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LAMPIRAN

Lampiran 1. Hasil analisis tahanan kapal

- Nilai tahanan kapal bentuk awal

Speed (Knot)	Froude No. (Fn)	Koefisien Tahanan Gesek (CF)	Koefisien Tahanan Sisa (CR)	Koefisien Tahanan Total (CT)	Tahanan Gesek (kN)	Tahanan Sisa (kN)	Tahanan Total (kN)
10	0,427	2.225	7.816	10.041	2.2	7.7	9.9
10.1	0,432	2.222	8.082	10.304	2.2	8.2	10.4
10.2	0,436	2.218	8.337	10.555	2.3	8.6	10.9
10.3	0,440	2.215	8.581	10.796	2.3	9.0	11.3
10.4	0,445	2.212	8.814	11.026	2.4	9.4	11.8
10.5	0,449	2.209	9.036	11.245	2.4	9.9	12.3
10.6	0,453	2.206	9.250	11.456	2.5	10.3	12.7
10.7	0,457	2.203	9.454	11.657	2.5	10.7	13.2
10.8	0,462	2.200	9.649	11.849	2.5	11.1	13.7
10.9	0,466	2.197	9.836	12.033	2.6	11.6	14.2
11	0,470	2.194	10.015	12.208	2.6	12.0	14.6
11.1	0,474	2.191	10.186	12.377	2.7	12.4	15.1
11.2	0,479	2.188	10.350	12.537	2.7	12.9	15.6
11.3	0,483	2.185	10.506	12.691	2.8	13.3	16.0
11.4	0,487	2.182	10.656	12.838	2.8	13.7	16.5
11.5	0,492	2.179	10.799	12.979	2.9	14.1	17.0
11.6	0,496	2.176	10.936	13.113	2.9	14.6	17.5
11.7	0,500	2.174	11.067	13.241	2.9	15.0	17.9
11.8	0,504	2.171	11.193	13.364	3.0	15.4	18.4
11.9	0,509	2.168	11.313	13.481	3.0	15.9	18.9
12	0,513	2.166	11.427	13.593	3.1	16.3	19.4
12.1	0,517	2.163	11.537	13.700	3.1	16.7	19.9
12.2	0,521	2.160	11.641	13.802	3.2	17.2	20.3
12.3	0,526	2.158	11.741	13.899	3.2	17.6	20.8
12.4	0,530	2.155	11.837	13.992	3.3	18.0	21.3
12.5	0,534	2.153	11.928	14.080	3.3	18.5	21.8
12.6	0,539	2.150	12.015	14.165	3.4	18.9	22.3
12.7	0,543	2.148	12.098	14.245	3.4	19.3	22.7
12.8	0,547	2.145	12.177	14.322	3.5	19.8	23.2
12.9	0,551	2.143	12.269	14.412	3.5	20.2	23.7
13	0,556	2.140	12.385	14.525	3.6	20.7	24.3
13.1	0,560	2.138	12.486	14.623	3.6	21.2	24.8
13.2	0,564	2.135	12.571	14.706	3.7	21.7	25.4
13.3	0,569	2.133	12.641	14.774	3.7	22.1	25.9
13.4	0,573	2.131	12.697	14.828	3.8	22.6	26.4
13.5	0,577	2.128	12.739	14.868	3.8	23.0	26.8
13.6	0,581	2.126	12.768	14.894	3.9	23.4	27.3
13.7	0,586	2.124	12.784	14.908	3.9	23.8	27.7
13.8	0,590	2.122	12.788	14.910	4.0	24.1	28.1
13.9	0,594	2.119	12.781	14.901	4.1	24.5	28.5
14	0,598	2.117	12.763	14.881	4.1	24.8	28.9

- Nilai tahanan kapal variasi 1

Speed (Knot)	Froude No. (Fn)	Koefisien Tahanan Gesek (CF)	Koefisien Tahanan Sisa (CR)	Koefisien Tahanan Total (CT)	Tahanan Gesek (kN)	Tahanan Sisa (kN)	Tahanan Total (kN)
10	0,427	2.225	9.739	11.964	2.2	9.6	11.8
10.1	0,432	2.222	10.088	12.310	2.2	10.2	12.4
10.2	0,436	2.218	10.422	12.640	2.3	10.7	13.0
10.3	0,440	2.215	10.741	12.956	2.3	11.3	13.6
10.4	0,445	2.212	11.046	13.258	2.4	11.8	14.2
10.5	0,449	2.209	11.338	13.547	2.4	12.4	14.8
10.6	0,453	2.206	11.618	13.824	2.5	12.9	15.4
10.7	0,457	2.203	11.885	14.088	2.5	13.5	16.0
10.8	0,462	2.200	12.141	14.340	2.5	14.0	16.6
10.9	0,466	2.197	12.385	14.582	2.6	14.6	17.2
11	0,470	2.194	12.620	14.813	2.6	15.1	17.7
11.1	0,474	2.191	12.843	15.034	2.7	15.7	18.3
11.2	0,479	2.188	13.058	15.245	2.7	16.2	18.9
11.3	0,483	2.185	13.262	15.447	2.8	16.8	19.5
11.4	0,487	2.182	13.458	15.640	2.8	17.3	20.1
11.5	0,492	2.179	13.646	15.825	2.9	17.9	20.7
11.6	0,496	2.176	13.825	16.001	2.9	18.4	21.3
11.7	0,500	2.174	13.996	16.170	2.9	19.0	21.9
11.8	0,504	2.171	14.160	16.331	3.0	19.5	22.5
11.9	0,509	2.168	14.316	16.485	3.0	20.1	23.1
12	0,513	2.166	14.466	16.631	3.1	20.6	23.7
12.1	0,517	2.163	14.609	16.772	3.1	21.2	24.3
12.2	0,521	2.160	14.745	16.905	3.2	21.7	24.9
12.3	0,526	2.158	14.875	17.033	3.2	22.3	25.5
12.4	0,530	2.155	15.000	17.155	3.3	22.8	26.1
12.5	0,534	2.153	15.119	17.271	3.3	23.4	26.7
12.6	0,539	2.150	15.232	17.382	3.4	23.9	27.3
12.7	0,543	2.148	15.340	17.487	3.4	24.5	27.9
12.8	0,547	2.145	15.443	17.588	3.5	25.1	28.5
12.9	0,551	2.143	15.563	17.705	3.5	25.6	29.2
13	0,556	2.140	15.711	17.851	3.6	26.3	29.9
13.1	0,560	2.138	15.839	17.977	3.6	26.9	30.5
13.2	0,564	2.135	15.947	18.083	3.7	27.5	31.2
13.3	0,569	2.133	16.037	18.170	3.7	28.1	31.8
13.4	0,573	2.131	16.107	18.238	3.8	28.6	32.4
13.5	0,577	2.128	16.160	18.288	3.8	29.2	33.0
13.6	0,581	2.126	16.195	18.322	3.9	29.7	33.6
13.7	0,586	2.124	16.215	18.339	3.9	30.1	34.1
13.8	0,590	2.122	16.219	18.341	4.0	30.6	34.6
13.9	0,594	2.119	16.209	18.328	4.1	31.0	35.1
14	0,598	2.117	16.185	18.302	4.1	31.4	35.5

- Nilai tahanan kapal variasi 2

Speed (Knot)	Froude No. (Fn)	Koefisien Tahanan Gesek (CF)	Koefisien Tahanan Sisa (CR)	Koefisien Tahanan Total (CT)	Tahanan Gesek (kN)	Tahanan Sisa (kN)	Tahanan Total (kN)
10	0,427	2.225	8.915	11.140	2.203	8.827	11.0
10.1	0,432	2.222	9.226	11.448	2.2	9.3	11.6
10.2	0,436	2.218	9.523	11.742	2.3	9.8	12.1
10.3	0,440	2.215	9.808	12.023	2.3	10.3	12.6
10.4	0,445	2.212	10.080	12.292	2.4	10.8	13.2
10.5	0,449	2.209	10.340	12.549	2.4	11.3	13.7
10.6	0,453	2.206	10.589	12.795	2.5	11.8	14.2
10.7	0,457	2.203	10.827	13.030	2.5	12.3	14.8
10.8	0,462	2.200	11.055	13.255	2.5	12.8	15.3
10.9	0,466	2.197	11.273	13.470	2.6	13.3	15.8
11	0,470	2.194	11.482	13.675	2.6	13.8	16.4
11.1	0,474	2.191	11.681	13.872	2.7	14.3	16.9
11.2	0,479	2.188	11.872	14.060	2.7	14.7	17.5
11.3	0,483	2.185	12.055	14.240	2.8	15.2	18.0
11.4	0,487	2.182	12.229	14.411	2.8	15.7	18.5
11.5	0,492	2.179	12.396	14.576	2.9	16.2	19.1
11.6	0,496	2.176	12.556	14.732	2.9	16.7	19.6
11.7	0,500	2.174	12.709	14.882	2.9	17.2	20.2
11.8	0,504	2.171	12.855	15.026	3.0	17.7	20.7
11.9	0,509	2.168	12.994	15.163	3.0	18.2	21.3
12	0,513	2.166	13.128	15.293	3.1	18.7	21.8
12.1	0,517	2.163	13.255	15.418	3.1	19.2	22.4
12.2	0,521	2.160	13.377	15.537	3.2	19.7	22.9
12.3	0,526	2.158	13.493	15.651	3.2	20.2	23.4
12.4	0,530	2.155	13.604	15.759	3.3	20.7	24.0
12.5	0,534	2.153	13.710	15.862	3.3	21.2	24.5
12.6	0,539	2.150	13.811	15.961	3.4	21.7	25.1
12.7	0,543	2.148	13.907	16.055	3.4	22.2	25.6
12.8	0,547	2.145	13.999	16.144	3.5	22.7	26.2
12.9	0,551	2.143	14.107	16.250	3.5	23.2	26.8
13	0,556	2.140	14.243	16.383	3.6	23.8	27.4
13.1	0,560	2.138	14.360	16.498	3.6	24.4	28.0
13.2	0,564	2.135	14.459	16.595	3.7	24.9	28.6
13.3	0,569	2.133	14.541	16.674	3.7	25.5	29.2
13.4	0,573	2.131	14.607	16.737	3.8	26.0	29.8
13.5	0,577	2.128	14.656	16.784	3.8	26.4	30.3
13.6	0,581	2.126	14.689	16.815	3.9	26.9	30.8
13.7	0,586	2.124	14.708	16.831	3.9	27.3	31.3
13.8	0,590	2.122	14.712	16.834	4.0	27.7	31.7
13.9	0,594	2.119	14.704	16.823	4.1	28.1	32.2
14	0,598	2.117	14.683	16.800	4.1	28.5	32.6

- Nilai tahanan kapal variasi 3

Speed	Froude No.	Koefisien Tahanan Gesek	Koefisien Tahanan Sisa	Koefisien Tahanan Total	Tahanan Gesek	Tahanan Sisa	Tahanan Total
(Knot)	(Fn)	(CF)	(CR)	(CT)	(kN)	(kN)	(kN)
10	0,427	2.225	6.669	8.894	2.2	6.6	8.8
10.1	0,432	2.222	6.879	9.101	2.2	6.9	9.2
10.2	0,436	2.218	7.080	9.298	2.3	7.3	9.6
10.3	0,440	2.215	7.272	9.487	2.3	7.6	10.0
10.4	0,445	2.212	7.456	9.668	2.4	8.0	10.4
10.5	0,449	2.209	7.632	9.841	2.4	8.3	10.7
10.6	0,453	2.206	7.800	10.006	2.5	8.7	11.1
10.7	0,457	2.203	7.961	10.164	2.5	9.0	11.5
10.8	0,462	2.200	8.115	10.315	2.5	9.4	11.9
10.9	0,466	2.197	8.263	10.459	2.6	9.7	12.3
11	0,470	2.194	8.404	10.597	2.6	10.1	12.7
11.1	0,474	2.191	8.539	10.729	2.7	10.4	13.1
11.2	0,479	2.188	8.668	10.855	2.7	10.8	13.5
11.3	0,483	2.185	8.791	10.976	2.8	11.1	13.9
11.4	0,487	2.182	8.909	11.091	2.8	11.5	14.3
11.5	0,492	2.179	9.022	11.202	2.9	11.8	14.7
11.6	0,496	2.176	9.130	11.307	2.9	12.2	15.1
11.7	0,500	2.174	9.234	11.408	2.9	12.5	15.5
11.8	0,504	2.171	9.333	11.504	3.0	12.9	15.9
11.9	0,509	2.168	9.427	11.596	3.0	13.2	16.3
12	0,513	2.166	9.518	11.683	3.1	13.6	16.7
12.1	0,517	2.163	9.604	11.767	3.1	13.9	17.1
12.2	0,521	2.160	9.686	11.847	3.2	14.3	17.5
12.3	0,526	2.158	9.765	11.923	3.2	14.6	17.9
12.4	0,530	2.155	9.841	11.996	3.3	15.0	18.3
12.5	0,534	2.153	9.912	12.065	3.3	15.3	18.7
12.6	0,539	2.150	9.981	12.131	3.4	15.7	19.1
12.7	0,543	2.148	10.046	12.194	3.4	16.0	19.5
12.8	0,547	2.145	10.109	12.254	3.5	16.4	19.9
12.9	0,551	2.143	10.182	12.325	3.5	16.8	20.3
13	0,556	2.140	10.273	12.414	3.6	17.2	20.8
13.1	0,560	2.138	10.353	12.491	3.6	17.6	21.2
13.2	0,564	2.135	10.420	12.556	3.7	18.0	21.7
13.3	0,569	2.133	10.476	12.609	3.7	18.3	22.1
13.4	0,573	2.131	10.520	12.651	3.8	18.7	22.5
13.5	0,577	2.128	10.553	12.682	3.8	19.0	22.9
13.6	0,581	2.126	10.576	12.702	3.9	19.4	23.3
13.7	0,586	2.124	10.588	12.712	3.9	19.7	23.6
13.8	0,590	2.122	10.591	12.713	4.0	20.0	24.0
13.9	0,594	2.119	10.585	12.705	4.1	20.3	24.3
14	0,598	2.117	10.571	12.688	4.1	20.5	24.6

- Nilai tahanan kapal variasi 4

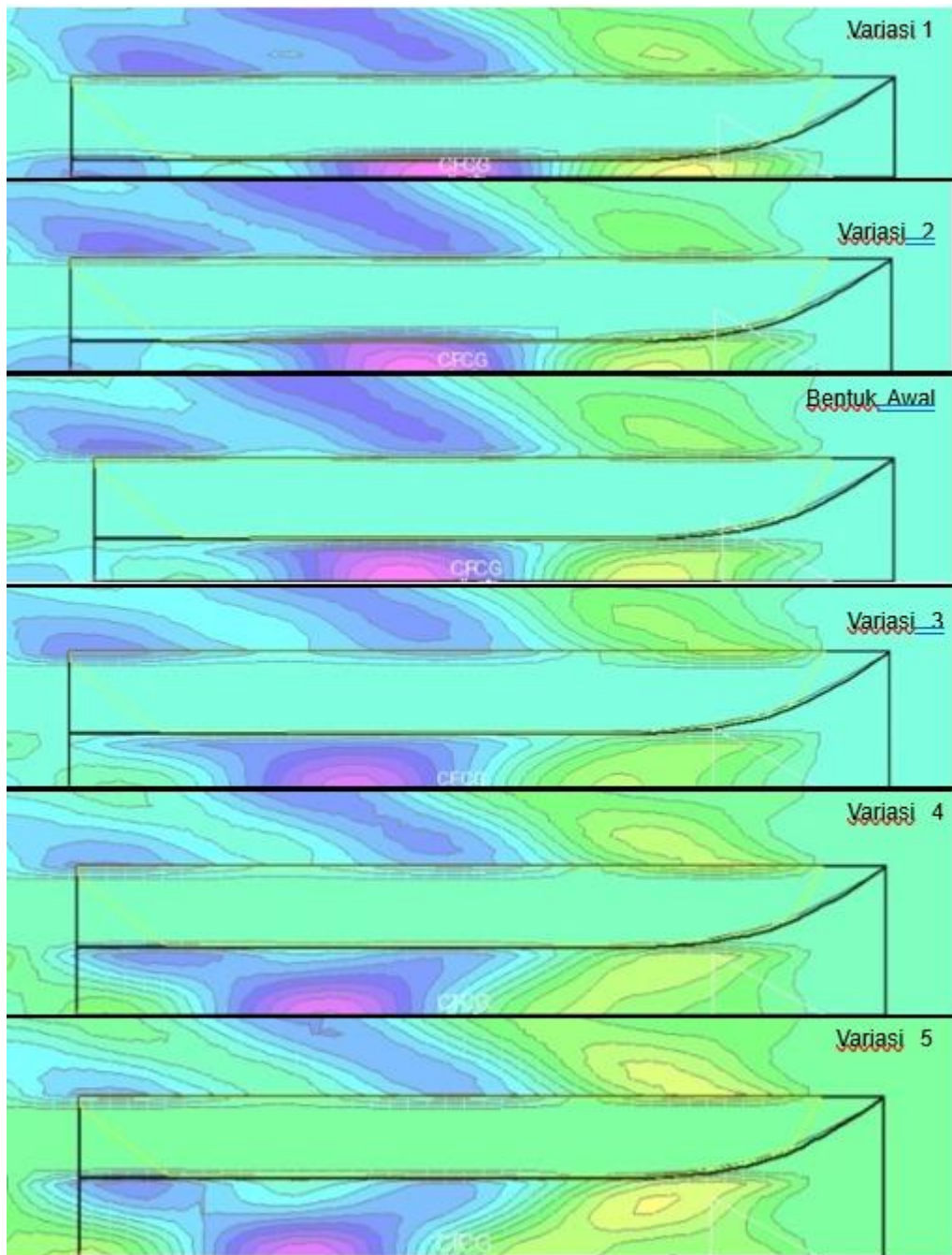
Speed	Froude No.	Koefisien Tahanan Gesek	Koefisien Tahanan Sisa	Koefisien Tahanan Total	Tahanan Gesek	Tahanan Sisa	Tahanan Total
(Knot)	(Fn)	(CF)	(CR)	(CT)	(kN)	(kN)	(kN)
10	0,427	2.225	5.588	7.813	2.2	5.5	7.7
10.1	0,432	2.222	5.732	7.954	2.2	5.8	8.0
10.2	0,436	2.218	5.869	8.088	2.3	6.0	8.3
10.3	0,440	2.215	6.001	8.216	2.3	6.3	8.6
10.4	0,445	2.212	6.127	8.339	2.4	6.6	8.9
10.5	0,449	2.209	6.247	8.456	2.4	6.8	9.2
10.6	0,453	2.206	6.362	8.567	2.5	7.1	9.5
10.7	0,457	2.203	6.472	8.674	2.5	7.3	9.8
10.8	0,462	2.200	6.577	8.776	2.5	7.6	10.1
10.9	0,466	2.197	6.677	8.874	2.6	7.9	10.4
11	0,470	2.194	6.774	8.967	2.6	8.1	10.7
11.1	0,474	2.191	6.866	9.056	2.7	8.4	11.0
11.2	0,479	2.188	6.953	9.141	2.7	8.6	11.4
11.3	0,483	2.185	7.038	9.222	2.8	8.9	11.7
11.4	0,487	2.182	7.118	9.300	2.8	9.2	12.0
11.5	0,492	2.179	7.195	9.374	2.9	9.4	12.3
11.6	0,496	2.176	7.268	9.445	2.9	9.7	12.6
11.7	0,500	2.174	7.338	9.512	2.9	9.9	12.9
11.8	0,504	2.171	7.406	9.576	3.0	10.2	13.2
11.9	0,509	2.168	7.470	9.638	3.0	10.5	13.5
12	0,513	2.166	7.531	9.696	3.1	10.7	13.8
12.1	0,517	2.163	7.589	9.752	3.1	11.0	14.1
12.2	0,521	2.160	7.645	9.805	3.2	11.3	14.5
12.3	0,526	2.158	7.698	9.856	3.2	11.5	14.8
12.4	0,530	2.155	7.749	9.904	3.3	11.8	15.1
12.5	0,534	2.153	7.798	9.950	3.3	12.1	15.4
12.6	0,539	2.150	7.844	9.994	3.4	12.3	15.7
12.7	0,543	2.148	7.888	10.035	3.4	12.6	16.0
12.8	0,547	2.145	7.930	10.075	3.5	12.9	16.3
12.9	0,551	2.143	7.980	10.123	3.5	13.1	16.7
13	0,556	2.140	8.045	10.185	3.6	13.5	17.0
13.1	0,560	2.138	8.101	10.239	3.6	13.8	17.4
13.2	0,564	2.135	8.148	10.284	3.7	14.1	17.7
13.3	0,569	2.133	8.187	10.320	3.7	14.3	18.1
13.4	0,573	2.131	8.218	10.349	3.8	14.6	18.4
13.5	0,577	2.128	8.241	10.370	3.8	14.9	18.7
13.6	0,581	2.126	8.257	10.383	3.9	15.1	19.0
13.7	0,586	2.124	8.265	10.389	3.9	15.4	19.3
13.8	0,590	2.122	8.267	10.388	4.0	15.6	19.6
13.9	0,594	2.119	8.262	10.381	4.1	15.8	19.9
14	0,598	2.117	8.251	10.368	4.1	16.0	20.1

- Nilai tahanan kapal variasi 5

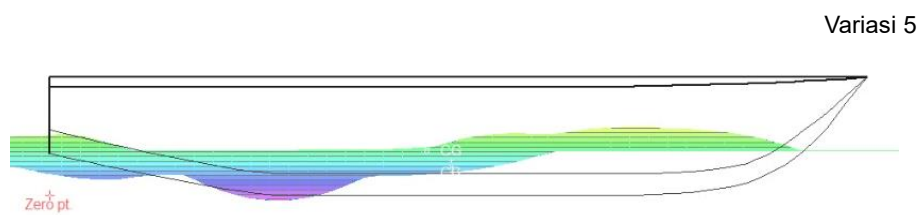
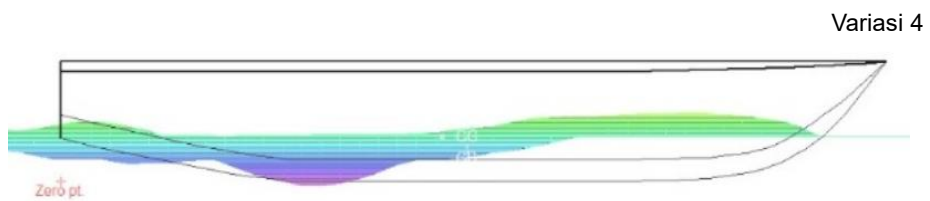
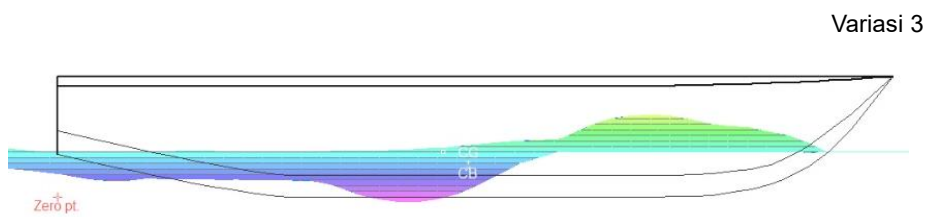
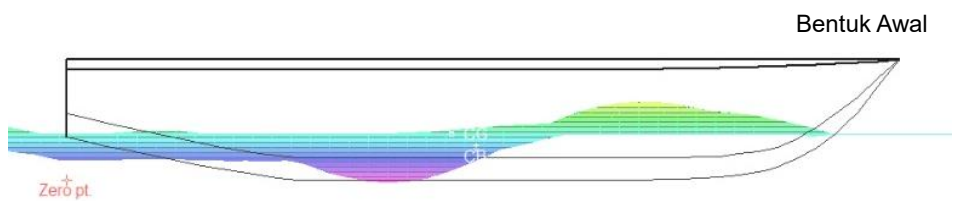
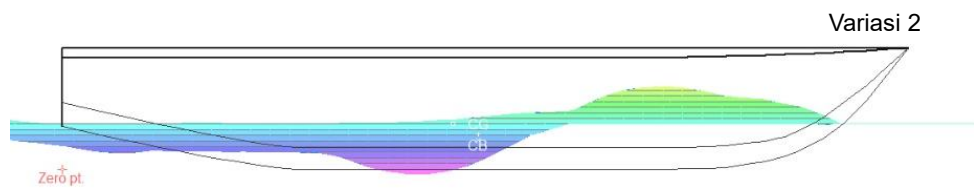
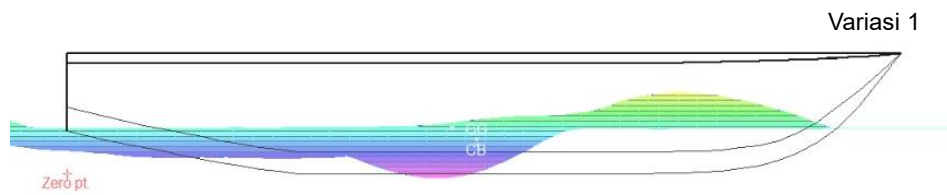
Speed	Froude No.	Koefisien Tahanan Gesek	Koefisien Tahanan Sisa	Koefisien Tahanan Total	Tahanan Gesek	Tahanan Sisa	Tahanan Total
(Knot)	(Fn)	(CF)	(CR)	(CT)	(kN)	(kN)	(kN)
10	0,427	2.225	4.634	6.859	2.2	4.6	6.8
10.1	0,432	2.222	4.707	6.929	2.2	4.8	7.0
10.2	0,436	2.218	4.777	6.995	2.3	4.9	7.2
10.3	0,440	2.215	4.843	7.059	2.3	5.1	7.4
10.4	0,445	2.212	4.907	7.119	2.4	5.3	7.6
10.5	0,449	2.209	4.967	7.176	2.4	5.4	7.8
10.6	0,453	2.206	5.025	7.231	2.5	5.6	8.0
10.7	0,457	2.203	5.080	7.283	2.5	5.8	8.3
10.8	0,462	2.200	5.133	7.333	2.5	5.9	8.5
10.9	0,466	2.197	5.183	7.380	2.6	6.1	8.7
11	0,470	2.194	5.231	7.425	2.6	6.3	8.9
11.1	0,474	2.191	5.277	7.467	2.7	6.4	9.1
11.2	0,479	2.188	5.320	7.508	2.7	6.6	9.3
11.3	0,483	2.185	5.362	7.547	2.8	6.8	9.5
11.4	0,487	2.182	5.401	7.584	2.8	7.0	9.8
11.5	0,492	2.179	5.439	7.618	2.9	7.1	10.0
11.6	0,496	2.176	5.475	7.652	2.9	7.3	10.2
11.7	0,500	2.174	5.509	7.683	2.9	7.5	10.4
11.8	0,504	2.171	5.542	7.713	3.0	7.6	10.6
11.9	0,509	2.168	5.573	7.741	3.0	7.8	10.9
12	0,513	2.166	5.603	7.768	3.1	8.0	11.1
12.1	0,517	2.163	5.631	7.794	3.1	8.2	11.3
12.2	0,521	2.160	5.658	7.818	3.2	8.3	11.5
12.3	0,526	2.158	5.683	7.841	3.2	8.5	11.7
12.4	0,530	2.155	5.707	7.862	3.3	8.7	12.0
12.5	0,534	2.153	5.730	7.883	3.3	8.9	12.2
12.6	0,539	2.150	5.752	7.902	3.4	9.0	12.4
12.7	0,543	2.148	5.772	7.920	3.4	9.2	12.6
12.8	0,547	2.145	5.792	7.937	3.5	9.4	12.9
12.9	0,551	2.143	5.818	7.961	3.5	9.6	13.1
13	0,556	2.140	5.856	7.996	3.6	9.8	13.4
13.1	0,560	2.138	5.888	8.026	3.6	10.0	13.6
13.2	0,564	2.135	5.915	8.051	3.7	10.2	13.9
13.3	0,569	2.133	5.938	8.071	3.7	10.4	14.1
13.4	0,573	2.131	5.955	8.086	3.8	10.6	14.4
13.5	0,577	2.128	5.968	8.097	3.8	10.8	14.6
13.6	0,581	2.126	5.977	8.103	3.9	10.9	14.8
13.7	0,586	2.124	5.981	8.104	3.9	11.1	15.1
13.8	0,590	2.122	5.980	8.102	4.0	11.3	15.3
13.9	0,594	2.119	5.977	8.096	4.1	11.4	15.5
14	0,598	2.117	5.969	8.086	4.1	11.6	15.7

Lampiran 2. Pola aliran pada variasi jarak antar lambung

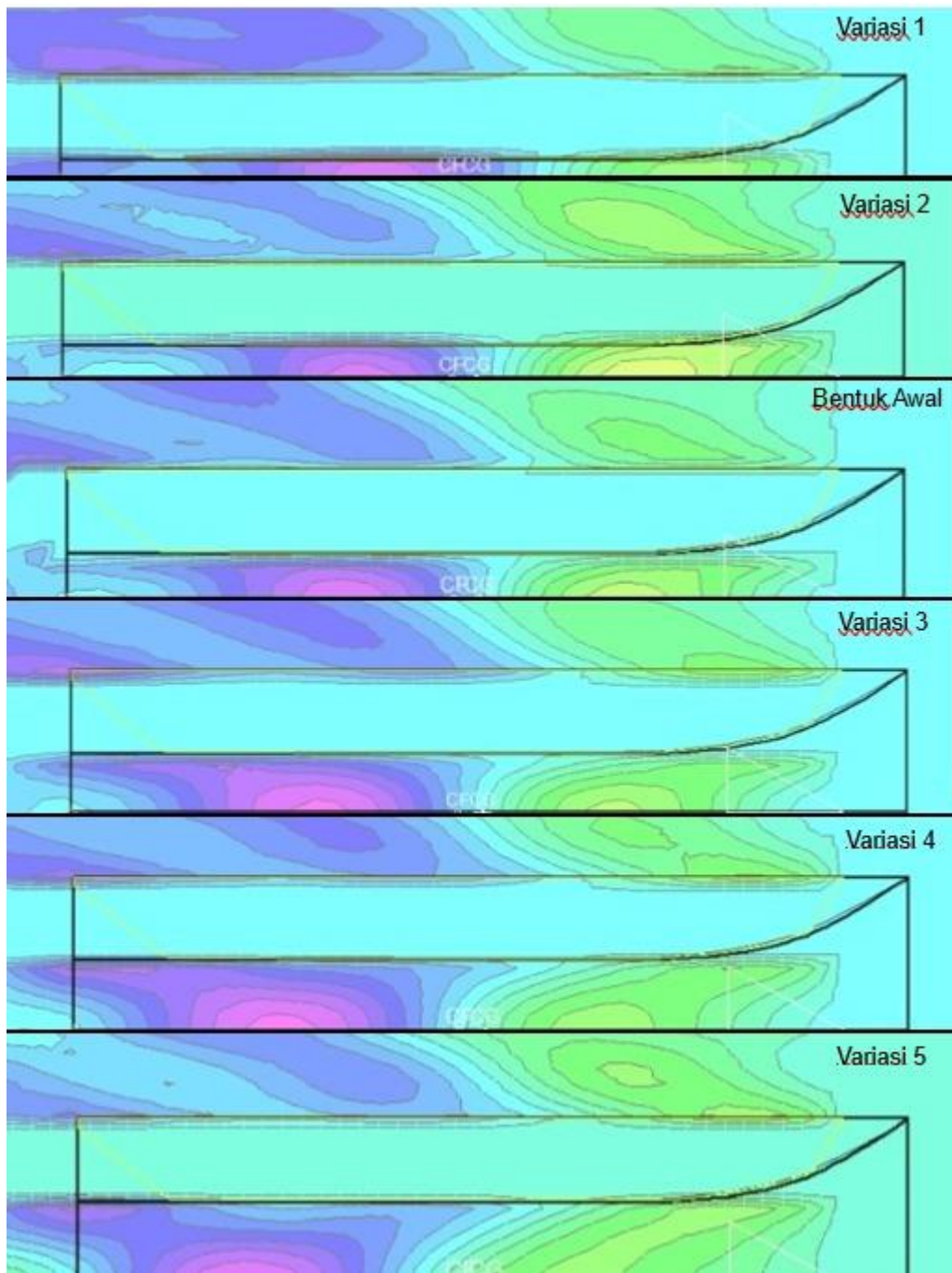
1. Pola aliran pada setiap variasi dengan Froude number 0,47
 - Pola aliran tampak atas



- Pola aliran tampak samping

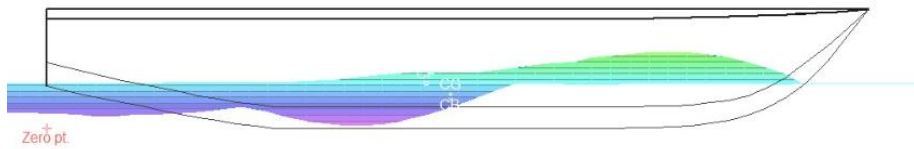


2. Pola aliran pada setiap variasi dengan Froude number 0,513
 - Pola aliran tampak atas

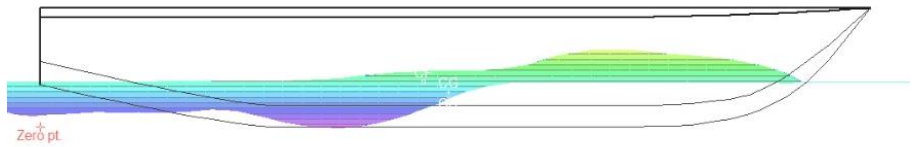


- Pola aliran tampak samping

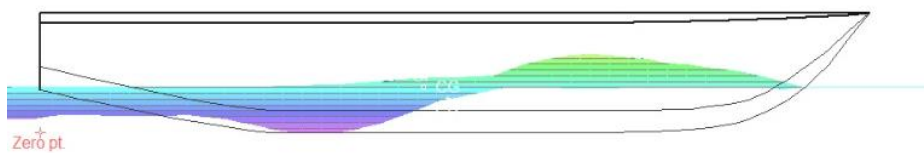
Variasi 1



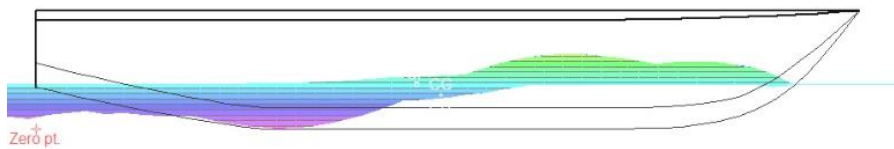
Variasi 2



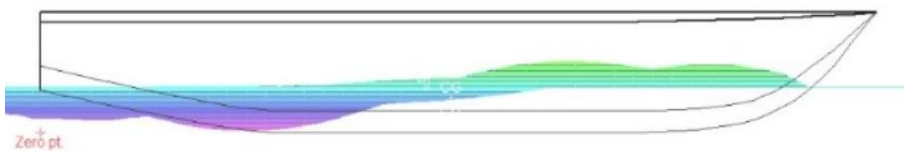
Bentuk Awal



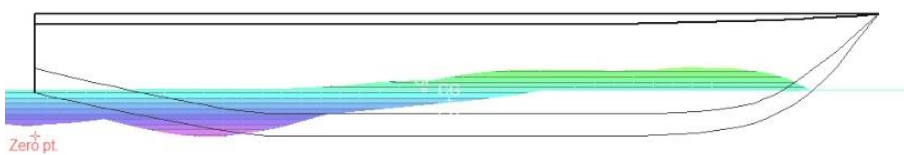
Variasi 3



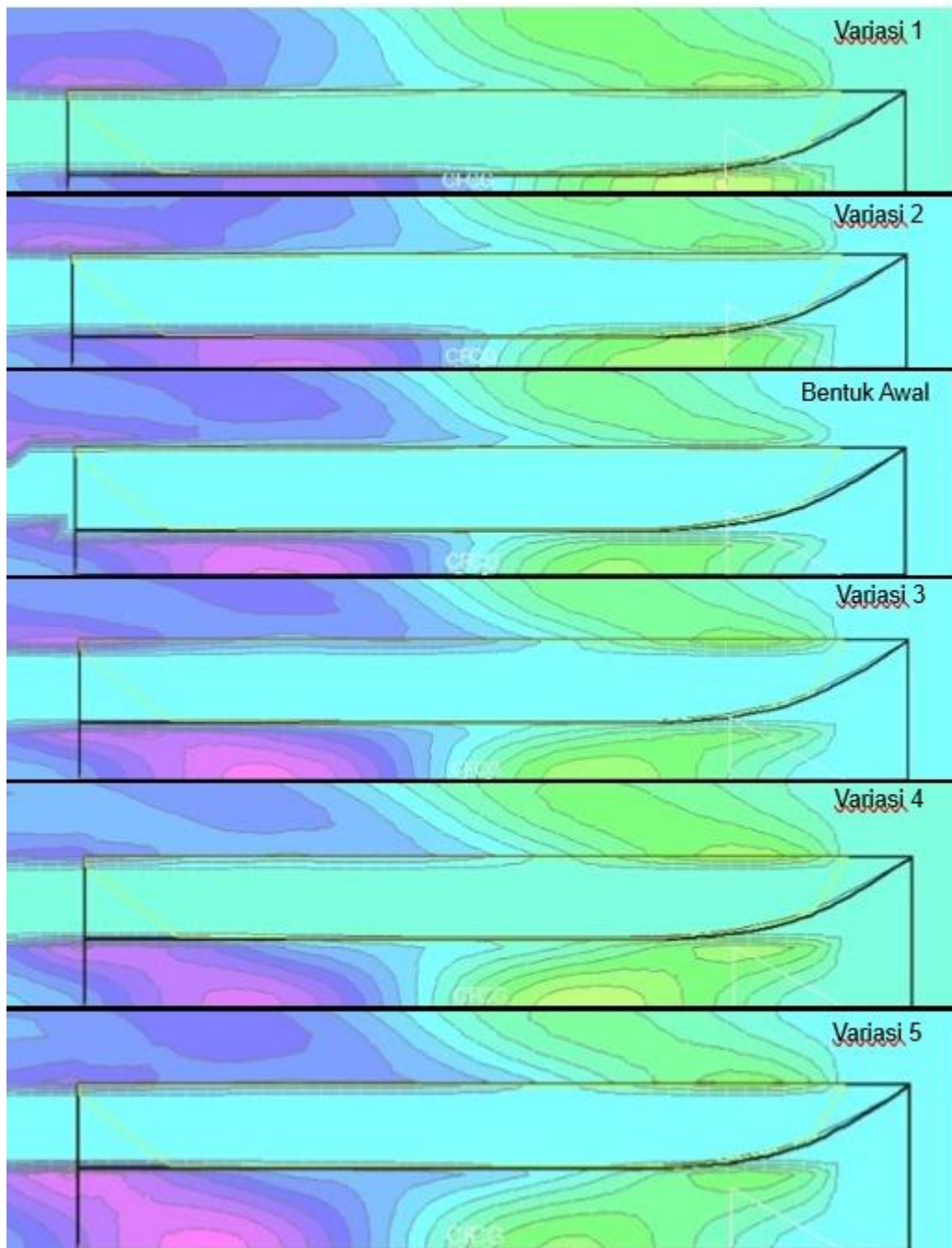
Variasi 4



Variasi 5

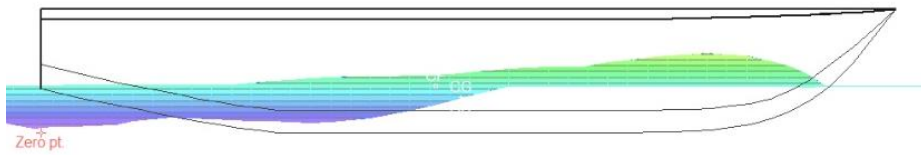


3. Pola aliran pada setiap variasi dengan Froude number 0,556
- Pola aliran tampak atas

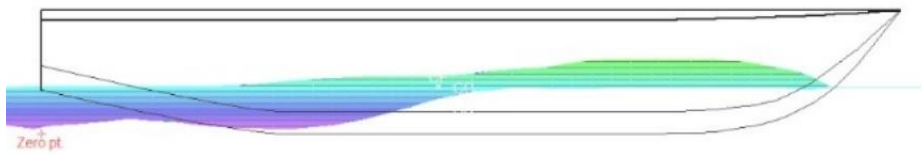


- Pola aliran tampak samping

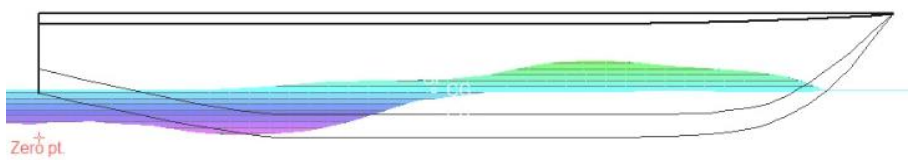
Variasi 1



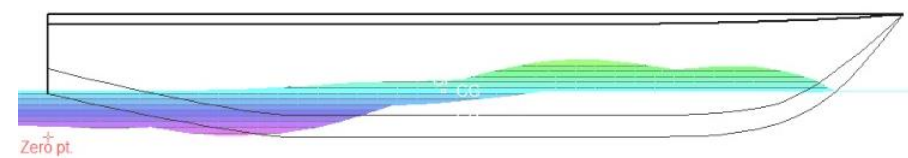
Variasi 2



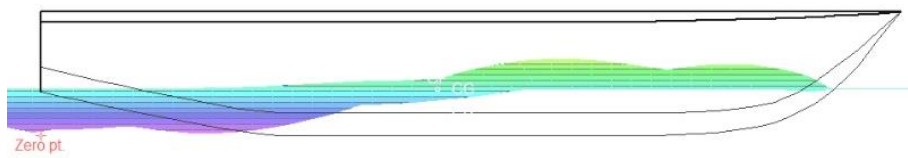
Bentuk Awal



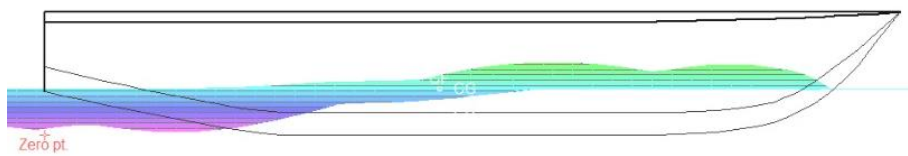
Variasi 3



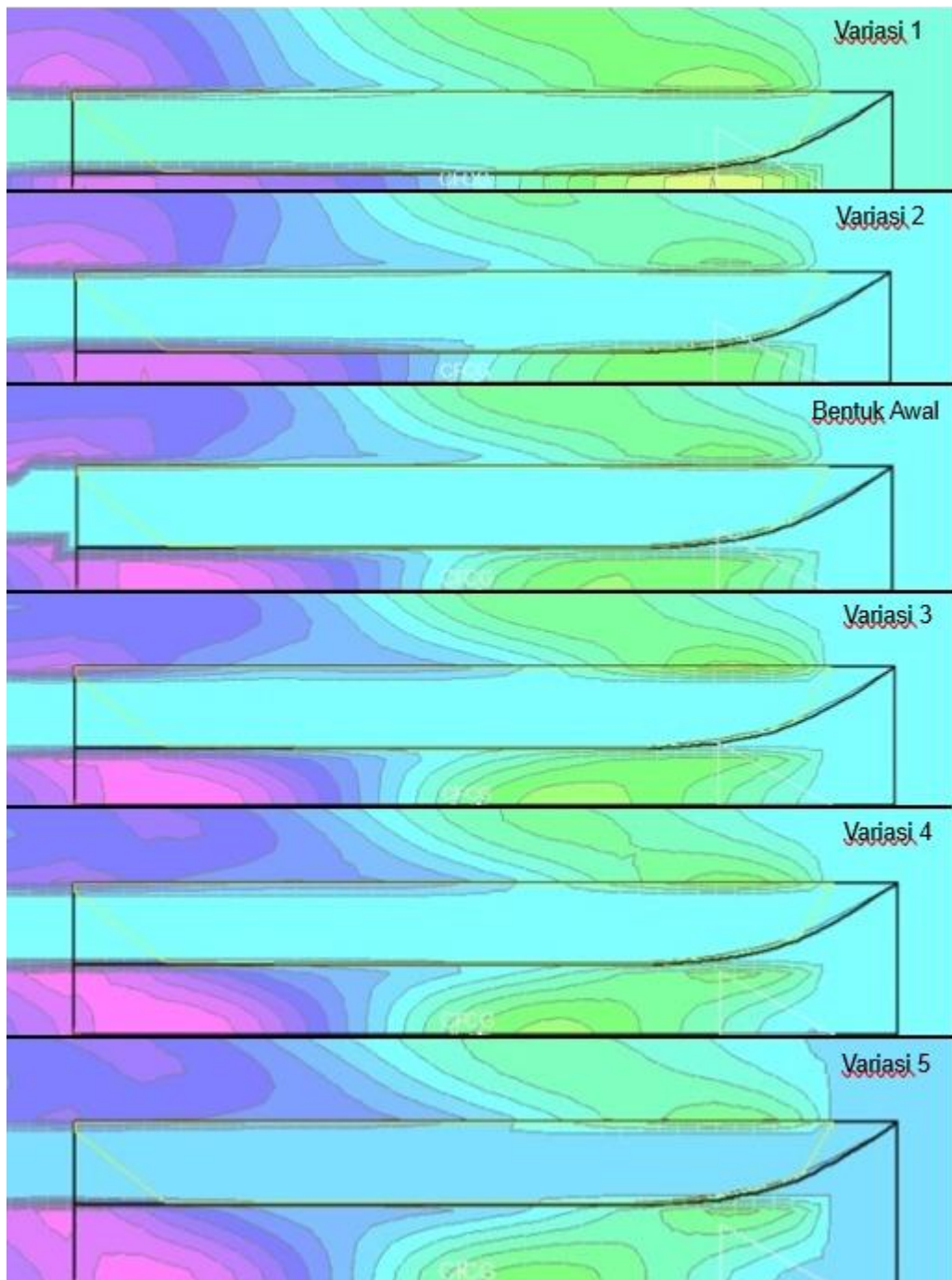
Variasi 4



Variasi 5

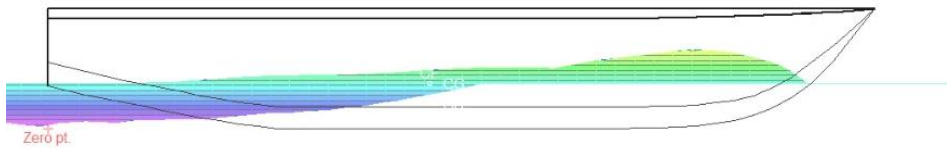


4. Pola aliran pada setiap variasi dengan Froude number 0,598
- Pola aliran tampak atas

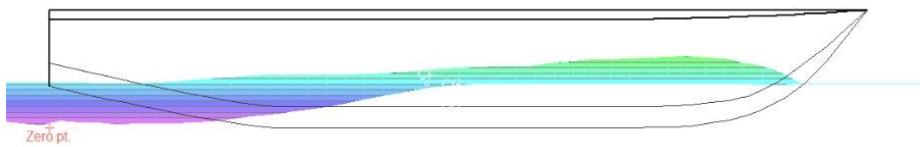


- Pola aliran tampak samping

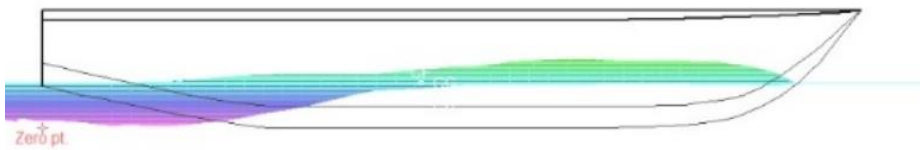
Variasi 1



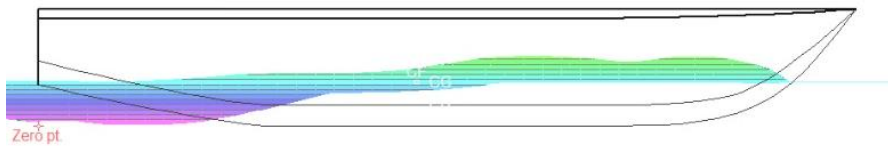
Variasi 2



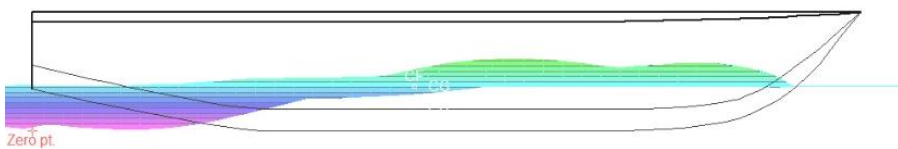
Bentuk Awal



Variasi 3



Variasi 4



Variasi 5

