1.99	KX	47	-4.47

Table A1. (continued)

Species	Mult	λ(Å)	log gf	Ref.	W_λ (m Å)	log N/N_T
Fe II	J	4499.71	-1.76	KX	18	-4.36
(continued)		4579.52	-2.36	KX	20	-4.52
		4640.84	-1.81	KX	10	-4.58
		4820.83	-0.69	KX	5	-4.61
		4824.83	-1.89	KX	10	-4.25
		4826.68	-0.44	KX	8	-4.67
		4836.95	-1.95	KX	5	-4.48
		4843.31	-3.74	KX	6	-4.02
		4893.82	-4.45	MF	9	-4.78
		4908.15	-0.30	KX	6	-4.89
		4913.29	+0.01	KX	27	-4.51
		4948.10	-0.32	KX	12	-4.53
		4948.79	-0.01	KX	15	-4.75
		4951.58	+0.18	KX	34	-4.54
		4958.82	-0.64	KX	5	-4.57
		4969.36	-0.76	KX	5	-4.52
		4974.21	-0.84	KX	2	-4.76
		4977.03	0.04	KX	24	-4.55
		4977.92	-0.66	KX	6	-4.54
		4984.48	+0.01	KX	27	-4.47
		4990.51	+0.18	KX	35	-4.51
		4999.18	-0.48	KX	3	-4.97
		5004.20	+0.50	KX	55	-4.58
		5009.02	-0.41	KX	6	-4.76
		5021.59	-0.30	KX	13	-4.53
		5026.80	-0.22	KX	18	-4.45
		5030.63	+0.39	KX	57	-4.44
		5035.71	+0.61	KX	70	-4.51
		5061.72	+0.22	KX	37	-4.53
		5062.93	-0.93	KX	4	-4.47
		5067.89	-0.20	KX	9	-4.78
		5070.90	+0.24	KX	34	-4.59
		5075.76	+0.28	KX	34	-4.55
		5082.23	-0.10	KX	20	-4.45
		5087.30	-0.49	KX	20	-4.08
		5089.21	-0.04	KX	23	-4.50
		5093.58	+0.11	KX	34	-4.40
		5106.11	-0.19	KX	11	-4.68
		5107.11	-0.72	KX	6	-4.46
		5113.00	-0.49	KX	7	-4.56
		5117.01	-0.13	KX	8	-4.87
		5115.06	-0.45	KX	6	-4.68
		5119.34	-0.55	KX	4	-4.79
		5120.30	-4.21	KX	25	-4.56
		5132.66	-4.18	MF	33	-4.46
		5144.36	+0.28	KX	35	-4.52
		5149.46	+0.40	KX	48	-4.45
		5150.49	-0.12	KX	14	-4.57
		5154.40	-4.14	KX	30	-4.52
		5157.28	-0.31	KX	11	-4.49
		5166.56	-0.03	KX	23	-4.44
		5170.78	-0.36	KX	10	-4.49
		5175.39	-2.27	KX	4	-4.49
		5178.37	-0.59	KX	6	-4.55
		5180.31	+0.04	KX	18	-4.66
		5186.87	-0.30	KX	8	-4.67
		5194.89	-0.15	KX	11	-4.67
		5197.56	-2.10	MF	287	-4.40
		5199.12	+0.10	KX	21	-4.64
		5203.64	-0.05	KX	16	-4.61

Table A1. (continued)

Species	Mult	λ(Å)	log *gf*	Ref.	W_λ (m Å)	log N/N$_T$
Fe III						log Fe/N$_T$ = -5.11
	4	4419.59	-2.22	KX	7	-5.11
Ni I						log Ni/N$_T$ = -5.55 ± 0.21
	32	3858.30	-0.97	MF	8	-5.83
	98	4786.53	-0.17	MF	1	-5.58
	111	4866.26	+0.07	HE	3	-5.35
	143	5080.53	+0.13	MF	3	-5.45
Ni II						log Ni/N$_T$ = -5.79 ± 0.08
	9	4244.80	-3.11	KX	14	-5.89
		4362.10	-2.72	KX	43	-5.74
	10	4192.07	-3.05	KX	24	-5.70
	12	4015.50	-2.42	KX	63	-5.82
Sr II						log Sr/N$_T$ = -8.75 ± 0.09
	1	4077.71	+0.15	WM	94	-8.82
		4215.52	-0.17	WM	70	-8.69
Y II						log Y/N$_T$ = -9.00 ± 0.22
	5	4309.62	-0.75	HL	5	-8.97
		4398.02	-1.00	HL	6	-8.70
	6	3950.35	-0.49	HL	5	-9.32
		3982.59	-0.49	HL	9	-9.02
	22	4883.68	+0.07	HL	10	-9.00
Zr II						log Zr/N$_T$ = -8.62 ± 0.20
	15	4211.91	-0.98	GB	6	-8.64
	16	3998.95	-0.67	GB	13	-8.52
	29	4090.53	-1.10	GB	3	-8.65
		4156.28	-0.71	GB	4	-8.96
	30	3991.15	-0.30	GB	14	-8.72
	40	4496.98	-0.81	GB	3	-8.92
	42	4150.99	-0.99	CC	7	-8.36
	79	4359.72	-0.56	GB	4	-8.72
		4370.95	-0.71	GB	5	-8.58
		4440.45	-1.19	GB	3	-8.31
	88	4379.74	-0.36	CC	6	-8.62
		4443.01	-0.33	CC	11	-8.40
Ba II						log Ba/N$_T$ = -9.15
	1	4554.03	+0.16	WM	16	-9.15
La II						log La/N$_T$ = -9.22
	10	4086.71	+0.13	MC	4	-9.22
Eu II						log Eu/N$_T$ = -9.55
	1	4129.73	+0.20	BK	5	-9.55

gf value references follow: BG = Biémont et al. (1989) for V II, Biémont et al. (1981) for Zr II; BK = Biémont et al. (1982); CC = Cowley & Corliss (1983); FW = Fuhr & Wiese (1990); GB = Grevese et al. (1981); HE = Heise (1974); HL = Hannaford et al. (1982); JK = Jönsson et al. (1984); KG = Kurucz (guess-1995); KP = Kurucz & Peytremann (1975); KX = Kurucz (1995); LA = Lanz & Artru (1985); LD = Lawler & Dakin (1989); MF = Fuhr, Martin & Wiese (1988), & Martin, Fuhr & Wiese (1988); MC = Magazzu & Cowley (1986); SG = Schulz-Gulde (1969); WF = Wiese, Fuhr & Deters (1996); WM = Wiese & Martin (1980); WS = Wiese, Smith & Glennon (1966), & Wiese, Smith & Miles (1969); WV = Ward (1985).