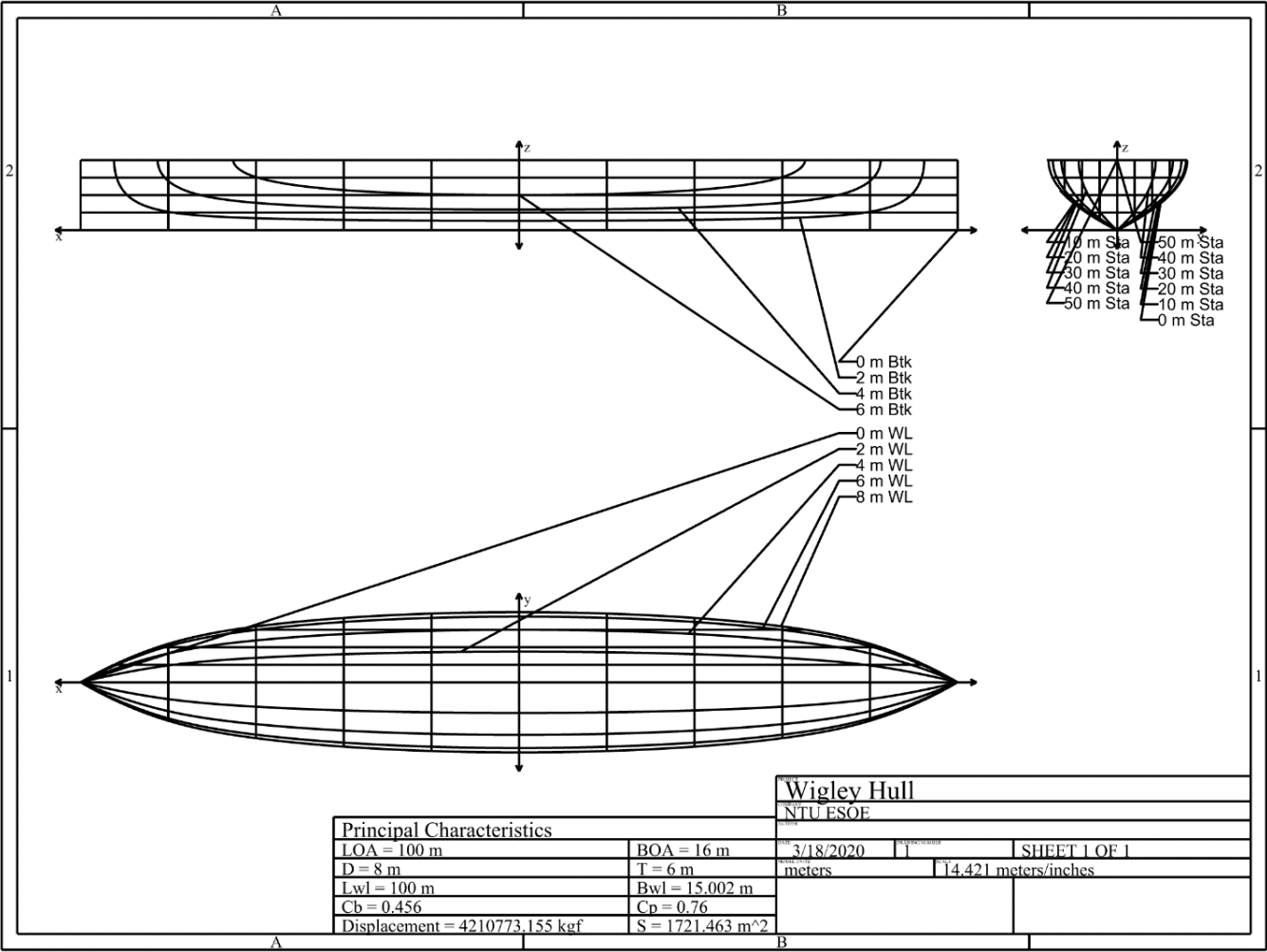


1. (40%)

	St	0	1	2	3	4	5	6	7	8	9	10
	x	-50	-40	-30	-20	-10	0	10	20	30	40	50
WL	z	Half-Breadth										
0	0	0	0	0	0	0	0	0	0	0	0	0
1	1.6	0	1.580913	2.294415	2.643702	2.822308	2.88	2.822308	2.643702	2.294415	1.580913	0
2	3.2	0	2.810511	4.078961	4.699914	5.017436	5.12	5.017436	4.699914	4.078961	2.810511	0
3	4.8	0	3.688796	5.353636	6.168637	6.585385	6.72	6.585385	6.168637	5.353636	3.688796	0
4	6.4	0	4.215767	6.118441	7.049871	7.526154	7.68	7.526154	7.049871	6.118441	4.215767	0
5	8	0	4.391424	6.373376	7.343616	7.839744	8	7.839744	7.343616	6.373376	4.391424	0

2. (20%)



3 . (40%)

$$B_{WL} = \left(2 * \left(\frac{6}{8} \right) - \left(\frac{6}{8} \right)^2 \right) * \frac{B}{2} * 2 = 15$$

$$L_{WL} = L_{oa} = 100$$

$$Boa = 16$$

$$\begin{aligned} C_{WL} &= \frac{A_W}{LB_{WL}} = \frac{1}{LB_{WL}} \int_{x=-\frac{L}{2}}^{x=\frac{L}{2}} 2y dx = \frac{1}{2LB_{WL}} \int_{\xi=-1}^{\xi=1} B\eta L d\xi = \frac{1}{2B_{WL}} \int_{\xi=-1}^{\xi=1} B\eta d\xi \\ &= \frac{1}{2} \times \frac{16}{15} \int_{\xi=-1}^{\xi=1} (2\zeta - \zeta^2)(1 - \xi^2)(1 + 0.5\xi^2 + 0.5\xi^4) d\xi = \frac{16}{21} \times \frac{16}{15} (2\zeta - \zeta^2) \Big|_0^{\frac{6}{8}} \\ &= 0.762 \end{aligned}$$

$$\begin{aligned} C_B &= \frac{\nabla}{LBT} = \frac{1}{LBT} \int_{Z=0}^{Z=T} A_W(z) dz \\ &= \frac{1}{T} \int_{Z=0}^{Z=T} C_W dZ = \frac{D}{T} \int_{\zeta=0}^{\zeta=\frac{6}{8}} C_W d\zeta = \frac{D}{T} \int_{\zeta=0}^{\zeta=\frac{6}{8}} \frac{16}{21} \times \frac{16}{15} (2\zeta - \zeta^2) d\zeta \\ &= 0.458 \end{aligned}$$

$$\begin{aligned} C_M &= \frac{A_M}{B_{WL}T} = \frac{1}{B_{WL}T} \int_{Z=0}^{Z=6} 2y dZ \\ &= \frac{D}{B_{WL}T} \int_{\zeta=0}^{\zeta=\frac{6}{8}} B\eta d\zeta = \frac{D}{T} (1 - \xi^2) (1 + 0.5\xi^2 + 0.5\xi^4) \int_{\zeta=0}^{\zeta=\frac{6}{8}} (2\zeta - \zeta^2) d\zeta \\ &= 0.601 \end{aligned}$$

$$\begin{aligned} C_P &= \frac{\nabla}{A_M L} = \frac{C_B}{C_M} \\ &= 0.762 \end{aligned}$$

$$\begin{aligned} C_{VP} &= \frac{\nabla}{A_W T} = \frac{C_B}{C_{WL}} \\ &= 0.601 \end{aligned}$$

Coefficients of form	Value
C_{WL}	0.762
C_B	0.458
C_M	0.601
C_P	0.762
C_{VP}	0.601