

## **BAB V**

### **PENUTUP**

#### **5.1 Kesimpulan**

Berdasarkan analisa data yang telah dilakukan pada daerah penelitian, maka dapat ditarik kesimpulan sebagai berikut :

- 1) Dari hasil interpolasi terhadap 75 titik bor dengan metode *IDW* menggunakan ArcGis 10.3, terlihat distribusi kadar Ni cukup tinggi ( $COG \geq 1,6\%$ ) terdistribusi dominan di bagian tengah hingga barat daya daerah penelitian.
- 2) Berdasarkan pemodelan kadar Ni dengan metode *IDW* menggunakan aplikasi Surpac 6.6.2, terlihat distribusi Ni dengan kadar cukup tinggi ( $COG \geq 1,6\%$ ) pada bagian tengah hingga baratdaya daerah penelitian, sedangkan Ni kadar rendah ( $< 1,6\%$ ) terdistribusi di bagian timur laut daerah penelitian. Adapun berdasarkan pemodelan *ore* dan *waste*, daerah dengan kandungan *ore* tersebar di bagian tengah daerah penelitian dengan ketebalan berkisar 4-16 m dan *waste* yang cukup tebal di bagian timur berkisar 25-38 m. Adapun berdasarkan kenampakan vertikal model blok section C-D memperlihatkan daerah dengan kandungan *ore* terdistribusi dominan di bagian selatan daerah penelitian dengan ketebalan berkisar 6-16 m dengan *waste* cukup tebal di bagian tengah daerah penelitian dengan ketebalan berkisar 13-24 m. Juga terlihat dari kedua pemodelan, Ni dengan kadar cukup tinggi ( $\geq 1.6\%$ ) cenderung terkonsentrasi pada lapisan limonit bagian bawah hingga lapisan saprolit bagian atas.

- 3) Luas dihitung menggunakan ArcGIS 10.3 berdasarkan titik bor teluar yaitu 43.219 m<sup>2</sup>. Melalui pemodelan distribusi Ni dengan metode *IDW* menggunakan aplikasi Supac 6.6.2 pada daerah penelitian diperoleh volume sumber daya terukur Ni sebesar 165.312,5 m<sup>3</sup> yang kemudian dikalikan dengan nilai densitas tiap lapisan dan diperoleh tonase sumber daya terukur Ni sebesar 186.845,781 M/T dengan kadar Ni rata-rata 2,06%.

## **5.2 Saran**

Penelitian ini masih terbatas menggunakan metode *IDW* dalam penentuan distribusi sebaran Ni dan Fe serta dalam estimasi sumber daya daerah penelitian sehingga perlu dilakukan penelitian lebih lanjut dengan menggunakan metode-metode lainnya selain metode *IDW*. Juga disarankan untuk rencana titik bor yang dirapatkan sesuai dengan hasil interpolasi potensi dari titik bor awal sehingga bisa lebih efisien.

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**L**

**A**

**M**

**P**

**I**

**R**

**A**

**N**

**Tabel Data Logging Spasi 25 m Daerah Penelitian**

HID	FR	TO	Ni	Fe	MgO	SiO <sub>2</sub>	LYR	HID	FR	TO	Ni	Fe	MgO	SiO <sub>2</sub>	LYR
12_35	0	0.45	0.69	14.366	3.26	21	LIM	12_32	5	6	1.6	23.675	2.27	15	LIM
12_35	0.45	1	0.55	12.834	4.61	21	LIM	12_32	6	6.52	1.27	17.275	3.74	19	LIM
12_35	1	1.45	0.43	11.449	7.73	21	LIM	12_32	6.52	7	0.67	14.086	4.76	22	LIM
12_35	1.45	2	0.3	8.938	11.64	22	LIM	12_32	7	8	0.8	15.555	4.63	21	LIM
12_35	2	3	0.28	8.085	12.86	22	LIM	12_32	8	9	0.28	6.777	1.74	32	LIM
12_35	3	3.5	0.26	6.497	13.97	19	LIM	12_32	9	10	0.42	8.365	3.73	28	LIM
12_35	3.5	4	0.25	5.308	9.11	29	LIM	12_32	10	11	0.32	6.295	3.36	33	LIM
12_35	4	5	0.24	5.679	10.78	26	LIM	12_32	11	12	0.8	12.288	5.8	22	LIM
12_36	0	1	0.34	12.337	2.21	25	LIM	12_32	12	13	0.45	6.162	2.17	35	LIM
12_36	1	2	0.37	12.603	4.32	21	LIM	12_32	13	14	0.14	2.847	0.72	41	LIM
12_36	2	3	0.31	11.4	4.65	23	LIM	11_32	0	1	0.98	27.486	1.74	13	SAP
12_36	3	4	0.18	6.001	8.13	23	LIM	11_32	1	1.2	0.96	23.836	2.68	16	SAP
12_36	4	5	0.28	7.595	10.42	21	LIM	11_32	1.2	1.4	0.84	16.345	3.67	18	SAP
12_36	5	6	0.24	7.064	11.27	21	LIM	11_32	1.4	2	1.38	20.765	3.84	17	SAP
12_36	6	7	0.24	6.938	8.28	26	LIM	11_32	2	2.5	0.94	15.079	6.9	18	SAP
12_33	0	0.54	1.77	23.801	2.21	15	LIM	11_32	2.5	3	0.68	13.918	4.73	20	SAP
12_33	0.54	1	1.36	17.856	2.86	18	LIM	11_32	3	3.53	1.07	17.219	4.67	20	SAP
12_33	1	1.19	1.64	22.577	2.12	15	LIM	11_32	3.53	4	0.56	13.261	5.47	22	SAP
12_33	1.19	2	0.24	3.959	1.87	38	LIM	11_32	4	4.75	0.65	12.372	5.91	21	SAP
12_33	2	3	0.16	2.777	0.98	40	LIM	11_32	4.75	5	1.96	16.485	5.14	16	SAP
12_33	3	4	0.26	3.112	1.61	38	LIM	11_32	5	6	1.83	18.052	4.21	16	SAP
12_33	4	5	0.15	1.874	1.66	41	SAP	11_32	6	7	1.25	24.318	2.03	16	SAP
12_34	0	1	1.4	23.745	1.87	15	SAP	11_32	7	7.62	1.07	17.226	5.7	19	SAP
12_34	1	2	0.47	7.099	2.18	31	SAP	11_32	7.62	8	1.26	17.289	5.23	19	SAP
12_34	2	2.4	0.61	12.086	4.72	22	SAP	11_32	8	9	1.18	17.205	5.75	19	SAP
12_34	2.4	3	0.51	11.904	5.29	22	SAP	11_32	9	9.2	0.34	10.799	6.69	23	SAP
12_34	3	4	0.29	8.784	5.86	27	SAP	11_32	9.2	10	0.87	14.506	7.51	19	SAP
12_34	4	5	0.2	5.875	6.67	27	SAP	11_32	10	11	0.88	13.533	7.47	19	SAP
12_34	5	6	0.14	2.951	5.23	32	SAP	11_32	11	12	1.19	19.464	5.52	17	SAP
12_34	6	7	0.13	3.434	6.3	32	SAP	11_32	12	13	1.18	15.065	7.14	18	SAP
12_34	7	7.2	0.11	2.014	3.59	37	SAP	11_32	13	14	1.46	16.779	5.86	18	SAP
12_32	0	1	0.89	23.409	1.13	17	SAP	11_32	14	15	1.49	18.653	5.12	18	LIM
12_32	1	2	0.41	12.596	0.48	29	SAP	11_32	15	16	0.85	13.289	4.72	22	LIM
12_32	2	3	0.43	10.792	1.29	28	SAP	11_32	16	17	1.5	18.562	3.11	19	SAP
12_32	3	3.45	0.96	14.03	2.56	21	SAP	11_32	17	18	1.11	14.205	5.39	19	SAP
12_32	3.45	4	1.11	14.31	3.25	21	SAP	11_32	18	18.47	1.48	11.435	9.18	22	SAP
12_32	4	4.5	1.68	16.548	4.11	19	LIM	11_32	18.47	19	0.82	10.239	9.98	20	SAP
12_32	4.5	5	0.89	12.904	6.25	22	LIM	11_32	19	20	0.41	10.89	8.14	21	SAP

HID	FR	TO	Ni	Fe	MgO	SiO <sub>2</sub>	LYR	HID	FR	TO	Ni	Fe	MgO	SiO <sub>2</sub>	LYR
11_32	20	21	0.41	12.547	7.43	21	SAP	11_33	4.33	5	2.67	16.541	5.6	18	SAP
11_32	21	22	0.55	11.568	8.31	22	SAP	11_33	5	5.4	0.82	6.686	10.37	21	SAP
11_32	22	23	0.42	10.967	8.57	22	SAP	11_33	5.4	6	1.4	16.534	4.41	20	SAP
11_32	23	24	0.85	14.478	6.51	19	LIM	11_33	6	7	0.09	1.874	0.44	43	SAP
11_32	24	25	1.29	16.569	5.34	19	LIM	11_33	7	8	0.23	3.203	0.84	39	SAP
11_32	25	26	0.37	6.749	2.24	35	LIM	11_33	8	9	1.82	12.456	3.97	20	SAP
11_32	26	26.56	0.87	15.422	6.25	19	LIM	11_33	9	10	0.18	3.357	0.51	39	SAP
11_32	26.56	27	1.13	14.778	7.03	19	LIM	11_33	10	11	1.85	17.59	2.77	20	LIM
11_32	27	28	0.67	10.218	8.59	22	LIM	11_33	11	12	0.11	2.014	0.33	43	LIM
11_32	28	28.37	1.21	15.114	5.33	22	LIM	10_31	0	1	1.28	21.549	2.76	17	LIM
11_32	28.37	29	0.71	5.266	2.67	35	LIM	10_31	1	1.55	1.04	19.478	3.2	16	LIM
11_32	29	29.2	0.8	10.379	5.73	26	LIM	10_31	1.55	2	1.17	15.981	5.31	18	LIM
11_32	29.2	30	0.5	5.833	1.48	36	LIM	10_31	2	3	0.99	14.792	5.66	20	LIM
11_32	30	31	0.68	6.323	1.62	36	LIM	10_31	3	4	1.14	19.548	5.24	19	LIM
10_30	0	0.29	1.48	18.933	3.58	18	LIM	10_31	4	5	0.9	10.232	10.62	23	LIM
10_30	0.29	1	1.28	16.331	4.21	18	SAP	10_31	5	6	0.35	9.456	10.31	18	LIM
10_30	1	2	1.4	23.535	1.97	16	SAP	10_31	6	7	0.3	8.477	10.56	19	LIM
10_30	2	2.63	1.29	23.409	2.45	16	SAP	10_31	7	8	0.53	11.834	10.41	17	LIM
10_30	2.63	3	0.78	10.708	6.03	21	SAP	10_31	8	9	0.4	10.967	11.87	16	LIM
10_30	3	3.54	0.39	11.141	5.91	22	SAP	10_31	9	10	0.25	6.546	15.49	15	LIM
10_30	3.54	4	0.92	22.954	3.06	14	SAP	10_31	10	11	0.23	5.847	15.01	17	LIM
10_30	4	5	0.92	21.695	3.62	15	SAP	10_31	11	12	0.28	7.337	11.91	17	LIM
10_30	5	5.22	0.63	15.352	6.49	18	SAP	10_31	12	13	0.29	6.246	17.22	11	LIM
10_30	5.22	5.53	0.33	11.065	6.81	21	SAP	10_31	13	14	0.21	6.63	13.57	14	LIM
10_30	5.53	6	0.89	17.562	5.79	17	SAP	10_31	14	15	0.54	11.988	9	18	LIM
10_30	6	6.61	0.68	14.373	5.95	18	SAP	10_31	15	16	0.14	2.637	18.23	9	LIM
10_30	6.61	7	0.22	6.861	16.42	18	SAP	10_32	0	1	1.34	28.703	1.49	10	LIM
10_30	7	7.33	0.21	7.225	15.69	18	SAP	10_32	1	2	2	21.618	5.62	16	SAP
10_30	7.33	8	0.68	13.407	7.21	19	LIM	10_32	2	3	2.07	21.458	5.8	16	SAP
10_30	8	9	0.28	7.777	14.25	19	LIM	10_32	3	4	1.85	21.003	5.77	16	SAP
10_30	9	9.36	0.42	9.568	9.42	18	LIM	10_32	4	4.44	1.68	15.436	8.44	17	SAP
10_30	9.36	9.51	0.2	6.106	20.47	8	LIM	10_32	4.44	4.66	1.35	10.827	10.9	18	SAP
10_30	9.51	10	0.48	11.722	8.08	19	LIM	10_32	4.66	5	1.76	15.226	10.28	19	LIM
10_30	10	11	0.32	8.777	10.99	18	LIM	10_32	5	5.1	1.64	13.743	9.96	19	LIM
10_30	11	11.4	0.19	6.246	19.64	13	LIM	10_32	5.1	6	1.35	14.065	9.02	17	LIM
11_33	0	1	1.14	31.375	1.19	12	LIM	10_32	6	6.22	1.35	15.163	9.53	19	LIM
11_33	1	2	1.17	27.319	1.14	13	LIM	10_32	6.22	6.5	1.36	13.121	10.47	18	LIM
11_33	2	3	0.96	15.38	2.53	18	LIM	10_32	6.5	7	1.61	14.652	8.93	18	LIM
11_33	3	4	0.84	13.156	4.96	21	LIM	10_32	7	7.34	1.23	11.421	10.89	19	LIM
11_33	4	4.33	0.73	12.414	5.08	22	SAP	10_32	7.34	8	1.05	11.659	11.4	19	LIM

HID	FR	TO	Ni	Fe	MgO	SiO <sub>2</sub>	LYR	HID	FR	TO	Ni	Fe	MgO	SiO <sub>2</sub>	LYR
10_32	8	9	1.01	14.177	9.84	19	LIM	10_32	40	41	0.74	13.617	7.14	18	LIM
10_32	9	10	0.8	10.176	12.71	18	LIM	10_32	41	42	0.58	11.827	5.23	21	LIM
10_32	10	11	0.68	9.568	11.95	19	LIM	10_32	42	43	0.42	11.442	9.2	20	SAP
10_32	11	12	0.68	14.268	6.68	19	LIM	10_32	43	44	0.59	13.981	5.88	18	SAP
10_32	12	13	0.75	16.121	6.52	18	LIM	10_33	0	1	1.68	26.339	2.42	14	SAP
10_32	13	14	0.55	9.288	11.61	19	LIM	10_33	1	1.36	1.05	15.771	2.37	20	LIM
10_32	14	15	0.5	11.127	10.85	18	LIM	10_33	1.36	2	1.29	16.422	3.93	18	SAP
10_32	15	16	0.48	10.855	9.91	18	LIM	10_33	2	3	0.99	13.261	5.35	20	SAP
10_32	16	17	0.65	10.799	10.52	20	LIM	10_33	3	4	0.68	11.253	5.93	23	SAP
10_32	17	18	0.35	6.756	15.68	21	LIM	10_33	4	4.55	0.47	12.233	5.61	22	SAP
10_32	18	18.2	0.69	6.903	14.79	23	LIM	10_33	4.55	5	1.1	14.499	6.46	19	SAP
10_32	18.2	18.4	1.22	8.903	15.96	21	LIM	10_33	5	5.76	1.04	15.156	5.49	20	SAP
10_32	18.4	19	1.45	16.695	9.41	18	LIM	10_33	5.76	6	0.4	11.925	6.81	24	SAP
10_32	19	19.5	0.73	11.764	9.35	18	LIM	10_33	6	7	0.35	9.917	5.43	25	SAP
10_32	19.5	20	0.38	9.736	9.73	20	LIM	10_33	7	8	0.28	9.435	6.96	22	LIM
10_32	20	20.74	1.21	10.575	9.82	21	LIM	10_33	8	8.37	0.38	9.036	8.61	21	LIM
10_32	20.74	21	0.92	14.261	8.08	19	LIM	10_33	8.37	9	0.76	11.023	7.69	22	LIM
10_32	21	21.68	0.89	13.764	7.15	17	LIM	10_33	9	10	0.34	9.113	9.58	20	LIM
10_32	21.68	22	0.28	8.505	15.16	14	SAP	10_33	10	11	0.25	7.938	7.75	25	LIM
10_32	22	22.57	0.56	11.127	9.82	21	SAP	10_33	11	12	0.23	6.973	9.12	22	LIM
10_32	22.57	23	0.24	7.519	16.9	12	SAP	10_33	12	13	0.3	6.847	10.01	20	LIM
10_32	23	24	0.87	12.24	8.39	19	SAP	10_33	13	14	0.77	11.967	7.92	20	SAP
10_32	24	25	1.28	11.785	8.85	20	SAP	10_33	14	15	0.21	6.917	14.35	16	SAP
10_32	25	26	0.47	9.743	11.4	17	SAP	10_33	15	15.27	0.26	9.337	11.84	18	SAP
10_32	26	27	0.58	9.841	13.88	13	SAP	10_33	15.27	16	0.47	10.26	9.36	20	SAP
10_32	27	27.2	0.18	6.539	14.94	10	SAP	10_33	16	17	0.7	11.925	9.05	18	SAP
10_32	27.2	28	0.96	10.981	11.13	18	LIM	10_33	17	18	0.59	9.994	11.26	17	SAP
10_32	28	29	0.18	6.728	16.09	13	LIM	10_33	18	19	0.25	7.379	14.35	15	SAP
10_32	29	29.2	0.22	7.609	15.14	15	LIM	10_33	19	19.48	0.22	7.372	13.79	18	SAP
10_32	29.2	30	1.36	12.198	10.27	20	LIM	10_33	19.48	20	0.36	10.281	11.98	17	SAP
10_32	30	31	1.39	16.618	6.83	18	LIM	10_33	20	20.2	0.62	12.449	10.34	21	SAP
10_32	31	32	1.87	17.142	6.3	18	LIM	10_33	20.2	21	0.27	8.365	12.46	19	SAP
10_32	32	33	1.66	17.121	4.37	16	LIM	10_33	21	22	0.26	8.435	9.29	22	SAP
10_32	33	34	0.98	21.884	4.49	18	LIM	10_33	22	23	0.86	13.394	6.77	17	SAP
10_32	34	35	2.01	19.891	3.32	15	LIM	10_33	23	24	0.85	11.848	8.07	20	SAP
10_32	35	36	1.44	25.787	2.34	14	LIM	10_33	24	25	0.85	11.638	8.92	20	SAP
10_32	36	37	0.63	17.03	5.2	19	LIM	10_33	25	25.5	0.47	9.987	7.53	21	SAP
10_32	37	38	1.14	19.849	4.79	16	LIM	10_33	25.5	26	1.17	13.827	7.86	19	SAP
10_32	38	39	0.52	14.925	6.12	19	LIM	10_33	26	27	1.11	11.631	8.98	20	SAP
10_32	39	40	0.63	12.757	5.88	19	LIM	10_33	27	28	1.12	13.939	7.65	20	SAP

HID	FR	TO	Ni	Fe	MgO	SiO <sub>2</sub>	LYR	HID	FR	TO	Ni	Fe	MgO	SiO <sub>2</sub>	LYR
10_33	28	28.22	0.45	11.547	6.97	21	SAP	10_35	0.56	1	1.37	16.849	1.71	18	SAP
10_33	28.22	29	0.83	12.212	8.04	20	SAP	10_35	1	2	1.03	29.025	0.53	11	SAP
10_33	29	30	0.87	10.085	10.61	21	SAP	10_35	2	3	1.16	33.375	0.84	9	SAP
10_33	30	31	0.36	8.463	11.34	21	SAP	10_35	3	4	0.93	26.871	0.54	12	LIM
10_34	0	0.74	1.5	25.934	1.57	14	SAP	10_35	4	4.58	0.74	21.388	0.62	18	LIM
10_34	0.74	1	1.4	22.038	2.14	16	SAP	10_35	4.58	5	1.69	28.382	0.98	13	LIM
10_34	1	1.57	1.47	19.129	2.63	17	SAP	10_35	5	6	2.11	22.891	2.63	16	LIM
10_34	1.57	2	1.73	25.332	1.9	14	SAP	10_35	6	7	1.77	15.058	4.49	22	LIM
10_34	2	3	1.36	13.799	5.7	20	LIM	10_35	7	8	1.36	14.352	3.73	22	LIM
10_34	3	4	1.64	19.122	2.36	18	LIM	10_35	8	9	0.7	9.645	2.38	29	LIM
10_34	4	4.65	1.32	16.793	3.63	17	LIM	10_35	9	10	0.75	13.54	2.56	25	LIM
10_34	4.65	5	0.67	11.603	4.94	22	LIM	10_35	10	11	1.24	7.672	6.1	26	LIM
10_34	5	6	1.19	17.807	3.5	17	LIM	10_35	11	12	0.27	8.777	6.49	24	LIM
10_34	6	7	0.71	13.051	5.63	19	LIM	10_35	12	13	0.24	8.561	10.49	19	LIM
10_34	7	8	0.81	15.743	4.9	19	LIM	10_35	13	14	0.22	7.623	14.22	12	LIM
10_34	8	8.25	0.38	10.547	6.1	23	LIM	10_35	14	15	0.16	5.651	15.43	14	LIM
10_34	8.25	9	1	15.737	5.87	19	LIM	10_35	15	16	0.24	8.106	8.99	22	LIM
10_34	9	10	0.88	15.743	4.53	18	LIM	10_35	16	17	0.25	8.225	11.6	19	LIM
10_34	10	11	1.14	17.394	4.82	17	LIM	10_35	17	18	0.24	6.917	11.56	20	LIM
10_34	11	12	1.01	15.443	6.67	19	LIM	10_36	0	1	0.49	11.456	2.91	26	LIM
10_34	12	13	0.79	13.911	6.66	18	LIM	10_36	1	2	0.51	12.135	2.25	27	LIM
10_34	13	14	0.55	9.197	8	23	LIM	10_36	2	3	0.4	11.358	2.81	29	SAP
10_34	14	15	0.8	13.995	5.43	19	LIM	10_36	3	4	0.46	11.652	4.1	27	SAP
10_34	15	16	0.69	10.078	5.45	24	LIM	10_36	4	5	0.46	13.058	3.93	28	SAP
10_34	16	17	0.72	11.127	8.53	22	LIM	10_36	5	6	0.33	8.428	3.59	28	SAP
10_34	17	18	0.39	9.176	8.54	22	LIM	10_36	6	7	0.31	9.575	4.73	28	SAP
10_34	18	19	0.86	9.673	9.59	23	LIM	10_36	7	8	0.47	11.953	3.84	27	SAP
10_34	19	20	0.69	9.176	7.34	23	LIM	10_36	8	8.25	0.52	14.009	3.64	28	SAP
10_34	20	21	0.72	9.078	4.87	28	LIM	10_36	8.25	8.7	0.52	12.841	1.12	38	SAP
10_34	21	22	1.13	13.722	2.86	22	LIM	10_36	8.7	9	0.42	11.624	0.89	38	SAP
10_34	22	23	0.64	4.539	3.28	34	LIM	10_36	9	10	0.4	12.687	2.89	30	SAP
10_34	23	24	1.01	12.477	6.48	21	LIM	10_36	10	11	0.44	11.953	2.6	29	SAP
10_34	24	24.4	0.82	11.575	7.19	20	LIM	10_36	11	12	0.45	12.072	4.93	27	SAP
10_34	24.4	25	1.07	13.219	6.97	21	LIM	10_36	12	13	0.38	12.757	5.75	24	SAP
10_34	25	25.37	0.92	14.184	6.26	20	LIM	10_36	13	14	0.55	14.715	7.61	22	SAP
10_34	25.37	26	0.88	10.05	9.79	21	SAP	10_36	14	14.3	0.26	7.644	7.62	23	SAP
10_34	26	27	0.49	7.672	12.68	19	SAP	10_36	14.3	15	0.24	7.267	4.43	28	SAP
10_34	27	28	0.36	11.078	9.15	21	SAP	10_36	15	16	0.1	6.714	3.52	28	SAP
10_34	28	29	0.26	8.868	9.61	22	SAP	11_34	0	1	0.1	6.4	3.76	31	SAP
10_35	0	0.56	1.4	26.675	1.49	14	SAP	11_34	1	1.43	0.13	10.484	2.99	37	SAP



HID	FR	TO	Ni	Fe	MgO	SiO <sub>2</sub>	LYR	HID	FR	TO	Ni	Fe	MgO	SiO <sub>2</sub>	LYR
11_34	1.43	2	0.08	6.707	3.2	35	SAP	11_35	1	2	0.16	7.323	0.8	34	SAP
11_34	2	3	0.11	11.974	4.21	31	SAP	11_35	2	2.47	0.14	7.323	2.44	27	SAP
11_34	3	3.58	0.09	3.98	5.25	33	SAP	11_35	2.47	3	0.17	9.05	0.58	37	SAP
11_34	3.58	4	0.07	1.56	3.67	36	SAP	11_35	3	4	0.23	9.323	0.4	39	LIM
11_34	4	5	0.12	3.532	7.75	29	SAP	11_35	4	5	0.19	6.49	0.38	39	LIM
11_34	5	5.7	0.11	3.483	5.55	30	SAP	11_35	5	6	0.19	8.267	0.85	31	LIM
11_34	5.7	6	0.21	6.504	3.29	33	SAP	11_35	6	7	0.22	6.386	2.99	26	LIM
11_34	6	7	0.24	6.232	4.96	34	SAP	11_35	7	8	0.28	11.799	1.7	25	LIM
11_34	7	8	0.16	5.875	11.14	24	SAP	11_35	8	8.6	0.2	8.393	3	25	LIM
11_34	8	9	0.09	2.028	14.26	19	LIM	11_35	8.6	9	0.14	6.064	3.26	25	LIM
11_34	9	10	0.08	2.217	7.8	24	LIM	11_35	9	10	0.19	9.316	2.74	28	LIM
11_34	10	11	0.11	2.203	7.16	24	LIM	11_35	10	11	0.18	6.393	0.75	40	LIM
11_34	11	12	0.12	2.245	0.87	42	LIM	10_39	0	1	0.35	10.428	1.88	18	SAP
11_34	12	13	0.16	3.434	1.12	42	SAP	10_39	1	2	0.23	5.343	1.89	19	SAP
11_34	13	14	0.19	6.316	1.16	36	SAP	10_39	2	3	0.21	5.84	0.52	38	SAP
11_34	14	14.6	0.2	10.295	0.6	40	SAP	10_39	3	4	0.37	9.806	1.15	34	SAP
11_34	14.6	15	0.15	9.225	0.52	41	SAP	10_39	4	5	0.21	5.476	2.36	23	SAP
11_34	15	15.3	0.14	7.854	2.56	29	SAP	10_39	5	6	0.21	4.735	2.62	22	SAP
11_34	15.3	16	0.34	12.596	7.85	24	SAP	10_39	6	7	0.31	7.924	0.86	37	SAP
11_34	16	17	0.81	14.582	10.92	20	SAP	10_39	7	8	0.31	7.924	2.97	23	SAP
11_34	17	18	0.28	20.59	9.35	22	SAP	10_39	8	8.33	0.3	7.791	0.99	40	SAP
11_34	18	19	0.32	13.044	2.68	34	SAP	10_39	8.33	9	0.27	6.036	0.92	39	SAP
11_34	19	20	0.23	8.582	6.14	25	SAP	10_39	9	10	0.3	8.323	0.77	41	SAP
10_38	0	0.77	0.4	15.723	0.28	14	SAP	10_39	10	11	0.23	7.218	0.68	39	SAP
10_38	0.77	1	0.24	14.736	0.16	14	SAP	10_39	11	12	0.45	11.974	0.87	31	SAP
10_38	1	1.25	0.21	13.694	0.11	31	SAP	10_39	12	13	0.54	11.694	0.65	35	SAP
10_38	1.25	2	0.24	15.548	0.33	31	LIM	10_39	13	13.35	0.14	4.21	1.94	23	SAP
10_38	2	3	0.32	16.044	0.85	27	SAP	10_39	13.35	14	0.25	4.217	0.75	36	SAP
10_38	3	4	0.24	7.393	2.04	22	SAP	10_39	14	15	0.26	7.253	1.02	37	SAP
10_38	4	5	0.35	10.848	1.72	29	SAP	10_39	15	16	0.18	5.197	1.1	41	SAP
10_38	5	6	0.32	6.637	0.8	30	SAP	10_39	16	17	0.17	4.294	0.88	25	SAP
10_38	6	7	0.25	11.232	0.31	43	SAP	10_39	17	17.6	0.31	12.617	0.74	25	LIM
10_38	7	8	0.13	5.42	0.27	42	SAP	10_39	17.6	18	0.33	11.561	0.96	26	LIM
10_38	8	9	0.19	9.288	1.45	25	SAP	10_39	18	19	0.25	9.435	1.25	26	SAP
10_38	9	10	0.19	11.162	2.57	22	LIM	11_36	0	1	0.3	10.05	0.49	22	SAP
10_38	10	11	0.13	7.91	4.1	22	LIM	11_36	1	1.49	0.29	8.631	0.39	20	SAP
10_38	11	12	0.13	6.043	2.92	26	SAP	11_36	1.49	2	0.35	10.925	0.6	22	SAP
10_38	12	13	0.18	6.539	0.83	28	SAP	11_36	2	2.32	0.36	11.575	1.3	22	SAP
11_35	0	0.43	0.24	9.869	1.68	22	SAP	11_36	2.32	2.67	0.42	11.659	0.99	21	SAP
11_35	0.43	1	0.18	9.498	0.44	36	SAP	11_36	2.67	3	0.43	12.449	1.2	20	SAP

HID	FR	TO	Ni	Fe	MgO	SiO <sub>2</sub>	LYR	HID	FR	TO	Ni	Fe	MgO	SiO <sub>2</sub>	LYR
11_36	3	4	0.46	12.212	1.03	20	SAP	10_40	15.7	16	0.11	5.77	0.63	40	LIM
11_36	4	4.43	0.39	9.554	2.46	23	SAP	10_40	16	17	0.36	10.323	1.24	38	LIM
11_36	4.43	5	0.41	33.725	1.39	23	SAP	10_40	17	18	0.19	7.162	1.64	39	LIM
11_36	5	6	0.36	29.319	1.29	23	SAP	10_40	18	19	0.36	7.882	0.82	37	SAP
11_36	6	7	0.2	13.946	1.31	24	SAP	10_40	19	20	0.26	5.169	0.78	39	SAP
11_36	7	7.5	0.22	13.387	1.28	23	SAP	10_40	20	21	0.37	12.058	0.43	43	SAP
11_36	7.5	8	0.28	14.687	1.67	21	SAP	10_40	21	22	0.25	8.526	0.8	41	SAP
11_36	8	8.5	0.61	17.751	1.66	23	SAP	10_40	22	23	0.56	21.597	0.81	39	SAP
11_36	8.5	9	0.44	11.582	1.75	26	SAP	10_40	23	23.5	0.52	20.485	1.52	36	SAP
11_36	9	10	0.24	9.715	1.39	15	SAP	11_39	0	1	0.16	6.246	1.01	28	SAP
11_38	0	0.7	0.09	1.63	0.37	13	LIM	11_39	1	2	0.28	8.323	0.54	37	SAP
11_38	0.7	1	0.1	3.077	0.22	12	LIM	11_39	2	3	0.69	15.604	1.06	39	SAP
11_38	1	2	0.56	12.708	0.31	13	LIM	11_39	3	4	0.78	16.842	1.25	41	SAP
11_38	2	3	0.72	19.045	0.05	40	LIM	11_39	4	5	0.21	6.176	1.57	34	SAP
11_38	3	4	0.68	18.597	0.07	39	LIM	11_39	5	6	0.8	14.673	3.56	33	SAP
11_38	4	5	0.45	15.058	0.2	41	LIM	11_39	6	7	0.2	5.301	2.34	33	SAP
11_38	5	6	0.39	14.981	1.09	21	SAP	11_39	7	8	0.21	5.644	1.98	39	SAP
11_38	6	7	0.63	16.226	1.59	22	SAP	11_40	0	1	0.15	3.742	0.63	33	SAP
11_38	7	7.4	0.42	14.513	2.15	22	SAP	11_40	1	1.45	0.18	5.294	0.44	29	SAP
10_40	0	1	0.27	7.602	0.65	20	SAP	11_40	1.45	2	0.36	13.002	0.62	28	SAP
10_40	1	1.5	0.23	7.47	0.6	19	SAP	11_40	2	3	0.42	13.359	0.31	42	SAP
10_40	1.5	2	0.25	7.973	0.56	41	SAP	11_40	3	4	0.7	18.73	0.99	32	SAP
10_40	2	3	0.25	8.022	0.77	35	SAP	11_40	4	5	0.25	7.665	1.29	32	SAP
10_40	3	4	0.22	6.441	0.83	42	SAP	11_40	5	6	0.28	6.63	0.61	35	SAP
10_40	4	5	0.61	17.87	1.41	42	SAP	11_40	6	7	0.23	4.588	1.04	30	SAP
10_40	5	6	0.23	7.26	0.63	40	SAP	11_40	7	8	0.1	3.609	0.42	40	SAP
10_40	6	7	0.25	8.274	0.75	36	LIM	11_40	8	9	0.12	4.791	1.68	37	SAP
10_40	7	7.28	0.61	12.82	1.65	34	LIM	11_40	9	10	0.13	3.637	2.46	31	SAP
10_40	7.28	8	0.19	6.197	1.37	35	LIM	11_40	10	11	0.1	3.14	4.47	30	SAP
10_40	8	9	0.18	5.609	0.79	38	LIM	10_41	0	1	0.1	6.518	0.62	16	SAP
10_40	9	10	0.18	5.511	0.62	37	LIM	10_41	1	1.37	0.08	5.672	0.41	14	SAP
10_40	10	11	0.37	9.792	1.05	32	LIM	10_41	1.37	2	0.09	5.728	0.44	15	SAP
10_40	11	11.54	0.62	13.603	1.29	28	LIM	10_41	2	2.5	0.13	10.645	0.44	15	SAP
10_40	11.54	12	0.55	15.75	0.73	27	LIM	10_41	2.5	3	0.09	11.197	0.33	14	SAP
10_40	12	13	0.65	15.667	0.9	35	LIM	10_41	3	4	0.11	12.03	0.33	14	SAP
10_40	13	13.63	0.67	14.974	0.43	33	LIM	10_41	4	5	0.28	19.32	0.1	21	SAP
10_40	13.63	14	0.59	12.491	1.08	33	LIM	10_41	5	6	0.38	28.25	0.12	9	SAP
10_40	14	15	0.2	5.322	1.03	37	LIM	10_41	6	7	0.32	18.25	0.15	9	SAP
10_40	15	15.43	0.16	3.973	0.01	42	LIM	10_41	7	7.35	0.2	6.97	0.3	11	LIM
10_40	15.43	15.7	0.09	8.274	0.47	41	LIM	10_41	7.35	8	0.17	5.96	0.37	9	LIM

HID	FR	TO	Ni	Fe	MgO	SiO <sub>2</sub>	LYR	HID	FR	TO	Ni	Fe	MgO	SiO <sub>2</sub>	LYR
10_41	8	8.46	0.18	8.9	0.57	9	LIM	10_42	1	2	0.25	30.648	0.65	14	SAP
10_41	8.46	9	0.22	11.26	0.95	19	LIM	10_42	2	2.43	0.26	26.71	1.66	17	SAP
10_41	9	10	0.21	4.46	0.86	24	LIM	10_42	2.43	3	0.29	30.823	2.77	18	SAP
10_41	10	11	0.19	6.57	0.69	24	LIM	10_42	3	4	0.21	5.476	2.44	20	SAP
10_41	11	12	0.17	4.95	1	29	LIM	10_42	4	4.7	0.21	4.735	1.09	36	SAP
10_41	12	13	0.15	3.66	0.86	42	LIM	10_42	4.7	5	0.31	7.924	1.45	18	SAP
10_41	13	13.47	0.14	3.95	4.69	37	LIM	10_42	5	5.55	0.31	7.924	3.91	18	SAP
10_41	13.47	14	0.27	14.97	2.26	22	LIM	10_42	5.55	6	0.3	7.791	4.54	21	SAP
10_41	14	15	0.28	10.43	2.23	21	LIM	10_42	6	6.43	0.27	6.036	4.93	19	SAP
10_41	15	15.29	0.26	6.01	2.79	31	LIM	10_42	6.43	6.74	0.3	8.323	6.08	21	SAP
10_41	15.29	15.48	0.37	27.54	2.73	32	LIM	10_42	6.74	7	0.23	7.218	12.04	21	SAP
10_41	15.48	15.74	0.43	6.46	4.08	24	LIM	10_42	7	7.27	0.45	11.974	6.48	19	SAP
10_41	15.74	16	0.18	17.65	4.06	24	LIM	10_42	7.27	7.46	0.54	11.694	3.11	29	SAP
10_41	16	16.3	0.31	12.74	4.25	24	LIM	10_42	7.46	8	0.14	4.21	2.44	18	SAP
10_41	16.3	17	0.36	10.36	4.4	26	LIM	10_42	8	8.3	0.25	4.217	2.24	18	SAP
10_41	17	18	0.49	15.04	3.14	32	LIM	10_42	8.3	9	0.26	7.253	5.49	20	LIM
10_41	18	18.45	0.22	3.8	4.2	24	LIM	10_42	9	9.73	0.18	5.197	3.3	21	LIM
10_41	18.45	19	0.22	14.6	5.99	25	SAP	10_42	9.73	10	0.17	4.294	5.54	25	LIM
10_41	19	20	0.13	5.23	5	28	SAP	10_42	10	11	0.31	12.617	11.85	23	LIM
10_41	20	21	0.18	6.57	5.52	27	SAP	10_42	11	12	0.33	11.561	7.73	23	SAP
10_41	21	22	0.16	5.89	4.87	28	SAP	11_42	0	1	0.25	9.435	5.94	25	SAP
11_41	0	1	0.24	12.3	4.6	27	SAP	11_42	1	2	0.3	10.05	5.3	24	SAP
11_41	1	2	0.17	7.09	5.23	27	SAP	11_42	2	2.4	0.29	8.631	7.94	23	SAP
11_41	2	3	0.16	6.23	3.74	31	SAP	11_42	2.4	3	0.35	10.925	4.34	23	SAP
11_41	3	4	0.15	6.01	1.51	40	SAP	11_42	3	4	0.36	11.575	5.87	21	SAP
11_41	4	4.25	0.19	7.1	1.79	37	SAP	11_42	4	5	0.42	11.659	6.13	22	SAP
11_41	4.25	5	0.15	7.97	3.34	31	SAP	11_42	5	6	0.43	12.449	8.43	22	SAP
11_41	5	6	0.15	14.1	4.05	27	SAP	11_42	6	7	0.46	12.212	7.58	27	SAP
11_41	6	7	0.17	18.59	4.28	28	SAP	11_42	7	8	0.39	9.554	7.42	23	SAP
11_41	7	8	0.12	5.95	4.35	28	SAP	11_42	8	9	0.2	13.946	9.96	24	SAP
11_41	8	8.43	0.09	3.84	5.75	29	SAP	11_42	9	10	0.22	13.387	6.37	26	SAP
11_41	8.43	9	0.1	4.72	4.11	30	SAP	09_40	0	1	0.28	14.687	0.17	19	SAP
11_41	9	10	0.17	11.88	4.41	28	SAP	09_40	1	2	0.61	17.751	0.05	29	SAP
11_41	10	11	0.17	17.79	4.74	27	SAP	09_40	2	2.53	0.44	11.582	0.16	41	LIM
11_41	11	12	0.25	34.41	5.17	26	SAP	09_40	2.53	3	0.24	9.715	0.01	43	LIM
11_41	12	13	0.19	19.67	4.99	29	SAP	09_40	3	3.5	0.09	1.63	0.17	30	LIM
11_41	13	14	0.13	12.32	5.48	27	LIM	09_40	3.5	4	0.1	3.077	0.16	23	LIM
11_41	14	15	0.1	7.34	5.48	26	SAP	09_40	4	4.21	0.56	12.708	0.3	38	SAP
11_41	15	16	0.25	30.648	6.09	26	SAP	09_40	4.21	4.51	0.72	19.045	0.45	25	SAP
10_42	0	1	0.1	9.89	0.73	10	SAP	09_40	4.51	5	0.68	18.597	0.51	24	SAP

HID	FR	TO	Ni	Fe	MgO	SiO <sub>2</sub>	LYR	HID	FR	TO	Ni	Fe	MgO	SiO <sub>2</sub>	LYR
09_40	5	6	0.45	15.058	0.86	37	SAP	09_42	9	10	0.2	5.301	5.64	21	LIM
09_40	6	7	0.39	14.981	1.58	23	SAP	09_42	10	11	0.21	5.644	11.46	24	SAP
09_40	7	8	0.63	16.226	2.23	20	SAP	09_42	11	11.75	0.15	3.742	6.33	21	SAP
09_40	8	8.77	0.42	14.513	1.01	30	SAP	09_42	11.75	12	0.18	5.294	2	20	SAP
09_40	8.77	9	0.27	7.602	2.1	22	SAP	09_42	12	13	0.36	13.002	2.6	20	SAP
09_40	9	9.21	0.23	7.47	2.96	25	SAP	09_42	13	14	0.42	13.359	2.94	20	SAP
09_40	9.21	10	0.25	7.973	2.06	23	SAP	09_42	14	15	0.7	18.73	3.35	18	SAP
09_40	10	10.29	0.25	8.022	0.65	40	SAP	09_42	15	15.3	0.06	8.127	3.29	20	SAP
09_40	10.29	10.82	0.22	6.441	0.08	37	SAP	09_42	15.3	15.7	0.08	20.066	2	16	SAP
09_40	10.82	11	0.61	17.87	0.14	38	SAP	09_42	15.7	16	0.06	15.324	2.19	18	SAP
09_40	11	12	0.23	7.26	1.5	31	SAP	09_42	16	17	0.06	8.61	2.68	19	SAP
09_40	12	12.49	0.25	8.274	2.4	21	SAP	09_42	17	18	0.05	10.617	1.82	20	SAP
09_40	12.49	13	0.61	12.82	3.26	26	SAP	09_42	18	19	0.06	9.267	2.4	19	SAP
09_40	13	14	0.19	6.197	5.12	20	SAP	09_42	19	20	0.07	10.869	2	19	SAP
09_40	14	15	0.18	5.609	7.85	18	SAP	09_41	0	1	0.52	26.682	0.51	13	SAP
09_40	15	16	0.18	5.511	3.56	21	SAP	09_41	1	2	0.5	30.235	0.19	13	SAP
09_40	16	16.7	0.37	9.792	2.62	25	SAP	09_41	2	3	0.64	34.781	0.27	9	SAP
09_40	16.7	17	0.62	13.603	0.31	35	SAP	09_41	3	3.45	0.51	22.276	0.5	17	SAP
09_40	17	18	0.55	15.75	0.49	43	SAP	09_41	3.45	4	0.69	25.983	1.51	16	SAP
09_40	18	19	0.65	15.667	3	22	SAP	09_41	4	4.3	0.77	19.639	2.18	19	SAP
09_40	19	20	0.67	14.974	5.28	26	SAP	09_41	4.3	5	1.65	18.702	3.47	17	SAP
09_40	20	21	0.59	12.491	5.49	24	SAP	09_41	5	5.55	2.52	16.779	3.65	17	SAP
09_40	21	22	0.2	5.322	4.63	22	SAP	09_41	5.55	6	1.91	15.674	4.2	18	SAP
09_40	22	23	0.16	3.973	2.22	23	SAP	09_41	6	7	1.78	18.94	2.36	18	SAP
09_40	23	24	0.09	8.274	3.77	22	SAP	09_41	7	8	1.57	17.107	5.01	18	SAP
09_40	24	24.7	0.11	5.77	4.34	23	SAP	09_41	8	9	1.51	19.856	2.4	17	SAP
09_40	24.7	25	0.36	10.323	5.87	21	SAP	09_41	9	9.3	1.77	15.023	3.91	20	SAP
09_40	25	25.2	0.19	7.162	6.13	22	SAP	09_41	9.3	9.65	1.41	13.673	4.57	21	SAP
09_40	25.2	26	0.36	7.882	8.43	22	LIM	09_41	9.65	10	1.51	13.212	4.71	21	SAP
09_42	0	1	0.26	5.169	1.43	29	LIM	09_41	10	10.6	1.35	13.575	5.54	20	LIM
09_42	1	2	0.37	12.058	1.47	27	LIM	09_41	10.6	11	1.32	14.394	4.94	20	LIM
09_42	2	3	0.25	8.526	4.36	23	LIM	09_41	11	12	1.15	12.547	6.68	21	LIM
09_42	3	4	0.56	21.597	2.65	18	LIM	09_41	12	13	0.6	8.854	7.5	24	LIM
09_42	4	4.88	0.52	20.485	3.42	19	LIM	09_41	13	14	1.07	13.142	5.74	21	LIM
09_42	4.88	5	0.16	6.246	3.09	26	LIM	09_41	14	15	1.12	14.736	4.01	21	LIM
09_42	5	5.7	0.28	8.323	2.57	22	LIM	09_41	15	15.55	1.14	15.778	4.59	21	LIM
09_42	5.7	6	0.69	15.604	4.82	29	LIM	09_41	15.55	16	1.19	13.282	5.02	23	LIM
09_42	6	7	0.78	16.842	3.99	19	LIM	09_41	16	17	1.2	12.149	7.55	22	LIM
09_42	7	8	0.21	6.176	3.29	22	LIM	09_41	17	18	0.92	17.212	4.99	20	LIM
09_42	8	9	0.8	14.673	6.29	22	LIM	09_41	18	19	0.76	13.729	8.35	18	LIM

HID	FR	TO	Ni	Fe	MgO	SiO <sub>2</sub>	LYR	HID	FR	TO	Ni	Fe	MgO	SiO <sub>2</sub>	LYR
09_41	19	20	0.14	10.911	3.84	20	LIM	09_39	0	1	0.74	24.444	1.02	16	LIM
09_41	20	21	0.07	19.821	1.32	18	LIM	09_39	1	2	0.39	10.386	0.37	29	LIM
09_41	21	22	0.07	10.736	1.11	22	SAP	09_39	2	3	0.38	9.917	0.39	29	LIM
09_41	22	23	0.06	9.099	3.06	17	SAP	09_39	3	4	0.27	9.239	0.28	30	LIM
09_41	23	24	0.06	8.917	3.46	18	SAP	09_39	4	5	0.18	6.162	0.25	36	LIM
09_41	24	25	0.06	7.987	4.58	17	SAP	09_39	5	6	0.15	6.204	0.28	35	SAP
09_38	0	1	0.78	22.157	0.74	16	SAP	09_39	6	7	0.12	4.385	0.19	39	SAP
09_38	1	1.55	0.11	3.266	0.19	37	SAP	09_39	7	8	0.3	12.016	0.26	28	SAP
09_38	1.55	2	0.49	7.931	0.25	31	SAP	09_37	0	1	0.57	31.214	0.33	10	SAP
09_38	2	3	0.22	9.841	0.19	30	SAP	09_37	1	2	0.56	31.48	0.31	10	SAP
09_38	3	3.28	0.33	16.464	0.25	20	SAP	09_37	2	3	0.52	31.655	0.19	10	SAP
09_38	3.28	3.35	0.69	34.83	0.48	9	SAP	09_37	3	3.79	0.53	31.998	0.16	10	SAP
09_38	3.35	4	0.91	31.193	0.65	12	SAP	09_37	3.79	4	0.41	12.75	0.16	27	SAP
09_38	4	5	1.12	21.87	1.74	18	LIM	09_37	4	4.3	0.34	11.023	0.29	29	SAP
09_38	5	5.71	1.22	22.996	1.74	18	LIM	09_37	4.3	5	0.53	30.99	0.24	11	SAP
09_38	5.71	6	1.23	20.304	2.1	19	SAP	09_37	5	6	0.56	13.967	6.31	21	SAP
09_38	6	7	1.48	19.758	2.46	19	SAP	09_37	6	7	0.77	25.934	0.97	15	SAP
09_38	7	8	1.13	16.849	2.77	18	SAP	09_37	7	8	1.13	20.094	1.63	18	SAP
09_38	8	9	1.34	17.387	3.56	20	SAP	09_37	8	8.21	0.76	21.283	1.06	18	SAP
09_38	9	9.67	1.2	15.869	3.64	19	SAP	09_37	8.21	8.59	1.25	19.541	1.88	19	SAP
09_38	9.67	10	0.88	13.282	4.26	21	SAP	09_37	8.59	9	1.17	19.108	1.54	17	SAP
09_38	10	10.61	1.16	14.24	4.29	22	SAP	09_37	9	9.65	1.49	16.87	2.56	21	SAP
09_38	10.61	11	0.93	14.778	4.94	21	SAP	09_37	9.65	10	1.57	17.856	2.64	20	SAP
09_38	11	11.37	1.11	15.513	4.09	21	SAP	09_37	10	11	1.47	15.806	2.97	22	SAP
09_38	11.37	11.76	1.21	14.778	4.45	20	SAP	09_37	11	11.4	0.95	17.569	2.34	23	SAP
09_38	11.76	12	1.45	12.044	8.29	21	SAP	09_37	11.4	11.77	0.75	16.093	2.02	23	SAP
09_38	12	12.6	0.89	12.687	4.77	22	SAP	09_37	11.77	12	0.67	9.841	4.01	27	SAP
09_38	12.6	13	1.57	11.204	5.65	22	SAP	09_37	12	12.59	1.09	19.45	2.3	19	SAP
09_38	13	13.33	1.24	10.33	4.89	23	SAP	09_37	12.59	13	0.78	13.023	2.65	25	SAP
09_38	13.33	14	1.09	13.17	3.81	21	SAP	09_37	13	13.17	0.81	11.498	3.44	25	SAP
09_38	14	14.87	0.87	15.086	3.12	22	SAP	09_37	13.17	13.79	0.9	13.645	4.08	22	SAP
09_38	14.87	15	0.18	5.448	0.38	37	SAP	09_37	13.79	14	0.78	10.26	5.25	26	SAP
09_38	15	16	0.23	7.477	0.31	33	SAP	09_37	14	14.36	0.3	5.148	1.98	35	SAP
09_38	16	16.5	0.19	5.273	0.34	37	SAP	09_37	14.36	15	1.05	14.715	4.1	23	SAP
09_38	16.5	17	0.7	12.624	4.34	23	SAP	09_37	15	15.7	1.01	15.233	3.77	20	SAP
09_38	17	17.54	1.13	20.87	2.77	18	SAP	09_37	15.7	16	0.56	9.715	3.93	25	SAP
09_38	17.54	18	1.71	25.423	1.79	15	SAP	09_37	16	16.16	0.57	12.932	3.59	25	SAP
09_38	18	18.71	1.53	23.738	1.97	17	SAP	09_37	16.16	16.7	0.75	15.632	3.73	21	SAP
09_38	18.71	19	0.09	2.224	0.2	40	SAP	09_37	16.7	17	0.93	16.121	4.4	21	SAP
09_38	19	19.2	0.19	5.567	0.18	41	LIM	09_37	17	18	0.61	11.288	3.64	25	SAP

HID	FR	TO	Ni	Fe	MgO	SiO <sub>2</sub>	LYR	HID	FR	TO	Ni	Fe	MgO	SiO <sub>2</sub>	LYR
09_37	18	18.31	0.71	12.128	2.86	23	SAP	08_37	24	24.86	1.98	18.191	4.41	17	SAP
09_37	18.31	18.47	0.36	8.071	1.29	31	SAP	08_37	24.86	25	1.44	12.764	6.51	20	SAP
09_37	18.47	19	0.85	17.87	2.58	20	SAP	08_37	25	26	1.37	14.827	5.66	21	SAP
09_37	19	19.33	0.53	15.918	1.94	22	SAP	08_37	26	27	1.4	14.631	5.95	21	SAP
09_37	19.33	19.73	0.94	29.375	1.71	14	SAP	08_37	27	27.58	1.58	14.548	5.02	18	SAP
09_37	19.73	20	0.99	24.024	1.96	17	SAP	08_37	27.58	28	1.25	13.82	6.77	19	SAP
09_37	20	21	1.09	21.535	2.13	18	SAP	08_37	28	29	1.56	15.82	6.13	19	SAP
09_37	21	22	0.55	20.234	0.81	22	SAP	08_37	29	30	1.62	14.163	7.49	21	SAP
09_37	22	23	0.75	17.562	1.91	22	SAP	08_37	30	30.75	1.45	11.988	6.24	22	SAP
08_37	0	1	0.67	37.642	0.25	7	SAP	08_37	30.75	31	1.16	17.471	3.2	19	SAP
08_37	1	2	0.77	39.271	0.16	6	LIM	08_37	31	31.2	0.34	4.959	2.82	37	SAP
08_37	2	3	0.91	43.307	0.2	5	LIM	08_37	31.2	32	1.31	20.478	2.32	18	SAP
08_37	3	4	0.74	43.02	0.23	5	LIM	08_37	32	33	0.09	2.021	0.28	44	SAP
08_37	4	5	0.74	36.537	0.2	6	LIM	09_36	0	1	0.57	34.585	0.28	8	SAP
08_37	5	6	0.72	37.292	0.26	6	LIM	09_36	1	2	0.63	35.033	0.31	9	SAP
08_37	6	7	0.67	36.208	0.34	7	SAP	09_36	2	3	0.69	45.37	0.31	5	SAP
08_37	7	8	1.36	43.908	0.07	5	SAP	09_36	3	4	0.69	48.72	0.16	4	SAP
08_37	8	9	0.94	35.187	0.16	7	SAP	09_36	4	4.43	0.78	46.146	0.42	3	SAP
08_37	9	10	1.21	36.495	0.28	6	SAP	09_36	4.43	5	0.53	31.235	0.17	9	SAP
08_37	10	11	1.14	37.117	0.25	6	SAP	09_36	5	6	1.09	48.671	0.24	4	SAP
08_37	11	12	1.05	36.201	0.23	6	SAP	09_36	6	6.71	0.98	49.832	0.22	3	SAP
08_37	12	13	1.21	34.166	0.37	7	SAP	09_36	6.71	7	0.82	38.187	0.16	5	SAP
08_37	13	14	1.07	32.207	1.47	10	SAP	09_36	7	8	0.7	32.361	0.12	10	LIM
08_37	14	15	0.85	34.837	0.3	8	SAP	09_36	8	9	0.65	26.5	0.4	12	LIM
08_37	15	16	1.02	26.815	3.13	14	SAP	09_36	9	10	0.65	28.647	0.31	13	LIM
08_37	16	17	1.14	33.662	1.59	11	SAP	09_36	10	11	0.96	37.754	0.16	7	LIM
08_37	17	18	1.46	30.06	1.71	11	SAP	09_36	11	12	1.01	32.137	0.4	9	LIM
08_37	18	18.23	0.92	21.835	0.82	17	SAP	09_36	12	13	1.27	33.949	0.72	7	SAP
08_37	18.23	18.8	1.51	23.36	3.1	14	SAP	09_36	13	13.51	1.21	29.41	1.19	10	SAP
08_37	18.8	19	1.55	21.737	5.32	14	SAP	09_36	13.51	14	1.16	29.571	2.24	10	SAP
08_37	19	19.75	1.74	24.395	3.87	14	SAP	09_36	14	15	1.89	26.074	2.27	13	SAP
08_37	19.75	20	1.54	23.703	2.35	16	SAP	09_36	15	15.15	5.07	18.653	2.6	13	SAP
08_37	20	21	1.47	18.052	4.14	19	SAP	09_36	15.15	16	1.6	24.087	4.15	13	SAP
08_37	21	21.9	2.15	19.31	4.91	18	SAP	09_36	16	16.63	1.5	26.906	4.55	12	SAP
08_37	21.9	22	2.08	15.569	5.98	18	SAP	09_36	16.63	17	3.09	17.611	9.93	15	SAP
08_37	22	22.2	2.12	12.953	7.31	18	SAP	09_36	17	18	2.73	13.296	11.75	16	SAP
08_37	22.2	22.8	2.14	17.849	7.53	18	SAP	09_36	18	19	3.18	11.554	12.16	17	SAP
08_37	22.8	23	1.72	13.869	8.83	18	SAP	09_36	19	19.45	3.05	11.75	13.46	18	SAP
08_37	23	23.4	2.12	11.75	10.57	20	SAP	09_36	19.45	20	2.2	18.793	8.46	17	SAP
08_37	23.4	24	1.88	16.03	5.57	20	SAP	09_36	20	21	1.85	30.158	3.64	12	LIM

HID	FR	TO	Ni	Fe	MgO	SiO <sub>2</sub>	LYR	HID	FR	TO	Ni	Fe	MgO	SiO <sub>2</sub>	LYR
09_36	21	22	1.94	28.382	3.24	11	SAP	09_35	4.25	4.46	2.93	19.003	4.61	17	SAP
09_36	22	23	1.54	12.778	5.75	22	SAP	09_35	4.46	5	2.29	12.435	5.39	20	SAP
09_36	23	24	1.7	15.38	5.03	20	SAP	09_35	5	6	2.56	16.205	5.6	18	SAP
09_36	24	25	1.18	11.002	3.12	27	SAP	09_35	6	6.23	0.61	6.434	2.13	33	LIM
09_36	25	26	0.68	4.441	2.48	34	SAP	09_35	6.23	7	1.87	16.863	4.47	19	LIM
09_36	26	27	4.08	11.197	6.73	22	SAP	09_35	7	7.44	2.09	17.394	5.75	18	LIM
09_36	27	27.56	2.48	9.26	8.44	22	SAP	09_35	7.44	8	1.94	16.555	6.15	18	SAP
09_36	27.56	28	2.44	13.044	11.25	18	SAP	09_35	8	9	1.7	14.96	6.7	19	SAP
08_36	0	1	0.58	29.85	0.39	10	SAP	09_35	9	10	0.93	10.407	6.7	20	SAP
08_36	1	2	0.73	33.599	0.29	8	SAP	09_35	10	11	1.55	14.82	6.88	19	SAP
08_36	2	3	0.76	35.963	0.62	7	SAP	09_35	11	12	0.44	8.708	12.01	17	SAP
08_36	3	4	0.77	36.313	0.29	7	SAP	09_35	12	13	0.25	3.945	5.49	35	SAP
08_36	4	5	0.9	35.592	0.69	8	SAP	09_35	13	13.16	0.26	8.449	8.61	22	SAP
08_36	5	6	1.06	34.655	0.28	10	LIM	09_35	13.16	14	0.27	7.693	12.37	20	SAP
08_36	6	7	0.91	33.704	0.45	10	LIM	08_35	0	1	0.81	37.593	0.39	7	SAP
08_36	7	8	0.79	32.732	0.37	11	LIM	08_35	1	2	0.76	39.369	0.33	6	SAP
08_36	8	8.35	1.23	33.732	1.09	9	SAP	08_35	2	3	0.87	32.361	0.49	10	SAP
08_36	8.35	9	1.4	28.403	2.86	11	SAP	08_35	3	4	1.29	33.865	0.68	10	SAP
08_36	9	10	1.69	23.822	3.01	14	SAP	08_35	4	4.75	1.91	26.304	0.92	13	SAP
08_36	10	10.76	1.85	23.339	4.02	16	SAP	08_35	4.75	5	3.46	21.507	3.32	14	LIM
08_36	10.76	11	1.92	18.52	5.37	16	SAP	08_35	5	6	3.26	19.345	4.41	15	LIM
08_36	11	12	2.49	16.401	7.59	17	SAP	08_35	6	6.55	3.57	18.072	4.94	14	LIM
08_36	12	13	2.36	10.498	12.37	18	SAP	08_35	6.55	7	2.98	21.549	4.62	16	LIM
08_36	13	14	2.28	12.904	9.4	18	SAP	08_35	7	7.45	2.56	19.094	4.32	17	LIM
08_36	14	14.67	2.56	17.975	7.38	16	SAP	08_35	7.45	8	2.65	16.205	4.97	20	LIM
08_36	14.67	15	2.65	18.709	6.58	18	SAP	08_35	8	9	2.65	17.156	6.09	19	LIM
08_36	15	16	2.12	16.289	8.38	17	SAP	08_35	9	10	2.77	17.114	5.98	19	LIM
08_36	16	17	1.37	16.03	8.36	18	SAP	08_35	10	11	2.61	18.884	5.05	18	LIM
08_36	17	17.73	1.44	16.261	6.92	19	LIM	08_35	11	12	2.53	17.891	4.72	18	LIM
08_36	17.73	18	0.71	16.289	3.05	24	LIM	08_35	12	13	2.36	17.59	5.14	19	LIM
08_36	18	18.33	0.8	17.618	3.96	21	LIM	08_35	13	14	1.81	17.219	5.57	18	LIM
08_36	18.33	19	1.88	31.956	4.08	12	LIM	08_35	14	15	1.51	15.506	6.21	19	SAP
08_36	19	20	0.9	18.877	4.05	21	LIM	08_35	15	16	0.32	8.071	13.95	18	SAP
09_35	0	1	1.15	36.53	0.84	7	LIM	08_35	16	17	0.36	8.77	12.42	18	SAP
09_35	1	1.7	1.66	27.305	2.17	12	LIM	09_34	0	1	1.42	27.689	0.98	13	SAP
09_35	1.7	2	2.28	21.772	3.32	14	LIM	09_34	1	1.52	1.74	23.066	1.69	15	SAP
09_35	2	3	2.53	23.654	2.35	14	LIM	09_34	1.52	2	2.41	19.254	3.26	17	LIM
09_35	3	3.68	2.63	20.367	3.64	15	LIM	09_34	2	2.31	2.63	22.451	2.15	16	LIM
09_35	3.68	4	3.71	20.052	3.6	16	SAP	09_34	2.31	2.79	2.21	15.128	4.65	19	LIM
09_35	4	4.25	3.14	16.681	5.58	15	SAP	09_34	2.79	3	2.27	17.359	3.93	18	LIM

HID	FR	TO	Ni	Fe	MgO	SiO <sub>2</sub>	LYR	HID	FR	TO	Ni	Fe	MgO	SiO <sub>2</sub>	LYR
09_34	3	3.64	2.01	16.219	3.77	17	LIM	09_32	12	13	2.13	15.261	8.09	19	SAP
09_34	3.64	4	0.55	11.386	11.6	15	LIM	09_32	13	14	1.54	14.82	7.6	17	LIM
09_34	4	4.5	1.91	20.129	3.19	18	LIM	09_32	14	15	1.35	12.904	8.67	18	LIM
09_34	4.5	5	1.7	15.806	4.95	18	LIM	09_32	15	16	1.12	13.414	8.53	19	LIM
09_34	5	5.33	1.54	21.891	2.99	15	LIM	08_34	0	1	0.71	38.334	0.46	7	LIM
09_34	5.33	6	1.44	15.156	4.26	17	LIM	08_34	1	2	0.7	42.027	0.27	6	LIM
09_34	6	6.52	1.4	25.78	2.07	14	SAP	08_34	2	3	0.75	36.481	0.42	8	LIM
09_34	6.52	7	1.3	21.143	3.73	16	SAP	08_34	3	4	0.69	30.997	0.53	12	LIM
09_34	7	8	1.07	17.471	3.33	19	SAP	08_34	4	4.5	1.11	28.515	0.55	11	LIM
09_34	8	8.42	0.93	16.212	4.61	18	SAP	08_34	4.5	5	1.59	25.423	1.12	14	LIM
09_34	8.42	9	1.36	19.765	3.46	16	SAP	08_34	5	5.37	1.42	28.543	0.98	13	LIM
09_34	9	10	1.34	23.745	1.8	13	SAP	08_34	5.37	6	1.26	25.472	1.47	14	LIM
09_34	10	10.69	0.99	21.045	2.28	17	SAP	08_34	6	7	0.97	24.668	1.03	15	LIM
09_34	10.69	11	0.55	11.603	5.88	22	SAP	08_34	7	8	0.93	22.199	1.13	17	LIM
09_34	11	11.31	0.48	10.323	7.4	22	SAP	08_34	8	9	1.06	21.444	1.38	16	LIM
09_34	11.31	12	1.32	13.352	7.21	20	SAP	08_34	9	10	1	19.912	1.64	18	LIM
09_34	12	12.59	0.91	14.037	6.95	19	LIM	08_34	10	11	1.43	17.051	3.7	20	LIM
09_34	12.59	13	0.65	10.393	12.54	15	LIM	08_34	11	12	1.35	15.219	4.78	20	LIM
09_34	13	14	0.83	18.191	3.82	15	LIM	08_34	12	12.45	1.69	19.891	3.92	17	LIM
09_34	14	15	0.98	17.107	4.82	19	LIM	08_34	12.45	13	0.25	6.518	10.79	23	LIM
09_34	15	16	0.58	10.967	8.42	21	LIM	08_34	13	14	0.27	7.595	13.25	18	LIM
09_34	16	17	1.12	11.414	7.65	20	LIM	08_33	0	1	2.55	27.962	1.48	12	LIM
09_34	17	18	1.1	12.708	7.21	20	LIM	08_33	1	1.4	2.57	19.863	2.75	16	LIM
09_34	18	18.3	0.33	10.701	7.54	22	LIM	08_33	1.4	2	1.93	19.275	2.77	18	LIM
09_34	18.3	19	1.43	18.807	3.82	16	LIM	08_33	2	3	3.28	16.107	6.28	18	LIM
09_34	19	19.62	1.28	26.689	1.66	14	LIM	08_33	3	4	3	17.968	6.38	19	LIM
09_34	19.62	20	1.44	23.43	2.64	13	LIM	08_33	4	5	3.14	18.569	5.1	18	SAP
09_32	0	0.5	1.73	26.29	2.82	14	LIM	08_33	5	6	2.79	16.24	7.02	18	SAP
09_32	0.5	1	1.75	18.45	5.28	16	SAP	08_33	6	7	2.79	18.842	7.69	17	SAP
09_32	1	2	2.06	12.505	9.65	17	SAP	08_33	7	8	2.46	18.674	5.82	17	SAP
09_32	2	3	2.37	14.541	8.32	18	SAP	08_33	8	8.72	2.12	17.009	8	18	SAP
09_32	3	4	1.4	10.743	6.69	21	SAP	08_33	8.72	9	2.24	15.667	6.98	17	SAP
09_32	4	5	2.47	12.533	10	18	SAP	08_33	9	10	1.54	15.352	6.71	18	SAP
09_32	5	6	2.16	14.541	10.28	19	SAP	08_33	10	10.52	1.36	13.855	7.21	18	SAP
09_32	6	7	2.33	12.981	10.88	19	SAP	08_33	10.52	11	1.04	11.708	7.69	19	SAP
09_32	7	8	2.11	15.639	7.3	18	SAP	08_33	11	12	0.77	11.722	8.16	19	SAP
09_32	8	9	2.13	15.988	6.9	18	SAP	08_33	12	13	0.48	9.064	9.26	21	SAP
09_32	9	10	1.99	19.688	6.22	18	SAP	08_32	0	1	1.01	35.907	0.65	9	SAP
09_32	10	11	2.25	16.981	8.11	16	SAP	08_32	1	2	0.97	30.906	0.55	11	SAP
09_32	11	12	2.1	17.03	5.87	16	SAP	08_32	2	3	1.24	31.697	0.68	11	SAP



HID	FR	TO	Ni	Fe	MgO	SiO <sub>2</sub>	LYR	HID	FR	TO	Ni	Fe	MgO	SiO <sub>2</sub>	LYR
08_32	3	4	1.68	31.438	1.25	13	SAP	09_30	17.6	18	0.29	9.68	7.71	22	SAP
08_32	4	5	1.82	30.536	0.9	12	SAP	09_30	18	19	0.27	9.966	8.05	21	SAP
08_32	5	6	1.3	29.396	0.74	12	SAP	09_30	19	20	0.34	10.281	9.58	19	SAP
08_32	6	7	1.14	22.073	1.34	18	SAP	09_30	20	21	2.23	21.486	3.11	17	SAP
08_32	7	7.78	2.18	28.438	1.66	12	SAP	09_30	21	22	0.14	3.826	14.02	12	SAP
08_32	7.78	8	1.87	24.052	3.6	15	SAP	08_31	0	1	1.83	29.508	1.78	12	SAP
08_32	8	8.53	2.01	19.597	4.65	15	SAP	08_31	1	2	1.9	27.85	1.96	14	SAP
08_32	8.53	9	1.43	12.072	5.79	23	SAP	08_31	2	3	2.03	25.388	2.54	15	SAP
08_32	9	10	0.32	6.071	0.52	37	SAP	08_31	3	3.76	2.86	14.324	2.85	14	SAP
08_32	10	11	0.72	10.428	2.07	28	SAP	08_31	3.76	4	1.81	16.87	4.61	17	SAP
08_32	11	12	1.64	18.877	4.96	14	SAP	08_31	4	4.43	0.87	9.316	7.69	19	SAP
08_32	12	13	0.53	10.127	10.88	20	SAP	08_31	4.43	5	1.05	18.226	4.77	17	SAP
09_30	0	1	0.83	17.996	3.31	18	SAP	08_31	5	5.52	0.62	13.505	5.91	21	SAP
09_30	1	1.55	0.77	16.051	4.35	20	SAP	08_31	5.52	6	0.81	16.436	5.29	17	SAP
09_30	1.55	2	0.4	11.106	5.14	23	SAP	08_31	6	7	0.6	17.17	5.54	17	SAP
09_30	2	2.21	0.3	9.694	5.03	24	SAP	08_31	7	8	0.52	13.631	6.87	20	LIM
09_30	2.21	2.76	0.56	12.54	5.72	21	SAP	08_31	8	9	0.35	10.218	11.61	15	LIM
09_30	2.76	3	0.38	10.785	5.98	20	SAP	08_31	9	10	0.26	9.071	12.71	14	LIM
09_30	3	3.57	0.55	13.932	6.33	21	SAP	08_31	10	11	0.24	7.847	12.82	15	LIM
09_30	3.57	4	0.33	11.162	6.43	23	SAP	08_31	11	12	0.26	7.805	14.8	14	SAP
09_30	4	4.2	0.3	10.393	6.26	24	SAP	07_28	0	1	0.8	21.01	2.03	18	SAP
09_30	4.2	4.45	0.49	11.624	6.87	22	SAP	07_28	1	1.39	0.76	17.359	3	19	SAP
09_30	4.45	5	0.26	9.029	7.01	24	SAP	07_28	1.39	1.63	0.74	15.457	4.09	21	SAP
09_30	5	6	0.26	8.917	8.01	23	SAP	07_28	1.63	2	0.6	13.31	4.15	21	SAP
09_30	6	7	0.34	11.099	7.58	22	SAP	07_28	2	2.46	0.72	13.918	4.62	20	SAP
09_30	7	8	0.35	9.792	9.44	23	SAP	07_28	2.46	3	0.63	13.317	3.48	24	SAP
09_30	8	8.38	0.24	8.924	7.91	23	SAP	07_28	3	4	0.58	17.317	3.61	22	SAP
09_30	8.38	9	0.24	8.323	6.28	23	SAP	07_28	4	5	0.31	9.987	5.28	24	SAP
09_30	9	9.53	0.24	8.274	6.74	24	SAP	07_28	5	5.64	0.37	12.065	7.4	22	SAP
09_30	9.53	10	0.28	8.561	8.92	23	SAP	07_28	5.64	6	0.31	11.568	5.48	22	SAP
09_30	10	11	0.29	9.512	8.33	23	SAP	07_28	6	6.67	0.31	10.624	6.87	23	SAP
09_30	11	12	0.24	9.064	6.92	24	SAP	07_28	6.67	7	0.34	11.596	7.83	22	SAP
09_30	12	13	0.21	7.442	13.39	17	SAP	07_28	7	8	0.38	13.387	6.86	22	SAP
09_30	13	14	0.23	8.155	9.18	21	SAP	07_28	8	9	0.43	13.988	6.33	21	SAP
09_30	14	14.37	0.28	9.729	8.86	22	SAP	07_28	9	10	0.37	12.757	6.88	22	SAP
09_30	14.37	15	0.21	7.749	13.64	15	SAP	07_28	10	11	0.35	11.806	6.88	23	SAP
09_30	15	15.3	0.27	10.001	11.28	20	SAP	07_28	11	12	0.34	10.715	8.77	23	SAP
09_30	15.3	16	0.29	11.253	7.04	23	SAP	07_28	12	13	0.32	10.246	10.91	23	SAP
09_30	16	17	0.36	9.694	7.5	23	LIM	07_28	13	14	0.33	8.015	10.9	24	SAP
09_30	17	17.6	0.42	11.358	7.57	21	SAP	08_30	0	1	1.18	22.577	2.57	16	SAP

HID	FR	TO	Ni	Fe	MgO	SiO <sub>2</sub>	LYR	HID	FR	TO	Ni	Fe	MgO	SiO <sub>2</sub>	LYR
08_30	1	1.58	0.84	14.282	3.84	19	SAP	08_29	8	9	0.36	12.533	4.65	23	LIM
08_30	1.58	2	0.8	14.135	4.23	20	SAP	08_29	9	10	0.38	13.631	4.05	21	LIM
08_30	2	3	0.61	14.184	3.96	22	SAP	08_29	10	10.65	0.51	13.47	4.79	22	LIM
08_30	3	4	0.4	11.61	5.69	23	SAP	08_29	10.65	11	0.85	13.163	5.91	22	LIM
08_30	4	5	0.29	9.274	6.21	22	SAP	08_29	11	12	0.67	16.953	4.33	20	LIM
08_30	5	6	0.27	9.561	6.45	25	SAP	08_29	12	13	0.92	13.17	7.65	21	LIM
08_30	6	7	0.29	9.435	6.01	25	SAP	08_29	13	14	0.96	16.793	5.96	21	LIM
08_30	7	8	0.33	10.799	5.99	22	SAP	08_29	14	15	0.81	14.541	5.91	22	LIM
08_30	8	9	0.26	9.008	7.4	23	LIM	07_30	0	1	1.18	25.06	1.01	16	LIM
08_30	9	10	0.24	8.701	10.23	17	LIM	07_30	1	1.41	1.31	22.856	1.62	15	LIM
08_30	10	11	0.57	10.75	8.84	20	LIM	07_30	1.41	1.81	2.16	22.171	2.23	16	SAP
08_30	11	12	0.55	12.393	7.78	19	LIM	07_30	1.81	2	2.77	20.283	3.02	17	SAP
08_30	12	13	0.6	12.946	8.36	20	LIM	07_30	2	2.35	2.21	19.038	2.58	18	SAP
07_29	0	1	0.95	22.416	2.36	18	LIM	07_30	2.35	3	2.07	16.981	3.5	19	SAP
07_29	1	1.79	0.9	17.674	1.91	20	SAP	07_30	3	4	1.52	24.64	1.85	14	SAP
07_29	1.79	2	1.24	19.625	2.56	19	SAP	07_30	4	5	1.22	20.59	2.27	15	SAP
07_29	2	2.6	1.11	19.275	2.71	18	SAP	07_30	5	6	1.42	20.087	3.53	16	SAP
07_29	2.6	3	0.99	17.688	2.43	22	SAP	07_30	6	6.41	1.23	18.877	3.56	16	SAP
07_29	3	4	0.82	14.743	4.56	19	SAP	07_30	6.41	6.83	0.72	11.939	5.75	22	SAP
07_29	4	4.66	1.26	19.373	3.53	18	SAP	07_30	6.83	7	1.12	22.024	3.3	14	SAP
07_29	4.66	5	0.87	15.38	5.02	21	SAP	07_30	7	7.59	0.7	14.408	4.78	20	SAP
07_29	5	5.62	0.61	12.946	5.22	23	SAP	07_30	7.59	8	0.71	11.533	5.86	19	SAP
07_29	5.62	6	1.02	17.814	3.71	19	SAP	07_30	8	8.27	0.32	7.854	8.16	21	SAP
07_29	6	7	0.5	12.512	5.04	22	SAP	07_30	8.27	9	0.3	10.12	6.42	21	SAP
07_29	7	7.52	0.89	17.394	4.6	19	SAP	07_30	9	9.56	0.32	10.785	8.03	22	LIM
07_29	7.52	7.71	0.46	12.526	5.78	23	SAP	07_30	9.56	10	0.25	8.316	9.72	18	LIM
07_29	7.71	8	0.67	15.058	4.77	19	SAP	07_30	10	10.18	0.28	9.344	7.02	24	LIM
07_29	8	9	0.5	12.163	5.24	22	SAP	07_30	10.18	11	0.57	17.8	4.5	15	LIM
07_29	9	10	0.5	9.288	6.4	28	SAP	07_30	11	12	0.59	18.604	5.45	17	LIM
07_29	10	11	0.41	6.546	8.19	30	LIM	07_30	12	13	0.69	14.617	7.19	19	LIM
07_29	11	12	0.23	4.665	2.91	36	LIM	07_30	13	13.6	0.25	8.337	8.8	20	LIM
08_29	0	1	0.73	20.786	2.55	19	LIM	07_30	13.6	14	0.38	11.589	6.74	21	LIM
08_29	1	1.77	0.81	20.562	2.76	20	LIM	07_30	14	15	0.65	14.82	6.42	19	LIM
08_29	1.77	2	0.63	18.464	2.61	19	LIM	07_30	15	15.73	0.67	14.555	7.21	19	LIM
08_29	2	3	0.74	19.024	2.98	19	LIM	07_30	15.73	16	0.38	11.946	7.38	23	LIM
08_29	3	4	0.85	19.464	2.97	20	LIM	07_30	16	17	0.35	11.393	7.37	24	LIM
08_29	4	5	0.66	17.485	3.99	20	LIM	07_30	17	18	0.41	12.246	7.18	23	LIM
08_29	5	6	0.42	12.295	5.52	23	LIM	07_30	18	18.84	0.3	10.456	7.45	25	SAP
08_29	6	7	0.45	13.114	4.82	22	LIM	07_30	18.84	19	0.58	13.638	9.61	19	SAP
08_29	7	8	0.37	11.288	5.56	25	LIM	07_30	19	19.61	0.52	11.897	10.21	21	SAP

HID	FR	TO	Ni	Fe	MgO	SiO <sub>2</sub>	LYR	HID	FR	TO	Ni	Fe	MgO	SiO <sub>2</sub>	LYR
07_30	19.61	20	0.32	10.071	8.51	21	SAP	07_31	10	10.32	1.34	25.934	1.82	14	SAP
07_30	20	21	0.28	8.631	8.83	22	SAP	07_31	10.32	11	3.11	13.883	5.51	18	SAP
07_30	21	22	0.37	9.337	10.48	20	SAP	07_31	11	12	2.08	16.163	4.84	17	SAP
06_28	0	1	0.79	20.01	2.15	18	SAP	07_31	12	12.57	1.63	18.527	4.22	17	SAP
06_28	1	1.5	0.58	11.722	1.31	21	SAP	07_31	12.57	13	1.45	25.346	2.02	14	SAP
06_28	1.5	2	0.58	16.513	2.42	21	SAP	07_31	13	14	0.99	17.226	2.42	19	SAP
06_28	2	3	0.51	17.247	3.47	21	SAP	07_31	14	15	1.38	24.297	1.77	15	SAP
06_28	3	3.83	0.44	13.736	4.53	22	SAP	07_31	15	16	1.04	22.821	3.21	14	SAP
06_28	3.83	4	0.43	14.834	4.35	23	SAP	07_31	16	17	1.48	25.941	1.24	14	SAP
06_28	4	4.71	0.39	13.54	4.87	21	SAP	07_31	17	18	0.8	21.262	1.92	16	SAP
06_28	4.71	5	0.32	11.421	4.68	24	SAP	07_31	18	18.51	1.65	25.542	1.59	14	SAP
06_28	5	6	0.33	11.806	4.64	24	SAP	07_31	18.51	19	1.38	28.207	1.34	12	SAP
06_28	6	7	0.42	14.631	5.45	22	SAP	07_31	19	19.47	1.28	31.067	1.01	11	SAP
06_28	7	8	0.35	11.463	5.78	24	SAP	07_31	19.47	20	1.63	18.296	4.52	15	SAP
06_28	8	8.33	0.36	12.051	5.58	24	SAP	07_31	20	21	1.21	25.304	1.65	13	SAP
06_28	8.33	9	0.35	11.302	6.21	22	SAP	07_31	21	21.69	1.09	12.533	5.75	20	SAP
06_28	9	10	0.49	14.806	5.78	23	SAP	07_31	21.69	22	1.24	29.808	1.26	13	SAP
06_28	10	11	0.54	16.149	4.67	24	SAP	07_31	22	22.74	1.04	27.955	1.13	13	SAP
06_28	11	12	0.33	10.428	6.99	24	SAP	07_31	22.74	23	1.6	20.15	3.98	15	SAP
06_28	12	13	0.3	9.792	6.71	23	SAP	07_31	23	23.34	1.23	17.548	6.05	16	LIM
06_29	0	1	0.87	22.073	2.38	17	SAP	07_31	23.34	24	1.07	17.065	5.31	17	SAP
06_29	1	1.46	0.37	9.617	1.04	29	SAP	07_31	24	24.55	0.97	25.983	3.85	14	SAP
06_29	1.46	2	0.65	15.478	3.73	20	SAP	07_31	24.55	25	0.68	13.373	8.5	18	SAP
06_29	2	3	0.46	12.365	4.47	23	SAP	07_31	25	26	1.08	18.961	5.8	16	SAP
06_29	3	4	0.31	8.281	7.59	22	SAP	07_31	26	27	0.36	8.673	10.15	20	SAP
06_29	4	5	0.81	12.407	5.26	24	LIM	07_31	27	28	0.4	8.26	14.12	18	SAP
06_29	5	6	0.18	5.714	8.98	22	LIM	07_31	28	29	0.99	24.808	3.52	15	SAP
06_29	6	7	0.23	7.337	7.28	24	LIM	07_31	29	30	0.44	10.519	10.21	18	SAP
07_31	0	1	0.89	31.69	0.39	12	LIM	07_31	30	30.5	0.22	7.19	17.4	19	SAP
07_31	1	1.69	0.9	41.572	0.21	6	LIM	06_30	0	1	1.12	24.311	1.92	14	SAP
07_31	1.69	2	1	44.181	0.15	5	LIM	06_30	1	2	1.07	23.626	1.95	15	SAP
07_31	2	3	1.03	41.363	0.33	6	LIM	06_30	2	3	0.8	11.701	6.52	21	SAP
07_31	3	4	1.02	31.403	0.46	11	LIM	06_30	3	4	1.15	17.303	6.74	18	SAP
07_31	4	4.5	0.7	29.613	0.77	12	LIM	06_30	4	5	0.88	12.918	7.41	18	SAP
07_31	4.5	5	0.95	39.383	0.45	5	LIM	06_30	5	6	0.55	8.722	8.29	21	SAP
07_31	5	6	0.85	35.998	0.53	7	LIM	06_30	6	7	0.77	19.094	3.77	18	SAP
07_31	6	7	0.81	32.522	0.81	11	SAP	06_30	7	8	0.17	5.63	11.1	22	SAP
07_31	7	8	0.72	24.899	1.59	18	SAP	06_30	8	9	0.39	9.75	6.91	20	SAP
07_31	8	9	0.97	27.333	1.75	14	SAP	07_32	0	1	1.02	33.977	0.65	9	SAP
07_31	9	10	0.97	27.333	1.75	14	SAP	07_32	1	2	1.05	35.11	0.41	9	SAP

HID	FR	TO	Ni	Fe	MgO	SiO <sub>2</sub>	LYR	HID	FR	TO	Ni	Fe	MgO	SiO <sub>2</sub>	LYR
07_32	2	3	0.99	40.488	0.39	7	SAP	06_31	15	16	1.05	32.851	0.45	10	SAP
07_32	3	4	0.74	33.012	0.36	8	SAP	06_31	16	16.58	1.82	23.311	2.62	16	SAP
07_32	4	5	0.85	34.963	0.51	8	SAP	06_31	16.58	17	1.97	17.282	4.84	18	SAP
07_32	5	6	1.03	33.277	0.73	8	SAP	06_31	17	17.5	1.58	24.437	2.18	14	SAP
07_32	6	7	0.83	33.124	0.86	8	SAP	06_31	17.5	18	1.72	17.807	5.81	19	SAP
07_32	7	8	0.83	31.634	0.6	9	SAP	06_31	18	19	1.03	29.515	1.11	13	SAP
07_32	8	9	1	29.613	0.9	11	SAP	06_31	19	20	1.12	20.136	2.29	17	SAP
07_32	9	9.44	1.67	30.592	1.32	10	SAP	06_31	20	21	0.75	12.75	8.15	20	SAP
07_32	9.44	10	1.51	16.981	4.54	17	SAP	06_31	21	22	0.27	7.665	12.48	19	SAP
07_32	10	11	1.17	27.598	1.83	13	SAP	06_31	22	23	0.19	6.826	14.36	15	SAP
07_32	11	12	1.12	19.66	2.77	17	SAP	07_33	0	0.55	1.72	27.787	1.66	12	SAP
07_32	12	13	1.67	12.897	8.74	18	SAP	07_33	0.55	1	2.4	18.926	3.88	16	SAP
07_32	13	14	1.29	17.863	3.64	18	SAP	07_33	1	1.67	3.68	11.953	6.14	20	SAP
07_32	14	14.68	1.03	14.883	6.93	18	SAP	07_33	1.67	2	2.24	10.897	6.26	21	SAP
07_32	14.68	15	1.36	23.122	3.15	17	SAP	07_33	2	3	3.22	11.582	6.49	21	SAP
07_32	15	16	1.11	16.261	4.37	18	SAP	07_33	3	3.76	2.4	18.457	4.88	19	SAP
07_32	16	16.34	0.83	19.807	1.65	18	SAP	07_33	3.76	4	1.37	13.128	4.56	23	SAP
07_32	16.34	17	1.59	31.76	1.61	13	SAP	07_33	4	5	1.61	10.043	10.44	18	LIM
07_32	17	18	1.27	26.899	2.07	15	SAP	07_33	5	5.47	1.66	11.037	10.28	18	LIM
07_32	18	19	0.96	17.457	4.75	19	SAP	07_33	5.47	6	1.16	8.819	12.64	18	LIM
07_32	19	20	0.88	15.443	6.04	17	SAP	07_33	6	6.57	0.91	10.127	11.75	19	LIM
07_32	20	21	0.57	10.169	9.5	19	SAP	07_33	6.57	7	0.92	25.353	2.8	17	LIM
06_31	0	1	1.05	33.249	1.19	11	SAP	07_33	7	8	0.48	6.819	5.35	32	SAP
06_31	1	2	1.19	33.571	1.08	10	SAP	07_33	8	9	1.24	20.262	4.54	18	SAP
06_31	2	3	1.2	31.641	0.71	11	SAP	07_33	9	10	0.81	14.904	6.81	19	SAP
06_31	3	4	1.11	30.774	0.72	12	LIM	07_33	10	11	0.76	11.967	7.02	20	SAP
06_31	4	5	0.91	30.298	0.56	11	LIM	07_33	11	12	0.41	9.015	10.2	20	SAP
06_31	5	6	0.71	25.171	0.5	14	LIM	07_33	12	13	1.39	18.555	4.57	19	SAP
06_31	6	6.45	1.51	34.949	0.79	9	LIM	07_33	13	14	1.1	20.101	2.54	18	SAP
06_31	6.45	7	1.74	28.158	1.66	14	LIM	07_33	14	15	1.09	18.898	4.73	17	SAP
06_31	7	7.38	1.78	19.828	3.84	17	LIM	07_33	15	15.36	1.09	21.821	3.41	16	SAP
06_31	7.38	8	2.52	15.904	7.03	19	SAP	07_33	15.36	16	1.17	18.107	4.85	16	SAP
06_31	8	9	2.28	13.897	7.65	20	SAP	07_33	16	16.48	1.32	25.885	2.56	14	SAP
06_31	9	10	1.74	21.43	2.99	15	SAP	07_33	16.48	17	0.77	14.862	5.56	18	SAP
06_31	10	11	1.08	32.284	0.89	11	SAP	07_33	17	18	0.55	9.89	10.24	19	SAP
06_31	11	12	0.92	24.955	1.42	14	SAP	07_33	18	19	0.8	12.652	7.54	21	SAP
06_31	12	13	1.37	22.066	1.94	15	SAP	06_32	0	1	1.33	28.997	3.79	11	SAP
06_31	13	13.54	1.5	12.344	4.94	18	SAP	06_32	1	1.43	1.22	22.703	2.33	13	SAP
06_31	13.54	14	1.48	23.773	2.11	16	SAP	06_32	1.43	2	1.43	16.758	3.73	18	SAP
06_31	14	15	0.98	26.053	1.04	14	SAP	06_32	2	2.29	2.6	16.051	4.81	18	SAP

HID	FR	TO	Ni	Fe	MgO	SiO <sub>2</sub>	LYR	HID	FR	TO	Ni	Fe	MgO	SiO <sub>2</sub>	LYR
06_32	2.29	2.63	1.46	13.925	4.96	21	SAP	07_34	15	15.33	1.4	27.389	2.19	15	LIM
06_32	2.63	3	1.96	16.534	6.54	18	SAP	07_34	15.33	16	1.17	18.24	3.17	19	LIM
06_32	3	3.45	1.66	16.317	5.91	18	LIM	07_34	16	17	1.1	14.771	5.57	21	LIM
06_32	3.45	4	1.89	13.477	10.19	20	LIM	07_34	17	18	1.2	17.695	5.64	18	LIM
06_32	4	4.39	1.54	13.519	11.4	19	LIM	07_34	18	18.53	0.31	8.33	12.75	18	SAP
06_32	4.39	5	1.48	15.52	9.63	17	LIM	07_34	18.53	19	1.05	15.953	5.76	18	SAP
06_32	5	6	1.43	33.34	2.16	11	LIM	07_34	19	20	0.78	13.177	6.46	18	SAP
06_32	6	7	1.26	27.27	2.9	13	LIM	07_34	20	20.3	0.64	11.442	8.44	21	SAP
06_32	7	8	0.46	10.393	8.07	19	LIM	07_34	20.3	21	0.23	7.644	12.92	17	SAP
06_32	8	9	0.7	12.149	9.26	18	LIM	07_34	21	21.55	0.82	14.464	5.82	20	SAP
06_32	9	10	0.67	11.68	7.8	18	SAP	07_34	21.55	22	1.26	18.296	4.15	17	SAP
06_32	10	11	0.73	12.932	7.04	19	SAP	07_34	22	23	1.31	18.268	3.52	17	SAP
06_32	11	12	0.7	13.799	6.41	18	SAP	07_34	23	24	1.47	19.429	3.74	18	SAP
06_32	12	13	0.39	10.757	7.86	19	SAP	07_34	24	24.63	0.9	16.051	4.99	17	SAP
06_32	13	14	0.45	11.358	9.01	19	SAP	07_34	24.63	25	1.47	19.723	2.59	18	SAP
07_34	0	1	0.64	36.746	0.65	8	SAP	07_34	25	26	1.44	20.884	2.77	17	SAP
07_34	1	2	0.7	41.111	0.39	7	SAP	07_34	26	27	0.99	15.66	3.47	20	SAP
07_34	2	3	0.67	38.096	0.36	8	SAP	07_34	27	27.43	0.61	9.554	7.59	22	SAP
07_34	3	3.34	1.09	30.242	0.65	11	SAP	07_34	27.43	28	1.2	16.821	4.93	20	SAP
07_34	3.34	4	2.08	24.269	1.48	15	SAP	07_34	28	29	1.05	12.442	8.07	18	SAP
07_34	4	5	2.24	19.227	3.7	18	SAP	07_34	29	30	1.18	16.345	6.4	19	SAP
07_34	5	5.42	2.09	17.604	5.11	19	SAP	07_34	30	30.22	0.79	12.596	8.42	20	SAP
07_34	5.42	5.63	1.8	21.535	2.29	17	SAP	07_34	30.22	31	0.38	9.372	11.29	17	SAP
07_34	5.63	6	2.34	19.031	3.5	18	LIM	07_34	31	31.38	0.26	8.127	12.8	16	SAP
07_34	6	6.24	2.92	18.422	3.68	17	LIM	07_34	31.38	32	0.71	13.925	6.75	18	SAP
07_34	6.24	6.39	2.1	24.346	1.69	16	LIM	07_34	32	33	0.54	11.253	8.5	18	SAP
07_34	6.39	7	1.98	20.059	2.71	17	LIM	06_33	0	1	0.74	34.62	0.49	9	SAP
07_34	7	7.28	1.42	19.429	3.03	19	LIM	06_33	1	2	0.63	33.802	0.25	8	SAP
07_34	7.28	7.6	1.34	27.941	0.96	13	SAP	06_33	2	3	0.67	36.047	0.31	7	SAP
07_34	7.6	8	1.89	27.703	1.26	13	SAP	06_33	3	4	0.72	38.04	0.36	7	SAP
07_34	8	9	1.18	27.34	1.41	14	SAP	06_33	4	4.44	0.83	36.453	0.43	8	SAP
07_34	9	9.45	1.17	30.333	0.66	11	SAP	06_33	4.44	5	1.31	25.773	1.72	14	SAP
07_34	9.45	10	1.91	26.542	1.71	13	SAP	06_33	5	5.42	2.85	18.919	3.12	16	SAP
07_34	10	11	2.13	24.78	1.99	15	SAP	06_33	5.42	6	2.25	14.478	8.27	17	SAP
07_34	11	12	1.86	20.325	3.56	17	SAP	06_33	6	6.74	1.96	13.883	8.59	18	SAP
07_34	12	13	1.75	21.416	3.09	17	SAP	06_33	6.74	7	2	10.806	9.74	18	SAP
07_34	13	13.25	1.2	22.199	1.68	17	SAP	06_33	7	8	2	11.666	10.6	17	SAP
07_34	13.25	14	1.02	26.269	1.09	13	SAP	06_33	8	9	1.73	12.414	9.49	18	SAP
07_34	14	14.29	1.04	25.521	1.77	16	SAP	06_33	9	10	1.02	13.953	7.36	19	SAP
07_34	14.29	15	1.01	26.703	1.5	14	SAP	06_33	10	11	1.17	16.52	6.5	19	SAP

HID	FR	TO	Ni	Fe	MgO	SiO <sub>2</sub>	LYR	HID	FR	TO	Ni	Fe	MgO	SiO <sub>2</sub>	LYR
06_33	11	12	1.1	14.589	7.11	18	SAP	07_35	31	32	1.98	14.016	7.21	19	SAP
06_33	12	13	1.16	13.156	8.05	19	SAP	07_35	32	33	1.15	12.981	6.33	18	SAP
07_35	0	1	0.7	40.209	0.39	6	SAP	07_35	33	34	1.25	18.121	4.2	18	SAP
07_35	1	2	0.78	42.041	0.31	6	SAP	07_35	34	35	0.69	15.226	4.58	22	SAP
07_35	2	3	0.63	45.097	0.39	7	SAP	07_35	35	36	0.95	13.743	3.56	24	SAP
07_35	3	4	0.75	33.788	0.46	8	SAP	07_35	36	37	1.09	12.932	6.42	21	SAP
07_35	4	5	1.55	22.493	5.17	14	SAP	07_35	37	38	1.6	13.68	6.08	20	SAP
07_35	5	5.81	1.91	16.59	7.65	17	SAP	07_35	38	38.32	1.4	22.682	2.57	17	SAP
07_35	5.81	6	2.19	10.491	14.82	18	SAP	07_35	38.32	39	0.13	2.665	0.5	43	SAP
07_35	6	7	1.88	11.82	14.12	18	SAP	07_35	39	40	0.26	5.329	1.16	39	SAP
07_35	7	8	3.5	15.121	5.56	19	SAP	07_35	40	41	0.92	14.562	4.21	22	SAP
07_35	8	8.62	2.62	13.708	5.5	19	SAP	07_35	41	42	0.12	8.568	3.88	22	SAP
07_35	8.62	9	3	18.1	5.63	18	SAP	07_35	42	43	0.06	8.225	4.37	22	SAP
07_35	9	10	1.44	13.212	6.34	20	SAP	07_35	43	44	0.07	7.784	3.05	20	SAP
07_35	10	10.7	1.34	13.352	7.21	19	SAP	06_34	0	1	0.63	39.628	0.27	6	SAP
07_35	10.7	11	1.41	19.926	3.89	18	SAP	06_34	1	2	0.61	42.482	0.49	5	SAP
07_35	11	11.77	1.56	19.345	4.49	18	SAP	06_34	2	3	0.67	38.523	0.39	5	SAP
07_35	11.77	12	1.13	15.688	5.73	18	SAP	06_34	3	4	0.67	38.523	0.39	5	SAP
07_35	12	13	1.24	16.457	5.4	19	LIM	06_34	4	5	0.66	35.613	0.43	7	LIM
07_35	13	14	1.32	15.813	6.01	19	SAP	06_34	5	6	0.61	32.249	0.37	8	LIM
07_35	14	14.5	1.51	18.254	6.04	18	SAP	06_34	6	6.25	0.32	4.854	0.26	38	LIM
07_35	14.5	15	1.41	18.052	5.29	18	SAP	06_34	6.25	7	1.01	32.116	0.68	10	LIM
07_35	15	15.8	1.29	18.191	4.82	17	SAP	06_34	7	8	1.11	23.857	1.1	15	LIM
07_35	15.8	16	0.27	7.568	15.67	17	SAP	06_34	8	8.21	0.79	13.904	1.56	24	LIM
07_35	16	17	1.03	16.646	5.84	17	SAP	06_34	8.21	9	1.58	22.926	1.44	16	SAP
07_35	17	17.46	0.25	7.609	15.2	16	SAP	06_34	9	9.76	2.11	23.521	1.88	16	SAP
07_35	17.46	18	1.16	16.051	5.39	17	SAP	06_34	9.76	10	1.05	16.114	1.57	22	SAP
07_35	18	19	1.21	16.212	6.9	18	SAP	06_34	10	11	1.19	27.039	0.88	13	SAP
07_35	19	20	0.91	10.932	7.44	24	SAP	06_34	11	12	1.02	22.717	2.23	17	SAP
07_35	20	21	0.91	14.541	7.35	20	SAP	06_34	12	13	1.65	26.661	1.63	14	SAP
07_35	21	22	0.91	14.275	6.99	19	SAP	06_34	13	14	1.3	20.276	2.45	18	SAP
07_35	22	23	0.82	13.331	6.4	18	SAP	06_34	14	14.68	1.09	16.953	1.74	22	SAP
07_35	23	24	1.72	14.058	8.19	19	SAP	06_34	14.68	15	0.51	10.071	0.89	29	SAP
07_35	24	25	1.47	17.366	5.11	20	SAP	06_34	15	16	0.95	17.59	3.34	20	SAP
07_35	25	26	1.47	24.738	2.82	16	SAP	06_34	16	17	1.43	26.675	1.69	13	SAP
07_35	26	27	1.66	24.164	2.55	15	SAP	06_34	17	18	1.6	21.465	2.94	16	SAP
07_35	27	28	2.01	19.227	4.26	18	SAP	06_34	18	19	2.19	23.577	2.71	15	SAP
07_35	28	29	2.27	18.681	4.93	17	SAP	06_34	19	20	2.28	23.975	2.31	15	SAP
07_35	29	30	2.12	17.555	5.75	19	SAP	06_34	20	21	2.24	17.569	6.05	18	SAP
07_35	30	31	1.13	11.764	7.27	18	SAP	06_34	21	22	2.33	15.869	6.96	18	SAP

HID	FR	TO	Ni	Fe	MgO	SiO <sub>2</sub>	LYR	HID	FR	TO	Ni	Fe	MgO	SiO <sub>2</sub>	LYR
06_34	22	23	2.2	17.541	5.86	18	SAP	05_34	13	13.66	1.38	31.949	0.88	9	SAP
06_34	23	24	2.21	19.303	4.91	18	SAP	05_34	13.66	14	1.51	28.906	1.02	13	SAP
06_34	24	25	2.04	17.422	5.17	18	SAP	05_34	14	15	2.08	23.647	2.03	15	SAP
06_34	25	26	1.84	15.981	6.25	19	SAP	05_34	15	15.69	2.55	20.429	3.87	16	SAP
06_34	26	27	1.57	14.771	5.32	19	SAP	05_34	15.69	16	2.51	16.478	5.9	18	SAP
06_34	27	28	1.76	15.988	5.75	20	SAP	05_34	16	17	2.43	18.401	4.72	17	SAP
06_34	28	28.54	1.69	13.345	6.86	20	SAP	05_34	17	18	2.57	16.807	6.05	19	SAP
06_34	28.54	29	1.83	17.24	7.56	19	SAP	05_34	18	19	2.03	17.331	5.27	18	SAP
06_34	29	30	1.92	20.849	5.13	17	SAP	05_34	19	19.3	2.02	16.247	6.56	18	SAP
06_34	30	30.38	1.16	23.982	2.04	16	SAP	05_34	19.3	20	1.74	13.352	9.06	19	SAP
06_34	30.38	31	1.58	25.864	2.27	15	SAP	05_34	20	20.45	1.61	15.387	6.61	17	SAP
06_34	31	31.49	2.02	20.08	4.18	17	SAP	05_34	20.45	21	1.5	17.87	4.93	16	SAP
06_34	31.49	32	1.99	25.696	1.72	15	SAP	05_34	21	21.29	1.95	18.429	5.02	17	SAP
06_34	32	33	1.95	25.192	2.43	15	LIM	05_34	21.29	21.44	1.06	11.673	7.95	18	SAP
06_34	33	34	1.78	25.556	2.15	14	LIM	05_34	21.44	22	2.72	13.345	8.51	20	SAP
06_34	34	35	1.58	20.898	4.66	16	LIM	05_34	22	23	1.85	9.729	8.76	24	SAP
06_34	35	35.48	0.92	11.701	3.84	23	LIM	05_34	23	23.66	2.35	13.722	7.54	19	SAP
06_34	35.48	36	1.54	20.646	3.82	17	LIM	05_34	23.66	24	2.4	17.079	5.7	18	SAP
06_34	36	37	1.5	16.597	5.6	19	LIM	05_34	24	24.62	2.55	16.548	6.05	18	SAP
06_34	37	37.6	1.12	16.939	4.39	19	LIM	05_34	24.62	25	2.57	14.107	8.62	18	SAP
06_34	37.6	38	0.96	11.967	5.43	22	LIM	05_34	25	25.64	2.28	16.534	5.83	18	SAP
06_34	38	39	0.86	25.934	1.37	14	SAP	05_34	25.64	26	0.65	9.267	13.02	17	SAP
06_34	39	39.66	1.04	20.856	2.09	17	SAP	05_34	26	26.54	1.94	7.658	10.26	23	SAP
06_34	39.66	40	0.42	10.596	2.13	26	SAP	05_34	26.54	27	1.38	14.086	5.77	19	SAP
06_34	40	41	0.08	7.987	3.11	24	SAP	05_34	27	27.48	1.32	10.694	8.76	21	SAP
06_34	41	42	0.05	12.946	2.82	18	SAP	05_34	27.48	27.84	1.43	15.058	6.63	18	SAP
05_34	0	1	0.59	36.949	0.21	6	SAP	05_34	27.84	28	0.65	9.33	9.86	19	SAP
05_34	1	2	0.58	40.621	0.3	6	SAP	05_34	28	29	0.76	9.575	6.83	23	SAP
05_34	2	3	0.66	40.006	0.1	5	SAP	05_34	29	30	0.62	11.218	5.79	23	SAP
05_34	3	4	0.67	38.383	0.23	7	SAP	05_34	30	31	0.09	7.952	2.6	21	SAP
05_34	4	5	0.68	40.229	0.14	7	SAP	05_34	31	32	0.07	11.925	2.49	20	SAP
05_34	5	6	0.56	35.809	0.19	9	SAP	05_34	32	33	0.07	8.931	3.24	20	SAP
05_34	6	7	0.69	34.145	0.21	12	SAP	06_35	0	1	0.6	39.32	0.28	6	SAP
05_34	7	8	0.77	40.481	0.18	10	SAP	06_35	1	2	0.64	42.223	0.34	6	SAP
05_34	8	9	0.57	33.956	0.13	14	SAP	06_35	2	3	0.89	41.544	0.29	7	SAP
05_34	9	9.63	0.64	39.824	0.18	9	SAP	06_35	3	4	0.76	42.398	0.26	6	SAP
05_34	9.63	10	0.61	37.327	1.01	8	SAP	06_35	4	5	0.86	51.854	0.29	3	SAP
05_34	10	11	0.74	36.383	0.26	8	SAP	06_35	5	5.77	1.02	53.042	0.15	1	SAP
05_34	11	12	1.03	37.243	0.3	6	SAP	06_35	5.77	6	0.89	44.699	0.44	7	SAP
05_34	12	13	1.15	31.158	0.53	10	SAP	06_35	6	7	0.71	43.964	0.2	6	SAP

HID	FR	TO	Ni	Fe	MgO	SiO <sub>2</sub>	LYR	HID	FR	TO	Ni	Fe	MgO	SiO <sub>2</sub>	LYR
06_35	7	8	0.73	39.719	0.77	7	SAP	05_33	9	9.81	2.72	23.661	2.5	15	SAP
06_35	8	8.5	0.82	31.914	0.9	11	SAP	05_33	9.81	10	3.87	14.729	5.69	17	SAP
06_35	8.5	9	1.3	20.702	6.94	15	SAP	05_33	10	10.43	4.32	11.876	6.2	19	SAP
06_35	9	10	2.1	19.849	10.41	16	SAP	05_33	10.43	11	3.28	16.24	4.66	17	SAP
06_35	10	11	2.05	20.122	7.86	18	SAP	05_33	11	11.23	3.17	17.807	5.61	18	SAP
06_35	11	12	0.88	37.124	0.27	11	SAP	05_33	11.23	12	3.17	14.513	6.51	18	SAP
06_35	12	13	0.92	34.362	0.45	9	SAP	05_33	12	12.45	2.62	17.17	5.44	16	SAP
06_35	13	14	1.44	31.522	0.72	10	SAP	05_33	12.45	13	2.01	24.136	2.47	16	SAP
06_35	14	15	1.32	28.647	0.62	12	SAP	05_33	13	14	1.65	23.367	3.27	16	SAP
06_35	15	16	1.34	33.963	0.6	9	SAP	05_33	14	14.43	1.03	22.43	2.47	20	SAP
06_35	16	17	1.67	27.752	1.34	13	SAP	05_33	14.43	15	1.47	19.373	3.65	19	SAP
06_35	17	18	2.57	13.904	9.83	20	SAP	05_33	15	16	1.33	34.984	0.75	9	SAP
06_35	18	18.59	2.67	15.492	7.96	19	SAP	05_33	16	17	1.66	27.57	1.82	13	SAP
06_35	18.59	19	2.02	12.121	7.28	20	SAP	05_33	17	17.7	1.22	31.557	1.22	11	SAP
06_35	19	20	2.32	14.785	6.52	17	SAP	05_33	17.7	18	1.37	27.717	2.05	13	SAP
06_35	20	21	2.3	16.716	5.47	18	SAP	05_33	18	19	1.32	28.116	2.03	12	SAP
06_35	21	22	2.24	17.52	5.78	18	SAP	05_33	19	20	2.09	20.87	3.7	16	SAP
06_35	22	23	1.89	16.59	5.96	18	SAP	05_33	20	21	2.32	18.485	5.2	17	SAP
06_35	23	24	2.07	19.856	4.34	16	SAP	05_33	21	22	1.86	16.918	5.47	17	SAP
06_35	24	25	2.1	21.311	3.04	16	SAP	05_33	22	23	1.63	17.723	5.99	18	SAP
06_35	25	26	1.49	24.92	2.76	14	SAP	05_33	23	23.6	1.67	18.849	5.58	17	SAP
06_35	26	27	1.75	24.038	2.23	14	SAP	05_33	23.6	24	1.53	11.533	10.19	19	SAP
06_35	27	28	2.01	25.626	2.21	14	SAP	05_33	24	25	1.05	10.708	10.42	18	SAP
06_35	28	29	1.83	25.255	2.3	15	SAP	05_33	25	26	1.1	11.575	10.64	19	SAP
06_35	29	30	2.34	18.933	4.59	18	SAP	05_33	26	26.5	1.26	11.946	9.9	19	SAP
06_35	30	31	1.81	16.443	5.78	18	SAP	04_34	0	1	0.72	32.557	0.38	9	SAP
06_35	31	32	0.64	10.862	1.24	30	SAP	04_34	1	1.48	0.73	32.984	0.45	9	SAP
06_35	32	33	0.17	3.63	0.47	43	SAP	04_34	1.48	2	0.49	20.646	0.49	17	SAP
06_35	33	34	0.09	9.491	2.96	20	SAP	04_34	2	3	0.8	40.041	0.17	6	SAP
06_35	34	35	0.06	9.169	2.56	18	SAP	04_34	3	4	0.7	33.697	0.17	8	SAP
05_33	0	1	0.81	40.957	0.25	6	SAP	04_34	4	5	0.69	33.578	0.29	9	SAP
05_33	1	2	0.65	45.37	0.18	4	SAP	04_34	5	6	0.71	34.341	0.25	10	LIM
05_33	2	3	0.65	45.244	0.16	4	SAP	04_34	6	7	0.93	37.761	0.26	8	LIM
05_33	3	4	0.64	39.124	0.21	6	SAP	04_34	7	8	0.82	27.395	0.17	13	LIM
05_33	4	5	0.68	38.264	0.36	7	SAP	04_34	8	9	1	33.767	0.28	12	LIM
05_33	5	6	0.64	33.208	0.68	10	SAP	04_34	9	10	0.87	39.348	0.21	7	SAP
05_33	6	7	0.65	32.333	0.39	10	SAP	04_34	10	10.42	0.49	22.717	0.23	24	SAP
05_33	7	8	1.14	28.053	0.63	12	SAP	04_34	10.42	11	0.47	22.898	0.5	20	SAP
05_33	8	8.39	1	22.206	0.92	20	SAP	04_34	11	12	0.79	30.809	0.62	11	SAP
05_33	8.39	9	2.21	26.808	1.1	14	SAP	04_34	12	13	0.92	33.739	0.45	8	SAP



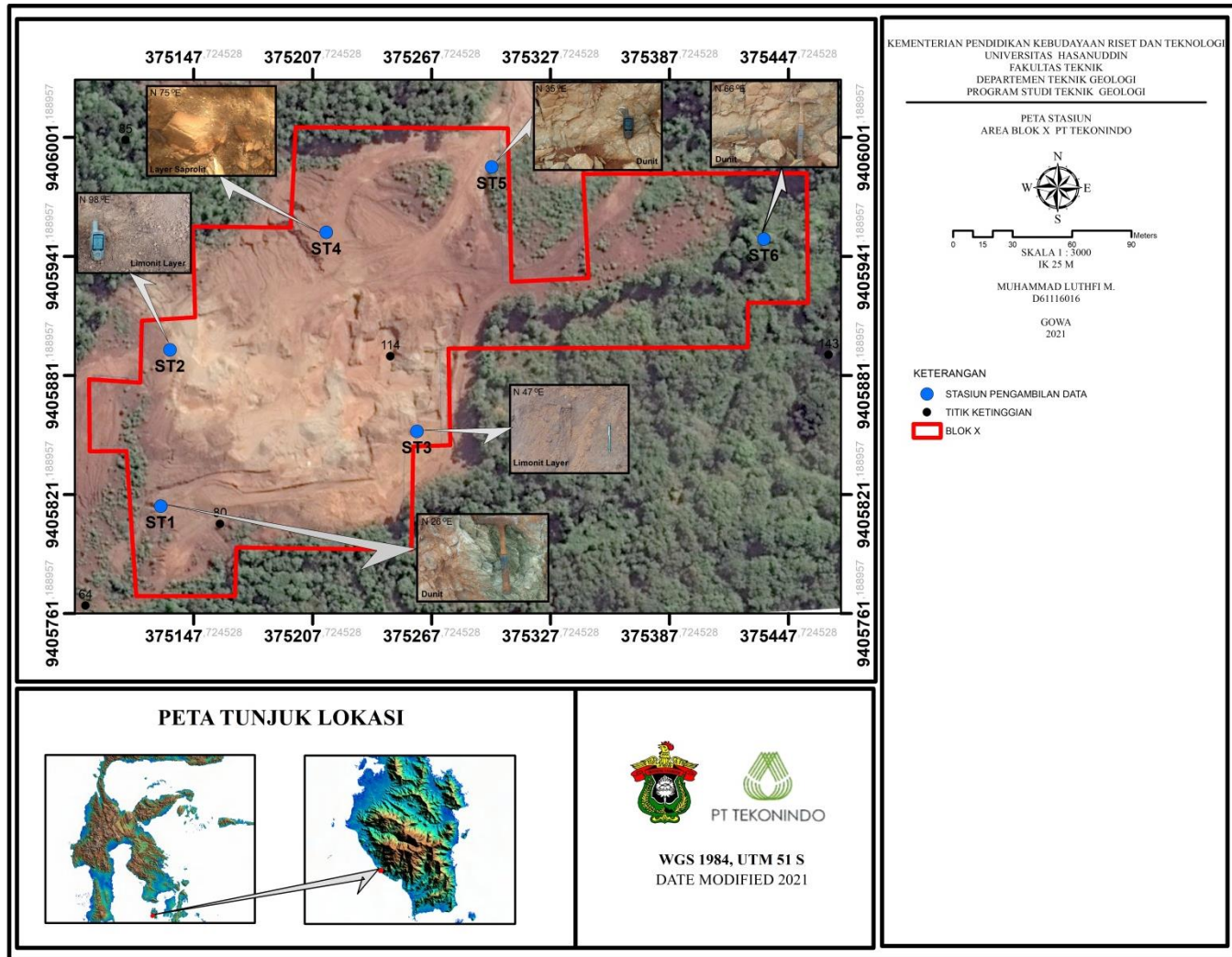
HID	FR	TO	Ni	Fe	MgO	SiO <sub>2</sub>	LYR	HID	FR	TO	Ni	Fe	MgO	SiO <sub>2</sub>	LYR
04_34	13	14	1.18	31.9	1.3	10	SAP	05_29	1.58	2	1.14	16.87	4.39	18	SAP
04_34	14	15	0.12	9.966	2.15	20	SAP	05_29	2	3	0.82	14.002	4.83	19	SAP
04_34	15	16	0.09	10.162	2.68	20	SAP	05_29	3	4	0.49	11.785	6.48	22	SAP
04_34	16	17	0.09	16.576	2.19	17	SAP	05_29	4	5	0.36	8.12	9.76	25	SAP
05_32	0	1	1.13	34.236	0.86	9	SAP	05_29	5	6	0.33	7.022	10	21	SAP
05_32	1	1.38	1.28	19.296	2.86	15	SAP	05_29	6	7	0.31	8.001	10.78	22	SAP
05_32	1.38	2	2.02	16.681	4.52	17	SAP	05_29	7	8	0.3	9.19	10.48	21	SAP
05_32	2	2.58	2.21	21.73	3.36	17	SAP	04_29	0	1	0.82	22.255	2.67	18	SAP
05_32	2.58	3	2.02	24.052	2.43	15	SAP	04_29	1	1.29	0.75	19.891	2.59	17	SAP
05_32	3	4	1.89	20.506	3.57	18	SAP	04_29	1.29	2	0.45	11.974	2.67	24	SAP
05_32	4	5	1.82	22.724	3.13	16	SAP	04_29	2	2.61	0.57	13.254	6.23	21	SAP
05_32	5	5.57	1.35	16.254	4.9	19	SAP	04_29	2.61	3	0.32	9.938	6.26	25	SAP
05_32	5.57	6	1.7	11.33	9.85	20	LIM	04_29	3	3.22	0.31	9.701	5.23	26	SAP
05_32	6	7	1.28	11.61	10.69	19	LIM	04_29	3.22	4	0.36	11.505	5.04	24	SAP
05_32	7	7.8	0.86	13.883	6.31	18	LIM	04_29	4	5	0.29	8.938	5.91	22	LIM
05_32	7.8	8	0.25	7.875	15.73	18	LIM	04_29	5	6	0.38	12.687	4.94	22	LIM
05_32	8	8.63	1.36	19.003	5.35	18	SAP	04_29	6	7	0.38	12.687	4.94	22	SAP
05_32	8.63	9	1.32	15.156	6.99	19	SAP	04_33	0	1	0.67	41.698	0.34	6	SAP
05_32	9	9.55	1.31	11.871	7	20	SAP	04_33	1	2	0.73	41.453	0.28	6	SAP
05_32	9.55	10	1	14.513	6.18	18	SAP	04_33	2	3	0.84	38.789	0.48	7	SAP
05_32	10	11	1.82	21.12	6	21	SAP	04_33	3	3.3	0.63	42.286	0.36	7	SAP
05_32	11	11.77	1.24	11.988	10.91	21	SAP	04_33	3.3	3.71	0.6	48.909	0.43	4	SAP
05_32	11.77	12	1.04	24.885	2.33	16	SAP	04_33	3.71	4	0.74	52.084	0.33	3	SAP
05_32	12	13	1.01	35.935	1.59	9	SAP	04_33	4	5	0.72	38.131	0.24	8	SAP
05_32	13	14	0.74	37.362	0.84	9	SAP	04_33	5	5.48	0.82	44.307	0.2	4	SAP
05_32	14	14.43	0.9	34.935	1.07	11	SAP	04_33	5.48	6	0.69	36.544	0.48	7	SAP
05_32	14.43	15	1.24	24.619	1.72	15	SAP	04_33	6	7	0.31	8.617	8.81	22	SAP
05_32	15	16	1.58	16.331	6.22	19	SAP	04_33	7	8	0.68	33.578	0.33	11	SAP
05_32	16	17	1.44	24.794	2.17	15	SAP	04_33	8	9	0.66	34.578	0.44	8	SAP
05_32	17	18	1.08	25.521	2.25	15	SAP	04_33	9	10	0.73	36.83	0.55	8	SAP
05_32	18	19	1.04	28.123	1.46	13	SAP	04_33	10	11	1.17	33.075	0.62	9	SAP
05_32	19	20	1.2	22.423	2.53	17	SAP	04_33	11	12	1.28	32.977	0.76	9	SAP
05_32	20	20.64	1.11	17.877	4.4	18	SAP	04_33	12	13	1.25	29.312	1.31	12	SAP
05_32	20.64	21	0.82	11.813	5.75	23	SAP	04_33	13	14	2	27.745	1.26	14	SAP
05_32	21	22	0.83	11.323	10.06	22	SAP	04_33	14	14.24	2.04	26.018	1.51	15	SAP
05_32	22	22.5	0.42	7.351	12.83	24	SAP	04_33	14.24	14.78	1.86	32.172	1.97	14	SAP
05_32	22.5	23	0.35	11.288	9.9	21	SAP	04_33	14.78	15	2.19	27.039	1.7	14	SAP
05_32	23	24	0.99	11.778	8.69	20	SAP	04_33	15	16	1.9	27.605	1.45	14	SAP
05_29	0	1	1.02	19.884	1.97	19	SAP	04_33	16	16.38	1.5	25.339	2.75	15	SAP
05_29	1	1.58	1.34	18.086	3.27	18	SAP	04_33	16.38	17	1.17	30.718	1.35	10	SAP

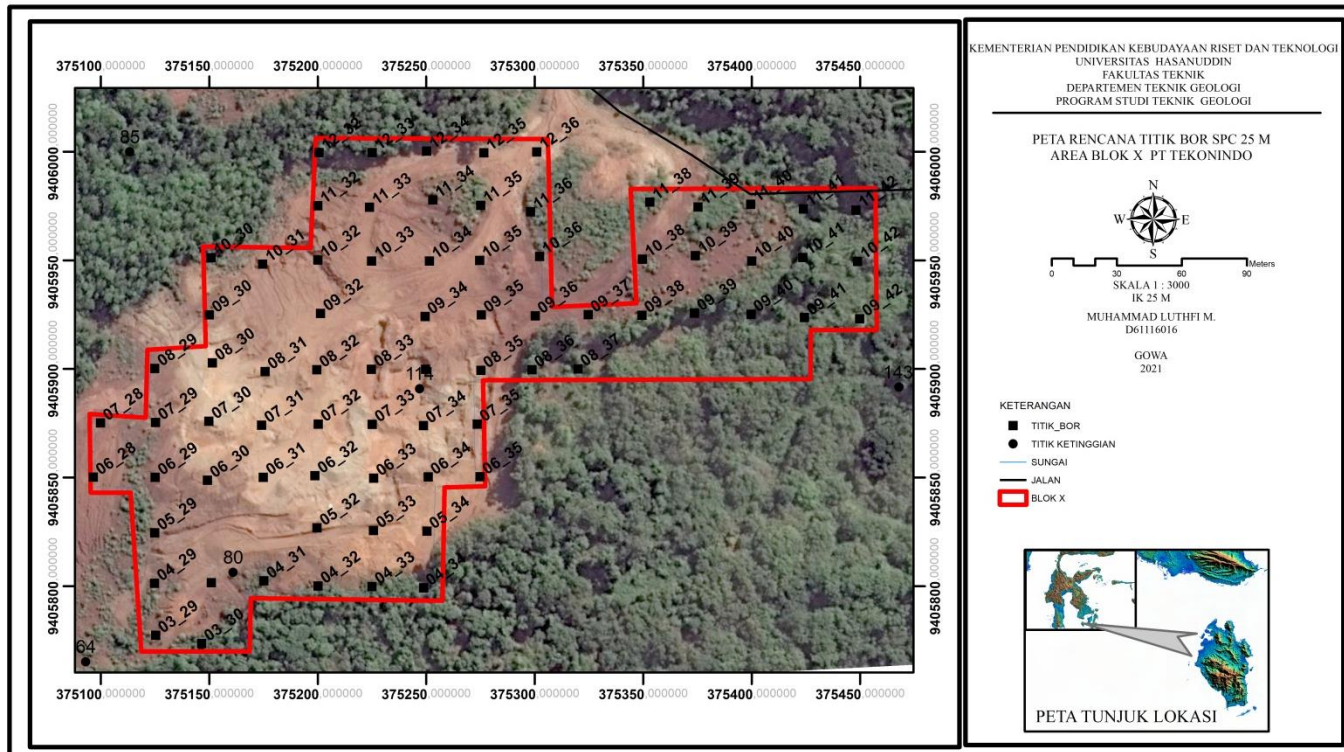
HID	FR	TO	Ni	Fe	MgO	SiO <sub>2</sub>	LYR	HID	FR	TO	Ni	Fe	MgO	SiO <sub>2</sub>	LYR
04_33	17	18	1.36	27.822	1.66	14	SAP	03_29	2	2.51	2.35	19.828	2.09	18	SAP
04_33	18	19	1.36	22.066	3.24	16	SAP	03_29	2.51	3	1.89	15.45	4.46	19	SAP
04_33	19	20	1.5	25.528	2.1	16	SAP	03_29	3	3.4	2.6	15.89	4.28	19	SAP
04_33	20	21	1.49	18.835	3.73	18	SAP	03_29	3.4	4	1.76	20.066	4.17	17	SAP
04_33	21	21.45	0.13	3.028	0.42	44	SAP	03_29	4	5	1.9	25.822	1.5	13	SAP
04_33	21.45	21.65	0.63	16.38	2.13	23	SAP	03_29	5	5.57	1.77	29.99	1.23	11	SAP
04_33	21.65	22	0.14	12.33	2.51	20	SAP	03_29	5.57	6	1.71	23.535	2.91	14	SAP
04_33	22	23	0.28	6.351	1.38	34	SAP	03_29	6	7	1.63	31.739	1.3	11	SAP
04_33	23	23.5	0.11	10.456	3.44	20	SAP	03_29	7	8	1.38	28.459	1.61	12	SAP
04_33	23.5	24	0.07	9.008	2.67	21	SAP	03_29	8	8.3	1.19	19.045	1.71	18	SAP
04_33	24	25	0.07	10.309	3.08	20	SAP	03_29	8.3	9	1.67	24.934	2.51	14	SAP
04_32	0	1	0.6	29.074	0.55	15	SAP	03_29	9	9.4	1.14	18.849	2.98	18	SAP
04_32	1	2	0.72	33.732	0.36	10	SAP	03_29	9.4	10	1.65	21.744	2.64	17	SAP
04_32	2	3	0.81	39.068	0.33	7	SAP	03_29	10	11	2.02	26.794	2.07	14	SAP
04_32	3	3.65	0.89	38.635	0.41	7	SAP	03_29	11	12	1.95	20.436	3.38	16	SAP
04_32	3.65	4	1.23	35.767	0.58	8	SAP	03_29	12	13	1.99	19.989	4.44	17	SAP
04_32	4	4.38	2.05	28.815	0.46	10	SAP	03_29	13	13.69	1.25	20.989	4.48	16	SAP
04_32	4.38	5	1.55	28.235	1.08	13	SAP	03_29	13.69	14	1.41	17.632	2.92	19	SAP
04_32	5	5.22	1.33	38.355	0.65	9	SAP	03_29	14	15	1.67	19.003	4.48	18	SAP
04_32	5.22	6	1.31	32.669	1.06	11	SAP	03_29	15	15.42	1.21	13.925	6.07	19	SAP
04_32	6	7	1.42	26.297	1.52	13	SAP	03_29	15.42	15.67	0.63	12.477	6.57	22	SAP
04_32	7	8	1.98	20.793	2.42	14	SAP	03_29	15.67	16	1.39	17.324	5.64	18	SAP
04_32	8	8.78	1.87	23.78	1.82	14	SAP	03_29	16	16.65	0.76	11.092	9.67	19	SAP
04_32	8.78	9	2.22	20.206	3.51	17	SAP	03_29	16.65	17	0.34	8.519	10.98	18	SAP
04_32	9	10	2.07	23.591	2.86	14	SAP	03_29	17	17.5	0.31	8.666	16.14	10	SAP
04_32	10	10.57	1.93	18.247	5.72	18	SAP	03_29	17.5	18	1.14	17.478	5.58	18	SAP
04_32	10.57	11	1.83	21.702	3.21	17	SAP	03_29	18	19	0.45	11.253	11.96	15	SAP
04_32	11	12	1.59	24.535	2.4	15	SAP	03_29	19	19.5	1.06	19.499	4.92	17	SAP
04_32	12	13	1.59	24.493	2.6	16	SAP	03_29	19.5	20	0.37	10.554	8.29	22	SAP
04_32	13	14	1.42	19.534	5.17	16	SAP	03_29	20	21	0.55	15.925	6.09	18	SAP
04_32	14	14.55	1.58	24.787	3.39	17	SAP	03_29	21	22	0.29	8.624	12.04	20	SAP
04_32	14.55	15	1.39	15.233	5.78	21	SAP	03_29	22	23	0.26	8.973	12.12	20	SAP
04_32	15	16	1.34	17.058	6.59	19	SAP	03_30	0	1	0.65	30.053	0.37	12	SAP
04_32	16	17	1.15	11.715	10.1	21	SAP	03_30	1	2	0.78	37.956	0.37	10	SAP
04_32	17	18	1.12	14.589	7.05	17	SAP	03_30	2	3	0.62	36.949	0.24	10	SAP
04_32	18	19	0.91	13.96	7.64	19	SAP	03_30	3	4	0.49	24.64	0.37	20	SAP
03_29	0	0.58	2.3	21.143	2.88	15	SAP	03_30	4	5	0.97	42.349	0.37	5	SAP
03_29	0.58	1	3.21	16.814	4.14	17	SAP	03_30	5	6	0.52	26.116	0.49	22	SAP
03_29	1	1.62	3.38	20.408	3.26	16	SAP	03_30	6	7	0.62	28.011	0.57	15	SAP
03_29	1.62	2	2.29	20.765	3.15	17	SAP	03_30	7	8	0.83	29.571	0.2	12	SAP

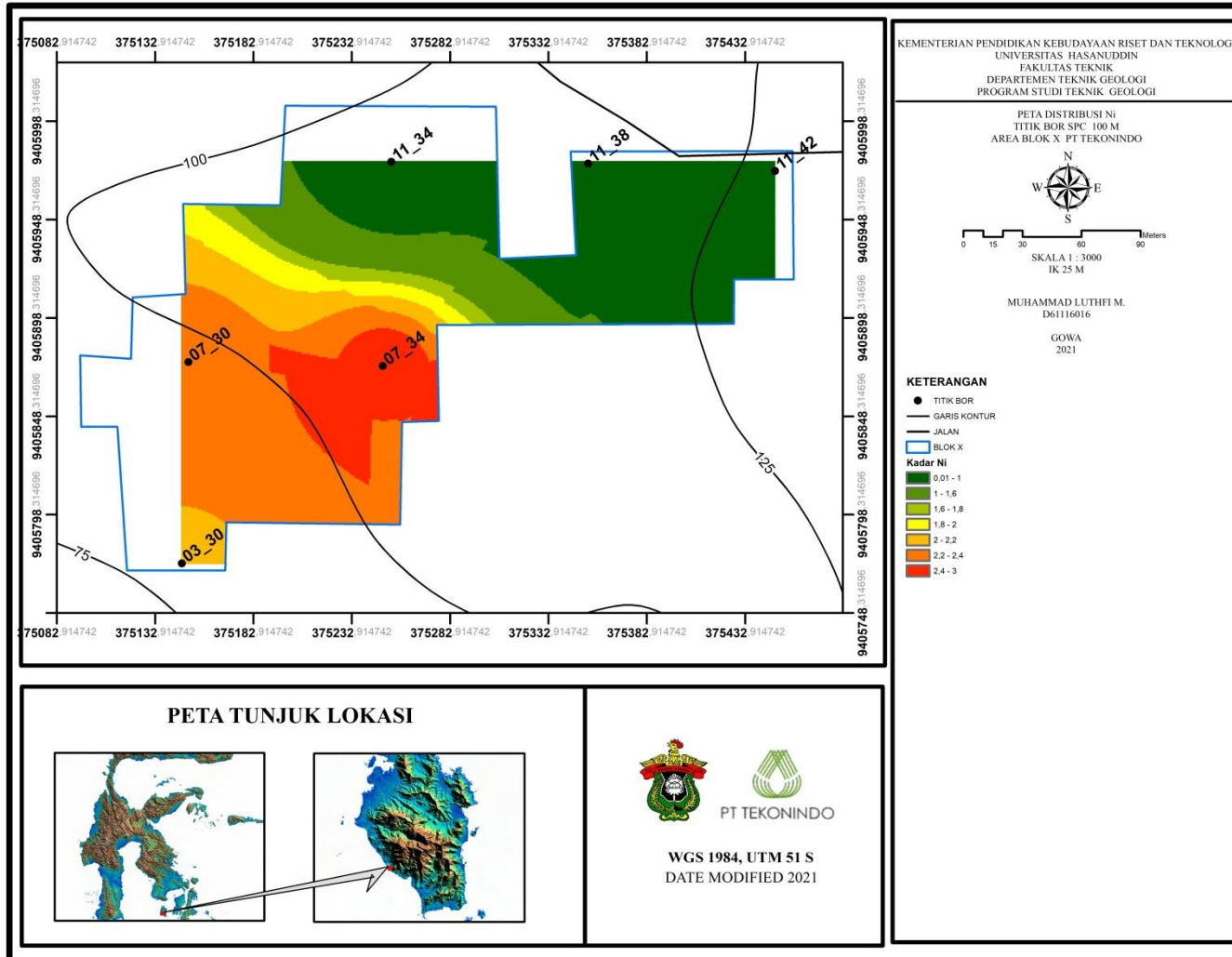
HID	FR	TO	Ni	Fe	MgO	SiO <sub>2</sub>	LYR	
03_30	8	8.69	1.74	27.263	1.95	14	SAP	
03_30	8.69	9	2.18	26.346	2.21	14	SAP	
03_30	9	10	1.78	15.911	5.82	17	SAP	
03_30	10	11	2.14	23.71	2.56	16	SAP	
03_30	11	11.39	1.2	18.282	2.15	21	SAP	
03_30	11.39	12	1.18	14.589	3.63	22	SAP	
03_30	12	13	1.34	11.016	7.28	21	SAP	
03_30	13	14	1.03	11.218	4.28	25	SAP	
03_30	14	14.45	1.47	19.157	4.21	16	SAP	
03_30	14.45	15	1.12	20.709	2.27	18	SAP	
03_30	15	15.25	1.42	14.359	2.94	20	SAP	
03_30	15.25	16	2.04	24.311	2.68	15	SAP	
03_30	16	17	1.47	23.829	1.05	14	SAP	
03_30	17	17.61	1.85	16.821	5.66	19	SAP	
03_30	17.61	18	2.34	11.358	8.01	21	SAP	
03_30	18	18.24	2.31	16.604	9.83	19	SAP	
03_30	18.24	19	1.53	12.421	11.34	19	SAP	
03_30	19	19.72	0.89	12.89	7.19	20	SAP	
03_30	19.72	20	0.91	19.296	5.48	16	SAP	
03_30	20	21	0.74	16.17	6.42	19	SAP	
03_30	21	22	0.6	15.785	6.55	18	SAP	
03_30	22	22.4	0.52	9.945	10.34	22	LIM	
03_30	22.4	23	0.3	7.987	13.16	21	SAP	
03_30	23	24	0.34	9.687	12.2	22	SAP	
03_30	24	25	0.34	9.036	11.87	22	SAP	
04_30	0	1	0.54	23.871	0.43	16	SAP	
04_30	1	2	0.87	34.627	0.49	10	SAP	
04_30	2	2.4	0.79	32.655	0.37	8	SAP	
04_30	2.4	3	0.82	28.836	0.69	11	SAP	
04_30	3	4	0.88	24.542	0.51	13	SAP	
04_30	4	5	0.92	34.068	0.45	10	SAP	
04_30	5	6	0.66	24.15	0.4	16	SAP	
04_30	6	7	0.82	26.878	0.72	14	SAP	
04_30	7	8	0.88	21.241	0.33	18	SAP	
04_30	8	9	1.11	31.368	0.4	10	SAP	
04_30	9	10	1.03	23.892	0.48	15	SAP	
HID	FR	TO	Ni	Fe	MgO	SiO <sub>2</sub>	LYR	
04_30	10	11	0.98	22.059	2.5	14	SAP	
04_30	11	12	1.43	12.414	3.12	21	SAP	
04_30	12	13	2.31	17.142	3.43	17	LIM	
04_30	13	13.37	2.12	16.009	4.17	19	LIM	
04_30	13.37	14	2.1	23.255	2.94	14	LIM	
04_30	14	14.57	1.83	13.631	6.81	20	SAP	
04_30	14.57	15	0.13	3.098	0.27	43	SAP	
04_30	15	16	1	18.373	3.84	19	SAP	
04_30	16	16.65	0.64	12.337	6.63	20	SAP	
04_30	16.65	17	0.46	9.526	6.46	24	SAP	
04_30	17	18	0.59	11.631	8.12	21	SAP	
04_30	18	19	0.54	11.694	7.44	22	SAP	
04_30	19	20	0.6	9.022	9.5	22	SAP	
04_30	20	21	0.43	7.581	10.09	20	SAP	
04_31	0	1	0.88	34.872	0.45	9	SAP	
04_31	1	2	0.73	31.13	0.33	11	SAP	
04_31	2	3	0.74	29.878	0.21	11	SAP	
04_31	3	3.66	0.5	22.835	0.23	21	SAP	
04_31	3.66	4	0.81	39.208	0.26	6	SAP	
04_31	4	5	0.86	42.517	0.39	7	SAP	
04_31	5	6	0.55	30.997	0.39	10	SAP	
04_31	6	7	0.58	29.536	0.28	12	SAP	
04_31	7	7.52	0.75	36.362	0.57	10	SAP	
04_31	7.52	8	1.33	44.622	0.58	6	SAP	
04_31	8	8.46	1.66	26.689	1.51	14	SAP	
04_31	8.46	9	2.39	15.184	6.54	17	SAP	
04_31	9	10	2.41	20.388	4.76	16	SAP	
04_31	10	11	0.74	12.198	7.56	19	SAP	
04_31	11	11.48	0.93	15.862	7.39	19	SAP	
04_31	11.48	12	0.71	13.505	7.4	19	SAP	
04_31	12	13	0.56	11.995	7.91	20	SAP	
04_31	13	14	0.24	7.588	14.48	16	SAP	
04_31	14	15	0.37	9.792	9.88	18	SAP	
			<b>avg</b>	<b>1.34</b>	<b>16.02</b>	<b>4.36</b>	<b>20.48</b>	-

**Tabel Data Hasil Estimasi Sumber Daya Terukur Ni Daerah Penelitian**

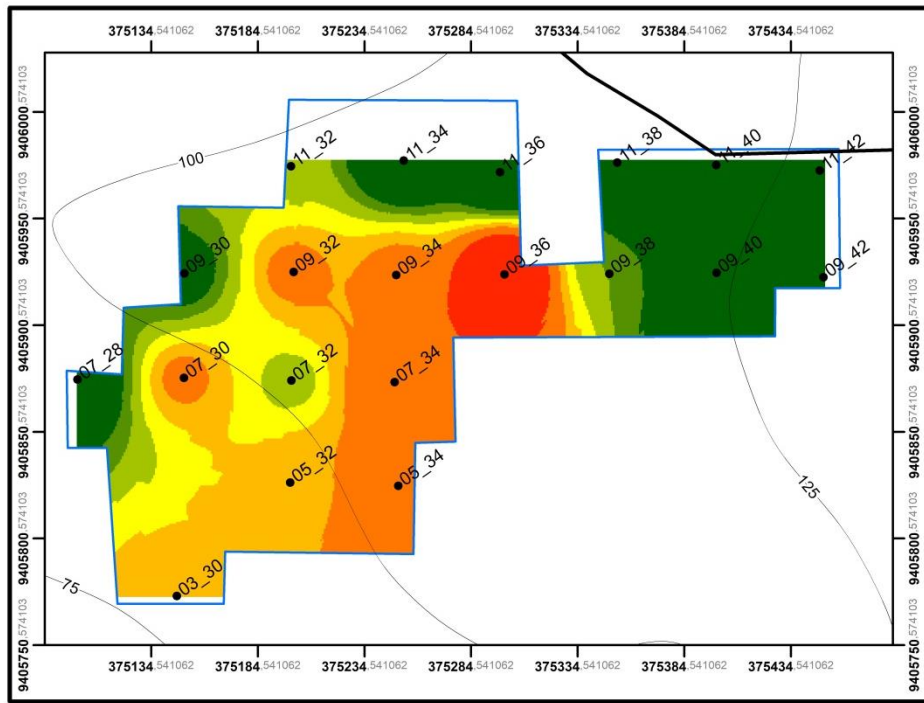
<b>Profil</b>	<b>Ore/Waste</b>	<b>Ni (%)</b>	<b>Density (kg/m3)</b>	<b>Volume (m3)</b>	<b>Tonase (M/T)</b>	<b>Avg Ni (%)</b>
<b>Limonit</b>	<i>Waste</i>	0-0.4	1.4	18593.75	26031.25	0.22
		0.4-0.8	1.4	91093.75	127531.25	0.66
		0.8-1.2	1.4	91250	127750	0.97
		1.2-1.6	1.4	43437.5	60812.5	1.4
	<b>Sub Total</b>			244375	342125	0.87
	<i>Ore</i>	1.6-2	1.4	26562.5	37187.5	1.81
		2-2.4	1.4	11875	16625	2.17
		2.4-2.8	1.4	5937.5	8312.5	2.62
		2.8-3.2	1.4	1093.75	1531.25	3.01
		3.2-3.6	1.4	2187.5	3062.5	3.33
	<b>Sub Total</b>			47656.25	66718.75	2.1
<b>Total</b>				292031.25	408843.75	1.07
<b>Saprolit</b>	<i>Waste</i>	0-0.4	1.6	185312.5	189204.062	0.25
		0.4-0.8	1.6	157500	160807.5	0.58
		0.8-1.2	1.6	156562.5	159850.312	1
		1.2-1.6	1.6	104218.75	106407.344	1.38
	<b>Sub Total</b>			603593.75	616269.219	0.72
	<i>Ore</i>	1.6-2	1.6	60625	61898.125	1.78
		2-2.4	1.6	41718.75	42594.844	2.16
		2.4-2.8	1.6	10625	10848.125	2.56
		2.8-3.2	1.6	4375	4466.875	2.97
		3.2-3.6	1.6	312.5	319.062	3.21
	<b>Sub Total</b>			117656.25	120127.031	2.03
<b>Total</b>				721250	736396.25	0.94
<b>Grand Total</b>				<b>1013281.25</b>	<b>1145240</b>	<b>0.99</b>





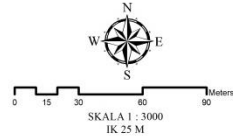






KEMENTERIAN PENDIDIKAN, KEBUDAYAAN, RISET DAN TEKNOLOGI  
 UNIVERSITAS HASANUDDIN  
 FAKULTAS TEKNIK  
 DEPARTEMEN TEKNIK GEOLOGI  
 PROGRAM STUDI TEKNIK GEOLOGI

PETA DISTRIBUSI NI  
 TITIK BOR SPC 50 M  
 AREA BLOK X PT TEKONINDO

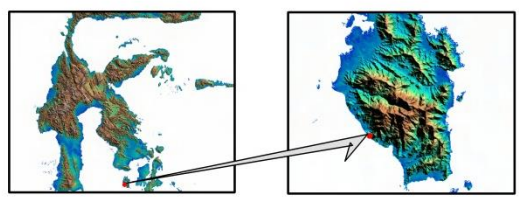


MUHAMMAD LUTHFI M.  
 D61116016  
 GOWA  
 2021

**KETERANGAN**

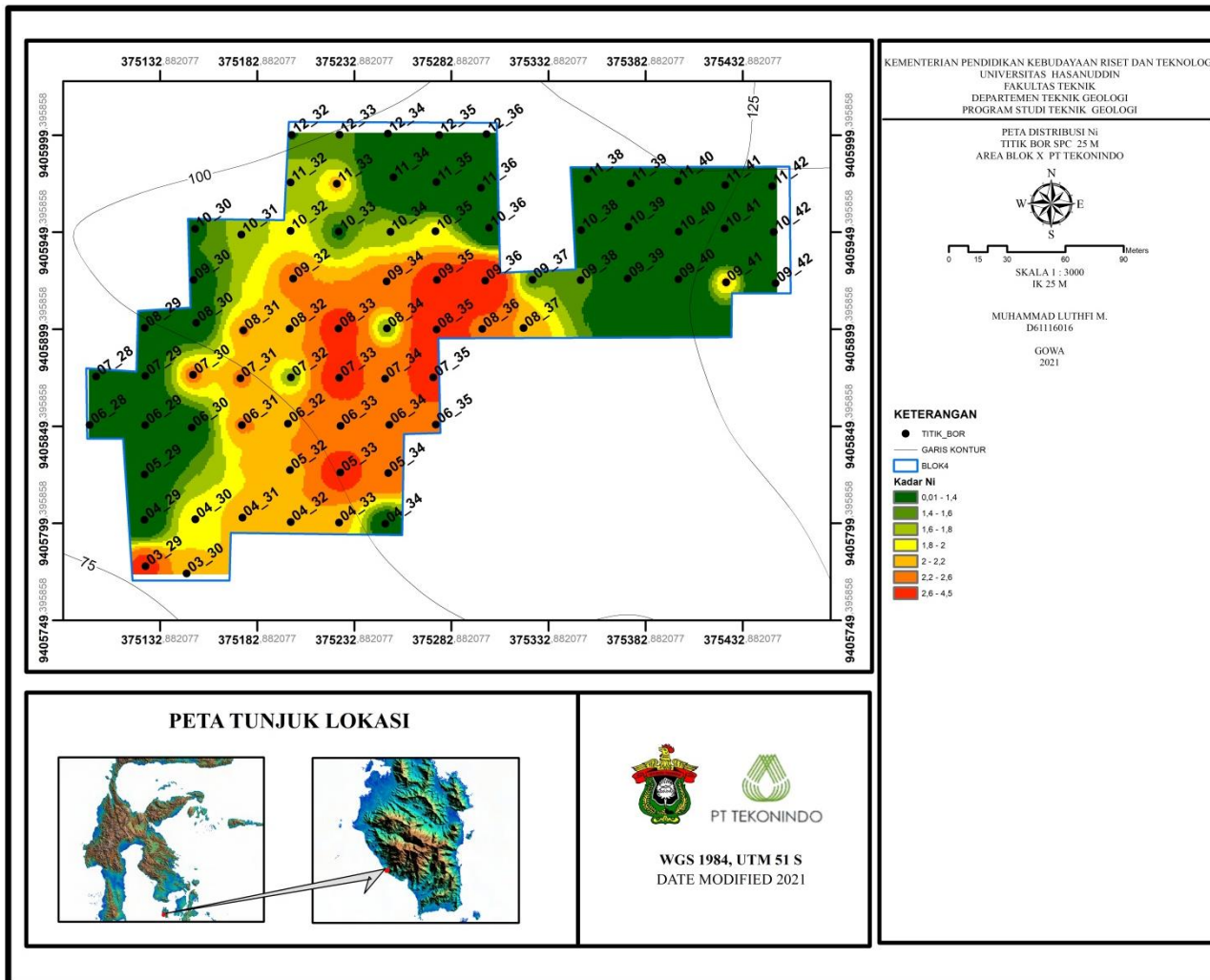
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  - GARIS KONTUR
  - BLOK X
  - JALAN
- Kadar Ni**
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  - 1.4 - 1.6
  - 1.6 - 1.8
  - 1.8 - 2
  - 2 - 2.2
  - 2.2 - 2.6
  - 2.6 - 4.2

**PETA TUNJUK LOKASI**



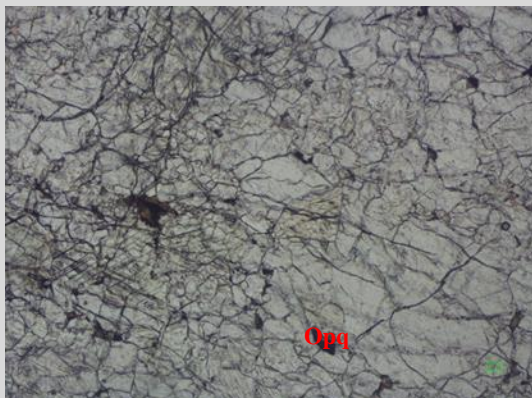
WGS 1984, UTM 51 S  
 DATE MODIFIED 2021



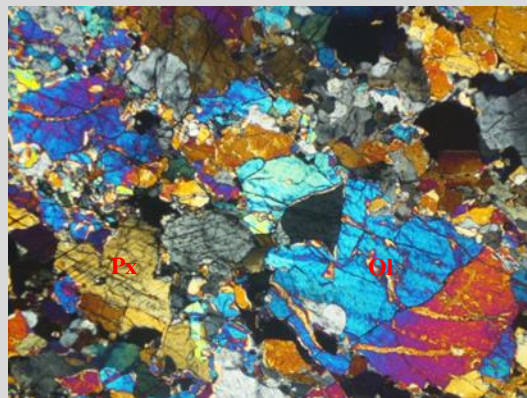


**No. Sayatan** : ST 01 **Satuan** : Dunit  
**Lokasi** : Blok X, PT Tekonindo, Pongkalaero **Nama Batuan** : *Dunite*

**Foto**



// - Nikol



X - Nikol

Lensa Okuler : 10x

Lensa Objektif : 5x

Perbesaran Total : 50x

**Tipe Batuan** : **Batuan Beku**

**Tipe Stuktur** : **Masif**

**Mikroskopis** :

Warna absorpsi putih, dan abu-abu, warna interferensi merah muda, biru, kuning, ungu, dan abu-abu, tekstur kristanilitas holokristalin, granularitas faneritik, relasi equigranular, bentuk subhedral-anhedral, terdiri dari mineral berupa olivin, piroksen, biotit, dan mineral opak, dengan ukuran mineral <0,02- 1 mm.

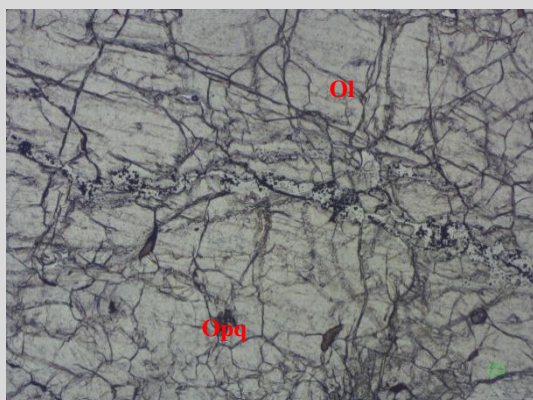
**Deskripsi Mineral**

Komposisi Mineral	Jumlah (%)	Keterangan Optik Mineral
<b>Olivin (Ol)</b>	<b>90</b>	Warna absorpsi abu-abu, relief tinggi, intensitas tinggi, tidak memiliki belahan, pecahan rata, bentuk subhedral-anhedral, warna interferensi merah muda, biru, kuning, ungu dan abu-abu, sudut gelapan 22°, ukuran mineral 0,1 – 1 mm.
<b>Augit (Px)</b>	<b>8</b>	Warna absorpsi <i>colourless</i> – keabu-abuan, relief tinggi, membentuk mineral subhedral-anhedral, intensitas tinggi, belahan 2 arah, warna interferensi kuning muda, tidak memiliki kembaran, sudut gelapan 42°, jenis gelapan miring, ukuran 0,05 – 0,4 mm.
<b>Mineral Opak (Opq)</b>	<b>2</b>	Warna absorpsi hitam, warna interferensi hitam, ukuran mineral <0,02 mm.

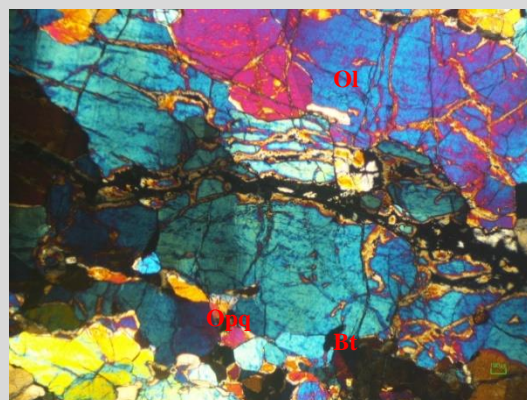
**Nama Batuan** : *Dunite* (Streckeisen,1976)

<b>No. Sayatan</b>	<b>: ST 06</b>	<b>Satuan</b>	<b>: Dunit</b>
<b>Lokasi</b>	<b>: Blok X, PT Tekonindo, Pongkalaero</b>	<b>Nama Batuan</b>	<b>: <i>Dunite</i></b>

**Foto**



// - *Nikol*



X - *Nikol*

Lensa Okuler : 10x

Lensa Objektif : 5x

Perbesaran Total : 50x

**Tipe Batuan** : **Batuan Beku**

**Tipe Stuktur** : **Masif**

**Mikroskopis** :

Warna absorpsi putih, dan abu-abu, warna interferensi merah muda, biru, kuning, ungu, dan abu-abu, tekstur kristanilitas holokristalin, granularitas faneritik, relasi equigranular, bentuk subhedral-anhedral, terdiri dari mineral berupa olivin, biotit, dan mineral opak, dengan ukuran mineral <0,02-0,9 mm.

**Deskripsi Mineral**

<b>Komposisi Mineral</b>	<b>Jumlah (%)</b>	<b>Keterangan Optik Mineral</b>
<b>Olivin (Ol)</b>	<b>95</b>	Warna absorpsi <i>colourless</i> , relief tinggi, intensitas tinggi, tidak memiliki belahan, pecahan rata, benduk subhedral-anhedral, warna interferensi merah muda, ungu, biru, kuning, dan abu-abu, sudut gelap 23°, ukuran mineral 0,3 – 0,9 mm.
<b>Biotit (Bt)</b>	<b>2</b>	Warna absorpsi coklat muda, pleokrisme dwikroik, intensitas sedang, bentuk subhedral, belahan 1 arah, relief sedang, ukuran mineral 0,1 mm, warna interferensi coklat tua, bias rangkap orde I, jenis gelap simetris sudut gelap 42°.
<b>Mineral Opak (Opq)</b>	<b>3</b>	Warna absorpsi hitam, warna interferensi hitam, ukuran mineral <0,02 mm

**Nama Batuan** : ***Dunite* (Streckeisen, 1976)**