```
                     ----------------------------
                       Results of Resistance Tests
                     ----------------------------
```

```
   Project Name   : 13K PC            Ship Particulars
   Ship Model ID  : KS2048            -------------------------------
   Test Date      : 17-APR-23         Length BP         =  122.00 m
   Test Option    : Bare              Length WL         =  125.50 m
   Test Draught   : Scantling         Draught at FP     =    8.55 m
   Scale Ratio    :  19.200           Draught at AP     =    8.55 m
                                      Breadth           =   21.00 m
                                      Wetted Surface Area=  4028.1 m2
   Water Temperature =   14.50  Deg C Displacement Volume= 17134.0 m3
   Standard Temp     =   15.00  Deg C Bilge Keel Area   =   40.80 m2
   Density (Fresh)   =  999.18  kg/m3 T.Proj Area abv WL =  342.00 m2
   Density (Sea)     = 1026.02  kg/m3 Hull Roughnness(e6)=    150. m
   Viscosity (Fresh) = 1.15376e-6 m2/s Ca*1000          =   0.1400
   Viscosity (Sea)   = 1.18919e-6 m2/s Cas*1000         =   0.0000
                                       Cair*1000        =   0.0849
```

Vs (kts)	Vm (m/s)	Fn	Rnm (e-6)	Rtm (N)	Ctm (e+3)	Cfm (e+3)	Cr (e+3)	Trim (deg)
11.00	1.291	0.161	7.317	36.04	3.958	3.170	0.789	0.133
12.00	1.409	0.176	7.982	42.26	3.900	3.121	0.779	0.165
13.00	1.526	0.191	8.647	49.15	3.865	3.077	0.788	0.201
13.50	1.585	0.198	8.979	53.11	3.873	3.057	0.816	0.220
14.00	1.644	0.205	9.312	57.69	3.912	3.037	0.874	0.241
15.00	1.761	0.220	9.977	70.22	4.147	3.001	1.146	0.286

Vs (kts)	Rns (e-9)	Cfs (e+3)	Cts (e+3)	Rts (kN)	PE (kW)	PE (PS)	Sinkage FP (m)	AP
11.00	0.597	1.633	2.665	176	998	1357	0.300	0.017
12.00	0.651	1.615	2.637	208	1282	1743	0.366	0.014
13.00	0.706	1.599	2.630	243	1625	2210	0.439	0.010
13.50	0.733	1.591	2.650	264	1834	2494	0.478	0.009
14.00	0.760	1.584	2.701	290	2085	2835	0.520	0.007
15.00	0.814	1.570	2.959	364	2809	3820	0.611	0.003

 Trim by bow is defined to be positive.

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                        Results of Self Propulsion Tests
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     Project Name : 13K PC              Ship Particulars
     Ship Model ID : KS2048             -------------------------------
     Propeller ID  : KP2015             Length BP          =  122.00 m
     Test Date     : 17-APR-23          Length WL          =  125.50 m
     Test Option   : Bare               Draught at FP      =    8.55 m
     Test Draught  : Scantling          Draught at AP      =    8.55 m
     Scale Ratio   :  19.200            Breadth            =   21.00 m
                                        Wetted Surface Area=  4028.1 m2
                                        Displacement Volume= 17134.0 m3
                                        Bilge Keel Area    =   40.80 m2
                                        T.Proj Area abv WL =  342.00 m2

          Temp  Density Viscosity
         (DegC) (kg/m3)  (m2/s)
     -------------------------------
     Res  14.5   999.2 1.15376e-6      Propeller Particulars
     S-P  14.5   999.2 1.15376e-6      ------------------------------
     Sea  15.0  1026.0 1.18919e-6      Number of Propeller =   1
                                       Number of Blades    =   4
     Model-Ship Correlation           Propeller Diameter   = 4.80  m
     ----------------------           Pitch/Dia at 0.7r    = 0.776
     Prop Roughness =  30.e-6 m       Chord Length at 0.7r= 1.358 m
     Hull Roughness = 150.e-6 m       Blade thickness 0.7r= 0.055 m
                                      Rn(model) at 0.7r    = 6.03e+5
                                      Expanded Area Ratio = 0.500
                                      Section Type         : NACA66
                                      Test Date            : 10-Nov-22
```

```
-------------------------------------------------------- --------------------
Ship  Model  Rtm     SFC  S-P  Rate Thrust Torque   Model Propeller
Speed Speed  S-P          Adv  Revs                 Open Water Character
(kts) (m/s)  (N)     (N)  (J)  (rps)  (N)    (N-m)   (J)  (10kt) (100kq)
-------------------------------------------------------- --------------------
11.00 1.291  36.04 12.71 0.522  6.59  29.05 0.955  0.000  3.758  4.045
12.00 1.409  42.26 14.80 0.525  7.18  34.28 1.125  0.050  3.592  3.908
13.00 1.526  49.15 17.02 0.526  7.78  40.22 1.318  0.100  3.414  3.759
13.50 1.585  53.11 18.18 0.524  8.11  43.84 1.433  0.150  3.227  3.601
14.00 1.644  57.69 19.37 0.521  8.46  48.14 1.570  0.200  3.034  3.437
15.00 1.761  70.22 21.85 0.504  9.33  60.91 1.968  0.250  2.836  3.268
                                                   0.300  2.635  3.094
                                                   0.350  2.432  2.917
                                                   0.400  2.228  2.737
                                                   0.450  2.020  2.551
                                                   0.500  1.810  2.358
                                                   0.550  1.595  2.156
                                                   0.600  1.373  1.943
                                                   0.650  1.143  1.714
                                                   0.700  0.901  1.465
                                                   0.750  0.643  1.192
                                                   0.800  0.365  0.888
                                                   0.850  0.063  0.548
                                                   0.860  0.000  0.476
```

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                  ------------------------------------------------
                        Propulsion Performance of Full Scale Ship
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```
     Project Name   : 13K PC             Ship Particulars
     Ship Model ID  : KS2048             ------------------------------
     Propeller ID   : KP2015             Length BP         =  122.00 m
     Test Date      : 17-APR-23          Length WL         =  125.50 m
     Test Option    : Bare               Draught at FP     =    8.55 m
     Test Draught   : Scantling          Draught at AP     =    8.55 m
     Scale Ratio    :  19.200            Breadth           =   21.00 m
                                         Wetted Surface Area= 4028.1 m2
                                         Displacement Volume= 17134.0 m3
                                         Bilge Keel Area   =   40.80 m2
                                         T.Proj Area abv WL =  342.00 m2
```

```
                          ITTC Standard Prediction
```

Ship Speed (kts)	Fn	PE (kW)	PD (kW)	S-P Adv (J)	Rate Revs (rpm)	Thrust (kN)	Torque (kN-m)	Model Wake (Wtm)	Ship Wake (Wts)
11.00	0.161	998	1357	0.536	93.61	220	138	0.334	0.291
12.00	0.176	1282	1739	0.537	101.91	259	163	0.331	0.291
13.00	0.191	1625	2205	0.537	110.35	304	191	0.330	0.291
13.50	0.198	1834	2495	0.535	114.89	331	207	0.330	0.292
14.00	0.205	2085	2850	0.531	119.84	364	227	0.330	0.293
15.00	0.220	2809	3920	0.515	131.92	459	284	0.332	0.295

Ship Speed (kts)	Thrust Deduct (Thdf)	Hull Effi (EtaH)	Relative Effi (EtaR)	Prop Effi (EtaO)	Behind Effi (EtaB)	Total Effi (EtaD)	Full Scale Propeller Open Water Character (J)	(10Kt)	(100Kq)
11.00	0.197	1.133	1.006	0.645	0.649	0.735	0.000	3.761	4.017
12.00	0.199	1.129	1.010	0.646	0.653	0.737	0.050	3.595	3.880
13.00	0.201	1.127	1.012	0.646	0.654	0.737	0.100	3.417	3.731
13.50	0.203	1.126	1.013	0.644	0.653	0.735	0.150	3.230	3.574
14.00	0.204	1.126	1.013	0.642	0.650	0.732	0.200	3.037	3.410
15.00	0.206	1.126	1.011	0.629	0.636	0.717	0.250	2.839	3.241
							0.300	2.638	3.067
							0.350	2.435	2.890
							0.400	2.231	2.710
							0.450	2.023	2.524
							0.500	1.813	2.331
							0.550	1.598	2.129
							0.600	1.375	1.916
							0.650	1.145	1.687
							0.700	0.903	1.438
							0.750	0.645	1.166
							0.800	0.367	0.862
							0.850	0.065	0.522
							0.860	0.002	0.450

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                    ----------------------------------------
                      Prediction of Powering Performance
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      Project Name   : 13K PC          Ship Particulars
      Ship Model ID  : KS2048          -------------------------------
      Propeller ID   : KP2015          Length BP           =  122.00 m
      Test Date      : 17-APR-23       Length WL           =  125.50 m
      Test Option    : Bare            Draught at FP       =    8.55 m
      Test Draught   : Scantling       Draught at AP       =    8.55 m
      Scale Ratio    :  19.200         Breadth             =   21.00 m
                                       Wetted Surface Area=  4028.1 m2
                                       Displacement Volume= 17134.0 m3
                                       Bilge Keel Area     =   40.80 m2
                                       T.Proj Area abv WL =   342.00 m2


          ===============================================
                   Ship Trial Prediction with
                 Ca*1000 = 0.1400, EtaT =0.970
          -----------------------------------------------
              Ship     Brake Horsepower     Rate of Revs.
              Speed    ---------------      -------------
              (kts)    (kW)      (PS)       (rps)   (rpm)
          -----------------------------------------------
              11.00    1399      1902       1.560   93.61
              12.00    1793      2437       1.698  101.91
              13.00    2273      3090       1.839  110.35
              13.50    2572      3497       1.915  114.89
              14.00    2938      3995       1.997  119.84
              15.00    4041      5494       2.199  131.92
          -----------------------------------------------
           [Trials]   Vs = 14.04 kts, Ns = 120.3 rpm
                      at Pb =   2970 kW
          -----------------------------------------------
           [Service]  Vs = 13.52 kts
                      with Sea Margin = 15.0 %
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[Notes]
 - For the explanation of abbreviations, see the list of symbols.
 - Analysis method : Based on 1978 ITTC performance prediction method
 - Frictional resistance determinced according to the ITTC-1957 formula.
 - Reynolds and Froude number based on Lwl=125.50.
 - A model-ship correlation allowance(2-D), Ca=0.00014.
 - w/o CP-CN correction.
 - A resistance of above water part through the air, Cair=.0000849.
 - The results are valid for unrestricted deep water of 15.0 deg C and a
   mass density of 1026.0 kg/m3, clean surfaces of hull and propeller blades
   and no effects of wind and waves.