A list of spectral lines in Procyon (in the order of wave length)

								EW(mA)					K88			E65			E65			
		WL	EP	log gf	ref	log gf	ref	KS82	Wght		S85		KS86	ref	rem	TL78	ref	RemTL	LS80	ref	W48	ref
Atom	No	WL (A)	EP(eV)	log gf	ref	log gf	ref	A87		ref	EW	rem	EW			LL87			TW95		E65	
Al I	13.00	3082.16	0.00																183.8	E65		
Nb II	41.01	3163.40	0.37																58.3	E65		
Ca II	20.01	3179.33	3.14																506.8	E65		
Ca II	20.01	3181.28	3.14																307.8	E65		
Ni I	28.00	3243.06	0.03																105.4	E65		
Cu I	29.00	3273.96	0.00																130.2	E65		
Na I	11.00	3302.34	0.00																202.7	E65		
Na I	11.00	3302.94	0.00																142.3	E65		
Ni I	28.00	3320.26	0.16																97.9	E65		
Ni I	28.00	3366.17	0.16																86.9	E65		
Er II	68.01	3385.08	0.05										12	KS86								
Lu II	71.01	3397.07	1.45										10	KS86								
Pd I	46.00	3404.60	0.81					6	**	KS82												
Dy II	66.01	3407.79	0.00					37	**	KS82			23	KS86								
Mn II	25.01	3419.40	4.93					9	**	KS82												
Zr II	40.01	3430.50	0.47					64	*	KS82												
Dy II	66.01	3434.40	0.00					7	**	KS82												
Ru I	44.00	3436.70	0.15					2	**	KS82												
Tm II	69.01	3462.20	0.00										10	KS86								
Ru I	44.00	3498.90	0.00					5	**	KS82												
Co II	27.01	3501.70	2.24					93	**	KS82												
Dy II	66.01	3506.81	0.10					22	**	KS82			15	KS86								
Os I	76.00	3528.60	0.00					< 1		KS82												
Gd II	64.01	3549.36	0.23										15	KS86								
Dy II	66.01	3550.20	0.59					24	**	KS82												
Dy II	66.01	3563.20	0.10					9	**	KS82												
Co I	27.00	3564.95	0.58																87.3	E65		
Co I	27.00	3652.54	0.17																38.3	E65		
Tb II	65.01	3658.86	0.13										3	KS86	hf							
Ni I	28.00	3670.43	0.16																104.3	E65		
Dy II	66.01	3672.31	0.58										4	KS86								
Yb II	70.01	3694.19	0.00										72	KS86								
Dy II	66.01	3694.81	0.10					18	**	KS82			15	KS86								

H I	1.00	3697.15	10.15																		1890	
Fe I	26.00	3699.15	3.00																		63	
Tm II	69.01	3700.26	0.02										4	KS86								
V II	23.01	3700.34	2.50																		45	
Fe I	26.00	3701.09	2.99																		138	
Tm II	69.01	3701.36	0.00										4	KS86								
Fe I	26.00	3702.03	2.83																		82	
H I	1.00	3703.86	10.15																		2250	
Fe I	26.00	3709.25	0.91																		250	
Y II	39.01	3710.30	0.18																		131	
H I	1.00	3711.97	10.15																		2720	
Gd II	64.01	3712.70	0.38										10	KS86								
Zr II	40.01	3714.77	0.52																		35	
Cr II	24.01	3715.19	3.09																		89	
Fe II	26.01	3715.91	2.27																		104	
Ti I	22.00	3717.39	0.00																		27	
Fe I	26.00	3719.94	0.00																		360	
H I	1.00	3721.94	10.15																		3700	
Ti II	22.01	3723.63	1.56																		45	
Ti II	22.01	3724.11	1.57																		54	
Fe I	26.00	3724.38	2.27																		144	
Eu II	63.01	3724.94	0.00										26	KS86	hf							
Eu II	63.01	3724.94	0.00																		36	
V II	23.01	3732.76	1.56																		84	
Fe I	26.00	3733.32	0.11																		197	
H I	1.00	3734.37	10.15																		4200	
Fe I	26.00	3734.87	0.86																		300	
Fe I	26.00	3737.13	0.05																		410	
Ti I	22.00	3741.06	0.02																		83	
Ti II	22.01	3741.63	1.57																		240	
Fe I	26.00	3744.11	3.03																		126	
Fe I	26.00	3745.56	0.09																		290	
Fe I	26.00	3745.90	0.12																		310	
Y II	39.01	3747.55	0.10																		54	
Fe I	26.00	3748.26	0.11																		290	
Fe I	26.00	3749.49	0.91																		255	
H I	1.00	3750.15	10.15																		4000	
Zr II	40.01	3751.60	0.97																		56	
Ti I	22.00	3752.86	0.05																		105	
Cr II	24.01	3755.13	3.09																		16	
Co I	27.00	3755.45	2.07																		35	
Fe I	26.00	3756.07	2.17																		69	
Cr II	24.01	3756.55	4.91																		8	
Fe I	26.00	3756.94	3.56																		115	

Fe I	26.00	3758.24	0.95																		390	
Ti II	22.01	3759.29	0.60																		410	
Fe I	26.00	3760.53	2.21																		120	
Ti II	22.01	3761.32	0.57																		300	
Ti II	22.01	3761.87	2.58																		129	
Gd II	64.01	3763.00	0.24																59.8	?e65		
Gd II	64.01	3763.00	0.24																		48	
Fe I	26.00	3763.79	0.99																		340	
Fe I	26.00	3766.09	2.58																		45	
Fe I	26.00	3767.19	1.01																		260	
Gd II	64.01	3768.39	0.08																36.7	?e65		
Ni II	28.01	3769.46	3.09																		95	
H I	1.00	3770.63	10.15																		4300	
Fe I	26.00	3773.70	3.03																		60	
Y II	39.01	3774.33	0.13																108.2	E65		
Y II	39.01	3774.33	0.13																		130	
Fe I	26.00	3774.82	2.21																		121	
Ni I	28.00	3775.57	0.42																		129	
Ti II	22.01	3776.06	1.57																		108	
Fe I	26.00	3777.45	2.55																		92	
Sm II	62.01	3780.76																			84	
Fe I	26.00	3781.19	2.19																		78	
Ce II	58.01	3781.62	0.53																52	E65		
Ce II	58.01	3781.62																			61	
Nd II	60.01	3784.25																	10.9	E65		
Fe I	26.00	3787.16	3.62																		89	
Fe I	26.00	3787.88	1.01																		210	
Cu II	29.01	3788.70	0.10																		127	
Fe I	26.00	3789.18	2.72																		108	
Fe I	26.00	3790.10	0.99																		188	
Fe I	26.00	3794.34	2.44																		98	
Fe I	26.00	3795.00	0.99																		215	
Tm II	69.01	3795.76	0.02										7	KS86								
H I	1.00	3797.90	10.15																		5100	
Fe I	26.00	3798.51	0.91																		141	
Fe I	26.00	3799.55	0.95																		225	
Fe I	26.00	3802.28	3.29																		62	
Ce II	58.01	3803.10																			21	
V I	23.00	3803.47	0.29																		14	
Fe I	26.00	3804.01	3.32																		80	
Fe I	26.00	3805.35	3.29																		134	
Ni I	28.00	3807.14	0.42																		159	
Fe I	26.00	3807.53	2.21																		135	
Fe I	26.00	3808.73	2.55																		106	

Fe I	26.00	3809.04	2.85																		46	
Fe I	26.00	3810.76	3.29																		114	
Fe I	26.00	3812.96	0.95																		235	
Fe I	26.00	3815.84	1.48	0.236	BK94																380	
Eu II	63.01	3819.67	0.00																		171	
Fe I	26.00	3820.43	0.86																		460	
Fe I	26.00	3821.18	3.25																		166	
Nd II	60.01	3822.47																			46	
V I	23.00	3822.89	0.29																		41	
Fe I	26.00	3824.44	0.00																		360	
Fe I	26.00	3825.88	0.91																		390	
Fe I	26.00	3827.83	1.55	0.090	BK94																340	
Mg I	12.00	3829.36	2.70																		450	
Ni I	28.00	3831.69	0.42																		166	
Mg I	12.00	3832.30	2.70																		420	
Fe I	26.00	3834.23	0.95	-0.265	BK94																255	
H I	1.00	3835.39	10.15																		7300	
Mg I	12.00	3838.29	2.70																		570	
Fe I	26.00	3840.44	0.99																		260	
Fe I	26.00	3841.05	1.60																		295	
Co I	27.00	3845.47	0.92																		169	
Fe I	26.00	3849.97	1.01																		260	
Fe I	26.00	3850.82	0.99																		193	
Nd II	60.01	3851.75	0.18																		23	
Fe I	26.00	3852.57	2.17																		154	
Si II	14.01	3853.66	6.83																		104	
Si II	14.01	3856.02	6.83																		192	
Fe I	26.00	3856.37	0.05																		265	
Cr I	24.00	3857.63	2.70																		66	
Ni I	28.00	3858.30	0.42																		205	
Fe I	26.00	3859.21	2.39																		173	
Fe I	26.00	3859.91	0.00																		370	
V I	23.00	3862.22	0.02																		2	
Si II	14.01	3862.59	6.83																		120	
Nd II	60.01	3863.41	0.00																		37	
Fe I	26.00	3863.75	2.68	-1.400	BK94																165	
La II	57.01	3864.49	3.53																		28	
V I	23.00	3864.86	0.02																		36	
Fe I	26.00	3865.53	1.01																		240	
Nd II	60.01	3866.80																			75	
Fe I	26.00	3867.22	3.00																		128	
Ce II	58.01	3870.87																			75	
Fe I	26.00	3872.54	0.99	-0.917	BK94																250	
Fe I	26.00	3878.02	0.95																		260	
Fe I	26.00	3887.05	0.91																		192	

H I	1.00	3889.05	10.15																		5500	
Gd II	64.01	3894.70	0.00										8	KS86								
Fe I	26.00	3895.66	0.11																		255	
Er II	68.01	3896.25	0.05										17	KS86								
Fe I	26.00	3897.45	2.94																		88	
Fe I	26.00	3899.71	0.09																		197	
Ti I	22.00	3904.79	0.90																113.5	E65		
Si I	14.00	3905.53	1.90													295.1	E65		234	LS80		
Si I	14.00	3905.53	1.90																		310	
Fe I	26.00	3906.48	0.11																		230	
Eu II	63.01	3907.10	0.20										22	KS86	hf							
Ce II	58.01	3909.31	0.44																		12	
Ni I	28.00	3912.98	0.03																		27	
V II	23.01	3916.42	1.42																79.6	E65		
Gd II	64.01	3916.51	0.59										8	KS86								
Fe I	26.00	3916.73	3.22	-0.565	BK94																104	
Fe I	26.00	3917.19	0.99																		139	
Fe I	26.00	3920.26	0.12																		175	
Fe I	26.00	3922.91	0.05																		197	
Fe I	26.00	3927.92	0.11																		235	
Fe I	26.00	3930.30	0.09																		186	
Ca II	20.01	3933.66																	6388	LS80		
Ca II	20.01	3933.66	0.00																		10500	
Al I	13.00	3944.00	0.00					270	**	KS82						282	LL87		174	LS80	261.5	E65
Al I	13.00	3944.01	0.00																		255	
Fe I	26.00	3947.00	3.20																		89	
Fe I	26.00	3949.95	2.17																		121	
Y II	39.01	3950.35	0.10																		94	
Y II	39.01	3950.36														115	LL87					
Fe I	26.00	3951.16	3.26																		126	
V II	23.01	3952.00	1.48					82	**	KS82												
Fe I	26.00	3955.96	3.06																		72	
Fe I	26.00	3960.28	3.62																		42	
Al I	13.00	3961.52	0.01																		225	
Al I	13.00	3961.53	0.01																190	LS80	203.4	E65
Cr I	24.00	3963.69	2.53																		51	
Fe I	26.00	3964.52	2.83																		52	
Fe I	26.00	3977.74	2.19																		112	
Fe I	26.00	3980.65	2.41																		8	
Y II	39.01	3982.59	0.13																104.1	E65		
Fe I	26.00	3986.18	3.20																		84	
Mg I	12.00	3986.75	4.33																		193	
La II	57.01	3988.52	0.40										45	KS86	hf				45.5	E65		
Pr II	59.01	3994.83	0.05										9	KS86	hf							

La II	57.01	3995.75	0.17					> 37		KS82			36	KS86	hf							
Ti I	22.00	3998.64	0.05																		112	
Fe I	26.00	4001.67	2.17																		107	
V II	23.01	4002.94	1.43					68		KS82	69	hf?				52	LL87					
V II	23.01	4002.94	1.42																		79	
Fe I	26.00	4005.25	1.55																		290	
V II	23.01	4005.71	1.82					107	*	KS82						129	LL87					
Fe I	26.00	4007.28	2.75																		109	
V II	23.01	4008.20	1.79					22	**	KS82												
Co I	27.00	4020.90	0.43					36		KS82	36.5	hf?							41.3	E65		
Nd II	60.01	4021.34	0.32					8	**	KS82	8.5		7	KS86								
Nd II	60.01	4023.01	0.20					10	**	KS82	7		11	KS86								
V II	23.01	4023.38	1.80					85	*	KS82	85	hf?				84	LL87		92.1	E65		
V I	23.00	4023.39																	84	LS80		
Sc I	21.00	4023.70	0.02					19	*	KS82	21.5	hf?										
Ti II	22.01	4028.35	1.89								111										131	
Mn I	25.00	4033.08	0.00																		215	
Mn I	25.00	4034.48	0.00													181	LL87				186	
V II	23.01	4036.77	1.48					39		KS82	41	hf?				37	LL87		45.6	E65		
Cr I	24.00	4039.10	3.85					23		KS82												
V II	23.01	4039.57	1.82					11		KS82	14.5	hf?										
Ce II	58.01	4042.59	0.50					9	**	KS82	9		10	KS86								
La II	57.01	4042.91	0.92					21		KS82			19	KS86								
Fe I	26.00	4044.62	2.82																		121	
Fe I	26.00	4045.83	1.48																		532	
Fe I	26.00	4049.34	2.58																		35	
Zr II	40.01	4050.33	0.71					26		KS82	28											
V II	23.01	4051.10	1.80					14	**	KS82												
Mn I	25.00	4055.54	2.14								112.5	hf?									106	
Mn I	25.00	4059.39	3.06																		14	
Nd II	60.01	4059.96	0.20										6	KS86								
Ti I	22.00	4060.27	1.05																		7	
Nd II	60.01	4061.09														33	LL87		55.7	E65		
Mn I	25.00	4061.74	3.06																		19	
Fe I	26.00	4062.45	2.83													120	LL87				112	
Fe I	26.00	4063.61	1.55																		362	
Fe I	26.00	4065.39	3.42																		43	
Fe I	26.00	4067.99	3.20																		132	
Ce II	58.01	4068.84	0.70										4	KS86								
Nd II	60.01	4069.28	0.06										7	KS86								
Mn I	25.00	4070.30	2.19					41		KS82												
Fe I	26.00	4070.78	3.23																		105	
Fe I	26.00	4071.75	1.60																		315	
Fe I	26.00	4072.51	3.42	-1.439	BK94																59	

Dy II	66.01	4073.15	0.54					8	**	KS82			6	KS86								
Ce II	58.01	4073.48	0.47										17	KS86								
Sr II	38.01	4077.72	0.00					339	**	KS82	366					379.2	E65		219	LS80	340	
Fe I	26.00	4079.85	2.85																		64	
Ce II	58.01	4081.22	0.47																47	E65		
Fe I	26.00	4082.12	3.40																		31	
Mn I	25.00	4082.94	2.17																87.6	E65		
Ce II	58.01	4083.23	0.69										19	KS86								
Fe I	26.00	4084.50	3.32																		111	
Fe I	26.00	4085.32	3.23																		84	
Gd II	64.01	4085.56	0.72										8	KS86								
La II	57.01	4086.72	0.00										40	KS86		24	LL87		51.5	E65		
Fe I	26.00	4087.10	3.32																		54	
Fe I	26.00	4091.56	2.82	-2.068	BK94																16	
Ca I	20.00	4094.93	2.51																76.2	E65	39	
V I	23.00	4099.79	0.27																		16	
Fe I	26.00	4100.75	0.86																		62	
H I	1.00	4101.75																			6480	
Fe I	26.00	4107.50	2.82																		131	
Ca I	20.00	4108.55	2.70																54.5	E65	30	
Nd II	60.01	4109.46	0.32																39.4	?e65		
Co I	27.00	4110.53	1.04																55.7	E65		
V I	23.00	4111.78	0.30																58.1	E65		
Fe I	26.00	4114.45	2.82																		80	
V I	23.00	4116.71	0.27																		5	
Fe I	26.00	4120.21																	110	LS80		
Co I	27.00	4121.33	0.92																		120	
Fe II	26.01	4124.80	2.53	-3.470				49	**	KS82												
Cr I	24.00	4126.52	2.53																		15	
Fe I	26.00	4126.86	2.83																		10	
Cr I	24.00	4127.28	2.53																		14	
V I	23.00	4128.10	0.27																		83	
Fe II	26.01	4128.74	2.57																87	LS80	40	
Eu II	63.01	4129.70	0.00					38	**	KS82	45	hf?	48	KS86	hf	59	LL87		58	LS80	57.4	E65
Ba II	56.01	4130.66	2.72					50	**	KS82	54.5											
Si II	14.01	4130.88														88	LL87		54	LS80		
Fe I	26.00	4132.07	1.60																		249	
Fe I	26.00	4132.91	2.83																		89	
Fe I	26.00	4133.86	3.35																		83	
Fe I	26.00	4136.53	3.35																		42	
Fe I	26.00	4139.94	0.99																		41	
Mn I	25.00	4141.05	4.26					7	*	KS82	9	hf?										
Fe I	26.00	4141.87	3.01																		37	
Fe I	26.00	4143.88	1.55																		245	

Cr II	24.01	4145.77																	45	LS80		
Fe I	26.00	4147.68	1.48																		107	
Zr II	40.01	4150.97														34	LL87					
Cr I	24.00	4153.07	2.53																		7	
Fe I	26.00	4154.51	2.82																		97	
Fe I	26.00	4156.81	2.82																		167	
Fe I	26.00	4157.79	3.40																		132	
Sr II	38.01	4161.80	2.94					53	*	KS82	53.5								67	LS80		
Ce II	58.01	4165.61														64	LL87					
Mg I	12.00	4167.27														221	LL87		217	LS80	215	
Fe I	26.00	4174.92	0.91																		113	
Fe I	26.00	4175.65	2.83																		121	
Fe II	26.01	4178.86	2.57																		146	
Fe I	26.00	4182.39	3.00																		75	
V II	23.01	4183.44	2.04																69.7	E65	48	
Fe I	26.00	4187.04	2.44																345	LS80	174	
Fe I	26.00	4191.44	2.46																		168	
Fe I	26.00	4191.69	2.85																		68	
Fe I	26.00	4202.04	1.48																		245	
Fe I	26.00	4206.70	0.05																		76	
Fe I	26.00	4208.61	3.38																		71	
Zr II	40.01	4208.99	0.71					52	**	KS82	61								55.7	E65	44	
Fe I	26.00	4210.35																	150	LS80		
Zr II	40.01	4211.88	0.52																52.4	E65	33	
Sr II	38.01	4215.52	0.00													274.1	E65		215	LS80	287	
Fe I	26.00	4216.19	0.00																		116	
Fe I	26.00	4222.22	2.44																		123	
CH	601.00	4223.09														11.7	TL78					
CH	601.00	4223.48														22.3	TL78	dbl				
V II	23.01	4225.20	2.03					44	**	KS82												
Ca I	20.00	4226.73	0.00													374.2	E65		282	LS80	505	
Fe I	26.00	4227.44	3.32																		189	
C I	6.00	4228.33	7.68								28.5											
Fe II	26.01	4233.17	2.57																		193	
Fe I	26.00	4233.61	2.47																		139	
V II	23.01	4234.23	1.69					15		KS82											9	
Fe I	26.00	4235.95	2.42																		280	
La II	57.01	4238.38														51	LL87					
Fe I	26.00	4241.12	2.82																		19	
Sc II	21.01	4246.84	0.31								189	hf?				194	LL87		187.7	E65	215	
Fe I	26.00	4247.43	3.35																		143	
Fe I	26.00	4250.13	2.46																		189	
Fe I	26.00	4250.80	1.55																		211	
Cr II	24.01	4252.64														73	LL87					

Cr I	24.00	4254.35	0.00													193	LL87		162	LS80	214	
Mn I	25.00	4257.70	2.95					35		KS82												
Fe I	26.00	4260.49	2.39	0.141	BK94																278	
Cr II	24.01	4261.94	3.85																		79	
Mn I	25.00	4265.93	2.94					37		KS82											31	
Fe I	26.00	4271.17	2.44																		205	
Fe I	26.00	4271.78	1.48																		316	
Cr I	24.00	4274.80	0.00										188.5	E65		208	LL87		172	LS80	199	
Fe I	26.00	4276.68	3.87																		27	
Fe I	26.00	4282.41	2.17																		151	
Ca I	20.00	4283.00	1.88					127		KS82											137	
Cr II	24.01	4284.21														101	LL87					
Ti I	22.00	4287.41	0.83																		19	
Cr I	24.00	4289.73	0.00																		155	
Fe I	26.00	4291.48	0.05																		49	
Cr I	24.00	4293.60	2.91					7	*	KS82												
Sc II	21.01	4294.77	0.61					82	**	KS82						74	LL87					
Fe II	26.01	4296.58	2.69																		108	
Ti II	22.01	4300.05																	212	LS80		
Ti II	22.01	4301.93	1.16																		129	
Fe II	26.01	4303.18	2.69																		117	
Nd II	60.01	4303.58														50	LL87					
Ti II	22.01	4312.86	1.18																181.7	E65	183	
Sc II	21.01	4314.09																			196	
Ti II	22.01	4316.80	2.04																		56	
Zr II	40.01	4317.32	0.71								20					20	LL87					
Sm II	62.01	4318.94	0.27										7	KS86								
Cr I	24.00	4319.64	2.88																		6	
La II	57.01	4322.51	0.17										12	KS86	hf	16	LL87				4	
Sc II	21.01	4325.00																			167	
Fe I	26.00	4325.78	1.60																		319	
Ti I	22.00	4326.36	0.82																		4	
Ti II	22.01	4330.71	1.18																93.8	E65		
La II	57.01	4333.74	0.17										37	KS86	hf				39.3	E65	24	
Fe I	26.00	4337.06	1.55																		117	
H I	1.00	4340.48																			6390	
Fe I	26.00	4347.24	0.00																		6	
Fe I	26.00	4352.75	2.21																		128	
Sc II	21.01	4354.62																			37	
CH	601.00	4355.71														6.9	TL78					
CH	601.00	4356.38														9.1	TL78					
CH	601.00	4356.62														8.7	TL78					
Nd II	60.01	4358.17														13	LL87					
CH	601.00	4360.30														10.8	TL78					

Ni II	28.01	4362.10	4.01																		15	
Ce II	58.01	4364.66	0.49										9	KS86								
Fe I	26.00	4365.91	2.98																		16	
Fe II	26.01	4369.41	2.77																		47	
Sc II	21.01	4374.46														161	LL87					
Fe I	26.00	4375.95	0.00																		128	
CH	601.00	4377.25														20.4	TL78	trpl				
CH	601.00	4378.24														18.8	TL78	dbl				
CH	601.00	4378.92														9.4	TL78					
V I	23.00	4379.24	0.30					68		KS82	73.5	hf?				76	LL87		66.9	E65	43	
Zr II	40.01	4379.77	1.53					34	*	KS82	36.5					42	LL87					
CH	601.00	4380.08														18	TL78					
CH	601.00	4380.73														30.9	TL78	4lin				
Ce II	58.01	4382.17	0.20					8	**	KS82	8		10	KS86								
Fe I	26.00	4383.56	1.48																		385	
Fe II	26.01	4385.39	2.77																		106	
CH	601.00	4386.10														7	TL78					
Ti II	22.01	4386.86	2.59																		64	
Fe I	26.00	4388.40														109	LL87					
CH	601.00	4388.90														10.5	TL78					
Fe I	26.00	4389.26	0.05	-4.583	BGS95																18	
V I	23.00	4389.98	0.28					52	**	KS82						76	LL87		55.8	E65	20	
Ti II	22.01	4394.06	1.22													137	LL87				112	
Ti II	22.01	4395.04	1.08																		235	
Ti II	22.01	4395.84	1.24					88	*	KS82	91								92.7	E65	67	
Y II	39.01	4398.02	0.13					61		KS82	64.5											
Ce II	58.01	4399.20														31	LL87					
Ti II	22.01	4399.77	1.23																141	LS80	143	
Sc II	21.01	4400.39														157	LL87				111	
Fe I	26.00	4404.76	1.55																		322	
V I	23.00	4406.65	0.30													61	LL87		37.5	E65	14	
V I	23.00	4408.20	0.28					31	**	KS82												
Ti II	22.01	4409.53	1.23					47		KS82											42	
Ti II	22.01	4411.92	1.22													82	LL87				37	
Fe II	26.01	4413.60																	30	LS80		
Fe I	26.00	4415.13	1.60													251	LL87				207	
Sc II	21.01	4415.57																			99	
Fe II	26.01	4416.81	2.77													137	LL87				112	
Ti II	22.01	4417.72	1.16								142.5					139	LL87				129	
Ti II	22.01	4418.34	1.24								96										86	
Ce II	58.01	4418.78														47	LL87					
Sm II	62.01	4420.53	0.33										4	KS86								
Sc II	21.01	4420.67	0.62					18		KS82	21.5	hf?									12	
Ti II	22.01	4421.95	2.05																84.4	E65	61	

Ca I	20.00	4425.40	1.88					115		KS82						150	LL87		134	LS80	135	
Fe I	26.00	4427.31	0.05																142	E65	140	
Fe I	26.00	4430.62	2.21																		85	
Sc II	21.01	4431.36	0.61					37		KS82	35.5	hf?									18	
Sm II	62.01	4434.32														29	LL87					
Ca I	20.00	4434.96														198	LL87					
Ca I	20.00	4435.70	1.88					117		KS82									126.8	E65	100	
Mn I	25.00	4436.36	2.91																		10	
Ni I	28.00	4437.57	3.66																		15	
Fe I	26.00	4439.89	2.27																		18	
Fe I	26.00	4442.34	2.19													145	LL87				120	
Ti II	22.01	4443.81	1.08								175										173	
Ti II	22.01	4444.56	1.12								79										73	
Nd II	60.01	4446.40	0.20					6	**	KS82			7	KS86								
Fe I	26.00	4447.72	2.21													150	LL87		131	E65	139	
Ti I	22.00	4449.15	1.88																		23	
Ti I	22.00	4450.90	1.87																		14	
V I	23.00	4452.01	1.87								13.5	hf?									11	
Mn I	25.00	4453.00	2.94					27		KS82											17	
Ti I	22.00	4453.71	1.87																		17	
Ca I	20.00	4455.89														166	LL87		153	LS80		
Cr I	24.00	4458.50	3.01					25	*	KS82												
Ni I	28.00	4462.46	3.45																		34	
Nd II	60.01	4462.99	0.56					10	**	KS82			11	KS86								
Ti I	22.00	4465.82	1.73																		16	
Sm II	62.01	4467.34	0.65										11	KS86	hf	43	LL87					
Ti II	22.01	4468.48	1.13													192	LL87				186	
Mn I	25.00	4470.10	2.94					31		KS82									39	LS80	14	
Ti II	22.01	4470.90	1.16					83		KS82												
Cr I	24.00	4475.31	2.89								6											
Ce II	58.01	4479.39	0.56					14	**	KS82	20											
Mg II	12.01	4481.23	8.86								262.5	bl				310.6	E65		232	LS80	240	
Fe I	26.00	4485.67														76	LL87					
Ce II	58.01	4486.91	0.30					10	**	KS82	15.5		11	KS86								
Ti II	22.01	4488.32																	103	LS80		
Fe II	26.01	4489.19	2.82																		89	
Fe I	26.00	4489.75	0.12																		55	
Eu II	63.01	4491.40																	110	LS80		
Fe II	26.01	4491.41	2.84								112					127	LL87		110	LS80	96	
Cr I	24.00	4492.31	3.36					11		KS82	14										12	
Ti II	22.01	4493.50	1.08					46		KS82											24	
Fe I	26.00	4494.58	2.19																		115	
Mn I	25.00	4498.90	2.93																		21	
Ti II	22.01	4501.26	1.11													185	LL87				199	

Mn I	25.00	4502.21	2.91					33		KS82			39.7	E65		42	LL87		40	LS80	18	
Fe I	26.00	4504.84	3.25																		21	
Ti II	22.01	4506.70	1.13					20		KS82												
Fe II	26.01	4508.29	2.84																		126	
Cr I	24.00	4511.90	3.09					20	**	KS82												
Ca I	20.00	4512.27	2.52								11											
Ti I	22.00	4512.75	0.83					35		KS82											19	
Fe II	26.01	4515.35	2.83																		118	
Fe I	26.00	4517.54	3.06																		37	
Ti I	22.00	4518.03	0.83								43.5										30	
Sm II	62.01	4519.64	0.54					4	**	KS82	4.5		4	KS86	hf							
Ni I	28.00	4519.99	1.67																		17	
Fe II	26.01	4520.23	2.80																		125	
La II	57.01	4522.37	1.24										9	KS86								
Fe II	26.01	4522.64	2.83																		171	
Ce II	58.01	4523.08	0.52					10	**	KS82	13.5		12	KS86								
Ca I	20.00	4526.93	2.71					65		KS82	71.5								90	LS80		
Fe I	26.00	4528.63	2.17																		191	
Ti II	22.01	4529.49	1.57																		132	
Ti I	22.00	4533.25	0.85								89										65	
Ti I	22.00	4534.79	0.84								76.5								115	LS80	52	
Ti I	22.00	4535.58	0.82																		68	
Sm II	62.01	4537.97	0.48					3	**	KS82	3.5		4	KS86								
Cr I	24.00	4540.70	3.10					41	**	KS82												
Cr I	24.00	4541.07	2.53																		16	
Fe II	26.01	4541.52	2.84													109	LL87				76	
Ti II	22.01	4544.02	1.24					48		KS82	50.5								63.9	E65		
Ti II	22.01	4545.14	1.13																88.1	E65		
Cr I	24.00	4545.96	0.94					61		KS82	63.5								66.6	E65	44	
Ti I	22.00	4548.76	0.82					41		KS82									47	LS80	27	
Ba II	56.01	4554.03	0.00					182		KS82	188	hf?				196	LL87		194	E65	208	
Cr II	24.01	4554.99	4.07					73		KS82											50	
Ti I	22.00	4555.49	0.85																		22	
Cr II	24.01	4558.65	4.07								124								134	LS80	117	
La II	57.01	4559.28	0.77																10.7	?e65		
Ce II	58.01	4560.96	0.67																27.9	?e65		
Ce II	58.01	4562.37	0.00					18		KS82	19.5		17	KS86					23.8	E65		
Ti II	22.01	4563.76	1.22													238	LL87				190	
V II	23.01	4564.60	2.27					33	**	KS82												
Sm II	62.01	4566.23	0.33					3	**	KS82	5.5		5	KS86	hf							
Ti II	22.01	4568.33	1.22								31										16	
Mg I	12.00	4571.08	0.00								66.5	hf?									54	
Ti II	22.01	4571.95	1.57													231	LL87				205	
Cr II	24.01	4572.87	3.09																		9	
Cr I	24.00	4575.11	3.37								4											

Fe II	26.01	4576.33	2.83													104	LL87		100	LS80	93	
Eu II	63.01	4576.33																	100	LS80		
V I	23.00	4577.18	0.00								9.5	hf?										
Sm II	62.01	4577.69	0.24										3	KS86								
Ca I	20.00	4578.56	2.52								68.5					49	LL87				61	
Fe II	26.01	4582.83	2.83	-3.094				85		KS82	88										74	
Ti II	22.01	4583.40	1.16					39		KS82												
Fe II	26.01	4583.84	2.80																		180	
Ca I	20.00	4585.88																			95	
Cr II	24.01	4588.20	4.07								110					144	LL87				103	
Ti II	22.01	4589.95	1.24								116										105	
Cr II	24.01	4592.06	4.07					70		KS82	76.5					103	LL87					
Fe I	26.00	4593.50	3.93	-2.060				12		KS82												
Fe I	26.00	4602.00	1.61	-3.154				44		KS82						57	LL87				32	
Fe I	26.00	4602.94	1.48													135	LL87				103	
Ni I	28.00	4605.00	3.47																		57	
Nb I	41.00	4606.80	0.35					< 1		KS82												
Sr I	38.00	4607.34	0.00					25	*	KS82	27										20	
Fe I	26.00	4607.66	3.25																		49	
Ti II	22.01	4609.30	1.18					15		KS82												
Zr II	40.01	4613.95	0.97																21.1	E65	9	
Sm II	62.01	4615.69	0.19																32.8	?e65		
Cr I	24.00	4616.13	0.98					67		KS82	71.5										59	
Cr II	24.01	4616.63	4.07					65		KS82	69.5					72	LL87				52	
Ti I	22.00	4617.28	1.74					36	*	KS82											14	
Cr II	24.01	4618.79														126	LL87					
Fe II	26.01	4620.50	2.82	-3.079				78		KS82									79.5	E65	74	
Ti I	22.00	4623.10	1.73																		15	
Fe I	26.00	4625.05	3.23																		86	
Cr I	24.00	4626.18	0.97					60		KS82	63.5										74	
Mn I	25.00	4626.53	4.71					12		KS82	13	hf?										
Eu I	63.00	4627.22	0.00																13.9	?e65		
Ce II	58.01	4628.16	0.04					14		KS82	16.5		13	KS86					18.8	E65		
Cr II	24.01	4634.08	4.07					81		KS82	88										92	
Ti II	22.01	4636.33	1.16																		16	
Fe I	26.00	4637.50	3.27													80	LL87				62	
Ti I	22.00	4639.95	1.73																		9	
Ti I	22.00	4645.20	1.73																		9	
Cr I	24.00	4646.15	1.03													110	LL87				97	
Fe I	26.00	4647.45	2.94																		103	
Ni I	28.00	4648.66	3.41																		99	
Ti I	22.00	4650.02	1.73																		8	
Cr I	24.00	4651.29	0.98					53		KS82	57.5										56	
Cr I	24.00	4652.17	1.00								79					96	LL87		88.1	E65	79	

Ti I	22.00	4656.06	1.74																		8	
Ti I	22.00	4656.47	0.00																		32	
Fe II	26.01	4657.00	2.88	-3.552				59	**	KS82												
Fe I	26.00	4661.98	2.98																		25	
La II	57.01	4662.51	0.00					7		KS82	8		6	KS86								
Fe II	26.01	4666.76	2.82																		89	
Na I	11.00	4668.57	2.10					34		KS82	38.5					50.5	E65		22	LS80	18	
Fe II	26.01	4670.20	2.57	-3.904				44	**	KS82												
Sc II	21.01	4670.40	1.36					83	**	KS82	88	hf?										
Mn I	25.00	4671.67														18	LL87					
Ti I	22.00	4675.11	1.06																		4	
Fe I	26.00	4678.83														94	LL87					
Ce II	58.01	4684.61														30	LL87					
Ca I	20.00	4685.30	2.93					40		KS82											33	
Ni I	28.00	4686.22	3.58																		45	
Cr I	24.00	4689.36	3.11																		14	
Fe I	26.00	4691.43	2.98																		84	
Co I	27.00	4693.19	3.22																15	E65		
Ti I	22.00	4693.68	0.02																		12	
S I	16.00	4694.12	6.52					20	**	KS82	22					33	LL87					
S I	16.00	4695.45	6.52					14	*	KS82	13					35	LL87					
Cr I	24.00	4697.06	2.70																		10	
Mg I	12.00	4703.00	4.33					216		KS82			WL?						201.4	E65	236	
Mg I	12.00	4703.98	4.34								221.5	hf?	WL?									
Sm II	62.01	4704.40	0.00																14.3	?e65		
Cr I	24.00	4708.02	3.17					37		KS82	37.5										19	
Ti II	22.01	4708.70	1.24					61		KS82											52	
Mn I	25.00	4709.72	2.89					38		KS82									45.5	E65	24	
Fe I	26.00	4710.29	3.01																		58	
Ni I	28.00	4714.42	3.37																		139	
Ti I	22.00	4715.30	0.05																			
Ni I	28.00	4715.76	3.53													77	LL87				52	
Cr I	24.00	4718.42	3.19					46		KS82	47.5								52.2	E65	31	
Sm II	62.01	4719.86	0.04					3	**	KS82	5		5	KS86	hf							
Zn I	30.00	4722.16	4.03					64		KS82	65.5					68	LL87		70.2	E65	76	
Mg I	12.00	4730.04	4.34					47		KS82	49.5								52.1	E65	28	
Cr I	24.00	4730.70	3.08					26		KS82												
Ni I	28.00	4732.47	4.10								32.5										13	
Fe I	26.00	4736.78	3.20																		124	
Cr I	24.00	4737.36	3.07					34		KS82	37.5											
Mn I	25.00	4739.11	2.94					27		KS82									46.4	E65	21	
Fe I	26.00	4741.50	2.82	-2.000				50		KS82									83	LS80		
Ti I	22.00	4742.80	2.23					11	**	KS82											10	
La II	57.01	4748.74	0.93								7		5	KS86								

Co I	27.00	4749.70	3.05								16.5	hf?										
Mn I	25.00	4754.04	2.27																138	LS80	112	
Ni I	28.00	4756.52	3.47																		20	
Ti I	22.00	4758.12	2.25					21		KS82	22										14	
Ti I	22.00	4759.28	2.25					22		KS82	24										23	
Mn I	25.00	4761.51	2.95					50		KS82						71	LL87				44	
Mn I	25.00	4762.38	2.88																		126	
Mn I	25.00	4765.85	2.93					62		KS82						100	LL87				43	
Mn I	25.00	4766.40	2.91					76		KS82											71	
C I	6.00	4770.03	7.48					19.8		A87	32										21	
Ce II	58.01	4773.96	0.92					8		KS82	7		8	KS86		38	LL87					
C I	6.00	4775.91	7.49					22.2		A87	35		31	K88					50.2	E65	20	
Ti II	22.01	4779.99	2.04																		68	
Mn I	25.00	4783.42	2.30								112	hf?									121	
Cr I	24.00	4789.40	2.54					39	*	KS82												
Co I	27.00	4792.84	3.24					13		KS82	14	hf?										
Nd II	60.01	4797.16	0.56																21	?e65		
Cr I	24.00	4801.03	3.11					31		KS82	36.5											
La II	57.01	4804.04	0.23																		5	
Ti II	22.01	4805.10	2.05																		124	
Ni I	28.00	4806.99	3.66					42		KS82	47.5										30	
Fe I	26.00	4808.20	3.24	-2.790				13		KS82												
Zn I	30.00	4810.54	4.08					67	*	KS82	73.5								99.2	E65	71	
Nd II	60.01	4811.35	0.60					4	**	KS82	5		5	KS86								
Cr II	24.01	4812.35	3.86					44		KS82	48.5										28	
Co I	27.00	4813.47	3.20					22		KS82	23.5	hf?									13	
Ni I	28.00	4814.60	3.58																		10	
Nd II	60.01	4820.34	0.20																23.4	?e65		
Ti I	22.00	4820.41	1.50					15		KS82	17										16	
Ti I	22.00	4827.62	2.30																		15	
Ti I	22.00	4840.90	0.90					34		KS82											19	
Cr II	24.01	4848.25	3.86								88											
Ni I	28.00	4857.40	3.72																		35	
Fe I	26.00	4859.75	2.86																		109	
H I	1.00	4861.34																			6310	
Fe I	26.00	4863.65	3.42																		20	
Ni I	28.00	4866.28	3.52																		48	
Co I	27.00	4867.88	3.10																		16	
Ti I	22.00	4868.27	2.23																		13	
Ti I	22.00	4870.14	2.24																		15	
Fe I	26.00	4871.33	2.85																		170	
Fe I	26.00	4872.14	2.87																165.7	E65	134	
Ni I	28.00	4873.45	3.68																		39	
Ti II	22.01	4874.02	3.08																		41	

Ni I	28.00	4874.80	3.53																		11	
Fe I	26.00	4875.88	3.32																		42	
Fe I	26.00	4882.15	3.40																		42	
Y II	39.01	4883.69	1.08								81.5										114	
Cr II	24.01	4884.60	3.84																		38	
Ti I	22.00	4885.09	1.88																		30	
Fe I	26.00	4890.76	2.86																187.4	E65	151	
Fe I	26.00	4891.50	2.84																194.8	E65	174	
Fe I	26.00	4896.44	3.87																		15	
Y II	39.01	4900.12	1.03					76	**	KS82	82											
Fe I	26.00	4903.33	2.87																		105	
Ni I	28.00	4904.42	3.54								75.5											
Fe I	26.00	4907.74	3.42																		25	
Ti II	22.01	4911.20	3.12					69		KS82											61	
Ni I	28.00	4912.03	3.77								29											
Ti I	22.00	4913.62	1.87					21		KS82	23										23	
Ni I	28.00	4913.98	3.73					35		KS82	39.5											
Fe I	26.00	4919.00	2.85																		172	
Fe I	26.00	4920.52	2.82																		246	
Fe II	26.01	4923.93	2.88								218										278	
Fe I	26.00	4924.78	2.27	-2.241	BK94																69	
Ti I	22.00	4928.30	2.15					10		KS82												
Ni I	28.00	4930.80	3.85								11											
C I	6.00	4932.00	7.65																72.8	E65		
Ba II	56.01	4934.09	0.00																230.7	E65	231	
Ni I	28.00	4935.83	3.92					41		KS82	44.5										31	
Cr I	24.00	4936.30	3.11					18	*	KS82												
Fe I	26.00	4938.82	2.86																		94	
Fe I	26.00	4939.70	0.86																		69	
Fe I	26.00	4946.40	3.35	-1.170				72		KS82											84	
V II	23.01	4947.58	3.74																30.7	E65		
Fe I	26.00	4950.10	3.40	-1.670				50		KS82											74	
Ni I	28.00	4953.21	3.72					30	*	KS82	34.5										34	
Nd II	60.01	4959.13	0.06																24.3	E65		
Fe I	26.00	4962.60	4.16	-1.290				35		KS82												
Ni I	28.00	4965.17														71	LL87					
Fe I	26.00	4966.10	3.32																		115	
Ti I	22.00	4973.06	1.99																		69	
Fe I	26.00	4973.11	3.94																		69	
Ti II	22.01	4981.40	1.57					10	*	KS82												
Ti I	22.00	4981.74	0.85					89		KS82	94										103	
Y II	39.01	4982.14	1.03					15	**	KS82	16											
Fe II	26.01	4993.35	2.79	-3.485				56		KS82	55.5											
Fe I	26.00	4994.14	0.91																		95	

Ti I	22.00	4995.50	0.83					79		KS82												
Ni I	28.00	4998.23	3.59					32		KS82	36.5									47.4	E65	24	
Ni I	28.00	5000.35	3.62																			53	
Fe II	26.01	5000.70	2.77	-4.398				15	*	KS82													
Ti I	22.00	5000.99	1.99																			12	
Ca II	20.01	5001.47	7.50					33	*	KS82	35.5												
Fe I	26.00	5001.87	3.87																			126	
Fe I	26.00	5002.80	3.38																			31	
Ti II	22.01	5005.17	1.57					30		KS82	30												
Ti II	22.01	5010.22	3.08																			26	
Ni I	28.00	5010.94	3.62					27		KS82	29.5									39.9	E65	22	
Fe I	26.00	5014.95	3.93																			93	
Ti I	22.00	5016.17	0.85					29		KS82	29											18	
Fe I	26.00	5016.48	4.26								15												
Ni I	28.00	5017.59	3.52																			65	
Fe II	26.01	5018.45	2.88																			327	
Ca II	20.01	5021.15	7.51					8	**	KS82	10												
Fe I	26.00	5022.24	3.97																			82	
Ti I	22.00	5022.88	0.83					38		KS82												23	
Ti I	22.00	5024.85	0.08					33		KS82	35.5											28	
Ti I	22.00	5025.57	2.03																			10	
Sc II	21.01	5031.03																				94	
Fe I	26.00	5031.92	4.37								12												
Ni I	28.00	5035.37	3.62					90		KS82	96												
Ti I	22.00	5036.50	1.44					41	**	KS82													
Ti I	22.00	5038.40	1.43					34	**	KS82													
Ti I	22.00	5039.97	0.02					38	**	KS82												29	
Ni I	28.00	5042.19	3.64					45		KS82	49												
Fe I	26.00	5044.22	2.84	-2.059	BK94																	24	
Ni I	28.00	5048.07	3.82																			23	
Fe I	26.00	5049.83	2.27	-1.334	BK94						117											141	
C I	6.00	5052.17	7.68					61.2		A87	82		79	K88						78.5	E65		
Ti I	22.00	5052.88	2.17																			8	
Ti I	22.00	5064.70	0.05					50		KS82												39	
Fe I	26.00	5067.16	4.22								58.5												
Ti II	22.01	5069.10	3.12					19	*	KS82													
Ti I	22.00	5071.49	1.46								15											5	
Fe I	26.00	5074.75	4.22								109												
Ni I	28.00	5081.12	3.85								89												
Ni I	28.00	5082.35	3.64																	46.5	E65	32	
Fe I	26.00	5083.34	0.95								90											82	
Ni I	28.00	5084.11	3.66					78		KS82	83											62	
Ti I	22.00	5087.10	1.43					13	**	KS82													
Y II	39.01	5087.43	1.08					68		KS82	71.5									73.6	E65	61	

Fe I	26.00	5088.16	4.15								22											
Ni I	28.00	5088.54	3.85								17											
Fe I	26.00	5090.78	4.26								77.5											
Nd II	60.01	5092.80	0.38					4	**	KS82	4.5		5	KS86								
Ni I	28.00	5094.42	3.82					16		KS82	18											
Fe II	26.01	5100.70	2.79	-4.135				34	**	KS82												
Cu I	29.00	5105.50	1.38					50	*	KS82	48.5	hf?							62	E65	49	
Fe I	26.00	5109.66	4.30								64.5											
Fe I	26.00	5110.41	0.00																		119	
Zr II	40.01	5112.28	1.66					11	*	KS82	12								26.7	E65	8	
Ti I	22.00	5113.45	1.44								5										9	
Ni I	28.00	5115.40	3.82					58		KS82	63.5								72.4	E65	52	
Y II	39.01	5119.12	0.99					13	*	KS82	12.5											
Ti I	22.00	5120.43	2.57																		21	
Cr I	24.00	5122.12	1.03								2											
La II	57.01	5123.01	0.32					9	**	KS82	12		8	KS86								
Y II	39.01	5123.22	0.99					34	**	KS82	35.5											
Si I	14.00	5125.02	5.61								29											
Fe I	26.00	5127.36	0.91								77.5										64	
Ni I	28.00	5130.38	3.82																		11	
Fe II	26.01	5132.70	2.79	-3.901				33	*	KS82												
Fe I	26.00	5141.75	2.41																		44	
Fe I	26.00	5145.10	2.19																		13	
Ti I	22.00	5145.47	1.46								10											
Ti I	22.00	5147.48	0.00																		6	
Fe I	26.00	5150.85	0.99																		115	
Fe I	26.00	5151.92	1.01																		61	
Ti II	22.01	5154.08	1.56																		95	
Ni I	28.00	5155.13	3.90								33.5											
Ni I	28.00	5155.77	3.88																		52	
Ni I	28.00	5157.98	3.61								7											
Fe I	26.00	5159.07	4.28								54.5											
Fe I	26.00	5164.55	4.43								25											
Fe I	26.00	5166.29	0.00																		61	
Fe II	26.01	5169.03	2.88																346.5	E65		
Fe I	26.00	5171.61	1.48																		151	
Mg I	12.00	5172.70	2.70					456		KS82	490										485	
Ti I	22.00	5173.74	0.00																61.9	E65	48	
Ni I	28.00	5176.56	3.88																42.4	E65	50	
Ni I	28.00	5176.57	3.90								42.5											
Fe I	26.00	5178.80	4.39								15											
Nd II	60.01	5179.80	0.74					4	**	KS82			4	KS86								
Fe I	26.00	5180.07	4.47								32.5											
Mg I	12.00	5183.62	2.70					606		KS82	606.5										675	

Ti II	22.01	5185.91	1.89																		117	
Ce II	58.01	5187.45	1.20										6	KS86								
Fe I	26.00	5191.46	3.03																166.6	E65	151	
Fe I	26.00	5192.35	2.99																175.1	E65	154	
Dy II	66.01	5192.87																	46.7	?e65		
Ti I	22.00	5193.00	0.02					48		KS82												
Ti I	22.00	5194.06	2.10								6											
Fe II	26.01	5197.58	3.22								128.5										161	
Fe I	26.00	5198.71	2.21								79										66	
Y II	39.01	5200.42	0.99					49		KS82	52.5								73.4	E65	50	
Cr I	24.00	5206.05	0.94																		221	
Ti I	22.00	5210.39	0.05					54		KS82									60.9	E65	46	
Cr II	24.01	5210.85	3.76					16		KS82	17											
Ti II	22.01	5211.54	2.59								48.5											
Co I	27.00	5212.69	3.51								8	hf?										
Cr I	24.00	5214.13	3.35					7	*	KS82	9											
Fe I	26.00	5215.19	3.25	-0.871	BK94																119	
Fe I	26.00	5216.29	1.60																		145	
Fe I	26.00	5217.40	3.20	-1.070				88		KS82											103	
Cu I	29.00	5218.07	3.80					36		KS82	38	hf?										
Cu I	29.00	5218.20	3.80																65.1	?e65		
Ti I	22.00	5219.71	0.02								5										7	
Fe I	26.00	5225.53	0.11								32.5											
Fe I	26.00	5229.86	3.27																		125	
Fe I	26.00	5232.95	2.93	-0.096	BK94						175										240	
V I	23.00	5234.09	2.35																12.9	E65		
Fe II	26.01	5234.63	3.21								136.5										133	
Fe I	26.00	5236.21	4.19								21											
Cr II	24.01	5237.33	4.07								86								96.9	E65	89	
Cr I	24.00	5238.97	2.71								6											
Sc II	21.01	5239.80	1.45					69		KS82	71.5	hf?							82.5	E65	72	
Fe I	26.00	5242.50	3.62	-0.840				75		KS82												
Fe I	26.00	5243.80	4.24	-1.150				43		KS82												
Cr II	24.01	5246.78	3.71					28		KS82	29											
Cr I	24.00	5247.57	0.96					50		KS82	52.5										35	
Fe I	26.00	5250.21	0.12	-4.938	BGS95						28											
Fe I	26.00	5250.66	2.19																		86	
Fe I	26.00	5253.47	3.27	-1.573	BK94																68	
Ca I	20.00	5260.40																			21	
Fe I	26.00	5260.65	2.19								89											
Ca I	20.00	5261.71	2.52								91											
Fe I	26.00	5263.32	3.25																		101	
Fe II	26.01	5264.80	3.22	-2.808				79		KS82												
Fe I	26.00	5266.57	2.99																		171	

Fe I	26.00	5269.54	0.86								201										250	
Ce II	58.01	5274.20	0.56					8	**	KS82												
Fe II	26.01	5276.00	3.19																		204	
Cr II	24.01	5279.90	4.07					37	**	KS82												
Fe I	26.00	5281.80	3.03																		139	
Cr I	24.00	5287.18	3.44								4											
Nd II	60.01	5293.17	0.81										8	KS86								
Fe I	26.00	5295.32	4.41								17											
Ti I	22.00	5295.78	1.07								5											
Cr I	24.00	5296.70	0.98								65.5										47	
Cr I	24.00	5297.36	2.89																79.2	E65	39	
Fe I	26.00	5300.41	4.59								5											
Cr I	24.00	5300.75	0.98					28		KS82											24	
Fe I	26.00	5302.31	3.27																		137	
V II	23.01	5303.22	2.27					6	**	KS82	8.5	hf?										
Cr I	24.00	5304.19	3.46								7.5										8	
Cr II	24.01	5305.87	3.83					45		KS82	48.5										44	
Fe I	26.00	5307.37	1.60																96.5	E65	86	
Cr II	24.01	5308.43	4.07					41		KS82	42.5										37	
Cr II	24.01	5310.70	4.07					25		KS82	26.5										17	
Zr II	40.01	5311.78	1.75																12.4	?e65		
Cr I	24.00	5312.86	3.43																		13	
Cr II	24.01	5313.59	4.07					59		KS82	61.5										42	
Sc II	21.01	5318.40	1.36					17		KS82	20.5	hf?										
Nd II	60.01	5319.82	0.55					7	**	KS82	8.5		7	KS86								
Fe I	26.00	5322.05	2.27								33.5											
Fe I	26.00	5324.19	3.20																		220	
Fe II	26.01	5325.56	3.21	-3.222				74		KS82	77.5										62	
Cr I	24.00	5329.15	2.91								50.5											
Fe I	26.00	5332.91	1.55																		80	
Cr II	24.01	5334.87	4.07								56.5								71.7	E65	52	
Ti II	22.01	5336.79	1.58								102										95	
Fe I	26.00	5339.18	3.23																		100	
Ca II	20.01	5339.20	8.44					20	**	KS82												
Fe I	26.00	5339.94	3.25																		133	
Cr I	24.00	5340.45	3.44					6	**	KS82	8											
Co I	27.00	5342.72	4.00					16		KS82	18	hf?							26.2	E65		
Cr II	24.01	5346.10	3.83					19	**	KS82											46	
Cr I	24.00	5348.33	1.00					70	*	KS82	77.5										71	
Ca I	20.00	5349.47	2.71								93											
Co I	27.00	5352.04	3.58					9	*	KS82	12	hf?										
Fe I	26.00	5365.40	3.56	-1.440				66		KS82												
Fe I	26.00	5367.48	4.41	0.445	BK94						125.5											
Cr II	24.01	5369.40	3.87					8	**	KS82												

Fe I	26.00	5371.50	0.95																		185	
Fe I	26.00	5373.71	4.47								50.5											
Fe I	26.00	5376.84	4.29								6											
Mn I	25.00	5377.62	3.84								27.5	hf?							36.4	E65	31	
C I	6.00	5380.34	7.68					45.4		A87	61.5		55	K88					52.6	E65		
Ti II	22.01	5381.03	1.56																		71	
Fe I	26.00	5383.38	4.31								145.5											
Fe I	26.00	5386.34	4.15	-1.770				13		KS82	16											
Fe I	26.00	5397.13	0.91								159.5								148.2	E65	169	
Fe I	26.00	5398.29	4.44								66.5										176	
Mn I	25.00	5399.49	3.84					17		KS82	19	hf?										
Y II	39.01	5402.78	1.84					18		KS82	19											
Fe I	26.00	5405.78	0.99								156.5											
Fe I	26.00	5406.78	4.35	-1.720				18		KS82	17											
Cr I	24.00	5409.80	1.03																		100	
Cr I	24.00	5409.80	1.03								112											
Mn I	25.00	5413.68	3.84					8		KS82	10	hf?										
Fe II	26.01	5414.10	3.21	-3.750				49		KS82												
Fe I	26.00	5415.21	4.39								140.5											
Fe I	26.00	5417.04	4.40	-1.680				17		KS82	21											
Ti II	22.01	5418.78	1.57					65		KS82	69.5								64.2	E65	61	
Mn I	25.00	5420.34	2.14					26		KS82	30	hf?										
Cr II	24.01	5420.90	3.76					36	**	KS82												
Fe II	26.01	5425.26	3.19	-3.372				67		KS82	67.5										59	
Ti I	22.00	5426.26	0.02																		4	
Fe I	26.00	5429.70	0.95																220	E65	201	
Mn I	25.00	5432.57	0.00					9	*	KS82	11	hf?										
Fe I	26.00	5434.53	1.01								138.5										144	
Ni I	28.00	5435.87	1.99					24		KS82	26										22	
Fe I	26.00	5436.59	2.27								18											
Fe I	26.00	5441.35	4.29	-1.730				14		KS82	16											
Co I	27.00	5444.60	4.07								8.5	hf?										
Fe I	26.00	5445.05	4.39								107										94	
Fe I	26.00	5446.93	0.99																		217	
Ti I	22.00	5453.65	1.44								2											
Co I	27.00	5454.60	4.07								7	hf?										
Fe I	26.00	5461.56	4.44								13											
Ni I	28.00	5462.50	3.83					25		KS82	27											
Fe I	26.00	5464.30	4.12	-1.720				21		KS82												
Mn I	25.00	5470.64	2.16								18.5	hf?									11	
Ti I	22.00	5490.16	1.45																		25	
Fe I	26.00	5491.85	4.19	-2.188	BK94						4											
Fe I	26.00	5497.53	1.01																		137	

Fe I	26.00	5501.47	0.95	-2.950				96		KS82	101											
Cr II	24.01	5502.09	4.17					35		KS82	35.5											
Ti I	22.00	5503.91	2.57																		9	
Fe I	26.00	5506.78	0.99								109										112	
Cr II	24.01	5508.63	4.15					28		KS82	29										16	
Ca I	20.00	5513.00	2.93					68		KS82											54	
Mn I	25.00	5516.79	2.17																		16	
Y II	39.01	5521.59	1.73																		9	
Fe I	26.00	5522.45	4.21	-1.550				24		KS82	27											
Co I	27.00	5524.99	4.10																28.6	?E65		
Fe II	26.01	5525.14	3.25								24											
Sc II	21.01	5526.82	1.77								110	hf?									86	
Mg I	12.00	5528.40	4.33					201		KS82	307	hf?							200.2	E65	202	
Fe II	26.01	5534.85	3.23								103											
Mn I	25.00	5537.74	2.19								9.5	hf?										
Fe I	26.00	5543.90	4.20	-1.140				46		KS82											39	
Y II	39.01	5544.62	1.73																		10	
Y II	39.01	5546.04	1.74																		8	
Sc II	21.01	5552.20	1.45					8	**	KS82												
Fe I	26.00	5554.90	4.53																73.7	E65	54	
Fe I	26.00	5560.22	4.43								38.5											
Fe I	26.00	5562.72	4.42																		26	
Fe I	26.00	5565.71	4.59																84.5	E65	36	
Fe I	26.00	5567.40	2.60																		24	
Fe I	26.00	5569.63	3.40	-0.486	BK94																113	
Fe I	26.00	5572.85	3.38																		158	
Fe I	26.00	5576.10	3.42	-1.000				92		KS82											104	
Fe I	26.00	5577.03	5.03								6											
O I	8.00	5577.30	1.97					3.2		A87								[]				
Ni I	28.00	5578.73	1.68					23	*	KS82	24.5										15	
Ca I	20.00	5582.00	2.52					84		KS82											80	
Fe I	26.00	5586.77	3.35																		164	
Ca I	20.00	5588.76	2.53					141		KS82	142.5										123	
Ni I	28.00	5589.37	3.88					14		KS82	16.5											
Ca I	20.00	5590.13	2.52					79		KS82	86										56	
Ni I	28.00	5593.75	3.88					23		KS82	27											
Ca I	20.00	5594.47	2.52								128.5										146	
Ca I	20.00	5601.28	2.51																102.4	E65	89	
Ni I	28.00	5614.78	4.14																		22	
Fe I	26.00	5615.66	3.32																		169	
Fe I	26.00	5618.64	4.21								32.5										17	
Fe I	26.00	5619.61	4.37	-1.700				16		KS82	17											
Si I	14.00	5621.61	5.08								6											
Fe I	26.00	5624.56	3.40																		133	

Ni I	28.00	5625.33	4.07					24		KS82	25										22	
Ni I	28.00	5628.35	4.09								9											
Cr I	24.00	5628.65	3.42								5											
Fe I	26.00	5633.95	4.99								56.5											
Fe I	26.00	5636.70	3.62	-2.610				8		KS82												
Fe I	26.00	5638.27	4.22								63.5										33	
Sc II	21.01	5641.00	1.50					53	*	KS82	56	hf?										
Ni I	28.00	5641.89	4.09					14		KS82	16											
Ti I	22.00	5644.15	2.56																		8	
Si I	14.00	5645.62	4.93					28	**	KS82	28								40.3	E65	16	
Co I	27.00	5647.26	2.28								5	hf?										
Ti I	22.00	5648.58	2.49								3											
Fe I	26.00	5652.33	4.26								14											
Fe I	26.00	5653.90	4.37	-1.640				20		KS82												
Fe I	26.00	5655.50	4.24																		62	
Sc II	21.01	5657.90	1.51								97	hf?										
Fe I	26.00	5661.35	4.28	-1.756	BK94						12											
Si I	14.00	5665.56	4.92					26		KS82	29										26	
Si I	14.00	5666.68	5.62								21											
Sc II	21.01	5667.15	1.50					41		KS82	42.5	hf?									42	
Sc II	21.01	5669.03	1.50					53		KS82	59.5	hf?							55.7	E65	54	
Ni I	28.00	5669.95	4.25																		17	
Sc I	21.00	5671.84																			10	
Ti I	22.00	5675.44	2.30																		42	
Fe I	26.00	5679.03	4.65	-0.920				42		KS82	45.5								46.4	E65	35	
Ni I	28.00	5682.20	4.10					39		KS82												
Na I	11.00	5682.65	2.10					86	*	KS82	93										101	
Si I	14.00	5684.49	4.95					51	*	KS82	51.5											
Na I	11.00	5688.22	2.10					111	*	KS82	124								129.5	E65	144	
Si I	14.00	5690.43	4.93					38	*	KS82	41.5								43	E65	35	
Si I	14.00	5701.11	4.93					30	*	KS82	29											
Fe I	26.00	5701.60	2.55	-2.120	BK94	-2.216	BGS95	64		KS82											48	
Ti I	22.00	5702.66	2.29								3											
V I	23.00	5703.60	1.05					9	**	KS82	8	hf?									16	
Si I	14.00	5708.41	4.95								71.5								65.9	E65	58	
Mg I	12.00	5711.08	4.34					90		KS82	88	hf?				96	LL87		78.5	E65	69	
Cr I	24.00	5712.78	3.00																		9	
Fe I	26.00	5717.84	4.27																		50	
V I	23.00	5727.00	1.08					11		KS82	13.5	hf?										
Fe I	26.00	5731.77	4.26								42.5										52	
Fe I	26.00	5738.24	4.22								10											
Ni I	28.00	5748.36	1.68								8.5											
Fe I	26.00	5752.04	4.53	-1.267				33		KS82	38.5					38	LL87				55	
Fe I	26.00	5753.14	4.24																		91	

Ni I	28.00	5754.67	1.93								45.5											
Fe I	26.00	5759.55	4.28																		19	
Ni I	28.00	5760.84	4.09					18		KS82	21										39	
Fe I	26.00	5763.01	4.19																		110	
Ti I	22.00	5766.34	3.28																		10	
Si I	14.00	5772.15	5.08					41		KS82	43.5										64	
Ti I	22.00	5774.04	3.29																		14	
Fe I	26.00	5775.09	4.20	-1.203				37		KS82	40.5										61	
Fe I	26.00	5778.47	2.58	-3.430	BK94																16	
Cu I	29.00	5782.10	1.64					30		KS82	31.5	hf?				38	LL87		37.4	E65		
Cr I	24.00	5783.07	3.32								16											
Cr I	24.00	5783.87	3.31					20		KS82	22											
Fe I	26.00	5784.67	3.38																		25	
Cr I	24.00	5787.93	3.31					25		KS82	27					17	LL87					
Si I	14.00	5793.08	4.93								44.5										54	
Fe I	26.00	5793.92	4.20	-1.700				19		KS82	21											
Si I	14.00	5797.87	4.95								34.5											
Ni I	28.00	5805.23	4.17					26		KS82	30											
La II	57.01	5805.77	0.13																		22	
Fe I	26.00	5806.73	4.61								39.5										64	
Fe I	26.00	5809.20	3.88	-1.840				25		KS82											66	
Fe I	26.00	5811.92	4.14								7											
Fe I	26.00	5814.82	4.26	-1.970				10		KS82	12											
V I	23.00	5817.08	1.89					7	**	KS82	9.5	hf?										
V II	23.01	5819.93	2.52					6	**	KS82	9	hf?										
Fe I	26.00	5834.04	2.60																		13	
Ba II	56.01	5853.69	0.60					79		KS82	83								87.7	E65	103	
Fe I	26.00	5856.10	4.29								18											
Ca I	20.00	5857.46	2.93								124											
Fe I	26.00	5859.60	4.55								62.5											
Fe I	26.00	5862.37	4.53	-0.058				75		KS82	77.5					88	LL87				102	
La II	57.01	5863.70	0.92																9.7	?e65		
Ti I	22.00	5866.46	1.07					17		KS82	16										33	
Ca I	20.00	5867.57																			25	
Fe I	26.00	5873.22	4.24																		22	
Na I	11.00	5889.97	0.00					399		KS82	407.5					397	LL87		400.1	E65	450	
Ni I	28.00	5892.89	1.98																		69	
Na I	11.00	5895.92	0.00					315		KS82	338.5					338	LL87		329.2	E65	370	
Fe I	26.00	5905.68	4.63	-0.730				41		KS82	42.5											
Fe I	26.00	5916.26	2.44																		32	
V II	23.01	5928.89	2.52					12		KS82	13	hf?										
Fe I	26.00	5930.20	4.63	-0.230				74		KS82											98	
Fe I	26.00	5934.67	3.91																		78	

Si I	14.00	5948.55	5.08								80										115	
Fe I	26.00	5956.70	0.86	-4.605	BGS95			19	*	KS82												
Ti I	22.00	5965.84	1.87																		28	
Fe I	26.00	5976.79	3.93																		46	
Ti I	22.00	5978.55	1.87								10										19	
Fe I	26.00	5983.70	4.53	-1.878				54		KS82												
Fe I	26.00	5984.83	4.71																		90	
Fe I	26.00	5987.07	4.77	-0.556				50		KS82	51.5										82	
Fe II	26.01	5991.38	3.14	-3.557				53		KS82	57.5					87	LL87					
Ni I	28.00	5996.75	4.22																		16	
Fe I	26.00	6003.00	3.86	-1.120				58		KS82											108	
Fe I	26.00	6005.56	2.58																		15	
Fe I	26.00	6008.00	4.63	-0.966				43		KS82												
Mn I	25.00	6013.51	3.06					42		KS82	44	hf?				86	LL87		76.3	E65	95	
Mn I	25.00	6016.64	3.07								61.5	hf?				74	LL87				80	
Mn I	25.00	6021.82	3.07								63	hf?				84	LL87				83	
Fe I	26.00	6024.10	4.53	-0.120				94		KS82												
Fe I	26.00	6027.06	4.06	-1.210				48		KS82	51.5											
V I	23.00	6039.75	1.06																		9	
S I	16.00	6046.02	7.83					28	**	KS82	28								44.7	E65		
S I	16.00	6052.68	7.84					24		KS82	27								39.4	E65		
Fe I	26.00	6056.01	4.71	-0.460				57		KS82	58.5										86	
Fe I	26.00	6065.49	2.60	-1.530				99		KS82	103										105	
Fe I	26.00	6078.50	4.77	-0.424				62		KS82											92	
Fe I	26.00	6079.00	4.63	-1.120				28		KS82												
V I	23.00	6081.46	1.05																		14	
Fe II	26.01	6084.11	3.19	-3.808				37		KS82	38.5											
Ni I	28.00	6086.29	4.25					24		KS82	27										23	
Fe I	26.00	6089.57	5.02								18											
V I	23.00	6090.21	1.08					9		KS82	10.5	hf?									19	
Ti I	22.00	6091.18	2.27								5										9	
Fe I	26.00	6093.65	4.59	-1.500				15		KS82	15											
Fe I	26.00	6094.38	4.65								8											
Fe I	26.00	6096.68	3.97																		37	
Ti I	22.00	6098.66	3.06								1.5											
Ca I	20.00	6102.70	1.88					107		KS82												
Ni I	28.00	6108.13	1.68					30		KS82	32.5											
Ni I	28.00	6111.08	4.09					18		KS82	21										24	
V I	23.00	6111.67	1.04																		7	
Fe II	26.01	6113.30	3.21	-4.158				21		KS82						25	TL78					
Ca I	20.00	6122.20	1.89					150		KS82						192	LL87				179	
Ti I	22.00	6126.22	1.07								7										21	
Ni I	28.00	6130.14	4.26					12		KS82	14										13	

Si I	14.00	6131.85														54	LL87					
Ni I	28.00	6133.97	4.07																		10	
Fe I	26.00	6136.63	2.44																		132	
Fe I	26.00	6137.70	2.58	-2.950	BGS95						119										98	
Ba II	56.01	6141.70	0.70					144		KS82						194	LL87				156	
Si I	14.00	6142.49	5.62					31	*	KS82	32											
Si I	14.00	6145.02	5.62					31		KS82	33.5											
Fe II	26.01	6149.25	3.87	-2.724				67		KS82	66.5					60	TL78				55	
V I	23.00	6150.16	0.30																		12	
Fe I	26.00	6151.62	2.17	-3.265	BK94	-3.299	BGS95				21										42	
Na I	11.00	6154.20	2.10					22		KS82	24								38.3	E65	38	
Si I	14.00	6155.13														106	LL87					
O I	8.00	6156.80	10.74					15		A87	15.5		14	K88								
O I	8.00	6158.17	10.74								21		20	K88		24	TL78					
Fe I	26.00	6159.38	4.61								4											
Na I	11.00	6160.80	2.10					35	*	KS82	38.5					59	LL87		51.9	E65	50	
Ca I	20.00	6161.30	2.52					40		KS82	41.5											
Ca I	20.00	6162.20	1.90					168		KS82											139	
Fe I	26.00	6165.36	4.14								27					23	TL78					
Ca I	20.00	6166.44	2.52					46		KS82	47.5					49	LL87				41	
Ca I	20.00	6169.04	2.52					69		KS82	73.5											
Ca I	20.00	6169.56	2.52								95											
Fe I	26.00	6170.52	4.78																		58	
Fe I	26.00	6173.34	2.21	-2.880	BGS95						42.5					36	TL78				46	
Ni I	28.00	6176.82	4.09								49.5										56	
Fe I	26.00	6180.21	2.73	-2.586	BK94											27	TL78					
Ni I	28.00	6186.73	4.09																		20	
Fe I	26.00	6188.00	3.94													26	TL78				40	
Ni I	28.00	6191.19	1.68								44.5											
V I	23.00	6199.20	0.29																		13	
Fe I	26.00	6200.32	2.60	-2.437	BGS95						43.5					43	TL78				54	
Ni I	28.00	6204.61	4.09								12											
Fe I	26.00	6213.44	2.21	-2.660				57		KS82	59.5										60	
V I	23.00	6216.36	0.28					12		KS82	16.5	hf?									12	
Fe I	26.00	6219.29	2.19	-2.422	BK94	-2.433	BGS95	68		KS82	70.5										73	
Ni I	28.00	6223.99	4.10								14										11	
Fe I	26.00	6229.24	2.83																		23	
Fe I	26.00	6230.74	2.55																		106	
Fe I	26.00	6232.66	3.64	-1.223	BK94																41	
Si I	14.00	6237.32	5.61					48	*	KS82	54.5					91	LL87					
Fe II	26.01	6238.39	3.87								74.5										67	
Fe II	26.01	6239.96	3.87																		28	
V I	23.00	6243.12	0.30																		10	
Si I	14.00	6243.81	5.61								42.5											

Si I	14.00	6244.47	5.62					38	*	KS82	41.5											
Sc II	21.01	6245.60	1.51					42		KS82	45.5	hf?										
Fe I	26.00	6246.30	3.59	-0.733				89		KS82												
Fe II	26.01	6247.57	3.88																		66	
Fe I	26.00	6252.56	2.39	-1.687				98		KS82	101										105	
Fe I	26.00	6254.25	2.27																		88	
Ti I	22.00	6258.11	1.44					18		KS82	21									25	E65	14	
Ti I	22.00	6258.71	1.45																	35.1	E65	32	
Ti I	22.00	6261.11	1.43					17		KS82	19									19.4	E65	14	
Fe I	26.00	6265.14	2.17	-2.550	BGS95			62		KS82	63.5											59	
Fe I	26.00	6270.20	2.85	-2.464				25	*	KS82												43	
Fe I	26.00	6297.80	2.21	-2.727	BK94	-2.740	BGS95				52.5											58	
O I	8.00	6300.31	0.00					3.5		A87	4.5	[]	3.7	NE92		4.2	TL78						
Sc II	21.01	6300.70	1.51					8	**	KS82	6	hf?											
Fe I	26.00	6301.50	3.64	-0.718				91		KS82													
Fe I	26.00	6311.51	2.82	-3.141	BK94																14		
Ti I	22.00	6312.25	1.45																		8		
Mg I	12.00	6318.71	5.11					27		KS82	29												
Sc II	21.01	6320.80	1.50					10	**	KS82	12	hf?									37		
Ni I	28.00	6322.17	4.14																		9		
Fe I	26.00	6322.70	2.58	-2.426	BGS95			45		KS82											44		
Ni I	28.00	6327.60	1.68					12		KS82	13												
Cr I	24.00	6330.10	0.94								9												
Fe I	26.00	6335.34	2.19	-2.230				77		KS82	79										71		
Fe I	26.00	6336.84	3.67	-0.856	BK94																88		
Fe I	26.00	6344.16	2.42																		43		
Si II	14.01	6347.10	8.12					112		KS82	121					118.1	E65		107	LS80	131		
Fe I	26.00	6355.04	2.83	-2.350	BK94																61		
Ni I	28.00	6360.83	4.15																		22		
Ca I	20.00	6361.94	4.45								99												
Zn I	30.00	6362.35	5.79					22	*	KS82	23.5										32		
Ni I	28.00	6366.50	4.15																		25		
Fe II	26.01	6369.50	2.88	-4.253				33		KS82						65	LL87						
Si II	14.01	6371.36	8.12					83		KS82	87					86.5	E65		108	LS80	89		
Ni I	28.00	6378.26	4.14					15		KS82	18												
Fe I	26.00	6393.61	2.42								109												
Fe I	26.00	6400.02	3.59																		147		
Fe II	26.01	6407.31	3.87																		31		
Fe I	26.00	6408.03	3.67																		87		
Fe I	26.00	6411.70	3.64	-0.595				96		KS82											169		
Si I	14.00	6414.97	5.87								40.5												
Fe II	26.01	6416.90	3.87	-2.740				62		KS82											59		
Fe I	26.00	6420.00	4.73	-0.240				71		KS82													

Fe I	26.00	6421.36	2.27								97										144	
Fe I	26.00	6430.85	2.17	-2.006				91		KS82	93										104	
Fe II	26.01	6432.68	2.88	-3.708				66		KS82	67.5					76	LL87					
Eu II	63.01	6437.72	1.31					< 8		KS82	10	hf?	8	KS86	hf							
Ca I	20.00	6439.08	2.52					146		KS82	152.5					165	LL87				191	
Fe II	26.01	6446.40	6.20	-2.073				10		KS82												
Ca I	20.00	6449.82	2.51					88		KS82	89											
Co I	27.00	6455.02	3.62																		14	
Ca I	20.00	6455.61	2.52					30	*	KS82	34.5											
Fe II	26.01	6456.39	3.89								104								115.5	E65	171	
Ca I	20.00	6471.67	2.52								77.5										102	
Fe I	26.00	6475.64	2.55																		45	
Ni I	28.00	6482.81	1.93					14	*	KS82	13											
Ti II	22.01	6491.59	2.05																		74	
Ca I	20.00	6493.79	2.52					114		KS82	121					176	LL87				158	
Ba II	56.01	6496.91	0.60					137		KS82	142.5										191	
Fe I	26.00	6498.95	0.96	-4.699	BGS95			17	*	KS82	18											
Ca I	20.00	6499.65	2.52					72		KS82	77.5										94	
Fe I	26.00	6518.38	2.82	-2.450	BK94																38	
Si I	14.00	6527.20	5.87								39.5											
Ni I	28.00	6532.89	1.93																		24	
Fe I	26.00	6546.26	2.75																		114	
Ti I	22.00	6554.25	1.44																		9	
Si I	14.00	6555.46	5.98								34.5											
Ti I	22.00	6556.09	1.45																		31	
Ti II	22.01	6559.59	2.04																		45	
H I	1.00	6562.82																			6050	
Ca I	20.00	6572.78	0.00																27.7	E65		
Fe I	26.00	6575.05	2.58																		31	
C I	6.00	6587.62	8.53					42		A87	40.5		42	K88		52	TL78					
Fe I	26.00	6592.93	2.72																		115	
Fe I	26.00	6593.88	2.42	-2.422	BGS95			61	*	KS82						54	TL78				44	
Ni I	28.00	6598.62	4.22																		16	
Ti I	22.00	6599.13	0.90																		9	
Sc II	21.01	6604.60	1.36					43		KS82	41.5	hf?							43.4	E65	60	
Ti II	22.01	6606.98	2.06					15	**	KS82	11.5										29	
Fe I	26.00	6609.12	2.55	-2.692	BGS95						35.5					30	TL78					
Co I	27.00	6632.48	2.27																		6	
Ni I	28.00	6635.14	4.42								18										18	
Fe I	26.00	6639.73	4.59																		15	
Ni I	28.00	6643.64	1.68					59		KS82	64.5											
Eu II	63.01	6645.15	1.38								9	hf?	6	KS86	hf							
Fe I	26.00	6646.98	2.60																		8	

C I	6.00	6655.51	8.54													14	TL78					
Cr I	24.00	6661.08	4.19								7										6	
C I	6.00	6671.80	8.85					8		A87												
Fe I	26.00	6678.01	2.68																		124	
Al I	13.00	6696.03	3.14					17		KS82	19.5		21	KWS5							28	
Al I	13.00	6698.70	3.14								11		12	KWS5							14	
Fe I	26.00	6703.57	2.75					15		KWS5	14										18	
Fe I	26.00	6705.10	4.61					28		KWS5												
Fe I	26.00	6713.05	4.59																		12	
Ca I	20.00	6717.69	2.71								99										102	
Si I	14.00	6721.84	5.86								39.5											
Fe I	26.00	6733.16	4.62																		15	
Ti I	22.00	6743.14	0.90																		11	
S I	16.00	6743.58	7.86					25	**	KS82	27											
Fe I	26.00	6750.15	2.41	-2.621	BGS95						45.5										33	
Fe I	26.00	6752.73	4.62	-1.204	BK94																15	
S I	16.00	6757.16	7.87					44	**	KS82	49.5											
Ni I	28.00	6767.78	1.83					54		KS82	58.5											
Ni I	28.00	6772.32	3.66								34.5											
Fe I	26.00	6820.40	4.62	-1.320				24		KS82												
Fe I	26.00	6843.70	4.55	-0.930				41		KS82												
Fe I	26.00	6855.20	4.54	-0.485				56		KS82												
Cr I	24.00	6882.50	3.42					14	**	KS82												
Cr I	24.00	6883.10	3.42					11	**	KS82												
Cr I	24.00	6925.30	3.43					20		KS82												
Fe I	26.00	6945.21	2.41	-2.435		-2.482	BGS95	52		KS82	58.5											
Mg I	12.00	6965.41	5.75								15											
Cr I	24.00	6979.80	3.45					16	**	KS82												
Fe I	26.00	6999.90	4.10	-1.560				33		KS82												
Si I	14.00	7003.57	5.96					55	*	KS82	58.5											
Si I	14.00	7034.90	5.87								71.5											
C I	6.00	7087.83	8.65					11.2		A87						22	TL78					
C I	6.00	7111.48	8.64					30.8		A87	40.5					31	TL78		33.4	TW95		
C I	6.00	7113.18	8.64					48		A87	59.5					47	TL78		51.3	TW95		
C I	6.00	7115.18	8.64					48.5		A87	61.5	:				47	TL78		53.7	TW95		
C I	6.00	7116.99	8.64					41.2		A87	55.5					49	TL78		48.3	TW95		
C I	6.00	7119.67	8.64													32	TL78		31.2	TW95		
Fe I	26.00	7130.93	4.20	-0.790				70		KS82	71.5											
Ca I	20.00	7148.15	2.71								145.5											

Fe I	26.00	7219.70	4.06	-1.690				30		KS82												
Ti I	22.00	7251.72	1.43								12.5											
Ca II	20.01	7323.89	0.00								10	[]										
Cr I	24.00	7355.90	2.88					30	**	KS82												
Mg I	12.00	7387.70	5.75					51	**	KS82	50.5											
Cr I	24.00	7400.19	2.89					46		KS82	52.5											
N I	7.00	7442.28	10.33					12		A87	16		13	K88		12	TL78					
Fe I	26.00	7445.76	4.26								102											
Fe II	26.01	7449.34	3.89													33	TL78					
N I	7.00	7468.29	10.33					18		A87	24.5		22	K88		15	TL78					
Fe II	26.01	7479.70	3.89													13	TL78					
C I	6.00	7483.44	8.77					16		A87						17	TL78					
Fe I	26.00	7491.65	4.30													39	TL78					
Fe I	26.00	7507.27	4.41													33	TL78					
K I	19.00	7698.96	0.00					138		KWS5												
Fe I	26.00	7746.61	5.06													10	TL78					
Fe I	26.00	7751.12	4.99													26	TL78					
O I	8.00	7771.94	9.15					174		KWS5												
O I	8.00	7773.00	9.15					433		FGVF		MULT										
O I	8.00	7774.17	9.15					155		KWS5												
O I	8.00	7775.39	9.15					124		KWS5												
Fe I	26.00	7780.57	4.47													86	TL78					
Fe I	26.00	7802.51	5.08													8	TL78					
Fe I	26.00	7807.92	4.99													38	TL78					
Fe I	26.00	7832.24	4.43					98		KWS5												
Al I	13.00	7835.39	4.02										26	KWS5								
Al I	13.00	7836.15	4.02										38	KWS5								
Fe I	26.00	8207.75	4.44													34	TL78					
Mg I	12.00	8213.03	5.75					100		KWS5												
Si I	14.00	8215.15	6.26					27		KWS5												
N I	7.00	8216.35	10.34					31		KWS5						26	TL78					
Fe I	26.00	8220.44	4.32					124		KWS5												
C I	6.00	8335.13	7.68					203		KWS5												
Ca II	20.01	8498.02														634	LL87					
Fe I	26.00	8674.76	2.83													82	TL78					

N I	7.00	8683.40	10.33													28	TL78					
Fe I	26.00	8699.46	4.95													45	TL78					
N I	7.00	8703.25	10.33													17	TL78					
C I	6.00	8727.13	1.26													9	TL78					
N I	7.00	8728.83	10.34													19	TL78					
C I	6.00	9111.80	7.49					270		KWS5												
O I	8.00	9260.85	10.74													44	TL78	triplt				
O I	8.00	9262.67	10.74													67	TL78	triplt				
O I	8.00	9265.94	10.74													82	TL78	triplt				
N I	7.00	9392.79	10.69													38	TL78					
P I	15.00	9750.75	6.95					9		KWS5												
P I	15.00	9796.91	6.99					23		KWS5												
Fe I	26.00	9800.36	5.09					83		KWS5												
Sr II	38.01	10327.31	1.84								146.5											

Rem
601 = CH

Ref		
		K88
KS82	Kato and Sadakane	KS86
S85	Steffen (1985) = ref. No. 1375	
KS86	Kato and Sadakane (1986)	
K88	Kato (1988) Thesis	
TL78	Tomkin and Lambert (1978)	
A87	Atlas (1987)	
LS80	Leushin and Sokolov (1980)	
TW95	Tomkin, Woolf, and Lambert (1995) No.1407	
LL87	Lane and Lester (1987) No.1281	
E65	Edmonds (1965) = No.1276	
W48	Wright(1948) Pub. Dominion Astropys. Obs. 8, 1	
NE92	Nissen and Edvardsson(1992) A&A 261, 255 = ref No. 803	
KWS5	Kato, Watanabe, and Sadakane (1995) PASP submit	
FGVF	Faraggiana, Gerbaldi, van't Veer, and Floquet(1988) A&A 201, 259 = ref. No.1132	

gf Ref:

BK94	Bard and Kock (1994) A&A 282, 1014 = ref. No. 1038