Danaos Management Consultants

"HYUNDAI SMART"
Friday 1st October, 2021

Vessel Basic Info:

IMO: 9475686
Vessel Type: Container
Deadweight:
Beam:
Length:
Min Draft: 7.0 m
Max Draft: 13.0 m
Max Speed: Sea speed Ballast 22.8. Laden 19.6
Dates of last two propeller cleanings:
Dates of last two dry docks:
Voyages the vessel most commonly Performs:

1 Models Performance Overview

Table 1: Total Actual FOC (MT), Total Predicted FOC (MT), Percentage Difference(Actual / Predicted), Mean STW (knt), Mean Draft (m) for each leg

Neural Net	Info per leg				
	Total Act FOC (MT)	Total Pred FOC (MT)	FOC Perc Diff	Mean STW (kt)	Mean Draft (m)
CARTAGENA - NEW YORK	352.59	355.28	0.76 %	14.21	8.81
KWANGYANG - YOSU	57.33	57.20	0.23 %	17.29	7.35
PANAMA - CARTAGENA	57.24	59.22	3.40 %	17.44	10.82
PUSAN - PANAMA	2,131.18	2,153.72	1.05 %	17.13	8.89
QINGDAO - NINGBO	55.42	59.86	7.70 %	12.50	8.79
YANGSHAN - PUSAN	25.97	28.57	9.53 %	13.42	11.15
YOSU - QINGDAO	67.60	72.47	6.95 %	17.54	7.29
ZHOUSHAN - YOSU	673.82	733.05	8.42 %	15.10	7.10
Total	**3,421.15**	**3,519.37**	**2.83 %**	**15.6 (Avg)**	**8.8 (Avg)**

Table 2: Total Actual FOC (MT), Total Predicted FOC (MT), Percentage Difference(Actual / Predicted), Mean STW (knt), Mean Draft (m) for each leg

Neural DT	Info per leg				
	Total Act FOC (MT)	Total Pred FOC (MT)	FOC Perc Diff	Mean STW (kt)	Mean Draft (m)
CARTAGENA - NEW YORK	352.59	348.74	1.10 %	14.21	8.81
KWANGYANG - YOSU	57.32	56.92	0.70 %	17.29	7.35
PANAMA - CARTAGENA	57.24	57.74	0.87 %	17.44	10.82
PUSAN - PANAMA	2,131.18	2,107.15	1.13 %	17.13	8.89
QINGDAO - NINGBO	55.42	57.85	4.29 %	12.50	8.79
YANGSHAN - PUSAN	25.97	27.69	6.41 %	13.42	11.15
YOSU - QINGDAO	67.60	70.88	4.74 %	17.54	7.29
ZHOUSHAN - YOSU	673.82	713.53	5.72 %	15.10	7.10
Total	**3,421.14**	**3,440.50**	**0.56 %**	**15.6 (Avg)**	**8.8 (Avg)**

Overall Accuracy

Legs Summary Info

- Total records: **44,078 instances**

- Total Sailing Time: **975 hours**

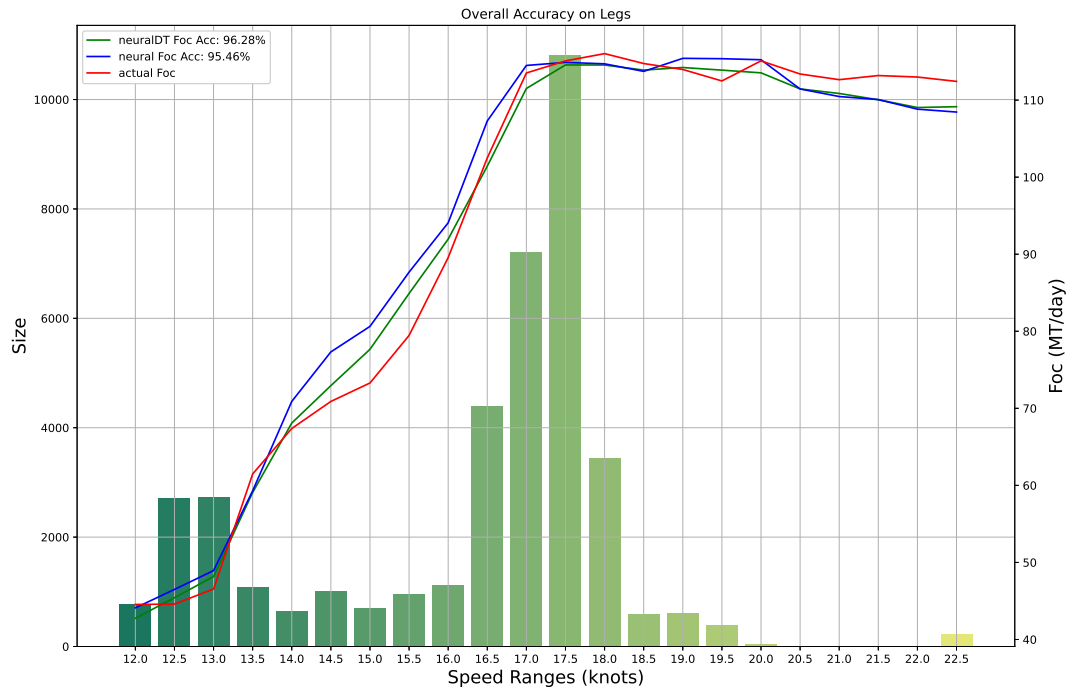- Total Distance Travelled: **10,864.50 n mi**

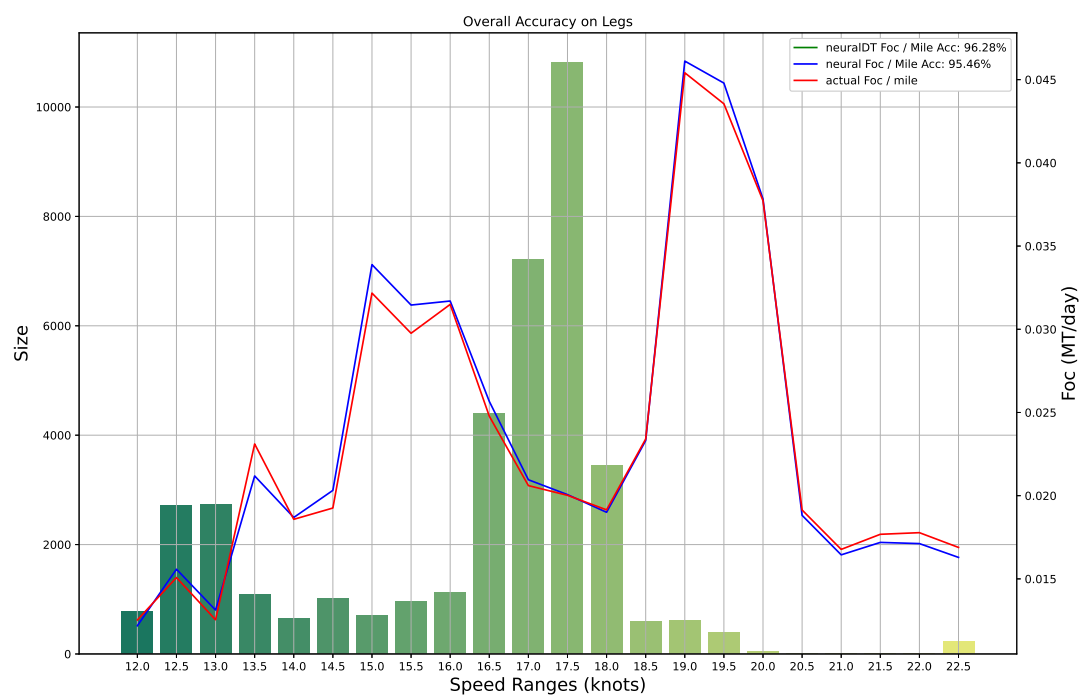**Figure 1:** FOC Actual vs Predicted / Speed Ranges, Overall on Legs

Figure 2: FOC/mile Actual vs Predicted / Speed Ranges, Overall on Legs

2 FOC estimation models performance on legs

Leg 1 # Basic INFO:

- Total Actual FOC : **352.59 MT**

  - Total Predicted FOC (Neural Net): **355.28 MT**
  - Total Predicted FOC (Neural DT): **348.74 MT**
  - FOC Perc Diff (Neural Net): **0.76 %**
  - FOC Perc Diff (Neural DT): **1.10 %**

- Departure Port : **CARTAGENA / 2020-06-30 01:09:00**

- Arrival Port : **NEW YORK / 2020-07-05 06:36:00**

- Total Sailing Time: **125 hours**

- Distance Travelled: **1,690.94 n mi**

- Draft: **8.8 m**
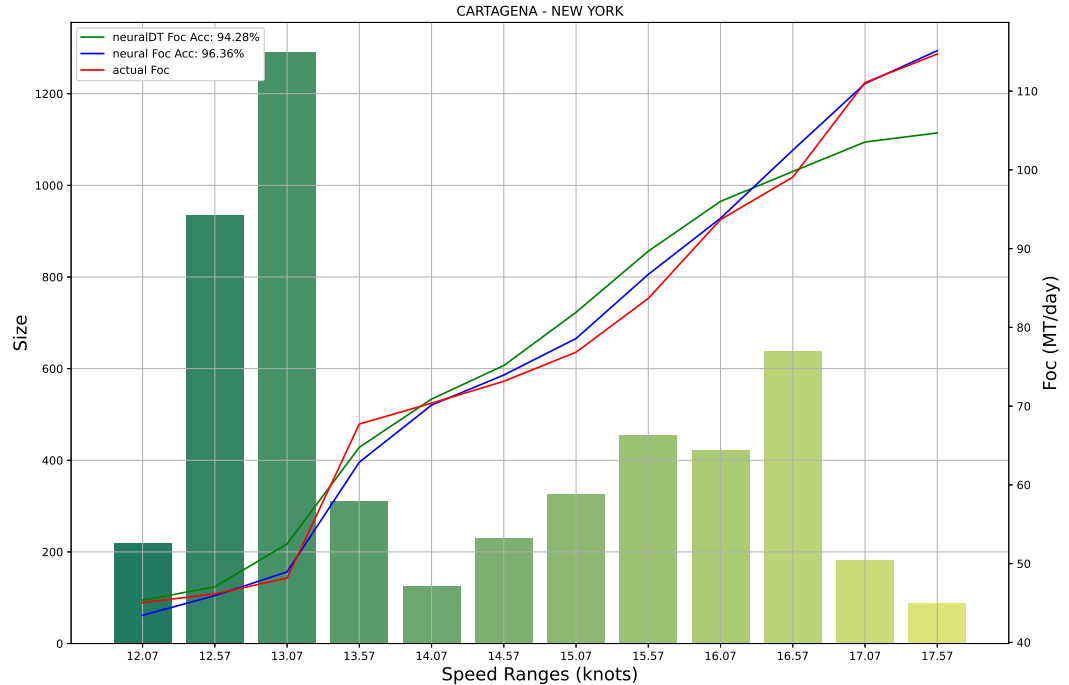
Figure 3: FOC Actual vs Predicted / Speed Ranges, CARTAGENA - NEW YORK

Leg 2 # Basic INFO:

- Total Actual FOC : **57.33 MT**

  - Total Predicted FOC (Neural Net): **57.20 MT**

  - Total Predicted FOC (Neural DT): **56.92 MT**

  - FOC Perc Diff (Neural Net): **0.23 %**

  - FOC Perc Diff (Neural DT): **0.70 %**

- Departure Port : **KWANGYANG / 2020-05-27 12:00:00**

- Arrival Port : **YOSU / 2020-05-28 07:06:00**

- Total Sailing Time: **19 hours**

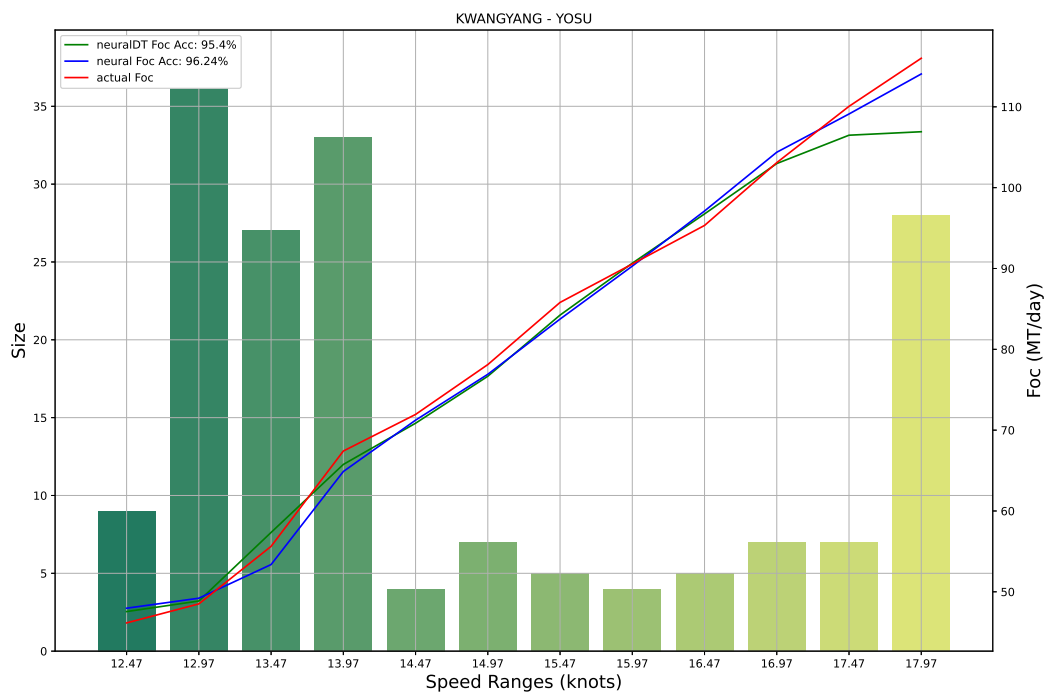- Distance Travelled: **142.78 n mi**

- Draft: **7.3 m**

Figure 4: FOC Actual vs Predicted / Speed Ranges, KWANGYANG - YOSU

Leg 3 # Basic INFO:

- Total Actual FOC : **57.24 MT**

  - Total Predicted FOC (Neural Net): **59.22 MT**

  - Total Predicted FOC (Neural DT): **57.74 MT**

  - FOC Perc Diff (Neural Net): **3.40 %**

  - FOC Perc Diff (Neural DT): **0.87 %**

- Departure Port : **PANAMA / 2020-06-28 15:30:00**

- Arrival Port : **CARTAGENA / 2020-06-29 05:30:00**

- Total Sailing Time: **14 hours**

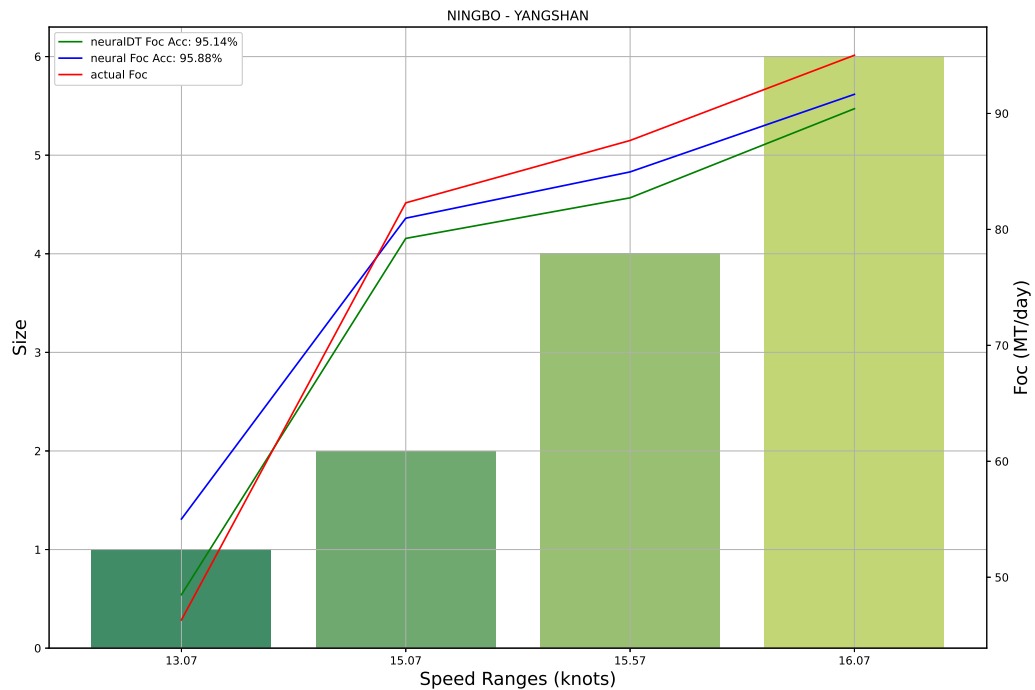- Distance Travelled: **163.24 n mi**

- Draft: **10.8 m**

Figure 5: FOC Actual vs Predicted / Speed Ranges, PANAMA - CARTAGENA

Leg 4 # Basic INFO:

- Total Actual FOC : **2,131.18 MT**

    - Total Predicted FOC (Neural Net): **2,153.72 MT**

    - Total Predicted FOC (Neural DT): **2,107.15 MT**

    - FOC Perc Diff (Neural Net): **1.05 %**

    - FOC Perc Diff (Neural DT): **1.13 %**

- Departure Port : **PUSAN / 2020-06-08 13:00:00**

- Arrival Port : **PANAMA / 2020-06-27 20:18:00**

- Total Sailing Time: **463 hours**

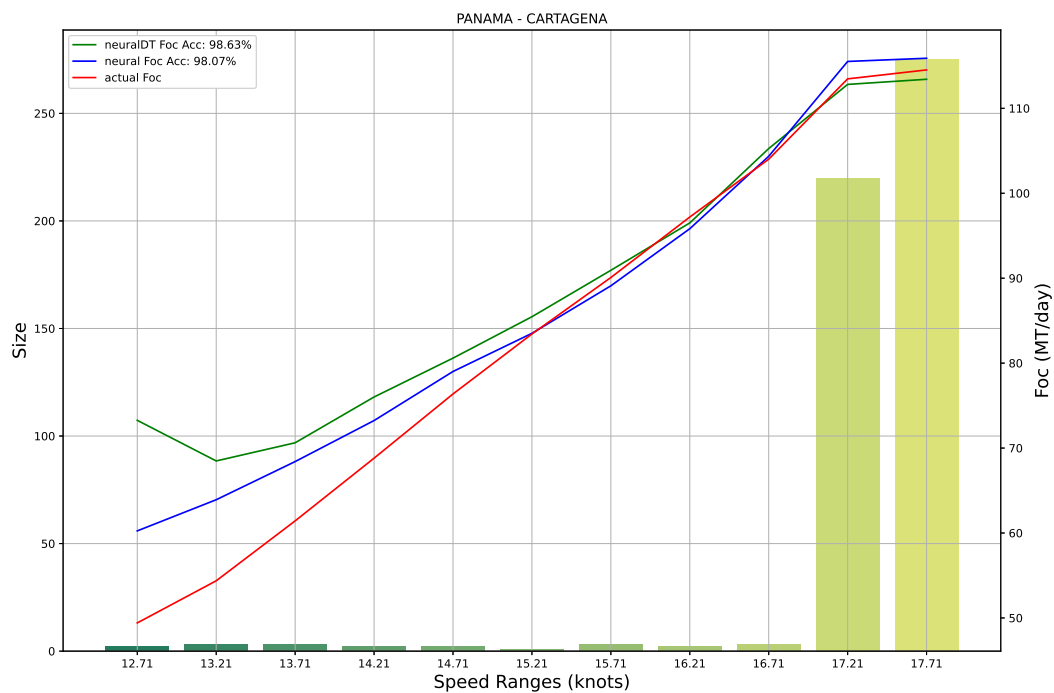- Distance Travelled: **7,683.88 n mi**

- Draft: **8.9 m**

Figure 6: FOC Actual vs Predicted / Speed Ranges, PUSAN - PANAMA

Leg 5 # Basic INFO:

- Total Actual FOC : **55.42 MT**

  - Total Predicted FOC (Neural Net): **59.86 MT**

  - Total Predicted FOC (Neural DT): **57.85 MT**

  - FOC Perc Diff (Neural Net): **7.70 %**

  - FOC Perc Diff (Neural DT): **4.29 %**

- Departure Port : **QINGDAO / 2020-05-30 05:54:00**

- Arrival Port :   **NINGBO / 2020-05-31 21:43:00**

- Total Sailing Time: **40 hours**

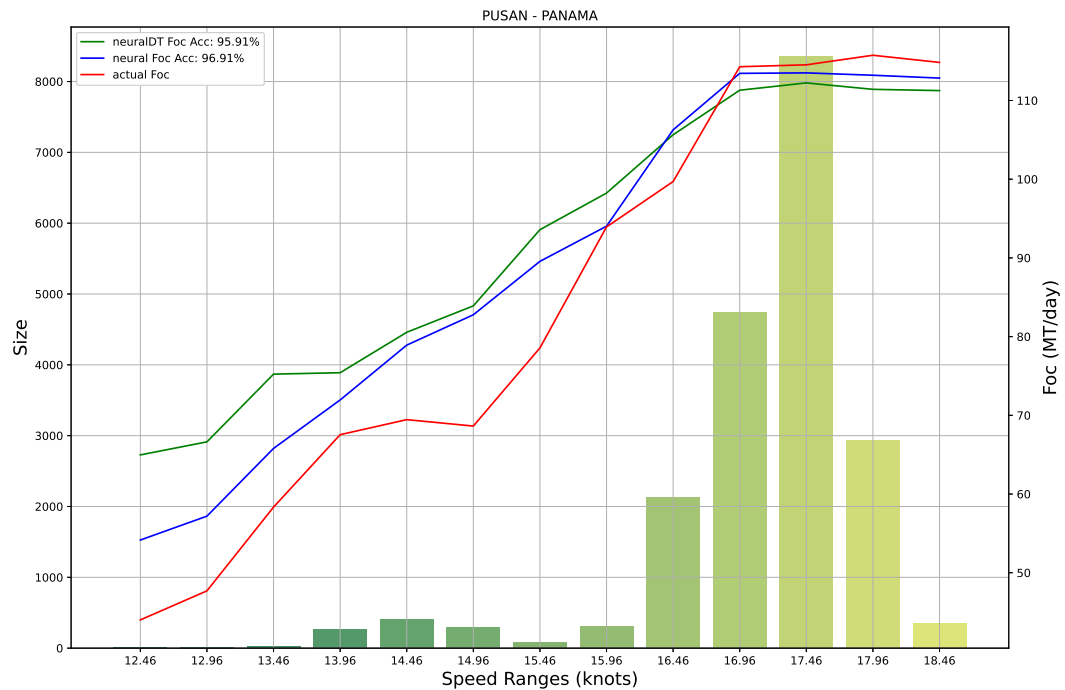- Distance Travelled: **315.03 n mi**

- Draft: **8.8 m**

Figure 7: FOC Actual vs Predicted / Speed Ranges, QINGDAO - NINGBO

Leg 6 # Basic INFO:

- Total Actual FOC : **25.97 MT**

  - Total Predicted FOC (Neural Net): **28.57 MT**
  - Total Predicted FOC (Neural DT): **27.69 MT**
  - FOC Perc Diff (Neural Net): **9.53 %**
  - FOC Perc Diff (Neural DT): **6.41 %**

- Departure Port : **YANGSHAN / 2020-06-05 01:12:00**

- Arrival Port : **PUSAN / 2020-06-06 10:32:00**

- Total Sailing Time: **33 hours**

- Distance Travelled: **288.35 n mi**
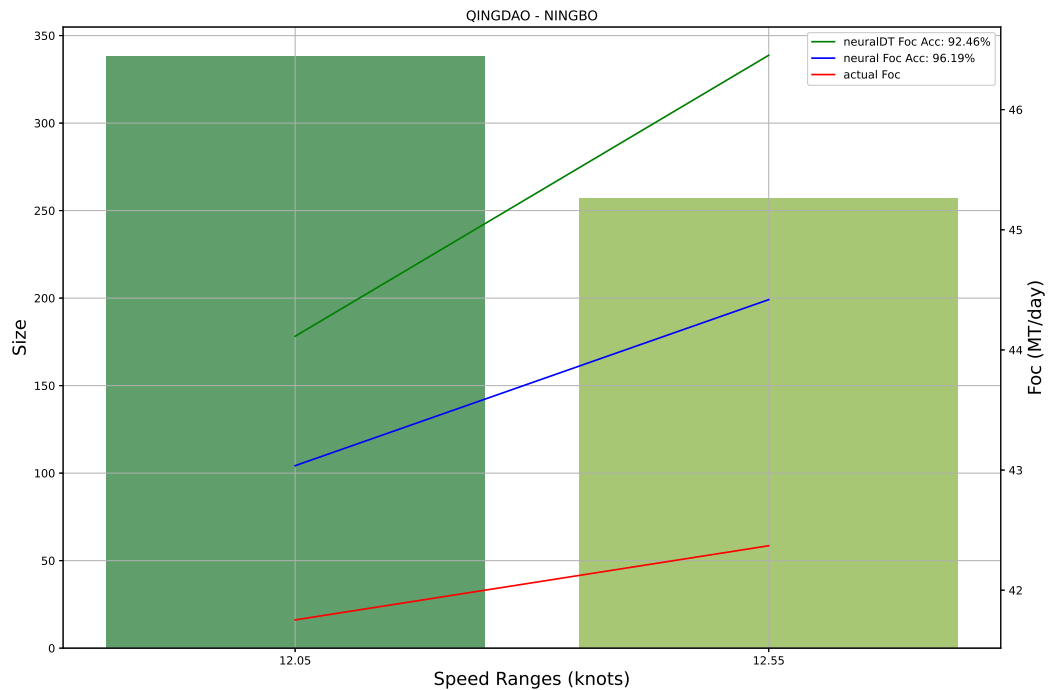
- Draft: **11.2 m**

Figure 8: FOC Actual vs Predicted / Speed Ranges, YANGSHAN - PUSAN

Leg 7 # Basic INFO:

- Total Actual FOC : **67.60 MT**

  - Total Predicted FOC (Neural Net): **72.47 MT**

  - Total Predicted FOC (Neural DT): **70.88 MT**

  - FOC Perc Diff (Neural Net): **6.95 %**

  - FOC Perc Diff (Neural DT): **4.74 %**

- Departure Port : **YOSU / 2020-05-28 15:12:00**

- Arrival Port : **QINGDAO / 2020-05-29 15:41:00**

- Total Sailing Time: **24 hours**

- Distance Travelled: **299.11 n mi**
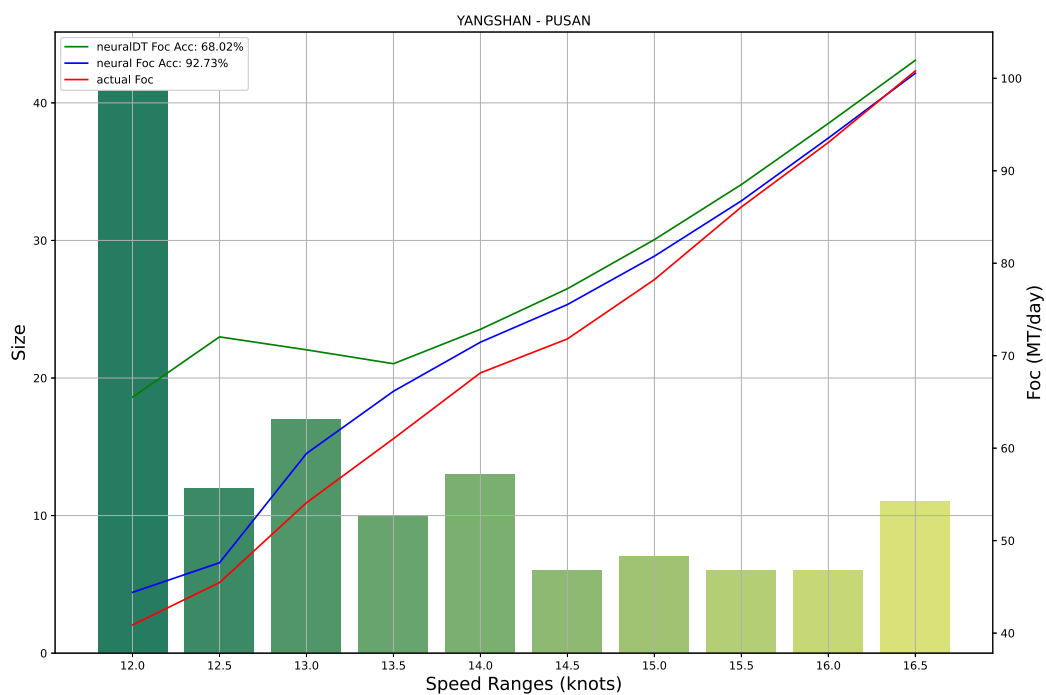
- Draft: **7.3 m**

Figure 9: FOC Actual vs Predicted / Speed Ranges, YOSU - QINGDAO

Leg 8 # Basic INFO:

- Total Actual FOC : **673.82 MT**

    – Total Predicted FOC (Neural Net): **733.05 MT**

    – Total Predicted FOC (Neural DT): **713.53 MT**

    – FOC Perc Diff (Neural Net): **8.42 %**

    – FOC Perc Diff (Neural DT): **5.72 %**

- Departure Port : **ZHOUSHAN / 2020-05-17 15:48:00**

- Arrival Port : **YOSU / 2020-05-28 07:06:00**

- Total Sailing Time: **255 hours**

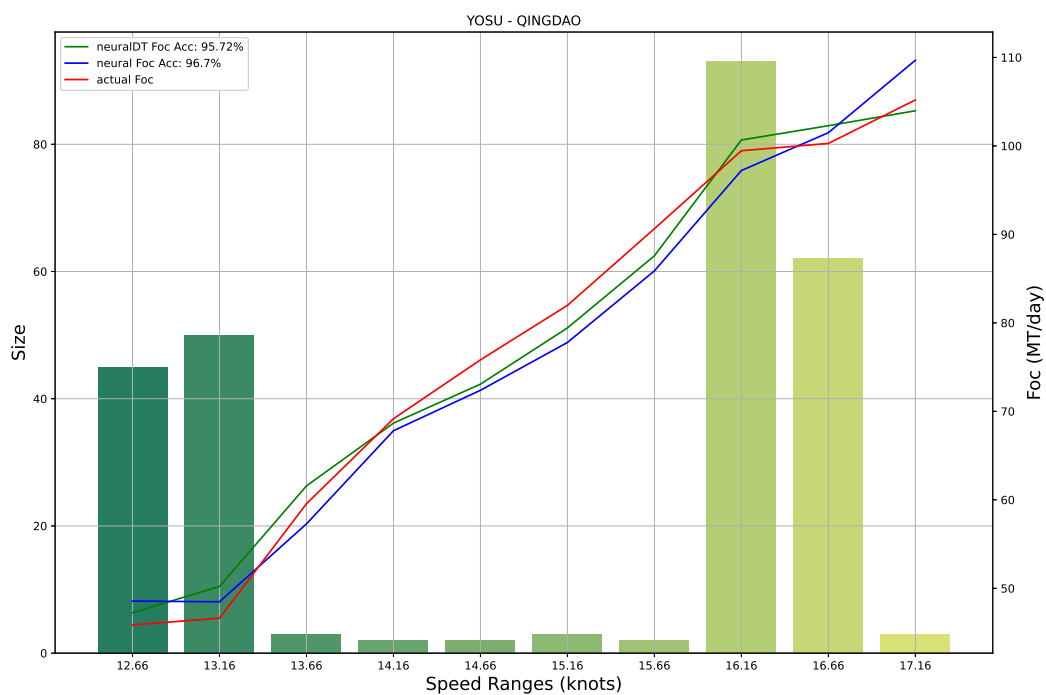- Distance Travelled: **281.17 n mi**

- Draft: **7.1 m**

Figure 10: FOC Actual vs Predicted / Speed Ranges, ZHOUSHAN - YOSU

3 Routing Optimization Per Leg Info

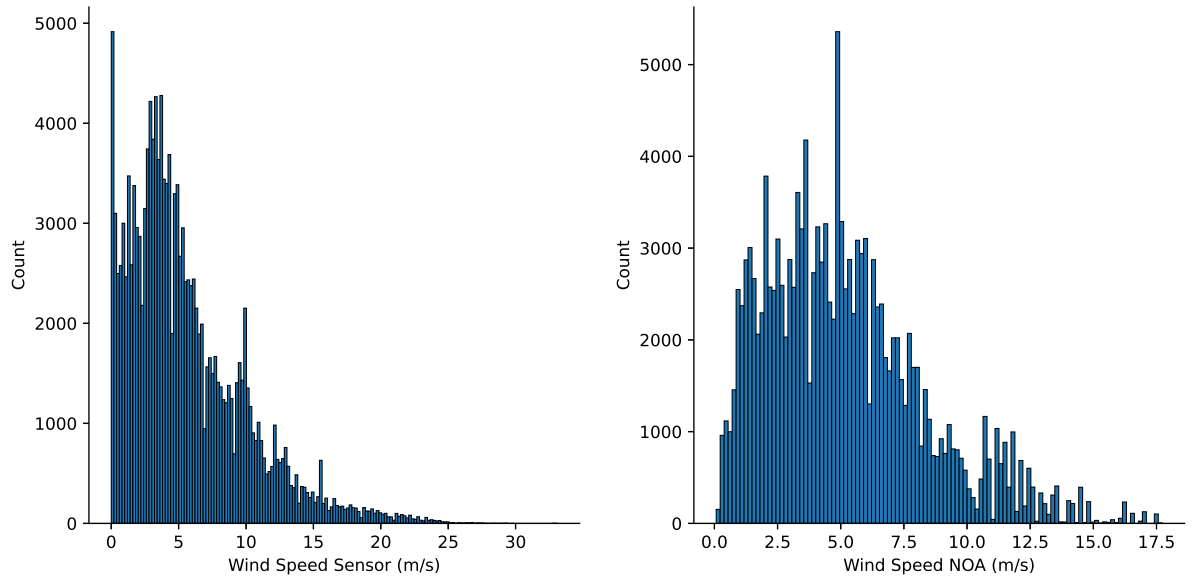# 4 Weather Comparison - Sensor / Weather Service (NOA)
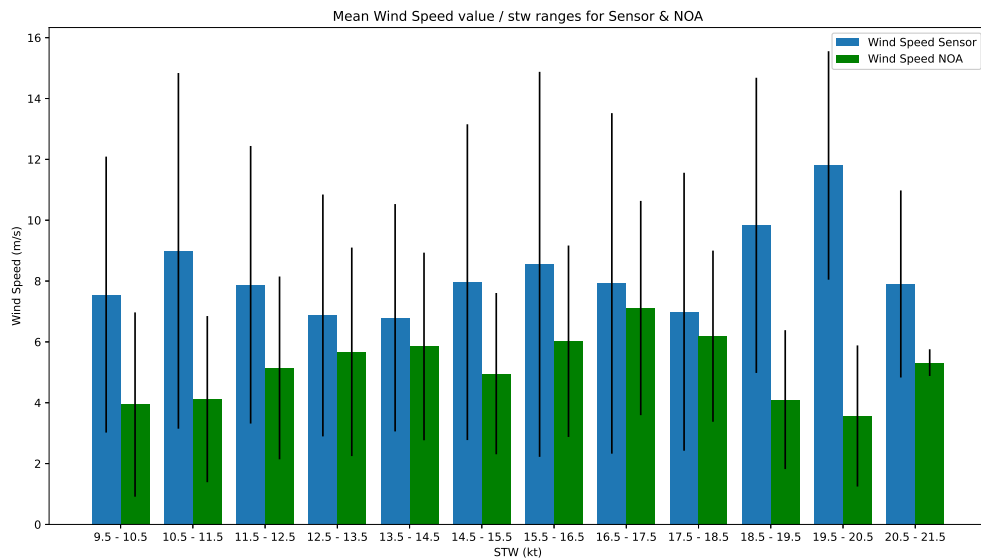

Figure 11: Wind Speed Distributions Comparison

Figure 12: Initial / Weather Features Comparison per Speed Range