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Canada, Mines Branch

Report # 848

Dept. Energy, Mines & Resources
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THE SPECTRUM OF STEEL

A Table

*For the Selection of
Homologous Spectral Lines*

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INTRODUCTION

Since the intensity of various spectral lines in electrical discharges is known to vary considerably from instant to instant, it has been suggested by Hasler and Sampson (1)* that spectral lines of equal or nearly equal excitation potentials should behave identically, regardless of source fluctuations. Moreover, if the excitation potentials were known, self-reversal of certain lines might be foreseen. In addition, other lines of higher excitation potentials might be selected. Results supporting these predictions have been reported (2, 3, 4).

In the present report, fundamental and practical information concerning the ultraviolet spectrum of steel alloys is tabulated. Its application will lead to a ready facility in selecting homologous line pairs employed for accurate and quantitative analysis of a wide variety of steel alloys. The methods of obtaining this information were described previously (2, 4).

In the tabulation, Column I contains the identified wave-lengths corrected for refractive index values found in the M.I.T. Wavelength Tables (5). Column II lists the refractive index displacements in millimetres of the spectral lines, as recorded by a large-quartz spectrograph. Column III lists the atomic origins of the spectral lines. The excitation potentials tabulated in Column IV were calculated from the relationship

$$E = 1.240 \times 10^{-4} T$$

where E is the excitation potential in electron volts and T is the term value of the upper energy level of the transition in cm^{-1} . The values of T were obtained from the literature (6-25). Column V, in addition to the visual intensities on a scale of zero to ten, gives information regarding background intensities, extreme self-reversal, and the diffuseness of the spectral lines. The visual intensities are those that might be expected in the spectrum of a steel of the following composition: Mn—1.0, Si—0.5, Ni—1.0, Cr—2.0, Mo—0.8, V—0.1, and Cu—0.1. In Column VI, possible interferences have been indicated; they depend upon the particular instrument used.

For bracketed reference numbers, see page 55.

LEGEND

- ? — classification doubtful
- r — self-reversal observed visually
- f — diffuse
- b — dense background
- S — secondary wavelength standard

Wave Length	Displacement	Atomic Origin	Excitation Potential	Visual Intens.	Interferences
I.A.	mm.		e.v.		
2327.39	578.262	Fe II	13.27	10	
2327.95	577.997	Fe II	16.00	4	
2328.67	577.677	Mn	.....	0	
2328.85	577.585	Mn	.....	0	
2329.36	577.323	Fe	.....	6	
2329.96	577.053	Ni I	5.59	2	
2330.05	576.984	Cr	.....	2	
2330.46	576.819	V	.....	1	
2330.93	576.587	Mo	.....	1	
2330.99	576.577	Fe II	.....	2	
2331.31	576.403	Fe II	13.41	10	
2332.03	576.060	Fe	.....	bf2	
2332.80	575.711	Fe II	13.21	br9	
2333.48	575.393	Cr	.....	b2	
2334.58	574.867	Ni II	13.59	b5	
2336.65	573.907	Mo	.....	0	Ni II 2336.68 Ni II 2336.59
2336.86	573.794	Fe II	.....	f1	
2337.09	573.716	Ni I	5.40?	0	
2337.53	573.499	Fe	.....	1	
2338.00	573.278	Fe II	13.27	10	
2338.96	572.823	Fe III	39.2	2	
2339.42	572.611	Fe II	15.44	7	
2339.75	572.464	Fe II	15.96	0	
2340.35	572.190	Fe II	.....	1	
2340.45	572.131	Fe II	15.84	4	Mo 2340.47
2340.59	572.076	Mn	.....	2	
2340.93	571.910	Fe II	15.84	3	
2341.18	571.785	Ni II	15.50	3	
2341.96	571.435	Fe II	17.10	3	
2342.25	571.301	Fe II	15.42	3	
2343.49	570.731	Fe II	13.15	r9	Ni II 2343.49
2343.96	570.506	Fe II	13.45	9	
2344.28	570.370	Fe II	13.27	10	
2345.34	569.882	Fe II	15.77	10	Cr 2345.33
2346.29	569.444	Fe II	17.11, 18.38	b2	
2348.10	568.610	Fe II	13.37	br8	
2348.30	568.502	Fe II	13.21	b8	
2351.19	567.196	Fe II	15.79	10	
2351.96	566.849	Fe II	.....	1	
2354.47	565.709	Fe II	15.80	9	
2354.90	565.515	Fe II	13.48	8	
2355.22	565.375	Fe II	15.78	5	
2355.42	565.276	Mo	.....	f3	
2356.41	564.836	Ni II	13.72	1	
2357.01	564.570	Fe II	15.27, 18.35	8	
2359.10	563.623	Fe II	13.22, 18.36, 15.81	bf10	
2359.59	563.400	Fe II	15.79	b4	
2360.00	563.209	Fe II	13.34	bf7	

THE SPECTRUM OF STEEL

2360.29—2389.87

Wave Length	Displacement	Atomic Origin	Excitation Potential	Visual Intens.	Interferences
I.A.	mm.		e.v.		
2360.29	563.078	Fe II	13.41	bf7	
2361.72	562.451	Fe II	15.80, 18.31	6	
2362.02	562.307	Fe II	13.41	8	
2363.94	561.454	Fe	.....	3	
2364.71	561.085	Cr I	5.25	7	
2364.83	561.047	Fe II	13.15	7	
2366.04	560.522	Fe II	.....	1	
2366.60	560.271	Fe II	13.45	8	
2366.86	560.143	Fe II	13.09, 15.79	3	Cr I 2366.85
2367.39	559.921	Ni II	12.99	1	
2368.60	559.374	Fe II	13.45	f10	
2369.23	559.096	Fe II	15.89	3	Ni II 2369.22
2369.44	559.007	Fe I	5.22	0	
2370.50	558.534	Fe II	18.32	b6	
2372.27	557.733	Mo I	6.65	f1	
2372.63	557.599	Fe II	17.23	9	
2372.78	557.531	Fe II	15.66	1	
2373.37	557.284	Mn II	16.38	1	Al I 2373.36
2373.73	557.116	Fe II	13.08	f10	Cr I 2373.73
2374.87	556.610	Fe II	.....	2	Mo 2374.87
2375.19	556.465	Fe II	13.46	f10	
2375.42	556.370	Ni II	13.68	2	
2376.03	556.095	Ni I	5.33	1	
2376.44	555.910	Fe II	18.27	f10	
2377.12	555.623	Mo	.....	1	
2377.52	555.434	Fe	.....	f1	
2377.87	555.300	Fe	.....	1	
2378.53	555.023	Fe II	16.49	7	
2378.98	554.806	Fe II	15.89	7	
2379.16	554.744	Fe II	16.29	3	V 2379.15
2379.28	554.678	Fe II	13.36	10	
2380.76	554.042	Fe II	13.15	b9	
2381.48	553.736	Cr	.....	b1	Mo 2381.47
2382.04	553.487	Fe II	13.06	br10	
2382.36	553.336	Fe II	13.45	b3	
2382.89	553.111	Fe II	15.46	b6	
2383.06	553.042	Fe II	13.11	b7	
2383.24	552.956	Fe II	13.42	b9	
2383.87	552.695	Mo	.....	0	
2384.39	552.465	Fe II	13.45	9	
2385.01	552.195	Fe II	13.40	7	
2386.96	551.355	Mo	.....	1	V I 2386.96
2387.43	551.149	Fe II	16.82	7	
2387.76	551.008	Ni II	13.47	1	
2388.20	550.811	Fe II	15.63	6	
2388.39	550.733	Fe II	15.51	6	
2388.63	550.639	Fe II	13.40	r9	
2389.40	550.292	Fe II	.....	3	
2389.53	550.247	Fe III	41.1	3	
2389.87	550.108	Fe II	16.29	1	

Wave Length	Displacement	Atomic Origin	Excitation Potential	Visual Intens.	Interferences
I.A.	mm.		e.v.		
2389.97	550.063	Fe I	5.15	1	
2390.22	549.923	Fe II	16.93	3	
2391.47	549.407	Fe II	13.34	9	
2392.58	548.946	Ni II	14.86	2	Fe II 2392.58
2394.01	548.342	Cr	.....	2	
2394.17	548.273	Fe II	.....	1	
2394.52	548.124	Ni II	13.46	9	Fe II 2394.52
2394.90	547.958	Fe II	15.89	5	
2395.41	547.750	Fe II	13.12	8	
2395.62	547.654	Fe II	13.08	r8	
2396.71	547.189	Fe II	16.23	8	
2397.77	546.753	Cr	.....	1	
2399.24	546.129	Fe II	13.11	br10	
2399.64	545.950	Fe II	.....	bf2	
2400.34	545.660	Fe II	16.29	10	
2402.08	544.930	Fe II	.....	7	
2402.26	544.850	Fe II	15.84	4	
2402.60	544.705	Fe II	13.36, 15.56	6	
2404.43	543.945	Fe II	13.12	10	
2404.88	543.754	Fe II	13.09	r10	
2405.83	543.363	Fe II	.....	3	
2406.09	543.248	Fe II	15.44	2	
2406.66	543.015	Fe II	13.12	r10	
2406.99	542.874	Fe II	16.91	8	
2407.23	542.772	Fe II	.....	1	
2407.95	542.473	Fe II	15.46	7	
2408.76	542.125	Fe II	.....	f4	Cr I 2408.75
2409.38	541.884	Fe II	15.46	2	
2409.71	541.742	Fe II	16.20	4	
2410.29	541.511	Fe II	15.83	bf1	
2410.52	541.411	Fe II	13.11	br10	
2411.07	541.187	Fe II	13.12	b10	
2413.05	540.366	Ni II	13.53	0	
2413.31	540.255	Fe II	13.12	10	
2414.08	539.940	Fe II	15.51	4	
2414.20	539.879	Fe II	.....	4	
2415.06	539.532	Fe II	15.84	9	
2415.78	539.232	Fe II	15.63	1	
2416.14	539.093	Ni II	13.59	8	Fe II 2416.12
2416.71	538.855	Fe II	16.80	5	V I 2416.75
2417.87	538.384	Fe II	16.23	10	
2419.01	537.910	Mo	.....	0	
2419.31	537.785	Ni I	5.29	1	
2419.88	537.552	Fe I, Fe II	6.11, 15.79	4	Blend
2420.38	537.359	Fe I	5.93	0	
2420.72	537.211	Mo I	6.65	0	
2421.51	536.900	Fe III	40.0	0	
2421.90	536.725	Fe II	15.44	3	
2422.18	536.622	Mo	.....	1	

Wave Length	Displacement	Atomic Origin	Excitation Potential	Visual Intens.	Interferences
I.Å.	mm.		e.v.		
2422.68	536.411	Fe II	16.86	10	
2422.94	536.309	Fe II	15.44	1	
2423.21	536.200	Fe II	16.86	10	
2423.92	535.912	Fe II	16.91	3	
2424.14	535.817	Fe II	15.77	10	
2424.39	535.717	Fe II	15.44	5	
2424.58	535.635	Fe II	16.86, 15.80	9	
2425.36	535.325	Fe II	16.20	7	
2425.68	535.195	Fe II	16.17	8	
2425.93	535.097	Fe II	15.51	3	
2427.20	534.580	Fe II	15.49	3	
2427.41	534.509	Mn	.....	f2	
2427.75	534.342	Mn	.....	1	
2428.08	534.230	Fe II	15.49	b1	
2428.29	534.123	Fe II	16.86	b10	
2428.80	533.939	Fe II	16.85	8	Mo 2428.78
2429.04	533.840	Fe II	16.85	8	
2429.38	533.698	Fe II	15.66	8	
2429.50	533.641	Fe II	15.81	3	
2429.85	533.512	Fe II	.....	4	Fe I 2429.81
2430.07	533.422	Fe II	15.79	10	
2430.84	533.111	Fe II	.....	4	Blend
2431.02	533.042	Fe II	.....	3	Fe I 2431.02
2431.32	532.921	Fe III	40.5	2	
2432.27	532.539	Fe II	15.80	10	
2432.87	532.292	Fe II	.....	10	
2433.50	532.053	Fe II	15.51	7	
2434.73	531.561	Fe	.....	bf9	
2434.94	531.462	Fe II	15.81	b9	
2435.81	531.117	Fe II	15.46	3	
2436.22	530.958	Fe II	16.10	7	
2436.41	530.868	Fe II	.....	b1	Fe I 2436.34
2436.67	530.766	Ni	.....	bf5	
2437.00	530.642	Fe II	18.18	bf3	
2437.15	530.581	Fe II	16.17	b5	
2437.27	530.528	Fe II	16.91	b3	
2437.67	530.360	Fe II	18.15	bf1	
2437.89	530.289	Ni II	13.37	b5	Fe II 2437.86
2438.18	530.176	Fe I	5.94	2	
2438.48	530.063	Cr	.....	1	
2439.30	529.728	Fe II	16.09	f10	
2439.74	529.548	Fe I, Fe II	.....	4	Blend
2440.11	529.406	Fe	.....	2	
2440.42	529.280	Fe II	16.82	10	
2441.55	528.838	Fe II	16.17	3	
2442.57	528.431	Fe	.....	4	
2443.72	527.966	Fe II	.....	3	
2443.87	527.923	Fe I	5.93	4	
2444.51	527.661	Fe II	15.51	bf10	
2445.56	527.247	Fe II	15.63	b10	

Wave Length	Displacement	Atomic Origin	Excitation Potential	Visual Intens.	Interferences
I.A.	mm.		e.v.		
2445.78	527.157	Fe II	16.81	b7	
2446.10	527.037	Fe II	16.82	9	
2446.46	526.898	Fe II	15.46	10	Mn 2446.45
2447.20	526.610	Fe II	16.81	10	
2447.32	526.553	Fe II	.....	10	
2447.56	526.463	Fe II	.....	f2	
2447.75	526.391	Fe II	17.01	10	Fe I 2447.72
2448.73	526.011	Fe II	16.12	2	
2449.19	525.832	Fe II	15.56	2	
2449.27	525.792	Fe II	15.46	1	
2449.65	525.652	Cr	.....	1	
2449.74	525.620	Fe II	13.21	1	
2449.96	525.531	Fe II	16.81	9	Cr 2449.96
2450.20	525.434	Fe II	16.81	9	V 2450.24
2451.10	525.084	Fe II	13.15	2	
2451.21	525.035	Fe II	16.12	7	
2451.39	524.976	Fe II	15.50, 16.81	1	
2452.59	524.509	Fe	.....	f2	
2452.92	524.375	Fe II	16.81	2	
2453.47	524.159	Fe	.....	2	
2453.80	524.034	Fe II	15.46	8	
2454.16	523.884	Fe II	16.11	4	
2454.58	523.725	Fe II	16.99	10	
2455.53	523.359	Ni II	13.33	0	
2456.64	522.930	Fe II	16.99	6	
2456.82	522.861	Fe II	16.13	6	
2457.60	522.569	Fe	.....	5	
2457.77	522.490	Mo	.....	f2	Fe II 2457.785
2458.78	522.102	Fe II	16.10	10	
2458.96	522.024	Fe II	.....	6	
2459.17	521.969	Fe	.....	3	
2460.65	521.380	Fe II	.....	f4	
2461.28	521.137	Fe II	16.13	10	
2461.67	520.994	Fe II	15.46	3	
2461.86	520.916	Fe II	16.12	10	
2462.18	520.791	Fe I	5.08	2	
2462.64	520.601	Fe I	5.03	4	
2462.98	520.490	Fe III	39.7	0	
2463.28	520.370	Fe II	16.04	10	
2463.73	520.200	Fe I, Fe II	5.98	4	Blend
2464.01	520.092	Fe II	16.09	10	
2464.90	519.748	Fe II	16.12	10	
2465.20	519.635	Fe II	15.66	10	Fe I 2465.15
2465.91	519.364	Fe II	16.11	10	
2466.68	519.081	Fe II	15.62	10	Mo 2466.68
2466.82	519.013	Fe II	15.61	10	
2467.73	518.673	Fe I	5.98	b1	
2468.30	518.455	Fe II	15.46, 15.44	b6	
2468.88	518.233	Fe	.....	b3	
2469.14	518.138	Cr	.....	0	

THE SPECTRUM OF STEEL

2469.37—2490.73

Wave Length	Displacement	Atomic Origin	Excitation Potential	Visual Intens.	Interferences
I.A.	mm.		e.v.		
2469.37	518.049	Fe II	15.44	1	
2469.51	517.988	Fe II	.....	10	
2469.83	517.869	Fe II	.....	4	
2470.41	517.651	Fe II	16.11	8	
2470.66	517.561	Fe II	15.59	9	
2470.75	517.520	Fe II	16.07	f4	
2471.67	517.179	Fe II	15.45	1	
2472.07	517.022	Fe II	15.45	6	
2472.43	516.888	Fe II	15.61	b9	
2473.15	516.619	Ni II	13.47	b1	
2473.32	516.547	Fe II	.....	b9	
2474.76	516.004	Fe II	16.09	9	Fe I 2474.81
2476.27	515.440	Fe II	15.89	8	
2476.65	515.282	Fe I	5.99	4	
2477.34	515.034	Fe II	15.44	9	
2477.48	514.968	Fe II	15.44	1	
2478.12	514.745	Fe II	16.20	6	
2478.21	514.708	Fe II	15.45	0	
2478.45	514.626	Fe II	15.50	1	
2478.57	514.570	Fe II	15.59	10	
2479.22	514.323	Fe II	.....	3	
2479.48	514.235	Fe I	5.98	2	
2479.78	514.109	Fe I	5.08	6	
2480.16	513.978	Fe II	15.54	10	
2481.05	513.643	Fe II	16.10	8	
2481.19	513.585	Mo	.....	1	
2481.57	513.443	Fe II	15.37, 17.01	5	
2482.12	513.244	Fe II	15.49	b10	
2482.33	513.165	Fe II	.....	b5	
2482.65	513.043	Fe II	16.01	b10	
2483.27	512.790	Fe I	.....	b7	
2483.54	512.712	Fe I	5.98	b0	
2483.72	512.647	Fe II	17.01	b8	
2484.24	512.450	Fe II	15.59, 16.09	b10	Fe I 2484.19
2484.56	512.336	Fe II	16.12	bf3	
2484.82	512.244	Fe III	39.9	b1	
2485.08	512.146	Fe II	13.15	1	
2485.98	511.810	Fe	.....	1	
2486.34	511.670	Fe II	16.04	10	Fe I 2486.37
2486.69	511.546	Fe	.....	1	
2487.06	511.408	Fe I	5.99	2	
2487.37	511.296	Fe I	5.08	1	
2488.18	510.989	Fe I	5.03	6	
2488.34	510.924	Fe II	.....	6	
2488.95	510.702	Fe	.....	1	
2489.10	510.649	Fe II	.....	1	
2489.29	510.579	Cr	.....	0	
2489.49	510.512	Fe II	15.50	10	
2489.82	510.382	Fe II	16.00	10	Fe I 2489.75
2490.73	510.063	Fe II	16.99	9	Fe I 2490.64

Wave Length	Displacement	Atomic Origin	Excitation Potential	Visual Intens.	Interferences
I.A.	mm.		e.v.		
2490.86	510.000	Fe II	15.54	8	
2491.16	509.880	Fe I	.....	2	
2491.39	509.806	Fe II	16.03	9	
2491.98	509.587	Fe	.....	0	
2492.34	509.458	Fe II	16.10	9	
2492.64	509.335	Fe	.....	2	
2493.18	509.162	Fe II	15.49, 16.04, 15.46	10	Dobbie found measurements difficult
2493.26	509.109	Fe II	15.49, 16.04, 15.46	10	
2494.11	508.803	Fe II	15.49	3	
2495.86	I 508.162	Fe I, Fe II	5.83	10	Blend
2495.86	II 514.336	Fe I, Fe II	5.83	10	Blend
2496.53	514.086	Fe I	5.88	3	
2497.30	513.791	Fe II	16.04	3	
2497.82	513.592	Fe II	16.06	10	
2498.36	513.385	Fe II	15.51	1	
2498.89	513.179	Fe I, Fe II	5.02	10	Blend
2500.93	512.403	Fe II	16.51	9	
2501.13	512.317	Fe I	4.96	2	
2501.70	512.114	Fe I	5.82	1	
2502.39	511.845	Fe II	16.03	10	
2503.32	511.493	Fe II	15.96	9	
2503.56	511.398	Fe II	15.49, 15.66	6	
2503.87	511.283	Fe II	16.57	9	
2505.22	510.772	Fe II	13.11	3	
2505.84	510.537	Ni II	15.15	0	
2506.09	510.442	Fe II	16.01	10	
2506.43	510.309	Fe II	15.35	2	
2506.80	510.177	Fe II	13.42	f1	
2507.01	510.088	Fe II	16.03	2	
2507.61	509.867	Fe II	17.62	f1	
2507.90	509.758	Fe I	5.90	2	
2508.33	509.592	Fe II	.....	f2	
2508.75	509.438	Fe I	5.93	0	
2509.12	509.301	Fe II	16.04	9	
2509.88	508.998	Fe II	17.63	f1	
2510.87	508.639	Ni II	13.22	8	Fe I 2510.83
2511.37	508.448	Fe II	13.09	1	
2511.76	508.306	Fe II	15.49	10	
2512.52	508.016	Fe II	17.27	8	
2513.37	507.692	Fe II	16.00?	1	
2514.39	507.317	Fe II	16.60	10	Si I 2514.33
2514.91	507.123	Fe II	15.99, 15.63	5	
2515.10	507.040	Fe II	.....	6	
2516.12	506.669	Si I	4.96	3	
2516.57	506.495	Fe I	5.88	0	
2516.73	506.429	Mn II	16.19	1	
2517.12	506.288	Fe II	15.56	9	
2517.66	506.092	Fe I	5.92	2	

Wave Length	Displacement	Atomic Origin	Excitation Potential	Visual Intens.	Interferences
I.A.	mm.		e.v.		
2517.97	505.987	Fe II	.....	3	
2518.10	505.915	Fe I	5.01	4	
2519.05	505.572	Fe II	16.17	10	
2519.40	505.441	Fe II	16.12	2	
2519.63	505.363	Fe I	5.93	5	V I 2519.62
2520.68	504.967	Fe II	16.04	3	Cr 2520.66
2521.09	504.821	Fe II	16.20	9	
2521.21	504.759	Fe II	.....	3	
2521.48	504.663	Fe II	.....	5	
2521.81	504.542	Fe II	.....	10	
2522.20	504.399	Fe II	15.41	3	
2522.50	504.289	Fe I	5.83	2	
2522.85	504.134	Fe I	4.91	10	
2523.66	503.856	Fe	.....	3	
2524.12	503.694	Si I	4.92	1	
2524.29	503.614	Fe I	5.02	3	Ni I 2524.22
2525.39	503.219	Fe II	15.40	f10	Ni II 2525.39
2525.86	503.043	Fe II	16.03	3	
2526.08	502.964	Fe II	15.44	5	
2526.30	502.875	Fe II	15.35	9	
2526.83	502.676	Fe II	13.12	0	
2527.10	502.577	Fe II	15.42	9	Cr I 2527.11
2527.43	502.448	Fe I	4.96	7	Mn 2527.44
2527.69	502.353	Fe II	16.57, 16.91	7	
2527.90	502.267	V II	13.22	0	
2528.52	502.058	Si I	4.94	1	
2528.87	501.929	Mo	.....	b2	
2529.08	501.857	Fe II	.....	b5	
2529.22	501.790	Fe II	16.01	b4	
2529.55	501.675	Fe II	15.45, 15.46	b10	
2529.93	501.535	Fe II	16.91	b1	Cr 2529.95
2530.11	501.465	Fe II	15.46	b8	
2530.69	501.250	Fe I	4.98	3	
2531.08	501.118	Fe II	13.11	f1	
2531.80	500.844	Mn II	16.41	f1	
2532.76	500.491	Mn II	16.41	2	
2533.63	500.178	Fe II	15.41	10	
2534.42	499.885	Fe II	15.44	10	
2535.36	499.549	Fe II	.....	0	
2535.48	499.486	Fe II	15.44	10	
2535.64	499.429	Mn II	15.76	2	Fe I 2535.60
2536.67	499.067	Fe II	16.00	b7	
2536.82	498.990	Fe II	15.42, 15.40	b10	
2537.93	498.602	Fe III	39.6	0	
2538.20	498.498	Fe II	15.99, 16.82	8	
2538.50	498.391	Fe II	15.44	b4	
2538.81	498.289	Fe II	15.40	b10	
2539.00	498.199	Fe II	15.37	b10	
2539.80	497.911	Fe II	.....	2	
2540.02	497.824	Ni I	5.31	0	

Wave Length	Displacement	Atomic Origin	Excitation Potential	Visual Intens.	Interferences
I.A.	mm.		e.v.		
2540.53	497.665	Fe II	.....	3	
2540.67	497.589	Fe II	15.45, 17.23	10	
2541.10	497.441	Fe II	15.45	10	Mn 2541.11
2541.84	497.174	Fe II	15.42	10	
2542.10	497.072	Fe I	7.49	2	
2542.32	496.994	Fe II	12.71	0	
2542.73	496.849	Fe II	16.07	8	
2542.92	496.779	Mn II	15.75	0	V 2542.94
2543.38	496.605	Fe II	15.41	10	
2543.92	496.410	Fe I	7.46	4	
2544.32	496.270	Cr II	13.20?	0	
2544.71	496.136	Fe I	7.43	0	
2544.97	496.041	Fe II	15.44	7	
2545.22	495.948	Fe II	15.42	8	
2545.43	495.859	Fe II	16.12	f4	
2545.98	495.676	Fe I	4.96	f4	Ni II 2545.90, V 2545.98
2546.66	495.423	Fe II	15.44	10	
2547.33	495.184	Fe II	15.41	8	Mo 2547.35
2548.33	494.827	Fe II	15.42	4	
2548.59	494.743	Fe II	15.40	b4	
2548.74	494.673	Fe II	.....	b4	Mn 2548.74
2548.92	494.607	Fe II	16.80	b2	
2549.08	494.543	Fe II	16.49	b5	
2549.43	494.426	Fe II	15.45, 15.45	b10	Blend
2549.77	494.304	Fe II	16.11	b2	
2550.02	494.210	Fe II	15.99	b10	V I 2549.97
2550.68	493.979	Fe II	15.96	10	
2551.21	493.785	Fe II	16.86	8	
2551.59	493.655	Cr	.....	2	
2551.88	493.555	Mn II	16.01	2	
2552.61	493.290	Fe I	4.96	1	
2552.83	493.195	Fe I	5.82	0	
2553.18	493.073	Fe	.....	3	
2553.73	492.872	Fe II	15.30	f4	Mn 2553.26
2554.44	492.623	Fe II	16.60	0	
2555.07	492.402	Fe II	15.44	10	Ni II 2555.11
2555.44	492.269	Fe II	15.45	9	Mo 2555.42
2556.30	491.970	Fe I	6.41	0	
2556.57	491.872	Mn II	15.72	4	
2556.86	491.763	Fe I	5.71	1	
2557.08	491.687	Fe II	15.40	4	
2557.50	491.536	Fe II	15.51	9	Mn 2557.54
2558.29	491.253	Mn	.....	1	
2558.59	491.143	Mn II	15.71	5	
2558.86	491.056	Mn	.....	1	V I 2558.90, Mo 2558.88
2559.24	490.922	Fe II	16.09	4	
2559.41	490.860	Mn II	15.71	1	
2559.77	490.740	Fe II	15.94	5	Mo 2559.69

Wave Length	Displacement	Atomic Origin	Excitation Potential	Visual Intens.	Interferences
I.A.	mm.		e.v.		
2559.93	490.668	Fe II	16.13	5	
2560.27	490.547	Fe II	15.89	10	Ni II 2560.30
2560.69	490.398	Cr I	.....	0	
2561.58	490.090	Fe II	15.89	1	
2562.10	489.910	Fe II	15.89	8	Mo 2562.08
2562.53	489.751	Fe II	13.68	f10	
2563.47	489.416	Fe II	13.74	f10	Fe 2563.40
2563.83	489.293	Fe I, Fe II	5.79, 16.12	4	Blend
2564.12	489.199	Mn	.....	0	
2564.55	489.042	Fe I	5.84	0	
2565.22	488.807	Mn II	15.70	2	
2565.31	488.771	Fe II	.....	1	
2566.21	488.456	Fe II	.....	9	
2566.41	488.379	Fe II	.....	6	
2566.62	488.306	Fe II	15.50	3	
2566.91	488.205	Fe II	13.76	10	
2567.33	488.061	Fe II	.....	0	
2568.40	487.678	Fe II	15.46	10	V 2568.39
2568.88	487.512	Fe II	15.51	4	Fe I 2568.86
2569.76	487.195	Fe II	.....	10	Fe I 2569.74
2570.52	486.937	Fe II	.....	3	Fe I 2570.52
2570.84	486.826	Fe II	.....	10	Mo 2570.80
2571.55	486.580	Fe I, Fe II	15.49	3	Blend
2571.74	486.499	Cr I	5.83	2	
2572.14	486.386	Fe II	.....	f0	
2572.43	486.274	Mn	.....	f0	
2572.75	486.159	Fe I	6.43	1	Mn 2572.75
2572.97	486.084	Fe II	.....	4	
2573.21	485.998	Fe II	15.89	7	
2573.54	485.885	Cr	.....	1	
2573.74	485.811	Fe II	16.49	1	Fe 2573.77
2573.95	485.741	Fe II	.....	0	
2574.37	485.600	Fe II	15.30	10	Mo 2574.42
2574.84	485.436	Fe III	39.1	1	
2575.51	485.207	Mn I	7.12	0	
2575.74	485.116	Fe	.....	1	
2576.10	484.993	Mn II	12.27	10	
2576.69	484.795	Fe I	5.67	1	
2576.86	484.724	Fe II	16.82	10	
2577.43	484.534	Fe II	15.51	1	
2577.92	484.358	Fe II	13.76	10	
2578.35	484.229	Mn II	19.93	1	
2579.13	483.923	Fe II	.....	f3	Cr I 2579.16
2579.41	483.843	Fe II	15.94	4	
2579.84	483.701	Fe	.....	0	
2580.30	483.537	Fe	.....	1	
2580.71	483.398	Fe II	16.81	2	
2581.11	483.261	Fe II	.....	4	
2582.42	482.819	Fe II	16.60	1	
2582.58	482.748	Fe II	13.74	10	

Wave Length	Displacement	Atomic Origin	Excitation Potential	Visual Intens.	Interferences
I.A.	mm.		e.v.		
2584.10	482.233	Cr	.....	2	
2584.31	482.160	Mn	.....	1	
2584.54	482.083	Fe I	5.65	bS7	Mn 2584.53
2585.62	481.720	Fe II	16.80?	b3	
2585.88	481.625	Fe II	12.66	br10	
2587.95	480.915	Fe II	16.80	b10	Fe I 2588.01
2588.20	480.831	Cr I	4.67	b3	Fe 2588.19
2588.80	480.628	Fe II	16.03	5	Mo 2588.78
2589.71	480.310	Mn II	16.30	4	
2590.03	480.215	Fe	.....	1	
2590.54	480.030	Fe II	15.35	6	
2591.23	479.806	Mn	.....	1	
2591.54	479.691	Fe II	13.68	10	
2592.03	479.532	Mn	.....	1	
2592.78	479.282	Fe II	.....	10	Mo 2592.79
2593.73	478.963	Fe II	13.74	10	Mn 2593.73
2594.15	478.822	Fe I	5.69	0	
2594.72	478.628	Mn II	15.93	2	Fe II 2594.67
2594.96	478.536	Fe II	16.60	6	
2595.29	478.436	Fe II	15.44	5	
2595.62	478.326	Fe III	39.1	f3	
2597.13	477.812	Mo	.....	b0	
2597.83	477.541	Fe	.....	bf3	
2598.37	477.402	Fe II	12.68	br10	
2598.90	477.226	Mn II	15.93	b2	Fe I 2598.86
2599.40	477.053	Fe II	12.63	br10	
2600.42	476.715	Fe II	15.84	b0	
2601.53	476.345	Mn II	16.29	1	
2601.82	476.246	Fe II	.....	1	
2601.96	476.198	Mo I	6.10	1	Fe II 2601.97
2602.72	475.934	Mn	.....	4	Mo 2602.80
2603.25	475.774	Mn	.....	0	
2603.72	475.606	Mn II	15.91	4	
2604.05	475.494	Fe II	.....	4	
2604.36	475.394	Mn	.....	1	
2604.66	475.296	Fe II	16.01	1	
2605.04	475.168	Fe II	.....	8	
2605.30	475.085	Fe II	17.10	8	Ni II 2605.35
2605.42	475.036	Fe II	15.84	5	Ni II 2605.35
2605.69	474.954	Mn II	12.21	9	Fe I 2605.65
2605.90	474.876	Fe II	.....	4	Mo 2605.93
2606.50	474.676	Fe II	17.11	9	
2606.82	474.576	Fe I	5.67	b1	
2607.09	474.487	Fe II	12.70	b10	
2607.63	474.315	Cr II	15.32	b2	
2607.91	474.223	Cr II	15.19	b2	
2608.11	474.142	Fe III	39.5	b2	
2608.43	474.041	Mn	.....	2	Fe II 2608.40
2608.85	473.902	Fe II	15.41	5	Mo 2608.86
2609.13	473.801	Fe II	16.57	8	

Wave Length	Displacement	Atomic Origin	Excitation Potential	Visual Intens.	Interferences
I.A.	mm.		e.v.		
2609.44	473.709	Fe II	16.03	3	
2609.87	473.568	Fe II	15.83	7	
2610.20	473.458	Mn II	15.61	8	
2610.52	473.354	Fe	.....	1	
2610.79	473.258	Cr	.....	1	Mn 2610.85, Fe I 2610.75
2611.07	473.159	Fe II	13.68	9	
2611.33	473.082	Fe II	15.44	b1	
2611.87	472.907	Fe II	12.66	br10	
2613.58	472.356	Fe II	15.41	b1	
2613.82	472.264	Fe II	12.71	b10	
2614.18	472.139	Fe II	15.99	b2	
2614.56	472.014	Fe II	.....	1	
2614.87	471.918	Fe II	15.42	3	
2615.19	471.824	Ni II	18.20	0	
2615.42	471.744	Fe	.....	f1	
2615.73	471.635	Fe II	16.49	f1	
2616.23	471.470	Cr	.....	0	V 2616.25
2616.51	471.382	Mn II	15.60	2	
2617.14	471.181	Fe	.....	1	
2617.62	471.023	Fe II	12.68	10	
2618.14	470.851	Mn II	15.60	5	
2618.71	470.679	Fe I	4.73	0	
2619.08	470.546	Fe II	15.40	9	
2619.30	470.472	Mn	.....	1	Mo 2619.34
2619.65	470.362	Cr	.....	f1	Fe II 2619.60
2620.17	470.192	Fe II	15.44	5	
2620.41	470.114	Fe II	12.70	6	
2620.70	470.020	Fe II	15.41	8	
2621.67	469.706	Fe II	12.71	10	
2623.12	469.234	Fe II	.....	5	
2623.37	469.158	Fe I	4.84	0	
2623.53	469.105	Fe I	5.68	2	
2623.73	469.033	Fe II	15.42	6	
2624.29	468.864	Fe II	.....	0	
2625.49	468.481	Fe II	.....	10	
2625.67	468.393	Fe II	12.63	10	
2626.08	468.270	Mo	.....	0	
2626.50	468.144	Fe II	15.44	8	Ni II 2626.56
2626.70	468.068	Fe II	15.67	1	
2627.05	467.956	Mn	.....	1	
2627.55	467.800	Mo I	6.10	1	Fe II 2627.57
2628.29	467.566	Fe II	12.70	10	
2628.57	467.473	Fe II	15.81	2	
2629.59	467.147	Fe I, Fe II	4.84, 15.41	9	Blend, Mn 2629.55
2630.07	466.991	Fe II	15.42	8	
2631.05	466.693	Fe II	15.40, 12.68	b10	
2631.32	466.583	Fe II	12.66	b10	Si I 2631.31
2631.61	466.492	Fe II	15.37	b10	Al II 2631.55
2631.98	466.370	Mn II	15.58	b1	

Wave Length	Displacement	Atomic Origin	Excitation Potential	Visual Intens.	Interferences
I.A.	mm.		e.v.		
2632.35	466.266	Mn II	15.58	5	
2632.60	466.189	Fe I	4.80	1	
2633.19	465.986	Fe II	.....	8	
2633.51	465.882	Mo	.....	1	
2633.80	465.809	Mn	.....	1	
2634.99	465.423	Fe II	.....	1	
2635.39	465.290	Fe II	15.83	6	
2635.60	465.220	Mn	.....	1	
2635.81	465.158	Fe I	5.69	S6	
2636.48	464.946	Fe I	5.62	1	
2636.67	464.877	Mo II	.....	3	Fe II 2636.69
2637.16	464.724	Mn II	16.84	1	
2637.64	464.571	Fe II	15.89	9	
2637.86	464.496	Mn	.....	1	
2638.17	464.410	Mn II	15.57	6	
2638.76	464.220	Mo II	13.59	5	
2639.55	463.965	Fe II	15.89	8	
2639.84	463.875	Mn II	16.21	6	
2641.13	463.474	Fe II	15.30	5	Mo 2641.15
2641.41	463.392	Fe III	39.4	0	
2641.65	463.314	Fe I	5.60	2	
2641.80	463.257	Cr	.....	2	
2642.02	463.186	Fe II	16.49	7	
2642.41	463.079	Mo	.....	2	
2642.72	462.974	V II	15.06	0	
2642.98	462.885	Fe II	.....	3	
2643.75	462.643	Mn	.....	2	
2644.00	462.571	Fe I	5.70	5	
2644.35	462.462	Mo II	13.59	4	
2645.08	462.220	Fe II	15.94, 16.49	7	
2645.35	462.141	Fe II	.....	7	
2646.22	461.874	Fe II	15.79	3	
2646.49	461.794	Mo II	.....	3	
2646.69	461.725	Fe II	15.62	1	
2647.56	461.459	Fe I	4.73	2	
2648.04	461.308	Mn	.....	2	
2648.94	461.031	Mn II	16.11	1	
2649.46	460.859	Fe II	.....	9	
2650.99	460.386	Mn	.....	3	
2651.29	460.294	Fe II	15.77	1	
2651.71	460.172	Fe I, Fe II	5.63, 17.27	6	Blend
2651.83	460.131	Fe II	.....	0	
2652.57	459.907	Fe II	15.80	6	
2653.35	459.663	Mo II	13.63	2	
2653.59	459.587	Cr I	.....	7	Fe II 2653.59, Mn 2653.56
2653.79	459.520	Mo	.....	0	
2655.13	459.107	Fe I	6.15	f0	
2655.91	458.871	Ni II	18.27	4	Mn II 2655.92
2656.15	458.792	Fe I	7.07	3	Mn 2656.17

Wave Length	Displacement	Atomic Origin	Excitation Potential	Visual Intens.	Interferences
I.A.	mm.		e.v.		
2656.80	458.602	Fe I	6.15	1	
2657.92	458.251	Fe II	16.29	3	
2658.25	458.139	Fe II	16.49	8	
2658.59	458.044	Cr II	12.92	7	
2659.05	457.896	Fe II	15.79	1	
2660.40	457.498	Fe I	5.65	1	
2660.58	457.436	Mo II	13.63	3	
2660.82	457.373	Fe III	39.3	0	
2661.31	457.209	Fe	.....	f2	
2661.73	457.086	Cr II	12.93	3	
2662.06	456.985	Fe I	5.62	1	
2662.32	456.903	Fe	.....	0	
2662.56	456.805	Fe II	18.43	f2	
2663.42	456.563	Cr II	12.95	10	
2663.68	456.488	Cr II	12.92	3	
2664.26	456.312	Fe II	.....	5	Fe II 2664.21
2664.66	456.185	Fe II	15.89	10	
2665.18	456.036	Mn II	16.12	0	
2666.02	455.774	Cr II	12.93	9	
2666.64	455.590	Fe II	15.94	10	
2667.00	455.468	Mn II	16.17	2	
2667.83	455.216	Mn	.....	1	Fe I 2667.92
2668.71	454.964	Cr II	12.91	9	
2668.94	454.884	Fe II	20.05	b4	
2669.31	454.778	Mn	.....	b4	
2669.50	454.721	Fe I	7.08	4	
2669.93	454.604	Fe II	.....	6	
2670.07	454.556	Cr II	15.17	5	Mo 2669.98
2670.24	454.501	Cr II	15.08	2	Mn 2670.20
2670.38	454.453	Fe II	17.23	4	Ni II 2670.33
2671.40	454.130	Fe II	18.40	bf2	
2671.80	454.026	Mn	.....	b8	Cr II 2671.81
2672.15	453.928	Fe II	20.08	b1	
2672.31	453.866	Fe II	15.61	b1	
2672.51	453.794	Fe II	20.05	b5	Mn II 2672.59
2672.84	453.715	Mo I, Mo II	6.11, 13.59	b7	Blend, Cr II 2672.83
2673.27	453.568	Mo	.....	f4	
2674.37	453.232	Mn	.....	3	
2674.74	453.139	Mn	.....	4	
2674.98	453.072	Mn II	16.15	3	
2675.48	452.915	Fe II	.....	1	Mn 2675.51
2675.68	452.855	Cr II	15.07	4	
2676.48	452.616	Mo	.....	1	
2676.88	452.503	Fe II	.....	2	
2677.16	452.416	Cr II	12.95, 12.92	10	
2677.42	452.340	Fe III	39.4	1	
2677.85	452.208	Mn II	16.15	2	V 2677.80
2678.57	452.112	V II	11.39	0	
2678.79	451.931	Cr II	12.89	9	

Wave Length	Displacement	Atomic Origin	Excitation Potential	Visual Intens.	Interferences
I.A.	mm.		e.v.		
2679.06	451.847	Fe I	5.48	S5	
2679.32	451.769	V II	11.39	1	
2680.34	451.463	Cr I	5.61	3	
2680.72	451.360	Fe II	20.03	b3	
2681.03	451.258	Fe II	20.06	b5	
2681.24	451.193	Mn	.....	b3	
2682.51	450.820	Fe II	19.24	7	
2682.99	450.676	Fe II	18.57	7	
2683.23	450.608	Mo II	13.43	3	
2683.44	450.534	Cr II	16.26	1	
2683.82	450.432	Mn II	16.10	f2	Fe 2683.95
2684.14	450.339	Mo I, Mo II	6.15, 13.64	5	Blend, Fe 2684.07
2684.75	450.152	Fe II	16.29	10	
2686.10	449.756	Fe II	15.59	2	
2686.39	449.663	Fe II	.....	3	
2687.09	449.468	Cr II	12.89	9	
2687.99	449.203	Mo II	13.50	4	V 2687.96
2688.25	449.126	Mn	.....	7	
2689.21	448.841	Fe I	5.52	S9	
2689.50	448.764	Fe	.....	1	
2689.83	448.668	Fe I	6.16	3	Mn 2689.80
2690.07	448.591	Fe I	4.61	1	
2690.79	448.379	V II	11.36	1	
2691.04	448.306	Cr II	12.92	9	
2691.73	448.102	Fe II	15.54	6	
2691.97	448.033	Mn	.....	b2	
2692.60	447.844	Fe II	16.23	b10	Mo 2692.61
2692.84	447.766	Fe II	13.45	b4	
2693.19	447.674	Mn II	15.76	3	Mo 2693.18
2693.57	447.570	Mn II	15.87	5	
2693.86	447.476	Fe II	15.84	4	
2694.09	447.419	Mn	.....	b2	
2695.03	447.127	Fe I	5.46	bf2	Mn 2695.05
2695.36	447.042	Mn II	15.67	b4	
2695.96	446.866	Mn	.....	b1	
2696.28	446.765	Fe I	7.00	bf1	
2696.75	446.632	Cr II	15.06	b2	
2697.02	446.561	Fe I	6.15	b2	
2697.31	446.472	Fe II	16.93	b4	
2697.46	446.420	Fe II	16.93	b8	Cr 2697.50
2697.91	446.297	Cr II	15.05	b5	
2698.16	446.229	Fe	.....	b0	
2698.41	446.154	Cr II	12.89	b6	V 2698.38
2698.69	446.080	Cr II	12.85	b6	V I 2698.73
2699.18	445.929	Fe II	.....	b5	
2699.41	445.868	Mo	.....	0	
2699.77	445.775	Fe	.....	f1	
2700.02	445.678	Fe III	47.3	bf1	
2701.13	445.374	Fe III	47.3	bf4	
2701.42	445.280	Mo II	13.43	b2	

Wave Length	Displacement	Atomic Origin	Excitation Potential	Visual Intens.	Interferences
I.A.	mm.		e.v.		
2701.70	445.201	Mn II	15.45	b8	
2701.99	445.122	Cr I	5.62	1	
2702.45	444.985	Fe I	6.99	1	
2703.55	444.662	Cr II	12.85	6	Mo 2703.61
2703.99	444.539	Fe II	15.83	10	Mn II 2703.99
2704.58	444.369	Fe II	15.54	3	
2704.93	444.262	Mo	.....	f1	
2705.56	444.089	Mn II	15.75	1	
2705.74	444.035	Mn II	15.45	8	
2706.02	443.951	Fe I	6.98	3	
2707.13	443.630	Fe II	16.91	9	
2707.53	443.518	Mn II	15.45	2	
2708.45	443.253	Mn II	15.45	b4	Fe II 2708.44
2708.79	443.154	Ni II	18.05	b3	Cr 2708.79
2709.06	443.078	Fe II	15.63	b8	
2709.31	443.002	Cr II	15.42	b3	
2709.96	442.822	Mn II	15.45	3	Fe 2709.99
2710.33	442.716	Mn II	15.45	5	
2710.62	442.633	Mn	.....	3	
2710.92	442.544	Cr II	16.26	4	Mo 2710.93
2711.58	442.355	Mn II	15.44	4	Fe I 2711.65
2711.84	442.284	Fe II	15.46	9	
2712.39	442.133	Fe II	15.51	6	Mo 2712.35, Cr II 2712.31
2713.84	441.707	Mn	.....	1	
2714.41	441.554	Fe II	13.42	10	
2714.87	441.420	Fe I	5.52	0	
2715.70	441.185	Fe II	.....	0	
2716.22	441.041	Fe II	15.84	9	
2716.79	440.890	Mn II	15.72	f3	
2717.35	440.720	Mo	.....	1	Fe 2717.37
2717.51	440.669	Cr II	12.69	3	Mn II 2717.53
2718.44	440.416	Fe I	5.55	b4	
2718.64	440.349	Fe II	.....	b7	
2719.02	440.241	Fe I	4.56, 7.14	b7	
2719.30	440.160	Fe II	16.91	b7	Mn 2719.30
2719.72	440.054	Mn II	15.72	b1	
2719.89	440.004	Mn	.....	b1	
2720.07	439.949	Cr II	15.12	b1	
2720.26	439.891	Cr	.....	b1	Fe I 2720.20
2720.90	439.710	Fe I	4.61	9	
2721.82	439.460	Fe II	15.45	5	
2722.04	439.384	Fe II	15.80	8	Mn II 2722.08
2722.74	439.198	Fe II	.....	9	Cr II 2722.75
2723.58	438.955	Fe I	4.64	S8	Cr 2723.63
2724.04	438.830	Cr II	15.12	4	Mo 2724.02
2724.45	438.723	Mn II	15.71	2	
2724.88	438.595	Fe II	13.45	10	Fe I 2724.95
2725.92	438.303	Mn	.....	1	
2726.05	438.270	Fe I	5.56	2	

Wave Length	Displacement	Atomic Origin	Excitation Potential	Visual Intens.	Interferences
I.A.	mm.		e.v.		
2726.25	438.209	Fe I	7.16	2	Fe 2726.25, Cr 2726.24 Cr I 2726.51
2726.51	438.135	Fe II	15.83	3	
2726.97	438.012	Mo	.....	1	
2727.38	437.907	Fe II	15.44	9	
2727.54	437.840	Fe II	13.45	10	
2728.02	437.713	Fe I	5.46	1	
2728.61	437.549	Mn	.....	4	V 2728.64
2728.97	437.467	Fe I	4.65	8	
2729.57	437.286	Fe II	.....	f3	
2730.20	437.104	Mo	.....	1	
2730.74	436.957	Fe II	13.48	10	
2730.98	436.890	Fe I	5.55	1	
2732.00	436.604	Fe II	15.54	7	
2732.45	436.479	Fe II	12.63	2	
2732.94	436.347	Fe II	.....	8	
2733.58	436.163	Fe I	5.40	8	
2734.00	436.053	Fe I	5.52	2	
2734.27	435.974	Fe I	6.71	2	V 2734.30
2734.62	435.888	Fe I	5.49	1	Fe II 2734.52
2734.80	435.826	Fe II	.....	4	
2735.45	435.641	Fe I	5.44	S7	
2736.47	435.373	Cr I	5.47	1	
2736.97	435.226	Fe I, Fe II	5.52, 13.46	10	Blend, Mn 2737.01
2737.31	435.132	Fe I	4.64	3	Mo I 2737.3
2737.63	435.046	Fe II	15.46	3	
2737.83	434.986	Fe	.....	1	Mo I 2737.88
2739.55	434.516	Fe II	13.36	b10	
2740.10	434.363	Cr II	12.80	b2	
2741.04	434.094	Fe II	.....	1	Cr 2741.07
2741.40	434.007	Fe II	15.81	8	
2742.02	433.833	Fe I	4.61	4	Cr II 2742.03
2742.26	433.768	Fe I	5.48	3	
2742.41	433.720	Fe I	4.61	b4	V 2742.41
2743.20	433.507	Fe II	13.48	10	
2743.64	433.384	Cr II	12.77	4	
2744.07	433.270	Fe I	4.64	4	
2744.53	433.138	Fe I	5.51	3	V 2744.54, Cr 2744.59
2744.98	433.036	Cr II	14.98	3	
2745.43	432.906	Cr II	15.39	b1	
2746.48	432.611	Fe II	13.21	b10	
2746.98	432.474	Fe II	13.42	b10	
2748.98	431.933	Cr II	12.77	b3	
2749.18	431.881	Fe II	13.45	b10	
2749.48	431.791	Fe II	13.46	b10	
2750.14	431.612	Fe I	4.56	b3	
2750.73	431.455	Cr II	12.78	7	
2751.12	431.341	Fe II	15.56	7	
2751.87	431.143	Cr II	12.79	7	

Wave Length	Displacement	Atomic Origin	Excitation Potential	Visual Intens.	Interferences
I.A.	mm.		e.v.		
2752.16	431.068	Fe II	17.62	bf3	
2752.39	431.012	Cr II	15.96	bf3	
2753.29	430.753	Fe II	15.51	b10	
2754.04	430.556	Fe I	5.49	b1	
2754.28	430.491	Cr II	15.06	b2	Mo 2754.29
2755.74	430.100	Fe II	13.34	b10	
2756.33	429.942	Fe I	4.61	b3	Cr 2756.30
2756.51	429.878	Fe II	15.46	b3	
2757.02	429.745	Fe II	13.40	4	
2757.32	429.666	Fe I	5.51	2	
2757.72	429.557	Cr II	12.77	8	
2758.62	429.319	Cr II	15.24	1	
2758.98	429.219	Cr II	15.94	6	
2759.39	429.104	Cr II	15.07	6	Fe II 2759.36
2759.82	429.014	Fe I	5.50	4	Cr 2759.73
2760.05	428.935	Cr II	15.34	2	
2760.36	428.857	Cr II	15.05	3	Fe II 2760.32
2760.53	428.802	Mo	.....	3	Fe 2760.50, Cr 2760.52
2760.70	428.761	V II	13.61	0	
2760.90	428.713	Fe	.....	1	
2761.81	428.459	Fe II	13.45	10	
2762.09	428.393	Mn II	16.70	4	
2762.44	428.305	Fe II	17.76	3	
2762.59	428.247	Cr II	12.78	9	
2762.78	428.190	Fe I	.....	2	
2763.11	428.111	Fe I	5.47, 5.35	2	
2763.67	427.975	Fe II	.....	3	Mo 2763.62
2763.91	427.892	Fe II	15.45	4	Cr 2763.97
2764.33	427.790	Fe I	6.69	2	Cr I 2764.36
2764.78	427.660	Fe II	15.50	3	
2765.50	427.476	Fe II	16.49	4	Cr 2765.47
2765.67	427.430	V II	12.80	1	
2765.86	427.368	Cr II	15.96	2	
2766.20	427.283	Fe II	16.49	1	
2766.54	427.190	Cr II	12.80	10	
2766.91	427.095	Fe I	5.49	1	
2767.50	426.937	Fe II	15.46, 17.56	b10	Fe I 2767.52
2768.59	426.643	Cr II	15.93	b2	V 2768.56
2768.93	426.555	Fe II	13.42	b6	
2769.14	426.497	Fe II	15.44	b1	
2769.35	426.436	Fe II	15.49	b7	
2769.67	426.355	Fe I	5.33	b0	
2769.92	426.290	Cr I	5.48	b0	
2770.51	426.133	Fe II	15.44, 15.49	7	
2771.18	425.955	Fe II	16.10	6	
2771.56	425.858	Fe II	15.56	2	
2772.11	425.712	Fe I	5.33	7	
2772.72	425.544	Fe II	13.36	1	
2773.31	425.397	Cr II	14.93	4	Fe 2773.24

Wave Length	Displacement	Atomic Origin	Excitation Potential	Visual Intens.	Interferences
I.A.	mm.		e.v.		
2773.68	425.282	Fe II	16.81	f1	V I 2773.68
2774.44	425.096	Cr II	16.09	3	Mo 2774.39
2774.69	425.023	Fe I, Fe II	5.48, 15.66	9	Blend, V 2774.72
2775.40	424.837	Mo II	13.23	7	
2776.18	424.631	Fe II	.....	4	
2776.65	424.520	Cr II	15.91	1	Mo 2776.67
2777.84	424.188	Fe II	15.45	4	Mo 2777.86
2778.22	424.095	Fe I	5.32	S3	
2778.84	423.942	Fe	.....	1	
2779.30	423.807	Fe II	15.46	10	
2779.91	423.632	Fe II	16.93	f3	
2780.30	423.542	Cr II	15.32, 15.97	3	
2780.70	423.452	Fe I	7.02	1	
2780.89	423.389	Fe	.....	2	Cr 2780.89
2781.01	423.341	Fe	.....	2	
2781.84	423.141	Fe I	5.44	1	
2782.35	423.004	Cr II	15.32	2	
2782.59	422.940	Cr II	15.97	1	
2783.10	422.808	Fe II	15.51	1	
2783.70	422.652	Fe II	15.44	10	
2784.28	422.502	Fe II	16.93	2	Fe 2784.35
2784.99	422.313	Mo	.....	2	
2785.70	422.124	Cr II	15.32	5	
2786.49	421.927	Cr II	15.91	5	
2787.63	421.623	Cr II	14.98	6	
2787.94	421.554	Fe I	5.93	1	Cr 2787.90, V 2787.92
2788.10	421.497	Fe I	5.31	9	
2789.40	421.160	Cr II	16.09	3	Fe I 2789.48
2789.80	421.069	Fe I	7.13	1	
2790.56	420.858	Fe II	16.12	3	
2791.01	420.751	Fe II	.....	2	
2791.46	420.615	Fe	.....	2	Mo 2791.54
2791.79	420.534	Fe I	6.87	2	
2792.16	420.444	Cr II	15.32	8	
2792.40	420.383	Fe I	5.99	0	
2793.24	420.161	Fe II	16.73	2	
2793.89	419.994	Fe II	15.50	9	
2794.82	419.753	Mn I	4.45	4	
2795.54	419.570	Fe I	5.34	3	Mg II 2795.53
2795.77	419.498	Fe II	16.11	1	
2797.78	418.991	Fe I	5.35	2	
2797.91	418.948	Fe II	15.44	4	
2798.27	418.860	Mn I	4.45	5	
2798.65	418.755	Ni I	4.54	f1	Cr 2798.67
2799.29	418.595	Fe II	15.44	9	
2799.72	418.480	Fe II	15.49	f1	
2800.17	418.372	Cr II	16.79	2	
2800.77	418.215	Cr II	15.31	8	Mo 2800.73
2801.06	418.133	Mn I	4.45	4	

THE SPECTRUM OF STEEL

2802.35—2826.01

Wave Length	Displacement	Atomic Origin	Excitation Potential	Visual Intens.	Interferences
I.A.	mm.		e.v.		
2802.35	417.796	Mo	.....	0	Impurity in C electrode
2802.70	417.717	Mg II	12.0	2	
2803.36	417.562	Cr II	15.02	f3	
2803.62	417.479	Fe	.....	3	
2804.02	417.381	Fe II	15.59	3	
2804.52	417.252	Fe I	5.33	S7	
2804.86	417.175	Fe I	7.14	0	
2805.32	417.038	Fe II	16.17	6	
2805.79	416.929	Fe II	15.54	6	
2806.07	416.850	Fe I	6.70	0	
2806.98	416.628	Fe I	5.33	8	
2807.24	416.572	Fe I	4.42	2	Fe 2807.16
2807.76	416.435	Mo	.....	4	
2808.02	416.362	Cr II	.....	2	
2808.36	416.279	Ni II	13.88	1	Fe 2808.32
2808.62	416.210	Fe	.....	1	
2810.26	415.795	Fe	.....	4	V 2810.27
2811.05	415.594	Cr II	16.77	1	
2811.27	415.532	Fe II	.....	5	Mn II 2811.29
2811.44	415.486	Mn II	15.93	1	
2812.05	415.346	Fe I	7.13	9	Cr 2812.01
2812.31	415.276	Fe I	6.02	1	
2812.58	415.203	Mo	.....	4	
2813.29	415.019	Fe I	5.32	S10	
2813.61	414.937	Fe II	15.49	9	
2814.67	414.669	Mo	.....	1	
2815.02	414.577	Fe I	6.69	5	Mn 2815.02
2815.51	414.459	Fe I	6.01	1	
2816.15	414.293	Mo II	11.9	10	Al II 2816.18
2816.84	414.119	Cr II	14.93	3	
2817.11	414.048	Fe II	17.62	2	
2817.51	413.945	Fe I	5.36	3	V 2817.50, Mo 2817.50 Cr 2817.95
2817.94	413.836	Fe I	.....	3	
2818.36	413.735	Cr II	15.26	9	
2818.62	413.665	Fe III	42.4	1	
2819.33	413.490	Fe II	15.41	5	
2820.81	413.119	Fe I	4.45	1	
2821.29	412.996	Ni I	4.42	1	
2822.01	412.813	Cr II	15.24	7	
2822.37	412.723	Cr II	14.84	10	
2822.67	412.649	Fe II	15.50	1	
2822.97	412.567	Fe II	.....	1	
2823.28	412.485	Fe I	5.34	S9	
2824.67	412.142	Fe I	7.14	2	
2825.24	412.005	Ni II	13.85	0	
2825.56	411.925	Fe I	5.35	7	Cr 2825.49
2825.75	411.867	Fe I, Fe II	4.39, 15.40	5	Blend
2826.01	411.799	Fe I, Fe II	4.48, 15.63	7	Blend

Wave Length	Displacement	Atomic Origin	Excitation Potential	Visual Intens.	Interferences
I.A.	mm.		e.v.		
2827.43	411.450	Fe II	15.49	6	
2827.90	411.335	Fe I	4.44	4	
2828.63	411.147	Fe II	15.49	9	
2830.47	410.694	Cr II	14.84	6	
2830.94	410.571	Fe II	16.06	2	Fe I 2830.96
2831.56	410.417	Fe II	15.44	10	
2832.44	410.198	Fe I	5.33	S7	Cr 2832.46,
2834.26	409.747	Cr II	15.37	4	
2834.76	409.632	Fe I	6.93	1	
2835.69	409.396	Cr II	12.69	10	Fe II 2835.72
2836.19	409.264	Fe II	16.12	2	
2836.51	409.191	Fe II	16.12	4	Cr 2836.48, V 2836.52
2837.30	408.991	Fe II	15.50	4	
2837.88	408.863	Cr II	14.81	2	
2838.12	408.788	Fe I	5.36	S4	
2838.45	408.715	Fe I	.....	2	
2839.24	408.522	Cr II	.....	1	
2840.02	408.317	Cr II	14.82	b7	
2840.42	408.238	Fe I	4.42	b5	
2840.76	408.149	Fe II	15.66	b9	
2842.15	407.806	Mo	.....	4	
2842.46	407.730	Mo	.....	1	Ni II 2842.42
2843.25	407.524	Cr II	12.67	10	Fe II 2843.32
2843.63	407.440	Fe I	5.27	b4	
2843.98	407.337	Fe I	.....	8	
2845.45	407.000	Fe II	16.11	4	
2845.71	406.918	Fe I	5.84	f4	
2846.44	406.739	Cr II	14.82	4	
2846.82	406.668	Fe I	.....	1	
2847.22	406.547	Fe II	15.44	4	
2848.05	406.349	Fe II	15.44	b8	
2848.33	406.290	Fe II	17.81	b3	Mo II 2848.23
2848.91	406.126	Fe II	16.29	b5	
2849.29	406.034	Cr I	7.77	1	Fe 2849.31
2849.61	405.965	Fe II	15.41	7	
2849.84	405.897	Cr II	12.62	9	
2850.29	405.791	Cr II	15.81	1	
2850.71	405.696	Cr II	15.47	1	
2851.36	405.531	Cr II	14.79	9	
2851.80	405.423	Fe I	5.36	S5	Fe II 2851.74
2852.63	405.216	Fe II	.....	1	
2852.86	405.164	Fe II	.....	1	
2853.20	405.074	Fe II	15.44	7	Cr 2853.22
2853.58	404.991	Mo	.....	1	
2853.77	404.950	Fe I	5.83	1	
2854.11	404.850	Mo	.....	2	
2855.07	404.629	Cr II	15.12, 15.12	4	Blend
2855.67	404.478	Fe II	15.42	10	Cr II 2855.68
2856.14	404.365	Fe II	15.40	b5	

Wave Length	Displacement	Atomic Origin	Excitation Potential	Visual Intens.	Interferences
I.A.	mm.		e.v.		
2856.77	404.221	Cr II	13.54	b2	
2857.17	404.120	Fe II	16.09	b4	
2857.42	404.051	Fe II	15.42	b2	Cr II 2857.40
2857.97	403.921	Cr II	15.34	b1	
2858.34	403.830	Fe II	15.41, 15.96	b9	
2858.65	403.756	Cr II	13.53	1	Fe II 2858.64
2858.90	403.691	Fe I	4.45	b8	
2860.93	403.206	Cr II	12.59	8	
2861.19	403.137	Fe II	13.27	3	
2861.56	403.050	Mo	.....	0	
2861.86	402.973	Mo	.....	1	
2862.50	402.811	Fe I	5.34	10	Cr II 2862.57
2863.08	402.664	Fe	.....	1	Mo 2863.12
2863.44	402.599	Fe I	5.82	2	
2863.86	402.507	Fe I	4.42	5	Mo 2863.81
2864.15	402.430	Ni II	18.04	1	
2864.37	402.373	Fe II	15.41	f2	V I 2864.36
2865.11	402.201	Cr II	12.60	9	
2865.33	402.137	Cr II	12.62	2	
2865.62	402.068	Mo	.....	2	
2865.89	402.006	Cr II	15.96?	2	
2866.69	401.806	Mo	.....	9	Fe I 2866.63, Cr II 2866.74
2867.10	401.719	Cr II	13.47	4	
2867.56	401.587	Fe I	5.93	8	Cr II 2867.65
2868.11	401.474	Mo	.....	0	Fe II 2868.05, V I 2868.10
2868.45	401.395	Fe II	16.91	4	Fe I 2868.45
2868.87	401.294	Fe II	13.21	4	
2869.00	401.230	Fe II	15.45	b5	
2869.31	401.190	Fe I	.....	b2	
2869.69	401.095	Fe II	15.45	b4	
2870.44	400.923	Cr II	13.55	8	
2870.60	400.881	Fe II	.....	1	
2871.06	400.759	Fe II	15.37	8	Fe II 2871.13
2871.51	400.665	Mo II	11.7	7	Cr 2871.45
2872.34	400.453	Fe I	5.27	10	Fe II 2872.38
2872.88	400.325	Mo	.....	3	
2873.40	400.209	Fe II	15.99	10	Fe II 2873.48
2873.82	400.113	Cr II	13.52	3	
2874.17	400.027	Fe I	4.32	3	
2874.85	399.869	Mo	.....	1	Fe 2874.88
2875.32	399.746	Fe I, Fe II	5.79, 15.44	9	Blend
2875.99	399.597	Cr II	13.57	8	
2876.24	399.521	Cr II	12.59	7	
2876.80	399.403	Fe II	15.44	7	
2877.30	399.288	Fe I	5.79	2	
2877.98	399.124	Cr II	12.60	6	
2878.45	399.016	Cr II	12.57	3	
2878.76	398.941	Fe	.....	0	

Wave Length	Displacement	Atomic Origin	Excitation Potential	Visual Intens.	Interferences
I.A.	mm.		e.v.		
2879.05	398.878	Mo	.....	3	
2879.24	398.822	Fe II	15.94	5	Cr I 2879.27
2879.43	398.760	Fe I	6.74	6	
2880.76	398.457	Fe II	13.15	10	Fe II 2880.83, V 2880.80
2881.58	398.271	Si I	5.08	6	
2881.93	398.197	Cr	.....	5	
2882.50	398.060	V II	11.37	3	
2883.70	397.771	Fe II	15.40	b10	
2884.28	397.605	Fe II	.....	b1	
2884.79	397.507	Fe II	17.71	b1	V II 2884.79
2885.93	397.248	Fe II	16.23	6	
2886.23	397.173	Fe II	15.40	2	
2886.68	397.072	Mn II	15.78	6	
2886.97	397.001	Mo	.....	0	Cr I 2887.00, V 2886.97
2887.31	396.924	Fe II	15.45	3	
2887.81	396.813	Fe I	6.98	4	Cr 2887.77
2888.09	396.740	Fe II	15.35	6	Mo 2888.15
2888.74	396.590	Cr II	15.49	3	Fe II 2888.74
2889.20	396.487	Cr II	13.48	4	
2889.48	396.400	Cr II	15.38	7	
2889.88	396.334	Fe	.....	3	
2890.99	396.064	Mo II	11.7	6	
2891.28	395.985	Mo	.....	4	
2891.64	395.909	V II	11.36	3	
2891.88	395.859	Cr II	16.00	2	Fe 2891.91
2892.39	395.740	Mn II	15.85	7	
2892.66	395.678	V II	11.37	3	
2892.81	395.644	Mo I	6.80	6	
2892.83	395.618	Fe II	13.21	3	
2893.76	395.413	Fe I	5.27	1	
2894.25	395.313	Cr II	14.92	1	
2894.45	395.254	Mo	.....	4	
2894.50	395.184	Fe I	6.56	b9	
2895.22	395.081	Fe II	16.04	b9	
2896.44	394.804	Mo	.....	9	Cr 2896.46
2896.75	394.726	Cr I	5.26	4	
2897.26	394.609	Fe II	15.56	8	
2897.63	394.509	Mo	.....	3	Fe 2897.64
2898.48	394.317	Mo	.....	8	Cr 2898.54
2898.74	394.270	Fe II	16.86	3	
2899.11	394.175	Fe II	.....	2	
2899.42	394.102	Fe I	6.55	6	Cr 2899.48
2900.80	393.795	Mo	.....	1	
2901.38	393.660	Fe I	5.83	1	
2901.92	393.531	Fe I	6.67	f1	
2902.47	393.416	Fe II	15.89	7	
2903.07	393.274	Mo	.....	6	V II 2903.08
2904.38	392.963	Fe II	15.35	2	

Wave Length	Displacement	Atomic Origin	Excitation Potential	Visual Intens.	Interferences
I.A.	mm.		e.v.		
2904.57	392.907	Fe II	20.05	1	
2905.18	392.788	Fe II	15.51	1	
2905.49	392.725	Cr I	5.21	1	
2905.77	392.642	Fe II	20.06	1	
2906.12	392.573	Fe II	15.46	6	
2906.46	392.495	V II	11.36	6	
2907.12	392.345	Mo	.....	1	
2907.52	392.258	Fe I	6.46, 6.99	6	V II 2907.47
2907.86	392.181	Fe II	13.11	4	
2908.82	391.961	V II	11.39	9	
2909.12	391.893	Mo II	11.6	6	Cr I 2909.06
2909.97	391.686	Fe II	.....	2	
2910.39	391.598	V II	11.32	4	
2910.76	391.520	Fe II	20.05	f5	Cr 2910.65, Fe II 2910.76
2911.58	391.316	Fe II	.....	6	
2911.86	391.256	Fe II	.....	7	
2912.16	391.197	Fe I	4.26	S7	
2913.73	390.835	Cr	.....	2	
2914.01	390.722	Ni I	4.42	1	
2915.23	390.509	Cr II	15.37	5	
2916.92	390.122	Fe II	15.37	0	
2917.09	390.084	Fe II	16.60	4	
2917.47	390.001	Fe II	13.15	4	
2918.03	389.867	Fe I	7.49	7	
2918.36	389.801	Fe I	6.67	1	
2919.85	389.458	Fe I	6.67	1	
2920.29	389.354	Fe I	6.74	1	
2920.69	389.274	Fe I	5.85	3	
2921.24	389.148	Cr II	15.83	9	
2921.82	389.028	Cr II	14.88	7	
2922.02	388.966	Fe II	16.01	7	
2922.62	388.842	Fe I	6.42	3	
2923.29	388.676	Fe I	7.57	8	
2923.85	388.562	Fe I	6.93	2	
2924.02	388.526	V II	11.37	9	
2924.32	388.463	Mo	.....	3	Fe 2924.35
2924.64	388.390	V II	14.68	8	
2925.36	388.226	Fe I	7.00	4	
2925.90	388.114	Fe I	5.84	2	
2926.16	388.051	Cr II	14.88	3	
2926.59	387.954	Fe II	13.08	10	
2927.08	387.845	Cr II	15.72	5	
2927.55	387.745	Fe	.....	1	Mo 2927.54
2928.10	387.619	Fe I	6.41	8	
2928.30	387.570	Cr II	14.80, 15.71	8	
2928.73	387.484	Fe II	.....	1	
2929.01	387.415	Fe I	4.28	6	
2929.44	387.319	Cr II	15.43	2	
2930.06	387.182	Mo	.....	1	

Wave Length	Displacement	Atomic Origin	Excitation Potential	Visual Intens.	Interferences
I.A.	mm.		e.v.		
2930.50	387.088	Mo	.....	6	Fe II 2930.49
2930.85	387.012	Cr II	14.65	5	V II 2930.81
2931.60	386.846	Fe II	.....	5	
2932.34	386.688	Fe III	38.8	0	
2932.62	386.604	Ni I	.....	2	
2933.06	386.522	Mn II	12.85	10	
2933.58	386.394	Fe II	.....	0	
2933.97	386.323	Cr II	14.78	4	
2934.30	386.253	Mo	.....	3	
2934.37	386.217	Fe I	6.40	1	V II 2934.40
2935.14	386.065	Cr II	14.75	9	
2935.70	385.946	Mo	.....	0	
2936.02	385.868	Fe II	16.23	2	
2936.90	385.669	Fe I	4.22	9	
2937.81	385.499	Fe I	6.42	2	
2939.31	385.148	Mn II	12.84	10	
2939.51	385.108	Fe II	13.12	2	
2940.22	384.945	Cr II	16.24	2	
2940.47	384.878	Fe II	.....	0	
2940.89	384.789	Fe II	.....	0	
2941.34	384.705	Fe I	4.30	S5	V II 2941.37
2941.88	384.568	Cr I	5.15	4	
2942.35	384.468	V I	4.28	0	
2942.63	384.408	Fe	.....	1	
2943.91	384.146	Ni I	4.24	2	
2944.40	384.030	Fe II	13.76	10	
2944.82	383.947	Mo	.....	2	
2945.26	383.862	Fe II	13.11	1	
2945.88	383.704	Fe II	.....	3	
2946.84	383.515	Cr II	15.23	4	
2947.13	383.415	Fe	.....	1	
2947.66	383.331	Fe II	13.74	10	
2947.88	383.280	Fe I	4.26	8	
2948.43	383.165	Fe I	6.93	3	
2949.20	382.998	Fe II	15.83	10	Mn II 2949.21, V 2949.17
2949.44	382.943	Cr II	15.08	1	
2950.24	382.778	Fe I	6.38	2	
2951.10	382.577	Fe II	15.30	5	
2952.08	382.371	V II	11.29	4	
2953.36	382.101	Cr II	14.62	2	
2953.78	382.016	Fe II	13.09	10	
2953.94	381.964	Fe I	4.28	S4	
2954.66	381.823	Fe I	6.47	2	
2955.06	381.723	Fe III	38.9	2	
2955.84	381.575	Mo	.....	2	
2956.06	381.521	Mo	.....	2	
2956.90	381.333	Mo	.....	3	Fe 2956.86
2957.36	381.241	Fe I	4.30	S9	
2959.60	380.767	Fe II	15.44	8	Cr II 2959.55

Wave Length	Displacement	Atomic Origin	Excitation Potential	Visual Intens.	Interferences
I. A.	mm.		e. v.		
2959.99	380.684	Fe I	6.88	6	
2960.30	380.615	Fe I	6.67	1	
2960.66	380.543	Fe I	7.13	0	
2961.28	380.406	Fe II	13.12	5	
2961.73	380.315	Cr II	14.65	5	Fe I 2961.70
2962.12	380.232	Fe I	5.67	0	
2963.23	379.998	Fe III	38.9	1	
2963.47	379.943	Cr II	15.05	0	
2963.79	379.869	Mo	.....	1	
2964.63	379.688	Fe II	13.76	8	
2965.04	379.608	Fe II	13.74	9	
2965.26	379.558	Fe I	4.30, 6.87	S4	
2966.05	379.393	Cr II	14.75	3	
2966.90	379.210	Fe I	4.18	10	
2967.64	379.063	Cr I	5.20	1	
2968.38	378.905	V II	12.62	5	
2968.48	378.885	Fe I	6.60	0	
2968.73	378.827	Fe II	15.42	1	
2969.48	378.677	Fe I	5.03	4	
2969.93	378.579	Fe II	15.84	9	
2970.10	378.537	Fe I	4.26, 4.28	5	
2970.51	378.453	Fe II	13.11	9	
2970.68	378.415	Fe II	15.80	3	
2971.11	378.327	Cr I	5.15	1	
2971.91	378.160	Mo	.....	10	Cr 2971.91
2972.28	378.082	Fe I	6.37	0	
2972.61	378.006	Mo	.....	2	
2973.24	377.885	Fe I	4.22	10	
2973.90	377.743	Fe III	38.9	1	
2975.48	377.412	Cr I	5.13	3	Mo 2975.40
2975.94	377.315	Fe II	13.12	5	
2978.85	376.717	Fe II	15.79	1	
2979.10	376.670	Fe II	15.99	3	
2979.35	376.611	Fe II	13.12	7	
2979.74	376.533	Cr II	14.62	8	
2980.54	376.369	Fe I	6.92	3	
2980.96	376.278	Fe II	15.44	4	
2981.45	376.175	Fe I	4.21	S7	
2982.06	376.051	Fe II	16.49	10	
2982.78	375.900	Mo	.....	0	V 2982.75
2983.57	375.731	Fe I	4.16	b9	
2984.83	375.462	Fe I, Fe II	13.68	b10	Mo 2984.88
2985.32	375.381	Cr II	14.60	b3	
2985.55	375.313	Fe II	13.74	b7	
2986.00	375.231	Cr I	5.15	b1	
2986.46	375.131	Fe I	4.26	4	Cr I 2986.47
2986.61	375.106	Fe II	15.44	1	Fe I 2986.66
2987.29	374.962	Fe I	5.06	S7	
2987.65	374.892	Si I	4.94	0	
2988.65	374.689	Cr I	5.09	2	

Wave Length	Displacement	Atomic Origin	Excitation Potential	Visual Intens.	Interferences
I.A.	mm.		e.v.		
2989.19	374.574	Cr II	14.59	10	
2990.39	374.326	Fe I	6.87	6	
2991.64	374.071	Fe	.....	2	
2991.89	374.018	Cr I	5.11	2	
2992.45	373.900	Cr II	14.60	3	
2992.84	373.823	Mo	.....	1	
2993.37	373.721	Fe II	16.49	1	
2993.51	373.681	Fe II	.....	1	Mo 2993.52
2994.43	373.496	Fe I	4.19	10	Ni 2994.46
2995.10	373.370	Cr I	5.08	1	
2996.00	373.185	V II	12.56	2	
2996.39	373.105	Fe I	6.56	3	
2996.58	373.053	Cr I	5.12	3	
2997.30	372.909	Fe II	16.49	8	
2997.96	372.778	Fe II	.....	1	V 2997.95
2998.86	372.602	Fe II	15.41	3	Cr I 2998.79
2999.51	372.459	Fe I	4.99	S9	
3000.06	372.353	Fe II	.....	4	
3000.45	372.269	Fe I	5.62	3	
3000.95	372.168	Fe I	4.22	9	
3001.20	372.120	V II	12.57	1	
3001.59	372.044	Fe III	38.8	3	
3002.33	371.877	Fe II	15.94	3	
3002.65	371.817	Fe II	13.68	10	
3003.03	371.743	Fe I	5.08	4	
3003.63	371.625	Ni I	4.24	4	
3003.92	371.566	Cr II	14.70	3	Fe II 3003.91
3004.26	371.499	Fe II	15.80	2	
3004.46	371.461	Mo	.....	0	
3005.06	371.340	Cr I	5.15	3	
3005.31	371.291	Fe I	6.52	1	
3006.12	371.123	Fe III	39.5	0	
3007.28	370.895	Fe I	4.21	b7	
3007.80	370.792	Fe III	38.8	b1	
3008.14	370.714	Fe I	4.23	8	
3008.51	370.640	Fe III	38.8	0	V 3008.50
3009.09	370.522	Fe I	6.52	3	
3009.57	370.426	Fe I	5.03	8	
3010.64	370.214	Cr	.....	2	Fe II 3010.65
3011.48	370.043	Fe I	6.88	6	
3012.00	369.940	Ni I	4.54	6	
3012.45	369.860	Fe	.....	0	
3013.12	369.715	Fe III	38.8	5	
3013.71	369.598	Cr I	5.08	3	
3014.18	369.511	Fe I	7.07	3	Mo 3014.16
3014.76	369.394	Cr I	5.08	2	
3014.92	369.358	Cr I	5.09	6	
3015.19	369.301	Cr I	5.08	2	
3015.51	369.237	Cr	.....	6	
3015.91	369.157	Fe I	6.55	1	

Wave Length	Displacement	Atomic Origin	Excitation Potential	Visual Intens.	Interferences
I.A.	mm.		e.v.		
3016.18	369.102	Fe I	5.10	4	
3017.57	368.823	Cr I	5.11	9	Fe I 3017.63
3018.50	368.640	Cr I	5.08	3	Mo 3018.55
3018.98	368.546	Fe I	5.06	8	
3020.49	368.254	Fe I	4.19	9	
3020.64	368.206	Fe I	4.10	10	Cr I 3020.67
3021.07	368.128	Fe I	4.16	9	
3021.56	368.033	Cr I	5.13	7	Mo 3021.62
3022.75	367.801	Mn	.....	1	
3023.30	367.690	Mo	.....	3	
3024.03	367.545	Fe I	4.21	7	
3024.35	367.482	Cr I	5.08	3	
3025.64	367.239	Fe I	6.50	9	
3025.84	367.180	Fe I	4.22	9	
3026.46	367.074	Fe I	5.08	4	
3026.65	367.021	Cr	.....	4	
3027.77	366.809	Mo	.....	0	
3028.12	366.742	Cr	.....	4	V II 3028.04
3029.16	366.538	Cr I	5.08	2	
3030.15	366.337	Fe I	6.52	8	
3031.06	366.168	Mn II	15.85	2	
3031.22	366.134	Fe I	6.55	6	
3031.64	366.050	Fe I	5.10	5	
3032.93	365.795	Cr II	13.57	2	
3033.33	365.726	Mo	.....	1	
3034.19	365.553	Cr I	5.09	1	
3034.54	365.490	Fe I	5.69?	1	Cr 3034.54
3034.92	365.410	Mo	.....	1	
3035.36	365.322	Mn II	15.86	4	
3035.80	365.243	Fe III	39.6	0	
3037.04	364.995	Cr I	5.11	2	Fe II 3036.99
3037.39	364.926	Fe I	4.19	S9	
3037.94	364.828	Ni I	4.10	2	
3038.78	364.659	Fe II	15.83	1	
3039.32	364.558	Fe I	6.51	0	
3040.43	364.341	Fe I	4.99	5	
3040.96	364.242	Fe	.....	8	Cr I 3040.85
3041.74	364.090	Fe I	5.03	8	
3042.02	364.027	Fe I	5.08	3	
3042.26	363.981	V II	12.84	1	
3042.66	363.904	Fe I	5.08	5	Mn 3042.73
3043.45	363.763	Mo	.....	1	
3044.57	363.543	Mn I	6.21	1	
3044.84	363.480	Fe II	15.89	3	
3045.08	363.451	Fe I	3.00	1	Ni I 3045.01
3045.59	363.346	Fe I	6.52	2	
3046.68	363.131	Fe II	.....	1	
3047.05	363.065	Fe I	7.02	2	Mn 3047.04
3047.60	362.954	Fe I	4.16	S9	
3048.05	362.866	Mo	.....	1	

Wave Length	Displacement	Atomic Origin	Excitation Potential	Visual Intens.	Interferences
I.A.	mm.		e.v.		
3048.46	362.795	Fe	.....	1	
3050.82	362.337	Ni I	4.09	5	
3052.32	362.061	Mo	.....	1	
3053.07	361.911	Fe I	6.48	3	
3053.44	361.836	Fe I	5.07, 7.00	2	
3053.88	361.755	Cr I	5.09	3	
3054.32	361.670	Ni I	4.17	3	Mn 3054.36
3055.26	361.491	Fe I	5.62	4	
3056.25	361.303	Fe	.....	0	
3056.80	361.195	Fe II	16.00	5	
3057.45	361.071	Fe I	4.91	S10	
3057.86	360.992	Cr	.....	1	Mo 3057.88
3058.34	360.904	Cr II	14.90, 14.90	f2	
3059.09	360.762	Fe I	4.10	S10	
3059.52	360.680	Cr II	13.53	2	
3061.59	360.289	Mo	.....	1	
3062.23	360.162	Fe II	15.99	10	
3063.15	359.984	Fe I	6.22	0	
3063.93	359.854	Fe I	6.47	2	
3064.28	359.782	Mo	.....	1	
3064.62	359.715	Ni I	4.16	2	
3065.04	359.637	Mo	.....	1	
3065.32	359.577	Fe II	15.84	4	
3066.48	359.367	Fe I	6.77	1	Ni I 3066.46
3067.24	359.220	Fe I	4.96	S9	
3067.64	359.148	Mo	.....	1	
3068.18	359.046	Fe I	5.65	3	
3068.76	358.938	Fe II	16.06	2	
3070.69	358.576	Fe II	15.54	3	Mo 3070.62
3071.27	358.471	Fe II	.....	2	
3071.57	358.413	Cr II	14.88	2	
3072.46	358.248	Cr	.....	1	
3073.24	358.100	Fe I	7.08	2	Cr II 3073.23, Mo 3073.24
3073.68	358.024	Cr	.....	1	
3073.98	357.953	Fe I	6.70	1	
3074.37	357.884	Mo	.....	1	Fe 3074.44
3075.23	357.731	Fe II	15.59	1	
3075.72	357.633	Fe I	4.98	S10	
3077.17	357.365	Fe II	15.96	10	
3077.66	357.271	Mo	.....	3	
3078.02	357.196	Fe	.....	1	
3078.43	357.130	Fe I	6.51	2	
3079.98	356.842	Fe	.....	1	
3080.40	356.765	Fe II	15.96	2	
3080.75	356.704	Fe	.....	1	Ni I 3080.76
3081.66	356.536	Fe	.....	0	Mo 3081.65
3082.22	356.430	Mo	.....	2	Al I 3082.16
3083.03	356.273	Fe II	15.84	3	
3083.74	356.145	Fe I	5.01	S9	

Wave Length	Displacement	Atomic Origin	Excitation Potential	Visual Intens.	Interferences
I.A.	mm.		e.v.		
3084.45	356.019	Cr	.....	1	
3085.62	355.810	Mo	.....	0	
3087.08	355.538	Ni II	13.72	1	
3087.62	355.431	Mo	.....	5	
3087.88	355.377	Cr	.....	1	
3089.39	355.103	Fe II	16.60	4	
3090.21	354.961	Fe I	6.77	0	
3091.58	354.700	Fe I	5.02	S8	
3092.07	354.613	Mo	.....	2	
3092.71	354.493	Al I	4.0	1	V 3092.72
3093.11	354.423	V II	11.14	10	
3093.49	354.356	Cr	.....	5	
3093.88	354.278	Fe I	6.56	2	
3094.20	354.221	V II	12.78	3	
3094.90	354.095	Fe I	6.73	1	
3095.27	354.030	Fe I	6.70	1	
3095.49	353.991	Cr	.....	1	
3096.04	353.881	Fe	.....	5	Cr 3096.13
3096.30	353.833	Fe II	15.83	5	
3097.06	353.701	Mn	.....	1	
3097.42	353.640	Fe II	15.81	1	
3097.69	353.597	Mo	.....	1	
3098.19	353.500	Fe I	6.70	3	Cr 3098.16
3098.46	353.445	Mo	.....	1	
3099.12	353.321	Ni I	4.17	f1	
3099.90	353.177	Fe I	5.01	10	
3100.30	353.106	Fe I	4.98	7	Mn 3100.302
3100.67	353.040	Fe I	4.96	9	
3101.55	352.884	Ni I	4.11	5	Mn 3101.56
3101.88	352.826	Ni I	4.42	4	
3102.30	352.754	V II	11.10	10	
3102.87	352.657	Fe	.....	1	
3103.47	352.541	Cr	.....	3	
3105.17	352.232	Fe II	15.62	6	
3105.55	352.161	Fe II	15.62	6	
3106.56	351.980	Fe I, Fe II	6.45, 15.54	5	Blend
3107.57	351.800	Cr	.....	6	Mo 3107.55
3107.98	351.728	Fe	.....	0	
3108.65	351.607	Cr	.....	b2	
3110.19	351.328	Fe	.....	b2	
3110.71	351.239	V II	11.07	b10	
3110.84	351.217	Fe	.....	b3	Mo 3110.84
3111.68	351.069	Fe I	6.55	b2	Mo 3111.64
3112.08	350.993	Fe I	6.93	b3	
3114.29	350.593	Fe II	15.61	8	
3114.68	350.524	Fe II	15.61	5	
3115.27	350.417	Cr II	14.92	2	Fe II 3115.35
3115.66	350.353	Fe	.....	3	
3116.09	350.273	Mo	.....	2	
3116.61	350.183	Fe I, Fe II	4.98, 15.61	S7	Blend

Wave Length	Displacement	Atomic Origin	Excitation Potential	Visual Intens.	Interferences
I.A.	mm.		e.v.		
3117.26	350.068	Cr	.....	1	
3117.76	349.997	Fe	.....	0	
3118.38	349.872	V II	11.05	8	
3118.65	349.818	Cr II	13.17	10	Fe II 3118.64
3120.37	349.511	Cr II	13.18	10	Fe 3120.43
3120.87	349.428	Fe	.....	1	
3122.00	349.226	Mo	.....	6	
3122.60	349.119	Cr II	13.07	6	
3122.90	349.066	V II	13.61	3	
3124.98	348.697	Cr II	13.20	10	
3125.28	348.643	V II	11.03	6	
3125.65	348.576	Fe I	4.96, 6.36	5	Blend
3126.76	348.382	Fe	.....	0	Mo 3126.78
3127.81	348.210	Mo	.....	0	
3128.70	348.041	Cr II	13.17	8	
3129.01	347.981	Fe II	15.79	1	
3129.33	347.935	Fe I	5.44	1	Ni I 3129.31
3130.06	347.807	Mo	.....	1	
3130.27	347.770	V II	11.05	6	
3130.57	347.717	Fe II	15.46	1	
3131.72	347.523	Fe II	15.89	2	
3132.06	347.449	Cr II	13.21	10	
3132.59	347.359	Mo I	3.96	6	V 3132.59
3133.05	347.279	Fe II	15.59	4	
3134.11	347.097	Fe I	4.91	S6	Ni I 3134.11
3134.93	346.951	V II	13.22	4	
3135.36	346.874	Fe II	15.59	9	
3136.44	346.690	Mo	.....	1	Blend
3136.68	346.642	Cr II	13.18	8	
3138.21	346.376	Fe II	20.06	1	
3138.72	346.290	Mo	.....	3	Fe II 3138.70
3139.91	346.092	Fe	.....	2	
3141.42	345.828	Mo	.....	2	
3141.73	345.764	Mo	.....	2	
3142.45	345.652	Fe I	6.40	2	
3142.88	345.567	Fe I	6.22	2	
3143.99	345.377	Fe I	7.16	3	
3144.50	345.297	Fe I	6.41	0	
3144.76	345.241	Fe II	15.59	6	
3145.10	345.184	Cr II	13.17	1	Ni I 3145.12, Fe 3145.06
3146.75	344.894	Fe II	15.45	1	
3147.23	344.816	Cr II	13.19	9	Fe 3147.29
3147.79	344.718	Fe I	6.95	1	
3148.41	344.618	Fe I	6.37	1	Cr 3148.44
3149.82	344.372	Cr	.....	3	Fe II 3149.85
3151.35	344.111	Fe I	6.66	5	
3152.82	343.856	Mo	.....	4	Fe II 3152.80
3153.21	343.785	Fe I	6.38	2	
3154.21	343.617	Fe II	15.44	10	

Wave Length	Displacement	Atomic Origin	Excitation Potential	Visual Intens.	Interferences
I.A.	mm.		e.v.		
3154.58	343.551	Ni I	5.88	0	
3155.64	343.374	Mo	.....	2	
3155.95	343.315	Fe II	15.44	1	
3156.27	343.260	Fe I	7.17	1	
3157.04	343.134	Fe I	6.35	S3	
3157.89	342.992	Fe I	6.40	2	
3158.16	342.943	Mo	.....	4	Fe 3158.16
3159.10	342.794	Cr II	13.18	f1	
3160.20	342.597	Fe I	7.19	f1	
3160.66	342.520	Fe I	6.35	S3	
3161.37	342.401	Fe I	5.48	1	
3161.95	342.295	Fe I	6.32	4	
3162.80	342.154	Fe II	15.94	8	
3163.87	341.976	Fe	.....	3	
3164.30	341.913	Fe I	6.36	1	
3165.01	341.785	Fe I	6.34	1	
3165.86	341.641	Fe I	6.36	b2	
3166.70	341.495	Fe II	13.45	b1	
3167.86	341.299	Fe II	15.46	10	
3168.86	341.132	Fe I	6.38	0	
3169.19	341.074	Cr	.....	2	
3169.96	340.948	Mo	.....	1	
3170.35	340.880	Fe II	13.46	9	Mo 3170.35
3171.35	340.714	Fe I	5.40, 6.95	2	Blend
3172.07	340.591	Fe I	6.10, 6.36	4	Blend, Cr 3172.08
3172.37	340.544	Mo	.....	0	
3172.74	340.477	Mo	.....	2	
3173.61	340.337	Fe I	6.77	f2	Cr 3173.56
3174.09	340.251	Fe III	39.5	2	
3175.08	340.090	Fe II	16.49	6	
3175.45	340.026	Fe I	6.30	S6	
3175.99	339.937	Fe I	6.79	1	
3176.36	339.875	Fe I	6.51	3	Mo 3176.33
3177.54	339.673	Fe II	15.54	10	
3178.02	339.598	Fe I	6.30, 6.37	4	
3178.55	339.511	Fe I	6.92	1	Mn 3178.50
3178.97	339.446	Fe I	6.33	1	
3179.51	339.345	Fe I, Fe II	5.51, 16.49	8	Blend
3180.16	339.233	Fe II	16.49	8	Fe I 3180.22
3180.76	339.143	Fe I	3.98	9	Cr II 3180.70
3181.52	339.016	Fe I	6.48	3	Cr 3181.43
3181.91	338.938	Fe I	6.92, 6.36	1	Blend
3183.11	338.743	Fe II	13.45	8	
3183.32	338.709	Cr	.....	3	V I 3183.41
3184.37	338.544	Fe II	.....	1	Ni I 3184.37
3184.90	338.450	Fe I	3.94	S3	
3185.32	338.378	Fe II	13.48	3	
3186.74	338.139	Fe II	13.45	10	Cr 3186.74
3187.29	338.051	Fe II	15.89	8	
3188.82	337.799	Fe I	6.37	3	

Wave Length	Displacement	Atomic Origin	Excitation Potential	Visual Intens.	Interferences
I.A.	mm.		e.v.		
3191.66	337.331	Fe I	.....	S3	
3192.06	337.268	Fe II	15.44	3	
3192.80	337.129	Fe I	6.36, 6.87	8	Blend
3193.23	337.066	Fe I	3.88	4	
3193.80	336.969	Fe I, Fe II	13.46	10	Blend
3196.08	336.602	Fe II	13.40	10	
3196.93	336.455	Fe I	6.30	S10	
3198.81	336.159	Fe III	38.5	0	
3199.52	336.045	Fe I	6.30, 3.98	5	
3200.48	335.891	Fe I	6.34, 6.33	S6	Blend
3201.50	335.717	Mo	.....	0	
3202.56	335.553	Fe I	6.92	3	
3203.51	335.396	Fe II	15.63	1	
3204.94	335.157	Mo	.....	f2	
3205.40	335.087	Fe I	6.35	S7	
3207.09	334.824	Fe I	6.26	1	
3208.48	334.578	Fe I	7.30	3	
3208.83	334.532	Mo I	3.86	2	
3209.18	334.468	Cr II	13.23	10	
3209.71	334.396	Mo	.....	0	
3210.24	334.312	Fe I	6.29	1	
3210.45	334.263	Fe II	13.45	10	
3210.83	334.208	Fe I	6.33	2	
3211.68	334.082	Fe I	7.20	f2	
3211.99	334.017	Fe I	6.25	6	
3212.88	333.874	Mn I	5.97	1	Cr 3212.90
3213.31	333.800	Fe II	13.42	10	
3214.04	333.695	Fe I	7.23, 6.30, 6.31	6	Blend, Ni I 3214.06 Mo 3214.44
3214.40	333.635	Fe I	3.94	2	
3214.75	333.578	V II	13.24	1	
3215.94	333.384	Fe I	6.32	S5	
3216.56	333.287	Cr	.....	3	
3217.11	333.194	V I, V II	4.05, 12.64	1	Blend
3217.38	333.148	Fe I	6.25	S8	Cr 3217.40
3219.13	332.874	Cr	.....	2	Fe II 3219.15
3219.58	332.807	Fe I	6.30	5	
3219.81	332.760	Fe I	3.96, 6.28	4	Blend, Ni 3219.81
3222.07	332.404	Fe I	6.25, 6.80	S9	
3222.90	332.266	Mo	.....	f1	Fe II 322294.
3223.53	332.167	Ni I	7.04, 7.34	f1	Blend
3225.02	331.933	Ni I	.....	0	
3225.36	331.877	Cr	.....	1	
3225.79	331.802	Fe I	6.24	S9	
3227.06	331.608	Fe I	6.32	0	
3227.75	II 331.492	Fe II	13.36	10	Fe I 3227.80
3227.75	III 315.375	Fe II	13.36	10	Fe I 3227.80
3228.10	315.311	Mn I	5.95	f3	

Wave Length	Displacement	Atomic Origin	Excitation Potential	Visual Intens.	Interferences
I.A.	mm.		e.v.		
3229.71	315.049	Mo	.....	1	
3229.99	314.994	Fe I	6.88	f3	
3230.50	314.905	Fe II	15.54	1	
3230.97	314.840	Fe I	6.29	4	
3231.71	314.715	Fe II	15.46	4	
3232.79	314.541	Fe II	15.84	7	
3233.05	314.486	Fe I	7.07	7	Mo 3233.14
3233.97	314.326	Fe I	6.25	7	Cr 3234.06
3234.61	314.235	Fe I	3.88	2	
3234.92	314.167	Fe II	12.68	0	
3236.22	313.966	Fe I	3.88	S3	
3236.78	313.874	Mn I	5.97	2	
3237.40	313.768	Fe II	15.45	3	
3237.82	313.697	Fe II	15.45	8	Mo 3237.84
3238.76	313.539	Cr	.....	6	
3239.44	313.430	Fe I	6.25, 6.31	S7	
3240.02	313.337	Fe I	6.87	0	
3240.71	313.217	Mo	.....	2	
3241.68	313.066	Fe II	15.46	2	
3243.06	312.835	Ni I	3.85	2	
3243.72	312.725	Fe II	15.83	8	
3244.19	312.648	Fe I	6.25	S6	
3245.48	312.427	Cr I	4.80	0	
3245.98	312.350	Fe I	4.73	3	
3246.48	312.269	Fe I	6.41	2	
3247.17	312.156	Fe II	15.45	9	
3247.54	312.089	Cu I	3.8	6	
3248.21	311.987	Fe I	6.26	4	
3248.52	311.934	Mn I	5.97	2	
3249.19	311.826	Fe I	6.38	1	
3249.66	311.749	Fe II	15.45	4	
3250.75	311.572	Mo	.....	3	Fe I 3250.63
3251.24	311.488	Fe I	6.01	3	
3252.44	311.287	Fe	.....	2	Cr 3252.49
3252.93	311.207	Fe I	6.37	2	Mn 3252.95
3253.60	311.091	Fe I	7.07	4	
3253.95	311.049	Fe I	6.42	0	
3254.36	310.972	Fe I	7.08	7	
3254.73	310.914	Fe I	6.50	1	V I 3254.77
3255.25	310.827	Mo	.....	1	
3255.89	310.726	Fe II	12.66	7	
3257.24	310.505	Fe I	6.80, 4.80	1	
3257.59	310.449	Fe I	5.98	S2	
3257.89	310.394	Fe II	17.23	2	V 3257.89
3258.77	310.262	Fe II	15.44	9	Cr 3258.77
3259.05	310.197	Fe II	15.45	9	
3259.99	310.062	Fe I	6.25	1	Cr 3259.98
3260.26	310.014	Fe I	6.36	1	Mn I 3260.23
3262.28	309.691	Fe	.....	1	Mo 3262.19
3263.37	309.509	Fe I	6.22	1	V II 3263.32

Wave Length	Displacement	Atomic Origin	Excitation Potential	Visual Intens.	Interferences
I.A.	mm.		e.v.		
3264.26	309.362	Cr	.....	3	
3265.05	309.232	Fe I	3.88	1	
3265.62	309.139	Fe I	5.97	6	
3266.29	309.043	Mo	.....	0	
3266.94	308.934	Fe II	15.42	5	Mo 3266.89
3267.64	308.816	Mo I	5.74	1	V II 3267.70
3268.24	308.729	Fe I	6.02	1	
3268.51	308.674	Fe II	15.81	2	
3269.77	308.474	Fe II	15.80	3	Cr 3269.76
3271.00	308.271	Fe I	5.99	S6	
3271.68	308.171	Fe I	5.27	1	Mo 3271.67
3273.50	307.870	Fe II	15.80	2	Mo 3273.58
3273.96	307.799	Cu I	3.8	4	
3274.45	307.718	Fe I	7.16	1	
3276.08	307.462	Fe III	38.5	4	V II 3276.12
3276.61	307.368	Fe II	15.46	6	
3277.35	307.253	Fe II	12.63	9	
3277.85	307.174	Fe II	15.41	0	
3278.73	307.028	Fe I	6.20, 6.36	2	
3279.65	306.888	Fe II	15.79	3	Fe. 3279.74
3280.26	306.787	Fe I	7.08	7	
3281.30	306.626	Fe II	12.68	7	
3282.89	306.361	Fe	.....	3	Mo 3282.91
3283.54	306.268	Fe	.....	0	
3284.59	306.099	Fe I	5.95	S3	
3285.42	305.973	Fe II	.....	2	
3286.76	305.752	Fe I	5.95	S10	
3288.81	305.433	Fe III	38.5	2	
3289.35	305.343	Fe II	15.44	7	V II 3289.39
3290.72	305.130	Fe I	5.94	1	
3290.99	305.089	Fe I	5.98	1	
3292.02	304.926	Fe I	7.02	4	
3292.31	304.871	Mo	.....	4	
3292.59	304.828	Fe I	5.99	3	
3295.42	304.393	Fe II	.....	6	
3295.82	304.321	Fe II	12.70	3	
3296.47	304.214	Fe I	6.35	1	
3299.77	303.712	Fe II	.....	1	
3302.86	303.225	Fe II	12.66	2	
3303.47	303.130	Fe II	12.71	3	
3305.14	302.863	Fe	.....	1	
3305.97	302.741	Fe I	5.95	9	
3306.35	302.676	Fe I	5.97, 6.80	10	
3307.01	302.577	Fe I	6.70	4	
3307.23	302.548	Fe I	6.98	2	Fe 3307.15
3310.34	302.065	Fe I	6.70	1	
3310.65	302.012	Cr	.....	4	
3311.93	301.823	Cr II	13.06	6	
3312.18	301.775	Cr II	13.06	6	Fe I 3312.22
3312.94	301.657	Mo	.....	f2	

Wave Length	Displacement	Atomic Origin	Excitation Potential	Visual Intens.	Interferences
I.A.	mm.		e.v.		
3313.62	301.556	Mo	.....	2	
3314.00	301.488	Fe II	12.70	2	Cr 3314.05, Fe I 3314.07
3314.74	301.385	Fe I	7.05	f6	
3315.66	301.242	Ni I	3.85	2	
3317.12	301.015	Fe I	6.02	1	Mo 3317.04
3319.25	300.687	Fe I	6.70	1	
3320.26	300.535	Ni I	3.90	1	
3320.90	300.433	Mo	.....	4	
3321.49	300.337	Fe II	.....	1	V 3321.54
3322.31	300.206	Ni I	4.15	f1	
3323.07	300.097	Fe II	15.44	8	
3323.74	300.005	Fe I	6.56	3	
3324.06	299.946	Cr II	12.93	2	
3324.37	299.910	Fe I	7.00	4	Cr 3324.35
3325.46	299.737	Fe I	6.13	1	
3328.35	299.296	Cr II	12.92	2	
3328.87	299.222	Fe	.....	b5	
3329.22	299.170	Mo	.....	b3	
3334.22	298.411	Fe I	6.15	b1	
3335.77	298.165	Fe I	6.56	1	
3336.25	298.091	Fe I	7.02	6	
3337.67	297.889	Fe I	6.41	3	
3338.52	297.757	Fe II	15.46	3	
3339.20	297.653	Fe I	6.16, 6.66	f2	Blend
3339.80	297.565	Cr II	12.92	9	
3340.57	297.457	Fe I	5.98	S2	Mo 3340.51
3341.90	297.254	Fe I	6.40	2	
3342.59	297.146	Cr II	12.93	9	Mo 3342.59
3343.24	297.053	Fe I	5.88	0	
3343.68	296.972	Fe I	6.70	0	
3346.02	296.634	Cr	.....	0	
3347.27	296.453	Mo	.....	1	
3347.84	296.361	Cr II	12.91	6	
3348.94	296.202	Mo	.....	1	
3349.32	296.138	Cr	.....	1	
3350.28	296.002	Fe I	6.15, 6.13	0	Blend
3353.13	295.580	Cr	.....	3	Cr 3353.03
3354.06	295.441	Fe I	6.55	2	
3355.23	295.265	Fe I	7.00	5	
3356.27	295.104	Fe II	.....	f2	Fe I 3356.32, V I 3356.35
3357.41	294.944	Cr	.....	5	
3358.50	294.782	Cr II	12.92	9	
3360.30	294.514	Cr II	13.06	9	Fe II 3360.31
3361.77	294.299	Cr II	13.06	4	
3365.77	293.719	Ni I	4.11	1	
3366.17	293.651	Ni I	3.85	1	
3366.87	293.553	Fe I	6.38	f4	Fe I 3366.87, Fe 3366.79

Wave Length	Displacement	Atomic Origin	Excitation Potential	Visual Intens.	Interferences
I.A.	mm.		e.v.		
3368.05	293.378	Cr II	12.93	10	Mo 3367.97
3368.63	293.288	Fe II	17.11	1	
3369.55	293.160	Fe I	6.41, 6.70	5	Ni 3369.57
3370.79	292.983	Fe I	6.37	S6	
3371.99	292.799	Ni I	3.84	2	Fe I 3372.07
3377.20	292.052	Fe	.....	f3	
3378.34	291.888	Cr II	13.54	4	
3378.68	291.839	Fe I	6.36	3	
3379.02	291.789	Fe I	5.84	3	
3379.37	291.736	Cr II	13.54	4	
3379.82	291.672	Cr I, Cr II	6.21, 13.54	6	Blend
3380.11	291.624	Fe I	6.43	5	
3381.00	291.504	Fe II	17.10	3	
3382.68	291.259	Cr II	12.88	8	
3383.98	291.070	Fe I	5.84	4	Mo I 3383.98
3387.32	290.590	Fe II	15.49	2	
3388.13	290.485	Fe II	15.42	0	
3391.43	290.008	Cr II	12.85	3	
3391.85	289.948	Mo	.....	1	
3392.31	289.887	Fe I	5.98	2	
3392.66	289.835	Fe I	5.83	7	
3392.99	289.778	Cr II	13.52	7	Ni I 3392.99
3393.84	289.660	Cr II	13.52	4	
3394.30	289.591	Cr II	13.52	4	
3394.59	289.559	Fe I	5.85	3	
3395.33	289.457	Fe II	15.54	2	
3395.61	289.417	Cr	.....	1	
3396.98	289.226	Fe I	4.61	S3	
3397.56	289.135	Fe I	6.67	1	V 3397.58
3398.36	289.027	Fe II	15.46	2	
3399.34	288.883	Fe I	5.84	S9	
3401.52	288.577	Fe I	4.56	S3	
3402.26	288.465	Fe I	6.88	5	
3402.81	288.393	Mo	.....	3	
3403.32	288.324	Cr II	12.69, 13.54	10	Fe I 3403.32
3404.30	288.179	Fe I	4.65, 6.36	7	Blend
3405.83	287.965	Fe I	6.33	2	
3406.80	287.830	Fe I	5.86	4	
3407.46	287.737	Fe I	5.82	S10	
3408.76	287.557	Cr II	12.89	10	
3410.03	287.365	Fe I	6.69	3	
3412.29	287.057	Mo	.....	0	
3413.14	286.947	Fe I	5.83	S9	
3413.48	286.895	Ni I	3.80, 7.17	1	
3413.94	286.832	Ni I	3.74	1	
3414.14	286.793	Fe II	15.44	1	V I 3414.20
3414.76	286.723	Ni I	3.66	9	
3415.53	286.616	Fe I	5.85	3	
3416.02	286.544	Fe II	13.76	3	
3417.84	286.295	Fe I	5.85	5	

THE SPECTRUM OF STEEL

3418.51—3471.34

Wave Length	Displacement	Atomic Origin	Excitation Potential	Visual Intens.	Interferences
I.A.	mm.		e.v.		
3418.51	286.202	Fe I	5.85	5	
3422.66	285.617	Fe I	5.84	10	
3423.71	285.480	Ni I	3.83	3	
3424.29	285.403	Fe I	5.79	6	
3425.02	285.304	Fe I	6.67	3	
3425.58	285.225	Fe II	13.15	0	
3426.32	285.123	Fe I	5.90	4	
3426.64	285.079	Fe I	5.82	5	
3427.12	285.012	Fe I	5.79	S10	
3428.20	284.866	Fe I	5.82	5	
3428.75	284.787	Fe I	7.22	f1	
3431.81	284.369	Fe I	5.82, 6.92	2	Blend
3432.23	284.314	Mo	.....	0	
3433.56	284.128	Ni I	3.64, 7.15	4	Cr I 3433.60
3434.05	284.068	Mo I	5.03	1	
3435.40	283.882	Mo	.....	2	
3436.11	283.779	Fe II	15.44	4	Cr I 3436.19
3437.22	283.631	Mo	.....	bf8	Ni I 3437.28
3437.95	283.538	Fe I	6.87	b1	
3438.31	283.486	Fe	.....	b1	
3438.97	283.399	Mn II	12.23	2	
3439.87	283.280	Fe	.....	1	
3440.61	283.179	Fe I	3.60	10	
3440.99	283.114	Fe I	3.65	10	
3441.99	282.983	Mn II	12.83	10	
3443.88	282.731	Fe I	3.68	S10	
3445.15	282.557	Fe I	5.79	S5	
3445.62	282.502	Cr	.....	0	
3446.26	282.412	Ni I	3.71	4	
3447.28	282.275	Fe I	5.79	3	
3450.33	281.859	Fe I	5.82	4	
3451.23	281.735	Fe II	.....	2	
3451.92	281.648	Fe I	5.82	4	
3452.28	281.596	Fe I	4.55	4	
3452.89	281.516	Ni I	3.70	4	
3454.99	281.238	Cr	.....	3	
3455.60	281.155	Cr	.....	0	
3456.93	280.980	Fe II	15.35	4	
3457.63	280.886	Cr	.....	3	
3458.47	280.776	Ni I	3.80	8	
3459.29	280.662	Cr	.....	f1	
3459.92	280.581	Fe I	5.86, 6.60	2	
3460.33	280.522	Mn II	12.84	9	
3461.65	280.347	Ni I	3.61	8	
3464.49	279.973	Fe II	15.46	1	
3465.86	279.790	Fe I	3.68	S10	
3466.90	279.660	Fe I	.....	1	
3468.68	279.422	Fe II	15.46	5	
3469.83	279.275	Fe I	6.13	1	
3471.34	279.070	Fe I	5.85	3	Fe I 3471.27

Wave Length	Displacement	Atomic Origin	Excitation Potential	Visual Intens.	Interferences
I.A.	mm.		e.v.		
3472.07	278.976	Cr	.....	2	
3472.54	278.912	Ni I	3.68	3	
3474.13	278.706	Mn II	12.85	f7	
3475.45	278.529	Fe I	3.65	10	
3476.70	278.365	Fe I	3.68	S10	
3478.63	278.118	Fe	.....	1	
3482.43	277.617	Fe II	.....	1	
3482.91	277.553	Mn II	12.84	6	
3483.77	277.447	Ni I	3.83	2	
3485.34	277.241	Fe I	5.75	S4	
3485.73	277.190	Mo	.....	1	
3488.00	276.899	Fe II	13.11	f1	
3488.68	276.804	Mn II	12.85	5	
3489.67	276.680	Fe I	6.50	3	
3490.58	276.562	Fe I	3.60	S10	
3492.96	276.257	Ni I	3.66	8	
3493.47	276.189	Fe II	15.44	8	
3494.17	276.101	Fe I	6.56	0	
3494.67	276.031	Fe II	13.68	2	
3495.29	275.953	Fe I	6.10	5	Cr II 3495.38
3495.84	275.883	Mn II	12.85	4	
3497.11	275.722	Fe I	5.71	6	
3497.84	275.630	Fe I	3.65	S9	
3499.88	275.371	Fe II	15.44	1	V II 3499.82
3500.57	275.290	Fe I	6.13	1	
3500.85	275.251	Ni I	3.71	1	V I 3500.82
3501.75	275.131	Fe III	39.1, 39.5	1	
3502.67	275.014	Mo	.....	0	
3503.47	274.917	Fe II	12.71	f1	
3504.41	274.798	Mo I	5.80	1	
3506.50	274.530	Fe I	5.82	4	
3508.48	274.274	Fe I	6.52	4	Fe I 3508.54
3509.87	274.100	Fe I	5.75	1	
3510.34	274.041	Ni I	3.74	5	
3511.74	273.859	Fe I	6.09	2	
3512.96	273.705	Fe I	6.60	1	
3513.82	273.601	Fe I	4.39	S10	
3514.63	273.507	Fe I	5.93	1	
3515.05	273.447	Ni I	3.63	8	
3515.82	273.355	Fe II	.....	1	
3516.42	273.273	Fe I	6.55	2	
3517.30	273.161	V II	11.39	4	
3518.68	272.985	Fe I	6.40	f2	
3519.77	272.861	Ni I	3.80	2	
3521.26	272.668	Fe I	4.44	S10	
3522.28	272.538	Fe I	6.35	1	
3522.89	272.461	Fe I	6.40	1	
3523.31	272.405	Fe I	6.40	1	
3524.07	272.311	Fe I	6.10	4	
3524.54	272.255	Ni I	3.55	10	

Wave Length	Displacement	Atomic Origin	Excitation Potential	Visual Intens.	Interferences
I.A.	mm.		e.v.		
3526.04	272.072	Fe I	6.11	10	
3526.46	272.015	Fe I	5.79	f7	Fe I 3526.38
3527.80	271.852	Fe I	6.36	3	
3529.82	271.606	Fe I	6.40	4	
3530.39	271.534	Fe I	6.32	1	
3530.77	271.485	V II	11.32	4	
3532.00	271.329	Mn I	5.81	3	
3534.53	271.013	Fe I	7.08	1	
3536.56	270.769	Fe I	6.38	9	
3537.73	270.615	Fe I	6.11	3	
3540.12	270.326	Fe I	6.36	2	
3541.09	270.210	Fe I	6.35	9	
3542.08	270.091	Fe I	6.36	9	
3543.67	269.892	Fe I	6.92	2	
3544.63	269.769	Fe I	6.10	f1	
3545.64	269.654	Fe I	6.35	4	
3547.20	269.462	Fe I	6.30, 6.80	1	Blend
3548.02	269.368	Fe I	6.51	f4	Mn 3548.03
3552.12	268.869	Fe I	6.56	1	
3552.83	268.780	Fe I	6.36	3	
3553.74	268.667	Fe I	7.07	8	
3554.93	268.524	Fe I	6.32	10	
3556.88	268.288	Fe I	6.34	6	
3558.10	268.135	Mo	.....	0	
3558.52	268.089	Fe I	4.48	S10	
3559.51	267.969	Fe I	6.55	1	
3560.70	267.829	Fe I	6.73	1	
3563.14	267.534	Mo	.....	0	
3563.76	267.448	Mo	.....	0	
3564.53	267.365	Fe	.....	3	
3565.38	267.258	Fe I	4.44	S10	
3566.37	267.143	Ni I	3.89	6	Fe I 3566.31
3567.04	267.061	Fe I	6.35	1	
3568.98	266.836	Fe I	.....	3	
3569.50	266.774	Mn I	5.81	3	
3570.10	266.691	Fe I	4.39	r10	Mn I 3570.10
3571.23	266.562	Fe I	4.96	0	
3571.87	266.476	Ni I	3.64	5	Fe I 3572.00
3573.40	266.305	Fe I	6.77	1	
3573.89	266.244	Fe I, Fe I	5.88, 6.77	5	Blend, Mo 3573.88
3575.38	266.071	Fe I	6.48	5	
3575.98	265.999	Fe I	6.33, 6.34	1	Blend
3576.76	265.904	Fe I	6.73	S3	Ni II 3576.76
3577.88	265.774	Mn I	5.81	1	V I 3577.87
3578.69	265.676	Cr I	3.46	10	V 3578.64
3579.56	265.570	Fe	.....	0	
3581.20	265.374	Fe I	4.32	Sr10	
3582.20	265.259	Fe I	6.70	4	
3583.34	265.128	Fe I	6.75	1	
3584.66	264.967	Fe I	6.15	bS9	

Wave Length	Displacement	Atomic Origin	Excitation Potential	Visual Intens.	Interferences
I.A.	mm.		e.v.		
3585.32	264.896	Fe I	4.42	bS10	
3585.71	264.841	Fe I	4.37	b8	
3586.11	264.791	Fe I	6.47, 6.70	bS9	
3586.99	264.695	Fe I	4.45	10	
3587.76	264.603	Fe I	.....	2	
3588.62	264.508	Fe I	6.29	3	
3589.11	264.449	Fe I	4.32	S3	
3589.46	264.397	Fe I	6.18	3	
3590.20	264.316	Mo	.....	f1	
3591.34	264.185	Fe I	6.30	f1	
3592.02	264.102	V II	11.29	4	
3592.49	264.044	Fe I	6.04	1	
3593.49	263.930	Cr I	3.45	10	
3594.64	263.802	Fe I	6.30	4	
3596.20	263.610	Fe I	5.88	f1	
3597.06	263.513	Fe I	6.71	1	
3598.98	263.289	Fe I	6.33	1	
3599.62	263.218	Fe I	7.02	3	
3600.93	263.068	Fe III	39.1	2	
3602.47	262.882	Fe I	6.30	3	
3603.21	262.803	Fe I	6.13	8	
3603.82	262.729	Fe I	6.51	3	Cr I 3603.74
3604.38	262.666	Fe I	6.32	0	V 3604.38
3605.46	262.546	Cr I	3.43, 6.45	10	
3606.68	262.395	Fe I	6.13	10	Mo 3606.67, V I 3606.69
3607.54	262.305	Mn I	5.60	0	
3608.86	262.144	Fe I	4.46	Sr10	
3610.16	262.000	Fe I	6.24	7	
3612.07	261.776	Fe I	6.26	3	
3612.74	261.705	Ni I	3.70	1	
3613.15	261.652	Fe I	6.31	2	
3613.45	261.615	Fe	.....	1	
3614.12	261.538	Fe	.....	2	
3617.79	261.116	Fe I	6.45	S8	
3618.30	261.057	Fe I	.....	2	Fe I 3618.39
3618.77	261.005	Fe I	4.42	S10	
3619.39	260.939	Ni I	3.85	7	Mn I 3619.40
3620.47	260.815	Fe	.....	1	
3621.46	260.700	Fe I	6.15	S9	
3622.00	260.637	Fe I	6.18	8	
3623.19	260.505	Fe I	5.83	4	
3623.77	260.441	Fe I	6.29	1	Mn I 3623.79
3624.31	260.368	Fe I	5.84	1	
3627.04	260.052	Fe II	17.23	f1	
3628.09	259.948	Fe I	5.62	0	
3630.35	259.689	Fe I	6.26	2	
3631.10	259.611	Fe I	6.25	3	
3631.46	259.561	Fe I	4.37	S10	
3632.04	259.500	Fe I	6.48	4	

THE SPECTRUM OF STEEL

3632.56—3688.31

Wave Length	Displacement	Atomic Origin	Excitation Potential	Visual Intens.	Interferences
I.A.	mm.		e.v.		
3632.56	259.440	Fe I	6.36	1	
3633.08	259.390	Fe I	5.90	1	
3633.83	259.298	Fe I	6.40	1	
3635.14	259.148	Mo	.....	4	Fe I 3635.20
3636.19	259.035	Fe I	5.60, 6.62	2	Blend
3636.65	258.979	Fe I	6.43	2	Cr I 3636.59
3637.00	258.935	Fe I	5.99	1	
3637.79	258.852	Mo	.....	1	Fe I 3637.73, V 3637.76
3638.30	258.796	Fe I	6.16	6	
3640.39	258.559	Fe I	6.13	9	Cr I 3640.40
3643.11	258.254	Fe	.....	1	
3643.71	258.194	Fe I	6.01	3	Fe 3643.82, V I 3643.86
3644.80	258.062	Fe I	6.65	f1	
3645.82	257.953	Fe I	6.51	4	
3647.43	257.770	Fe I	4.96	2	Cr II 3647.39
3647.84	257.726	Fe I	4.32	S10	
3649.51	257.543	Fe I	6.09	S7	
3650.28	257.459	Fe I	5.83	4	
3651.47	257.323	Fe I	6.15	S9	
3652.33	257.226	Mo	.....	1	
3653.76	257.069	Fe I	6.13	1	
3655.47	256.880	Fe I	6.22	3	
3656.23	256.799	Fe	.....	2	Cr I 3656.26
3657.14	256.700	Fe I	5.82	1	
3658.02	256.597	Fe	.....	f2	
3659.52	256.435	Fe I	5.84	4	
3662.85	256.069	Fe	.....	1	
3663.27	256.025	Fe I	6.38	1	Cr I 3663.21
3664.69	255.857	Fe I	6.38	f2	
3668.00	255.496	Fe I	6.37, 6.54	1	Blend
3669.16	255.381	Fe I	6.36	1	
3669.52	255.336	Fe I	6.10	S5	
3670.07	255.276	Fe I	6.30	3	
3670.67	255.211	Mo	.....	1	
3672.82	254.973	Mo	.....	f1	
3674.04	254.844	Fe	.....	1	
3674.77	254.769	Fe I	6.20	2	
3676.31	254.597	Fe I	5.93	S4	Cr 3676.32
3677.63	254.454	Fe I	6.13	Sf10	Cr II 3677.68
3678.86	254.318	Fe I	5.79	2	
3679.92	254.205	Fe I	3.37	S10	
3680.80	254.117	Fe I	6.58	f2	
3682.21	253.956	Fe I	6.92	8	
3683.06	253.866	Fe I	6.40	4	
3684.11	253.752	Fe I	6.09	8	
3686.00	253.549	Fe I	6.30	5	
3687.46	253.389	Fe I	4.22	S10	
3688.31	253.296	Mo	.....	3	

Wave Length	Displacement	Atomic Origin	Excitation Potential	Visual Intens.	Interferences
I.A.	mm.		e.v.		
3689.46	253.178	Fe I	6.20, 6.30	6	Blend
3690.73	253.040	Fe I	6.93	4	
3692.65	252.832	Fe	.....	3	Mo 3692.64
3694.01	252.692	Fe I	6.40	8	
3695.05	252.578	Fe I	5.94, 6.40	S6	Blend
3697.43	252.317	Fe I	.....	2	
3698.00	252.259	Cr	.....	0	
3698.60	252.199	Fe I	6.36	1	
3701.09	251.936	Fe I	6.35	8	
3702.03	251.834	Fe I	6.20	2	
3702.50	251.782	Fe I	4.96, 5.52	2	Blend
3703.70	251.660	Fe I	6.29	f4	
3704.46	251.574	Fe I	6.04	S5	
3705.57	251.457	Fe I	4.26	S10	
3707.05	251.297	Fe I	6.33, 6.34	f3	Blend
3707.92	251.210	Fe I	5.52	10	
3709.25	251.068	Fe I	4.26	10	
3711.22	250.854	Fe I	5.93	3	
3712.95	250.685	Cr II	12.69	f4	
3715.92	250.366	Fe I	5.62	1	
3716.45	250.308	Fe I	6.28, 6.71	4	Blend
3718.41	250.103	Fe I	6.09	2	
3719.94	249.943	Fe I	3.34	Sr10	
3721.40	249.788	Fe I	.....	2	
3722.03	249.729	Fe I	6.09	2	
3722.56	249.669	Fe I	3.41	S10	
3724.38	249.480	Fe I	5.60	S4	
3725.49	249.369	Fe I	6.38	f1	
3726.92	249.204	Fe I	5.52, 6.36	6	
3727.62	249.139	Fe I	4.28	S10	
3730.39	248.854	Fe I	6.37	3	
3730.95	248.798	Fe I	5.93	1	
3731.38	248.752	Fe I	5.93	1	
3732.40	248.645	Fe I	5.52	S7	
3733.32	248.549	Fe I	3.43	S10	
3734.87	348.384	Fe I	4.18	Sr10	
3737.13	248.154	Fe I	3.37	Sr10	
3738.31	248.033	Fe I	6.59	S7	
3739.53	247.907	Fe	.....	3	
3740.25	247.832	Fe I	6.56	3	
3742.62	247.591	Fe I	6.25	f2	
3743.36	247.511	Fe I	4.30	10	
3745.56	247.274	Fe I	3.40	r10	
3746.48	247.196	Fe I	.....	0	
3746.93	247.148	Fe I	6.30	3	
3748.26	247.010	Fe I	3.41	S10	
3748.97	246.941	Fe I	6.25	3	
3749.49	246.882	Fe I	4.22	Sr10	
3753.61	246.462	Fe I	5.48	6	
3754.50	246.376	Fe I	6.30	f2	

THE SPECTRUM OF STEEL

3756.94—3817.65

Wave Length	Displacement	Atomic Origin	Excitation Potential	Visual Intens.	Interferences
I.A.	mm.		e.v.		
3756.94	246.124	Fe I	6.87	4	
3758.24	245.994	Fe I	4.26	Sr10	
3760.05	245.815	Fe I	5.70	S5	
3760.53	245.760	Fe I	5.52	2	
3761.41	245.680	Fe I	5.88	1	
3762.21	245.596	Fe I	6.66	1	
3762.91	245.526	Fe II	17.11	1	
3763.79	245.431	Fe I	4.28	Sr10	
3765.54	245.252	Fe I	6.52	S10	
3767.19	245.085	Fe I	4.30	Sr10	
3774.83	244.326	Fe I	5.51	2	
3775.57	244.242	Ni I	3.71	2	
3775.87	244.209	Fe I	6.01	1	
3776.46	244.164	Fe I	5.46	2	
3778.51	243.949	Fe I	6.51	2	
3779.45	243.856	Fe I	5.84, 6.55	2	Blend
3781.51	243.657	Fe II	15.63	f2	
3782.13	243.591	Fe	.....	f2	Mo 3782.08
3783.53	243.457	Ni I	3.70	f3	
3785.95	243.209	Fe I	5.71	4	
3786.68	243.140	Fe I	4.28	2	
3787.17	243.088	Fe I	6.92	2	
3787.88	243.019	Fe I	4.28	S10	
3790.10	242.804	Fe I	4.26, 5.83	S5	
3790.66	242.747	Fe I	6.31	1	
3791.38	242.677	Cr I	6.28	1	
3792.14	242.608	Cr I	6.28	2	
3793.48	242.458	Fe I	6.26	f2	Ni I 3793.61
3794.34	242.379	Fe I	5.72	4	
3795.00	242.315	Fe I	4.26	S10	
3796.00	242.210	Fe I	5.67	1	
3796.90	242.124	Fe I	6.56	1	
3797.52	242.068	Fe I	6.50	S9	
3798.51	241.980	Fe I	4.18	Sf10	
3799.55	241.868	Fe I	4.22	S10	
3801.68	241.667	Fe I	6.09	f3	
3804.01	241.430	Fe I	6.54	1	
3805.34	241.301	Fe I	6.56	S10	
3806.70	241.168	Fe I	5.84, 6.52	9	
3807.54	241.091	Fe I	5.48	4	V I 3807.50
3808.73	240.970	Fe I	5.82	3	
3809.57	240.884	Fe	.....	3	Mn I 3809.59
3810.76	240.780	Fe I	6.55	3	
3811.90	240.658	Fe I	6.01	3	
3812.96	240.559	Fe I	4.21	10	
3813.89	240.467	Fe I	6.88	1	
3814.52	240.402	Fe I	4.26	3	Cr 3814.62
3815.84	240.279	Fe I	4.73	Sr10	
3816.75	240.182	Mn I	5.43	0	
3817.65	240.104	Fe I	6.58	2	

Wave Length	Displacement	Atomic Origin	Excitation Potential	Visual Intens.	Interferences
I.A.	mm.		e.v.		
3820.43	239.836	Fe I	4.10	r10	
3821.18	239.765	Fe I	6.51	8	
3821.83	239.709	Fe I	5.85	3	
3822.74	239.605	Fe II	.....	1	
3823.52	239.530	Cr I	4.20	1	Mn I 3823.52
3824.44	239.451	Fe I	3.24	S10	
3825.88	239.310	Fe I	4.16	Sr10	
3826.85	239.220	Fe I	5.96	0	
3827.82	239.122	Fe I	4.80	Sr10	
3829.46	238.967	Fe I	6.08, 6.51	3	Blend, Mg I 3829.35
3830.86	238.836	Fe I	5.84	f3	Blend
3831.69	238.752	Ni I	3.66	1	
3832.31	238.689	Mg I	5.9	1	Impurity in carbon electrode
3834.22	238.511	Fe I	4.19	Sr10	
3836.33	238.304	Fe I	6.54	4	
3837.14	238.230	Fe I	5.84	1	Mo 3837.14
3839.26	238.031	Fe I	6.27	S7	
3839.78	237.978	Mn I	5.43	2	
3840.44	237.924	Fe I	4.22	S10	
3841.05	237.850	Fe I	4.84	S10	
3843.26	237.648	Fe I	6.28	S8	
3845.28	237.462	Fe I	5.65	3	
3846.80	237.313	Fe I	6.47	S8	
3848.98	237.110	Cr I	5.93	1	
3849.97	237.013	Fe I	4.23	S10	
3850.82	236.937	Fe I	4.21	5	Mo 3850.82
3852.58	236.774	Fe I	5.40	4	
3853.46	236.691	Fe I	6.16	3	
3856.37	236.407	Fe I	3.26	S10	
3859.22	236.141	Fe I	5.62	6	
3859.91	236.075	Fe I	3.21	S10	
3861.60	235.924	Fe I	6.51	f4	
3862.55	235.826	Cr	.....	f2	
3863.41	235.739	Fe II	15.80	2	
3864.11	235.681	Mo I	3.21	8	
3865.53	235.551	Fe I	4.22	S10	
3867.22	235.344	Fe I	6.22	S5	
3872.50	234.901	Fe I	4.19	S10	
3873.76	234.786	Fe I	5.63	S3	
3874.69	234.694	Fe	.....	1	
3875.38	234.639	Fe	.....	1	
3876.04	234.582	Fe I	.....	2	
3876.38	234.539	Fe	.....	2	
3878.02	234.397	Fe I	4.16	S10	
3878.58	234.348	Fe I	3.28	Sr10	
3883.29	233.903	Fe I	6.45	7	Cr I 3883.29
3884.36	233.807	Fe I	5.88	1	
3885.51	233.696	Fe I	5.62	1	

THE SPECTRUM OF STEEL

3886.28—3953.16

Wave Length	Displacement	Atomic Origin	Excitation Potential	Visual Intens.	Interferences
I.A.	mm.		e.v.		
3886.28	233.626	Fe I	3.24	S10	
3887.05	233.557	Fe I	4.10	S10	
3888.52	233.418	Fe I	4.80	S10	
3890.84	233.209	Fe I	5.92	1	
3891.93	233.099	Fe I	6.60	2	Cr I 3891.94
3893.39	232.976	Fe I	6.13	4	Blend
3894.01	232.917	Fe I	6.48	1	Cr I 3894.04
3895.66	232.767	Fe I	3.29	S10	
3897.90	232.558	Fe I	5.88	5	Fe I 3898.01
3899.71	232.398	Fe I	3.26	S10	
3900.52	232.328	Fe I	6.42	f1	
3902.95	232.103	Fe I, Mo I	4.73, 3.17	S10	Cr I 3902.92
3903.90	232.021	Fe I	6.16	2	
3905.53	231.862	Si I	5.08	0	
3906.48	231.782	Fe I	3.28	S7	Mo 3906.48
3907.94	231.652	Fe I	5.93	S1	
3908.76	231.581	Cr I	4.18	1	
3909.84	231.486	Fe I	5.89	1	
3910.84	231.388	Fe I	5.93	0	
3912.05	231.278	Fe	.....	f3	
3913.64	231.140	Fe I	5.44	2	
3914.28	231.079	Fe I	6.45	1	V II 3914.33
3916.73	230.856	Fe I	6.40	3	
3917.18	230.810	Fe I	4.16	S3	
3918.42	230.698	Fe	.....	5	
3919.16	230.638	Cr I	4.19, 6.18	7	
3920.26	230.539	Fe I	3.28	S10	
3921.18	230.454	Fe I	5.72	f3	Blend
3922.91	230.302	Fe I	3.21	S10	
3925.83	230.040	Mo	.....	4	
3927.92	229.852	Fe I	3.26, 5.99	S10	
3930.30	229.642	Fe I	3.24	S10	
3932.63	229.430	Fe I	5.62, 5.88, 6.43	1	Blend
3933.60	229.345	Fe I	6.22, 6.42	6	
3935.82	229.148	Fe I	5.98, 6.42	S4	
3937.33	229.024	Fe I	.....	2	
3938.97	228.870	Fe II	16.91	2	
3940.88	228.708	Fe I	4.10	S3	
3941.49	228.654	Cr I	4.18	3	Mo 3941.48
3942.44	228.569	Fe I	5.87	S3	
3945.13	228.339	Fe I	5.90	f4	
3947.00	228.169	Fe I	6.36	1	
3947.53	228.113	Fe I	5.97, 6.09	2	
3948.11	228.065	Fe I	6.38	3	
3948.78	228.009	Fe I	6.41	S5	
3949.96	227.904	Fe I	5.31	4	
3951.17	227.799	Fe I	6.41	4	
3952.70	227.670	Fe I	5.83	3	
3953.16	227.622	Fe I	6.15	1	Cr I 3953.16

Wave Length	Displacement	Atomic Origin	Excitation Potential	Visual Intens.	Interferences
I.A.	mm.		e.v.		
3954.53	227.514	Ni I	6.79	f4	
3955.96	227.386	Fe I	6.20	f4	
3956.68	227.319	Fe I	5.83	S9	
3960.90	226.952	Fe II	.....	0	
3961.53	226.893	Al I	3.1	1	
3963.11	226.754	Fe I	6.41	0	
3963.69	226.706	Cr I	5.67	2	
3964.52	226.641	Fe I	5.97	0	
3966.07	226.500	Fe I	4.73	S3	
3966.63	226.444	Fe I	5.88, 6.34	4	Blend
3967.42	226.379	Fe I	6.43	S4	
3969.26	226.218	Fe I	4.61	S10	
3970.39	226.120	Fe I	6.20	2	Cr I 3970.40
3971.33	226.042	Fe I	5.82	3	Cr I 3971.26
3976.66	225.578	Cr I	5.67	4	Fe 3976.61
3977.74	225.486	Fe I	5.31	4	
3978.46	225.422	Fe I	5.95	f0	
3981.77	225.144	Fe I	5.84	2	
3983.96	224.954	Fe I	5.84	4	
3985.24	224.838	Mn	.....	1	Fe 3985.39
3986.17	224.767	Fe I	6.32, 6.36	2	
3991.12	224.340	Cr I	5.65	1	
3997.40	223.807	Fe I	5.83	8	
3998.06	223.749	Fe I	5.79	4	
4000.27	223.556	Fe I	6.36	0	
4002.55	223.370	Fe II	16.91	0	
4003.68	223.274	Fe I	6.51	0	
4005.25	223.142	Fe I	4.65	S10	
4007.27	222.971	Fe I	5.37	1	
4009.72	222.766	Fe I	5.31	4	
4012.47	222.534	Cr	.....	1	Fe II 4012.47
4013.82	222.421	Fe I	6.10	1	
4014.53	222.361	Fe I	6.66	S5	
4017.15	222.143	Fe I	5.84	2	
4018.10	222.063	Mn I	5.22	2	
4021.87	221.748	Fe I	5.84	5	
4024.74	221.510	Fe I	6.32	3	
4030.76	221.008	Mn I	3.10	10	Cr 4030.68
4031.96	220.910	Fe I	6.35	0	
4033.07	220.818	Mn I	3.10	10	
4034.49	220.700	Mn I	3.10	b10	
4035.73	220.600	Mn I	5.23	b2	Mo 4035.66
4040.64	220.196	Fe I	6.36	b2	
4041.36	220.133	Mn I	5.21	b5	Fe I 4041.29
4043.90	219.929	Fe I	5.79, 6.30	b1	Blend
4044.61	219.871	Fe I	5.90	b0	
4045.82	219.767	Fe I	4.55	Sr10	
4048.76	219.528	Mn I	5.24	3	Cr 4048.78
4054.83	219.031	Fe I	4.19	1	Fe I 4054.88
4055.54	218.970	Mn I	5.22	2	

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4057.35—4156.80

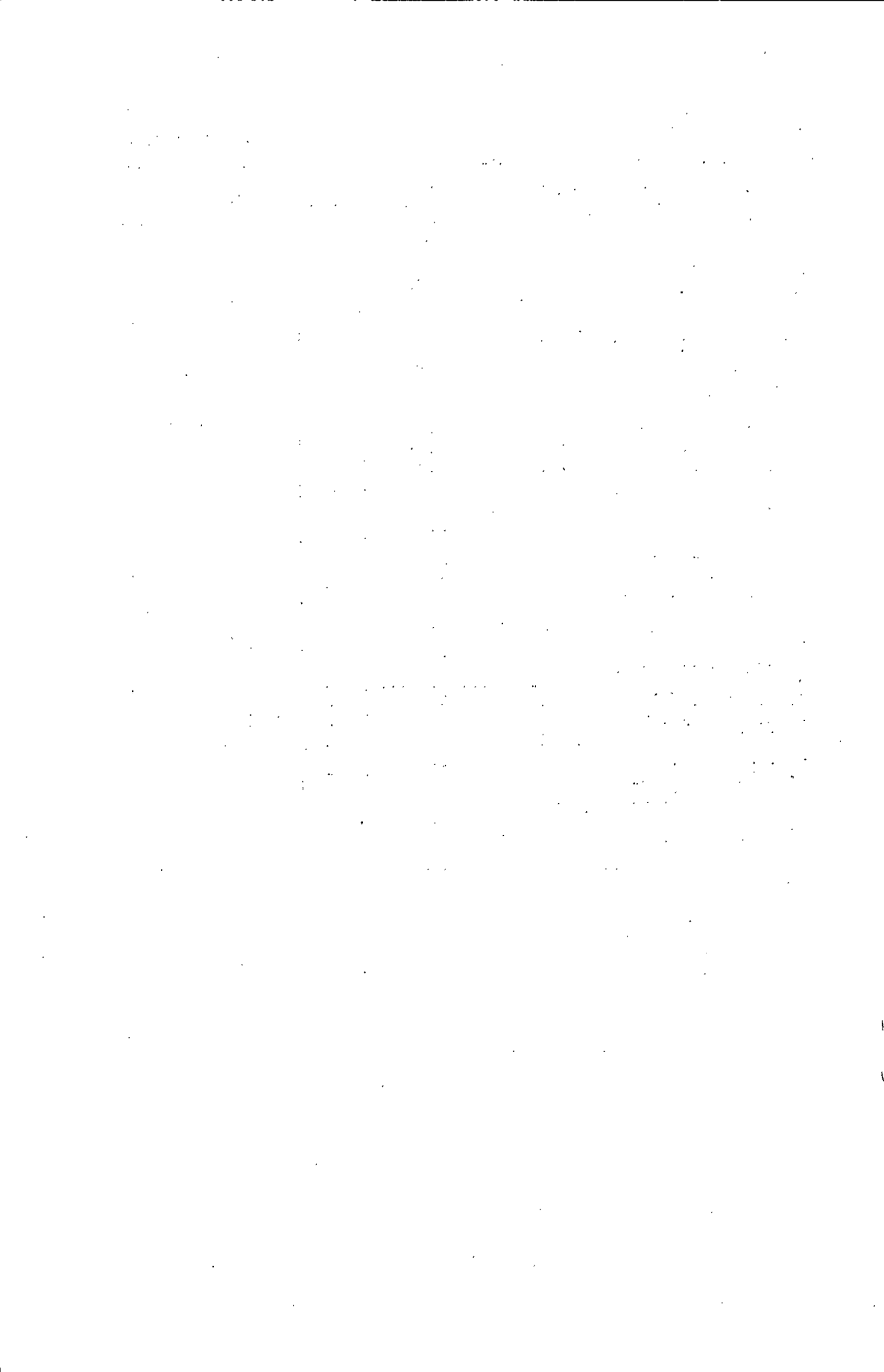
Wave Length	Displacement	Atomic Origin	Excitation Potential	Visual Intens.	Interferences
I.A.	mm.		e.v.		
4057.35	218.829	Fe I	5.82	1	
4058.76	218.706	Fe I	5.48	1	Cr 4058.77
4062.44	218.415	Fe I	5.90	2	
4063.60	318.317	Fe I	4.61	Sr10	Mn I 4063.53
4066.98	218.040	Fe I	5.88	S2	Ni II 4067.05
4067.98	217.967	Fe I	6.25	2	Mn I 4068.00
4069.88	217.814	Fe II	16.81	f5	Mo 4069.88
4071.74	217.663	Fe I	4.65	S10	
4073.78	217.503	Fe I	6.31	1	
4074.79	217.423	Fe I	6.31	2	
4075.94	217.332	Fe	.....	8	
4076.64	217.277	Fe I	5.65	4	Fe I 4076.64
4078.36	217.132	Fe I	5.65	1	
4079.84	217.004	Fe I	5.90	0	
4080.23	216.895	Fe I	6.33	f0	
4082.12	216.827	Fe I	6.45	0	
4082.94	216.767	Mn I	5.23	1	
4083.78	216.707	Fe I	6.45	1	Mn 4083.63
4084.50	216.645	Fe I	6.36	3	
4085.31	216.586	Fe I	6.28	4	
4087.10	216.441	Fe I	6.36	0	
4095.98	215.732	Fe I	5.62	1	
4097.11	215.638	Fe I	6.31	3	
4098.19	215.561	Fe I	6.26	1	Mo 4098.18
4104.95	215.025	Fe I	6.35	3	
4107.49	214.825	Fe I	5.85	S4	
4109.81	214.645	Fe I	5.86	2	
4110.90	214.565	Mn	.....	1	
4112.97	214.392	Fe	.....	1	
4114.45	214.286	Fe I	5.84	S1	
4118.55	213.963	Fe I	6.59	9	Mo 4118.55
4119.39	213.901	Fe	.....	3	
4120.21	213.828	Fe I	6.00	2	
4121.81	213.725	Fe I	5.84	S1	
4122.51	213.654	Fe I	5.85	1	Mo 4122.40
4123.74	213.550	Fe I	5.62, 5.99	f1	Blend
4125.88	213.390	Fe I	5.85	f1	
4127.61	213.260	Fe I	5.86	S3	Cr I 4127.64
4132.06	212.917	Fe I	4.61	S10	
4132.90	212.854	Fe I	4.61, 5.84	4	
4134.68	212.720	Fe I	5.83	S6	
4137.00	212.541	Fe I	6.41	3	
4143.87	212.023	Fe I	4.55	S10	
4146.07	211.865	Fe I	5.98	f2	
4147.67	211.727	Fe I	4.48	S1	
4149.37	211.603	Fe I	6.32	1	
4152.17	211.388	Fe I	3.94	f1	
4153.91	211.260	Fe I	6.38	2	Cr I 4153.82
4154.50	211.202	Fe I	5.82	4	
4156.80	211.037	Fe I	5.82	S5	Mo 4156.79

Wave Length	Displacement	Atomic Origin	Excitation Potential	Visual Intens.	Interferences
I.A.	mm.		e.v.		
4157.79	210.963	Fe I	6.40	2	
4158.80	210.887	Fe I	6.41	1	
4161.42	210.694	Cr	.....	0	Mo 4161.30
4166.70	210.281	Fe II	.....	0	
4170.91	209.972	Fe I	5.87	S2	
4171.90	209.893	Fe I	6.28	2	
4173.48	209.786	Fe II	13.42	2	Fe I 4173.32
4174.80	209.683	Cr I	5.52	1	Fe I 4174.92
4175.64	209.622	Fe I	6.48	S5	
4176.57	209.557	Fe I	6.34, 6.36	2	Mn 4176.60
4177.60	209.470	Fe I	3.88	0	
4178.87	209.383	Fe II	13.40	f2	
4181.76	209.171	Fe I	5.79	7	
4184.90	208.938	Fe I	5.79	S3	Cr 4184.90
4187.04	208.776	Fe I	5.41	6	
4187.80	208.720	Fe I	5.38	6	
4191.44	208.454	Fe I	5.43	5	
4195.34	208.166	Fe I	6.29	2	
4196.21	208.105	Fe I	6.35	1	
4198.31	207.951	Fe I	5.36	6	Fe I 4198.27
4199.10	207.892	Fe I	6.00	10	
4202.03	207.678	Fe I	4.44	S10	
4203.99	207.537	Fe I	5.79	3	Fe I 4203.95
4205.55	207.428	Fe I	6.36	f1	
4207.13	207.316	Fe I	.....	f1	Cr 4206.90
4208.62	207.204	Fe I	6.33, 6.34	1	Blend
4213.65	206.837	Fe I	5.79	S1	
4216.19	206.657	Fe I	2.94	S1	
4217.56	206.555	Fe I	6.37	1	Cr I 4217.63
4219.36	206.426	Fe I	6.51	S6	
4222.22	206.219	Fe I	5.38	4	
4224.18	206.079	Fe I	6.30	3	
4225.46	205.987	Fe I	6.35	3	
4227.43	205.846	Fe I	6.26, 6.35	8	
4234.52	205.339	Cr	.....	1	
4238.04	205.095	Fe I	6.33, 6.34	b1	Blend
4238.82	205.036	Fe I	6.32	b4	
4239.73	204.973	Fe I	5.88	1	Mn I 4239.72
4246.09	204.526	Fe I	6.56	0	Mo 4246.02
4247.43	204.433	Fe I	6.29	3	
4248.23	204.375	Fe I	5.87	0	
4250.13	204.246	Fe I	5.38	7	
4250.79	204.187	Fe I	4.48	S10	
4254.35	203.948	Cr I	2.92	10	
4254.94	203.896	Fe I	5.93, 5.93	0	Blend, Mo 4254.96
4260.48	203.517	Fe I	5.31	S10	
4266.97	203.072	Fe I	5.63	f8	
4271.76	202.739	Fe I	4.39	Sr10	
4274.80	202.531	Cr I	2.90	10	

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4282.41—4383.55

Wave Length	Displacement	Atomic Origin	Excitation Potential	Visual Intens.	Interferences
I.A.	mm.		e.v.		
4282.41	202.007	Fe I	5.07	S4	
4285.44	201.798	Fe I	6.13	S0	
4289.72	201.512	Cr I	2.89	9	
4294.13	201.209	Fe I	4.37	S5	
4296.58	201.047	Fe II	13.45	0	
4298.04	200.941	Fe I	5.93	S0	V I 4298.03
4299.24	200.864	Fe I	5.31, 6.15	4	
4303.17	200.599	Fe II	13.45	1	
4305.46	200.437	Fe I	5.90	S1	Cr I 4305.45
4307.91	200.278	Fe I	4.44	S10	
4309.38	200.184	Fe I	5.83	1	
4315.09	199.798	Fe I	5.07	S4	
4317.07	199.665	Fe I	6.42	f3	
4319.64	199.501	Cr I	2.89	f3	
4325.76	199.084	Fe I	2.87, 4.48	S10	Mo 4325.82
4337.05	198.347	Fe I	4.42	S4	
4339.45	198.186	Cr I	3.84	2	
4344.51	197.857	Cr I	3.86	2	
4347.85	197.649	Fe I	6.45	f3	
4351.76	197.390	Fe II	13.42	7	Cr I 4351.77
4352.74	197.325	Fe I	5.07	S2	
4357.57	197.008	Fe II	.....	0	
4358.50	196.951	Fe I	5.79	S0	
4359.58	196.878	Ni I	6.24	0	Cr I 4359.63
4369.77	196.226	Fe I	5.88	S2	
4371.28	196.127	Cr I	3.84	1	
4375.93	195.831	Fe I	2.83	S2	
4379.24	195.623	V I	3.13	2	
4381.64	195.473	Mo	0	
4383.55	195.341	Fe I	4.32	Sr10	



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