DRIFT CHARACTERISTICS

of

50,000 to 70,000 DWT TANKERS

(First Edition – 1982)

The OCIMF mission is to be the foremost authority on the safe and environmentally responsible operation of oil tankers and terminals, promoting continuous improvement in standards of design and operation.

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FOREWORD

Following investigations into drift characteristics, it was discovered that results obtained for VLCCs were not necessarily indicative of the behaviour of smaller vessels. Concern was expressed by the American Institute of Merchant Shipping (AIMS) for the need to include within the scope of the studies details for vessels of the 50,000 to 70,000 dwt range, particularly in view of the present numbers of these ships.

Computer programs were developed by the National Maritime Institute (NMI) to assess drift behaviour of these ships, which required validation. Some free model experiments were carried out to investigate wave drift forces and also to determine the accuracy of results obtained.

The Oil Companies International Marine Forum (OCIMF) and the NMI worked together upon the project to estimate the effects of wind, waves and current upon the drift track, heading and speed of such vessels under a variety of conditions.

The Appendix to the study contains some 28 of the 72 runs, being representative of the whole series or effects obtained. The raw data on the experiments may be obtained from:

The National Maritime Institute,
Feltham,
Middlesex, TW14 0LQ,
England.

CONTENTS

1 INTRODUCTION

The drift of disabled large tankers has been studied at NMI using a combination of model and theoretical investigations (Refs. 1 and 2). An attempt was made during these studies to generalise the results so that drift characteristics of smaller tankers could be deduced from data collected from models of their larger counterparts. This work was incomplete and required validation, so that when the National Maritime Institute was approached by the Oil Companies International Marine Forum (OCIMF) to predict the drift of tankers in the 50-70,000 dwt range, it was decided to carry out in addition to the predictions a short series of experiments to aid in validating the calculations. The project ultimately became a joint venture between NMI and OCIMF, with the model experiments being funded by the Ship and Marine Technology Requirements Board (now the Mechanical and Electrical Engineering Requirements Board) of the Department of Industry. The computational studies and report analysis were funded by OCIMF.

Results of both the experimental and computational studies are included in this report.

2 CONDUCT OF THE STUDY

When a ship drifts in the open sea, its equilibrium track, speed and heading depend on a balance between the external forces and moments acting on the ship (from wind, current, waves and Coriolis acceleration (Ref. 1)) and the hydrodynamic forces and moments due to its resultant drift through the water.

Wind effects may be estimated from the results of wind-tunnel experiments on models of the ship in question (Ref. 2) while a uniform current may be assumed to cause a translation in the direction of the current. Coriolis or geostrophic acceleration effects may be calculated directly (Ref. 1) while the hydrodynamic forces resisting motion may be deduced from model experiments (Ref. 2).

This leaves forces and moments due to waves to be estimated. A method by which this may be accomplished is outlined in Ref. 1, but, as it was based on data for VLCC models, it was desirable to carry out some model experiments to confirm its applicability to tankers in the deadweight range of interest.

Accordingly a series of experiments was carried out in which a representative model tanker was allowed to drift in waves alone in the absence of wind and current. Although the main aim of these experiments was to provide validation data for the NMI drift prediction computer program, the results were of interest in their own right, especially since the opportunity was taken to explore the effect of heel, trim, rudder angle and draught on drift in waves.

3 MODEL EXPERIMENTS

3.1 THE SHIP MODEL

A stock NMI model, number 5528, was used for the experiments. Originally a model of a 40,000 dwt bulk carrier, it was chosen as that closest in form to the tankers under investigation. Its principal particulars are shown in Table 1 where they are compared with those of the 50,000 dwt tanker *Ondina.* (Model dimensions are scaled to give the same length between perpendiculars as *Ondina.*)

The body plan, bow and stern profiles of the model are shown in Figs. 1 and 2.

It is clear that model 5528 could represent a ship of about 50,000 dwt albeit with slightly less beam than would be expected for a tanker of similar size. This, however, did not affect the validation which was carried out for the model as tested, the results then being generalised to a more typical tanker form.

TABLE 1

	Symbol	Unit	Model	Ship	*Ondina*
Length between perpendiculars	L_{pp}	m	2.841	216.42	216.42
Breadth, moulded	B	m	0.363	27.65	31.27
Load draught	T_L	m	0.149	11.35	12.19
Trim			level	level	level
Scale	λ		76.178	—	—
Displacement volume	∇	m^3	0.1270	56,143	—
Block coefficient	C_B		0.816	0.816	—
Prismatic coefficient	C_p		0.823	0.823	—
Maximum section coefficient	C_x		0.992	0.992	—
Wetted surface coefficient $S/\sqrt{\nabla L_{pp}}$			2.631	2.631	—
Rudder area/$(L_{pp} \cdot T_L)$			0.0155	0.0155	—
Maximum rudder angle		degs	±35	±35	
Screw particulars					
Model screw number			W228	—	—
Number of blades			4	—	—
Diameter		m	0.0921	7.02	—
Boss diameter (max.)		m	0.0203	1.55	—
Design face pitch (mean)		m	0.0677	5.16	—
Blade area ratio			0.453	0.453	—
Pitch/diameter ratio			0.735	0.735	—

Model 5528 was constructed of rigid polyurethane foam with a rudimentary superstructure added as in Fig. 3 which shows the model under tests in waves. Fully-proportional radio-control of screw revolutions and rudder angle was provided to allow initial positioning and final retrieving of the model during experiments.

The model was also fitted with an onboard heading gyro and telemetry system together with the transmitter of the NMI ultrasonic tracking system. The flux-gate and cover associated with the gyro, as well as the ultrasonic probe amidships can all be seen in Fig. 3.

Before each series of experiments the model was dynamically balanced and inclined to find both the yaw gyradius in air and the metacentric height.

3.2 THE EXPERIMENTS

The experiments were carried out in the number 4A manoeuvring tank at the National Maritime Institute. This tank is some 30 m square and 2.44 m deep. It is equipped with a wedge-type wave-maker along one side with a beach along the side opposite. Regular or irregular uni-directional long-crested waves can be generated in this tank with the irregular waves conforming to a fixed spectrum. The spectrum does not correspond to a standard form (such as the Oceanic International Towing Tank Conference spectrum) and is dominated by frequencies at or near the modal frequency. It was possible, however, to pre-set both the required significant wave-height, H_S, and modal period and the resulting H_S, zero up-crossing period and spectrum shape were monitored throughout the experiments using a conductive wave probe, a spectrum analyser and micro-computer.

All experiments started with the model at-rest close to the wavemaker either heading directly into, just less than or just more than beam-on to the waves. The wavemaker was then started and the track and heading of the model recorded using the NMI ultrasonic tracking system to record the position of the midships of the model and the gyro to record heading. The results were combined on shore and presented in real-time on a visual display unit. Results were also punched on to paper tape for further analysis.

The conditions of the model for the various experiments are given in Table 2 which also lists measured roll, heave and pitch periods together with measured metacentric heights. Displacement in load or ballast conditions remained constant while heel, trim, etc. were varied; all results are scaled to full-size at $\lambda = 76.178$.

TABLE 2

Draughts		Trim	Heel (deg)	Rudder (deg)	GM (m)	Periods (s)		
FP(m)	AP (m)					Roll	Pitch	Heave
11.35	11.35	LEVEL	0, 4S	0, ±35, FF	3.19	10.1	7.9	10.5
13.41	8.47	BOW	0	0	—	11.5	9.6	7.9
10.90	12.05	STERN	0	0	—	11.1	8.7	7.9
4.64	8.30	STERN	0	0, ±35	1.81	13.4	8.7	—

Note: FF = 'flying free'.

The wave conditions tested are referred to below in terms of Beaufort Numbers. These follow the standard ITTC Beaufort Number/significant wave height/windspeed relationships given in Table 3.

TABLE 3

Beaufort Number	H_S (m)	Modal frequency (Hz)	Wind speed (m/s)
5	2.71	0.121	9.3
6	3.90	0.101	12.4
7	5.24	0.087	15.4
8	7.16	0.075	19.0
9	9.24	0.066	22.6
10	11.83	0.058	26.8

Note: H_S = significant wave height.

3.3 RESULTS OBTAINED

In all some 72 runs were carried out of which three were ignored due to equipment malfunction. In the majority of experiments the model was allowed to drift freely in the tank under the action of waves, but for some (numbers 27, 33, 47 and 48(1)) attempts were made to manoeuvre the model using limited power.

Examples of the results obtained are given in the Appendix.

elapsed time in minutes
down-wave *(x)* and across wave *(y)* positions in nautical miles
ship's heading in degrees
track velocity (or drift speed) in knots
track direction in degrees

In all cases the axis system and definitions of Fig. 4 have been used.

The results are summarised in Table 4 in which standard deviations are shown for cases where runs were repeated, the number of runs in the sample being given as *n.* It is apparent from this Table and from the results in the Appendix that three runs (58, 59 and 60) were undertaken with a ballast draught trim by the stern of 1.5 m (5 ft) rather than the 3.66 m (12 ft) stern trim of Table 2. This gave some indication of the effect of trim in ballast draught, but it should be remembered that the 'normal' ballast draught condition is that of Table 2 with a stern trim of 3.66 m.

3.4 DISCUSSION OF RESULTS

The results of Table 4 are of some interest and the following observations, relating to the drift of the model in waves, have been made. Where appropriate, tests of significance have been made using the Student's '*t*' test.

(i) In load or ballast draught and in normal trim, the angle of the rudder had no significant effect on drift.
(ii) Changing from load to ballast draught at Beaufort 9 waves caused a significant change in drift track, but changes in speed and heading were not significant. The effect of ballast draught (with a 3.66 m trim by the stern) was to cause the model to make more headway across the waves, changing its drift direction from 166° to 142°.
(iii) At load draught, a 4° starboard heel made no significant difference to track, speed or heading at a significant wave-height of 5.5 m.
(iv) At a significant wave-height of 5.5 m stern trim in load draught had no significant effect, while at a significant wave-height of 10.8 m, stern trim in load draught had a significant effect on drift direction, causing the model to make more headway.
(v) No effect of changing trim from 1.5 m to 3.66 m by the stern was observed in ballast draught.
(vi) At a significant wave-height of 10.8 m, a trim by the bow had a significant effect on drift track only, causing the model to make more headway.

TABLE 4

Beaufort Number	H_S (m)	T_Z (s)	Track heading (deg)	Speed (knots)	Heading (deg)	δ°	Trim	*n*
Load								
5	2.607 (0.138)	9.117 (0.942)	154 (3.950)	1.533 (0.147)	94.1 (1.293)	0	N	6
6	4.142 (0.257)	10.170 (0.594)	158 (1.826)	1.375 (0.096)	89.5 (1.291)	0	N	4
6	3.891	9.860	155	1.5	89.5	35S	N	1
6	4.053	9.750	155	1.5	90	35P	N	1
7	5.408 (0.291)	12.095 (0.618)	157 (2.915)	1.27 (0.045)	93.6 (4.736)	0	N	5
7	5.678	14.790	159	1.3	92	35S	N	1
7	5.719	17.452	160	1.0	92	35P	N	1
7	5.666 (0.110)	11.406 (0.105)	158 (0)	1.175 (0.035)	93 (2.828)	0	4° heel	2
7	5.838 (0.083)	11.172 (0.021)	157 (2.828)	1.35 (0.071)	97.75 (0.353)	0	B	2
7	5.853 (0.064)	11.999 (1.046)	154.5 (0.707)	1.2(0.141)	96.5 (0)	0	S	2
8	7.924 (0.282)	13.360 (0.267)	161.3 (2.160)	1.025 (0.061)	93 (4.486)	0	N	6
8	8.091	13.322	160	1.0	107 (?)	35S	N	1
9	10.946 (0.252)	14.505 (0.253)	166 (1.732)	0.833 (0.236)	93.33 (4.509)	0	N	3
9	10.741 (0.393)	14.890 (0.351)	163.75 (2.986)	0.963 (0.149)	94.67 (1.756)	35S	N	4
9	10.843 (0.095)	14.729 (0.264)	147.5 (0.707)	1.2 (0.141)	92.25 (0.353)	0	S	2
9	10.776	14.916	143.5	1.3	115	0	B	1
9	11.326	14.305	148	1.25	114	FF	N	1
10	15.506	15.582	171	1.1	101	0	N	1
10	15.046 (0.246)	15.829 (0.071)	163.625 (7.181)	1.05 (0.071)	95.375 (0.946)	35S	N	4
Ballast								
5	2.544	22.374?	162	1.0	92.5	0	1.5 mS	1
6	3.929	12.290	144	1.1	100.5	0	”	1
7	5.720	12.036	143.5	0.85	101.5	0	”	1
7	5.550 (0.204)	11.901 (0.168)	141 (1)	1.267 (0.076)	121.83 (5.008)	0	3.66 mS	3
7	5.496	12.119	141	1.3	125	35P	„	1
8	7.491	14.074	146	0.9	112.5	0	„	1
9	11.347	14.789	142	0.95	105	0	”	1
10	14.564	16.310	145	0.9	110	0	”	1
6	3.962 (0.263)	10.388 (0)	158.5 (4.95)	0.55 (0.071)	93.75 (3.181)	0	”	2
5	2.467	8.639	150	1.0	91.5	0	”	1

Notes: H_s = Significant wave-height; T_z = Zero up-rossing period; δ° = Rudder angle; *n* = Number of runs; S = Trim by stern; FF = Rudder flying free; N = Normal trim (level); B = Trim by head. Figures in brackets are standard deviations.

Of course, for some of the above comparisons, only one run in a given condition was carried out and although some account of this has been taken in the '*t*' test, it should be borne in mind that some comparisons are better supported by quantity of data than others.

It is of interest to note that this model did not have multiple equilibrium drift directions in waves This feature has been observed at NMI for some models, but model 5528 settled rapidly to a repeat-able drift track, heading and speed regardless of its position or orientation at the start of the run.

4 VALIDATION OF COMPUTER PREDICTION

It has been stated in section 2 that it is necessary to validate the predictions of drift due to waves made by the NMI prediction program. This is done by comparing the model measurements with the predictions and, if necessary, making adjustments to the wave force data, obtained with VLCC models, to obtain a satisfactory drift estimate for the model in question. It is then assumed that the non-dimensionalised wave drift forces and moments thus obtained may be scaled directly to full-size, and used to estimate drift of similar hull forms.

Coriolis effects are also scaled to full-size in the final prediction and wind data, obtained from wind tunnel tests at the appropriate Reynolds Number and wind gradient, are used to add the wind force vector and moment to those from waves, drift, Coriolis acceleration and current.

It is a feature of the prediction program that, for a series of headings, equilibrium drift vectors are found and the final heading is that at which the residual moment acting on the ship is zero. This position is found by linear interpolation between values which are, hopefully, close to the final value of the interpolate. The program prints out the values between which the final interpolates of track, speed and heading were obtained and their range gives an indication of the inherent uncertainty of the final result.

Usually the range within which the interpolate is found is small, but occasionally, due to particular features of the vessel, large changes in the direction of the equilibrium drift vector can occur for small heading changes thereby increasing the uncertainty of the prediction.

The interpolates and their ranges of uncertainty are shown in Fig. 5 where they are compared with measured values and their standard deviations. It is seen that for the range of H_s used for prediction (Beaufort 6, 7, 8 and 9 from Table 3) speed and heading are better predicted than track. However, the range of uncertainty in the prediction of track is fairly large as shown, and the measured values lie within this range. With this in mind it was assumed that an adequate prediction of wave drift was obtained.

5 PREDICTIONS OF DRIFT

5.1 GENERAL

Having validated the wave-drift section of the program, it was possible to carry out some studies to investigate the effect of various parameters such as draught and ship size on drift in given weather conditions. Although drift estimates may be obtained by direct use of the program, it is possibly of more use to obtain predictions for a variety of conditions and present them graphically in such a way as to allow rapid estimates of drift to be made.

5.2 DRIFT ESTIMATION CURVES

Estimations have been made of the drift of a 70,000 dwt tanker with the following principal particulars:

Length between perpendiculars, L_{pp}	231.76 m
Breadth, moulded, B	33.53 m
Load draught, T_L	13.24 m
Block coefficient	0.81
Longitudinal above-water area at T_L	1433 m^2
Transverse above-water area at T_L	474 m^2

The ship in question is assumed to be similar to the Shell Tanker *Daphne* and wind tunnel data from Ref. 3 was used to estimate wind loadings.

Estimates of the drift of this ship in Beaufort 5, 7 and 9 open ocean conditions are shown in Fig. 6 for angles between wind and waves θ, from 0° to 360°. Also shown on this Figure are predictions of drift wind in the absence of waves, and also due to waves in the absence of wind. In all cases the heading is assumed to be between 000° and 180°.

Figure 6 therefore allows estimates to be made of drift in a variety of conditions whether the storm is fully or only partially developed. It is therefore apparent that such a plot can be used as a convenient means of estimating drift. As an example of this we suppose the wind to be coming from true north and the waves from north-west with a current of 0.5 knot from the west, heading 090°. Then the angle between wind and waves is 45° which gives, for Beaufort 9 conditions:

Track	187°
Speed	1.85 knots
Heading	091°

all relative to the wave direction, and with full-scale Coriolis effects taken into account. The actual track would therefore be 142°T, the heading 046°T and the drift speed 1.85 knots. If we now assume that current effects can be allowed for simply by making a correction for current set, we obtain a final drift velocity of 2.2 knots, a heading of 046°T and a track of 132°T.

Admittedly the current has an effect on wave encounter and should ideally be considered as yet another variable in Fig. 6. The NMI prediction program does in fact account for this effect of current so that, in a specific case, the program could be used to provide a more accurate prediction of drift than that given above. However, the method suggested here, in which wind and wave effects are combined and current effects treated separately, is probably adequate for most practical purposes.

It is of interest to note from Fig. 6 that Beaufort Number, while having some effect on drift speed, has no appreciable effect on heading or track for θ between zero and 180°. It is also apparent that there could be more than one stable drift direction for θ values near to 270°.

Although Fig. 6 covers the complete θ range from 0° to 360°, it is usual in many cases for the wind and wave directions to be co-incident or nearly so. In the comparisons which follow this is assumed to be the case so that θ is confined to the range 320° to 040°.

5.3 EFFECT OF LATITUDE

Coriolis acceleration depends on the speed of the vessel, its mass and latitude. All the predictions of drift shown in Fig. 6 were obtained for a latitude of 55°N and it is clearly of interest to see if Coriolis effects are of sufficient importance to change drift significantly at different latitudes. Accordingly estimates of drift at 55°N, 55°S and the equator are compared in Fig. 7 for the 70,000 dwt tanker at load draught. It is seen that while drift speed is negligibly affected by latitude, drift track may change by about 10° between latitudes 55°N and 55° S; the ship drifts more directly down-weather in the southern latitudes. It is also clear that the heading changes by about 5-10° over the θ range tested.

It would seem therefore that the predictions shown in Figs. 6-8 should be valid over a large part of the world, provided some small allowance, indicated in Fig. 7, is made for latitude. Incidentally, it would be expected that the smaller tankers of, say, 50,000 dwt would be less affected by changes in latitude due to their smaller mass.

5.4 EFFECT OF SHIP SIZE

All predictions of drift shown above have been for a 70,000 dwt tanker. To compare predictions for such a ship with those for a smaller vessel, the results in Fig. 8 have been obtained. These allow a comparison to be made between the drift of the 70,000 dwt tanker and one of 50,000 dwt. The smaller vessel was taken to be similar to the Shell tanker *Ondina* whose principal dimensions are shown in Table 1. The hull shape and above-water profiles were assumed to be the same for both vessels after scaling.

It is clear from Fig. 8 that the change in size from 70,000 dwt to 50,000 dwt has a negligible effect on predicted drift over the θ range considered. Moreover, computed results show that the 'waves only' and 'wind only' predictions of Fig. 6 are negligibly altered by the change in size.

It may be concluded therefore that the predictions and conclusions given above are applicable over a wide range of conditions.

6 GENERAL DISCUSSION

This study has considered only the equilibrium, steady drift of a 50,000-70,000 dwt tanker under a variety of conditions. Moreover, the discussion has concentrated on the case when the bow is to the right of the on-coming waves, i.e. the bow has initially paid off to starboard. It is probably adequate to assume that the drift of a vessel whose bow pays off to port is the 'mirror image' of the drift presented above. Strictly speaking this is not so because of Coriolis effects which act to the right of the ship's track in the Northern Hemisphere and to the left in the Southern Hemisphere. But as shown in Fig. 7 these effects are fairly small for the vessels under consideration so that the 'mirror image' assumption should be adequate for most practical purposes.

It is of interest to note that multiple equilibrium drift directions are predicted for θ in the region of 270° and shown in Fig. 6. While this was predicted for all three Beaufort Numbers under consideration, it is clear that the tendency is much less at Beaufort 5 than at Beaufort 9. It will be noted at Beaufort 9 that in one set of the multiple drift predictions, the heading and drift direction are roughly co-incident. In other words the ship is under the action of a combination of forces and moments that cause her to 'sail' ahead rather than drift broadside, or nearly broadside on to wind and waves. As the ship is therefore moving in its direction of least resistance, high drift speeds may be expected as shown. While the sailing phenomenon has been observed at sea (Ref. 4) it will probably be unlikely to be common in the tanker forms under consideration here, arising as it does for a fairly small set of combinations of wind and wave directions. Moreover, studies at NMI with other vessels exhibiting similar behaviour suggest that the 'sailing' condition may be the least stable of the two drift directions requiring only relatively small perturbations for the drift to revert to the 'broadside' on condition.

It should also be noted that no mention has been made above of the use of any limited power that may be available on the ship to alter drift direction. However, some model runs were carried out in waves alone (runs 27, 33, 47 and 48(1)). In these runs significant wave-heights varied from 11 to 15 m and in all cases screw revolutions equivalent to dead-slow, -slow- and half-astern were used. Additionally, in run 48(1), dead-slow-ahead was used at the start of the run. The rudder was either fixed amidships or fixed hard-over to starboard (run 48(1)). It is of interest to note that when astern revolutions were used, the vessel moved across the waves in the confines of the tank without turning. Clearly in a fully-developed gale with the additional effect of wind acting on the superstructure aft, astern revolutions up to half-astern would be inadequate to turn the vessel's stern into the weather by the action of the screw alone.

7 CONCLUSIONS

The drift of tankers of 50,000-70,000 dwt in wind, waves and current has been studied and the following main conclusions may be drawn:

(1) In waves alone the drift was unaffected in load or ballast draught by the angle of the rudder.
(2) Trim generally had an effect on drift direction in waves alone at load draught, tending to cause the model to make more headway when trimmed by bow or stern.
(3) Drift predictions suggest the possibility of more than one drift direction for a given initial bow pay-off. This may occur only when the angle between wind and wave directions is between 200° and 300°. One of the drift directions may give rise to the phenomenon of 'sailing'.
(4) The predicted drift track may vary by up to about 10° depending on latitude for ships in latitudes from 55°S to 55°N.
(5) Predicted drift is unaffected by ship size in the range 50,000 dwt to 70,000 dwt.
(6) To turn tankers of 50,000-70,000 dwt stern-to-weather by the use of astern power only required power greater than that given by revolutions corresponding to 'half-astern'.

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9 NOMENCLATURE

B	breadth, moulded
C_B	block coefficient
C_p	prismatic coefficient
C_x	midship section coefficient
H_s	significant wave height
L_{pp}	length between perpendiculars
T_L	load draught
θ	angle between wind and wave direction
λ	scale
∇	displacement volume

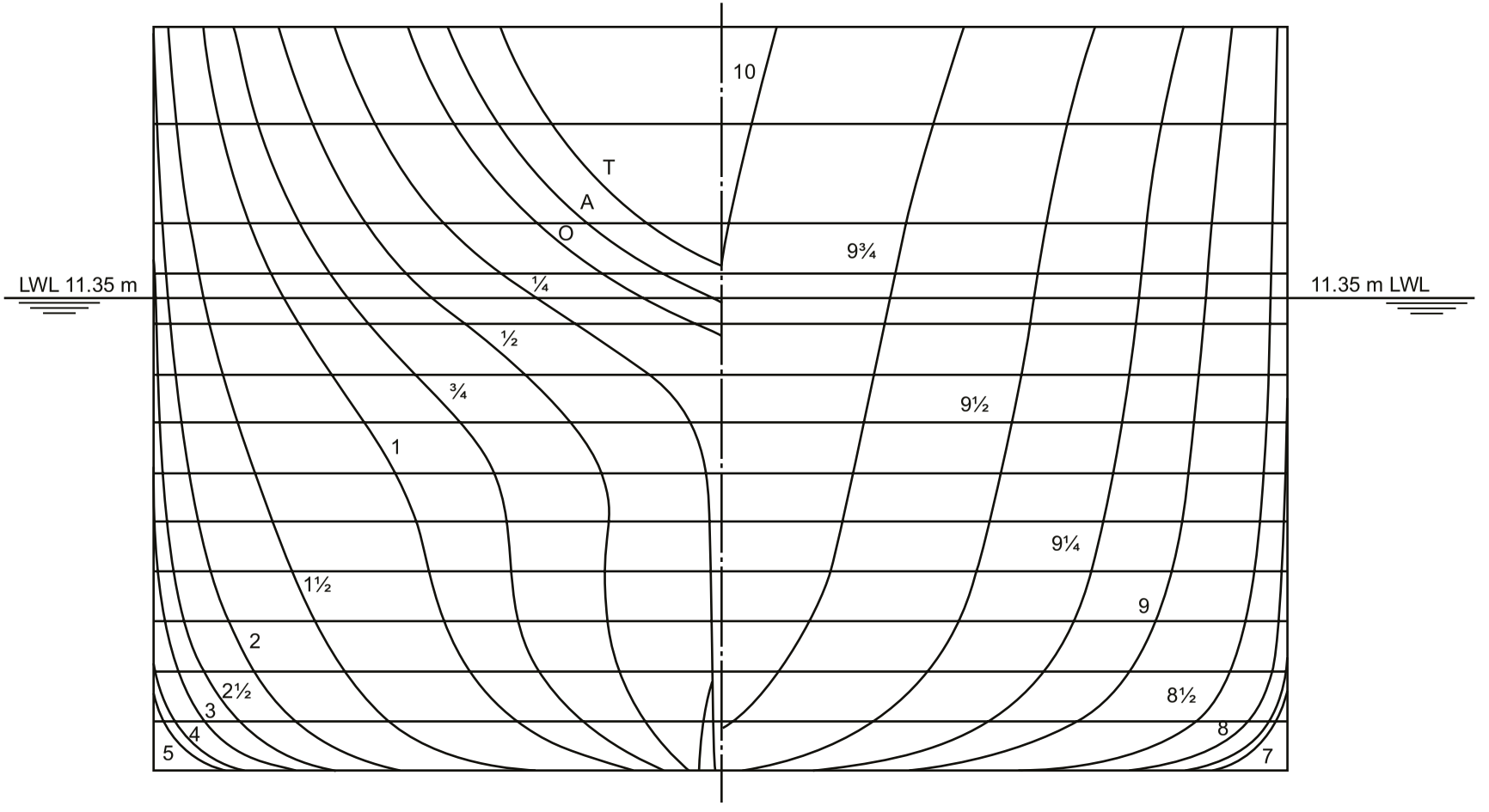


Fig. 1 Body Sections for Model 5528

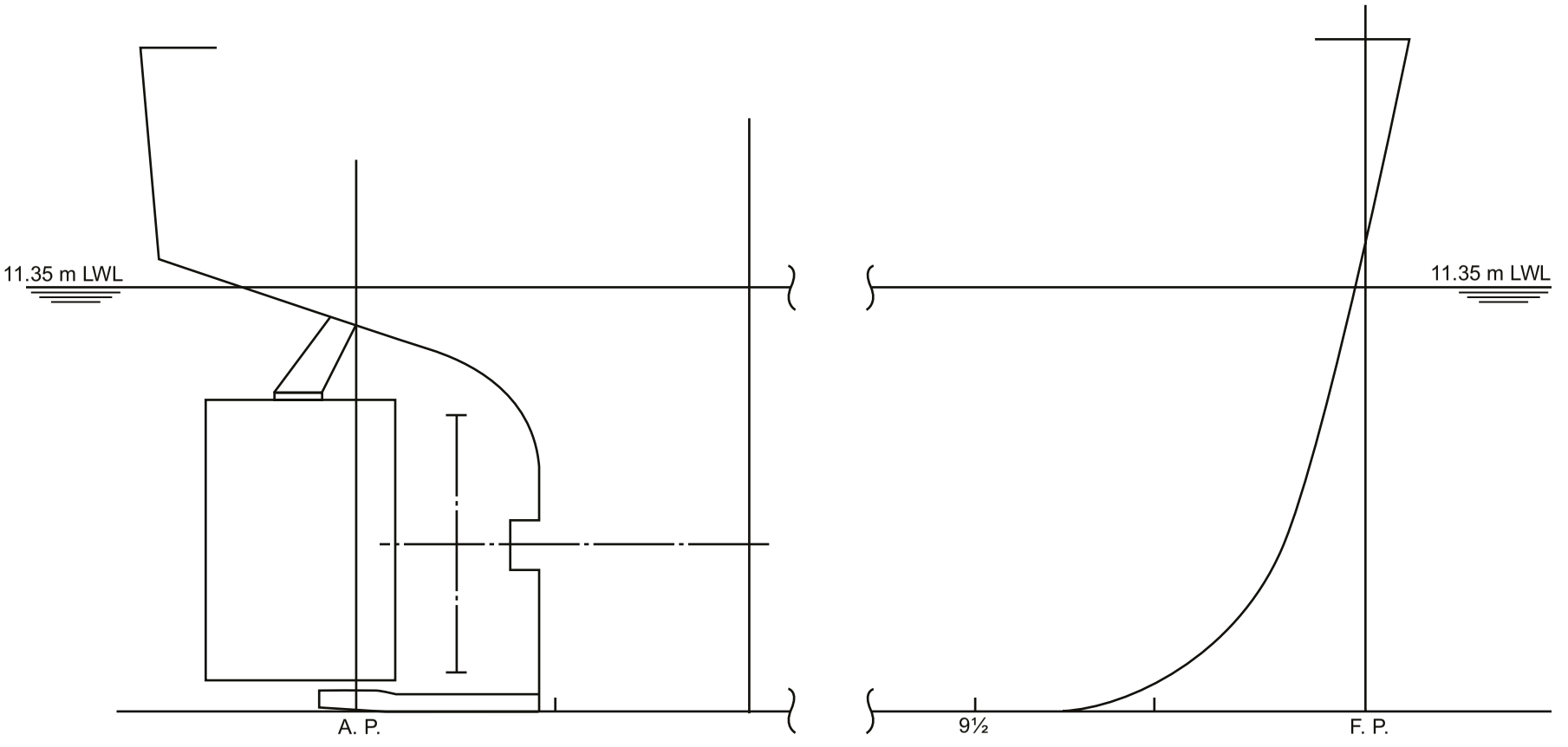


Fig. 2 Body Profile and Stern Arrangement
Model 5528

Fig. 3 Model 5528 Drifting in Waves

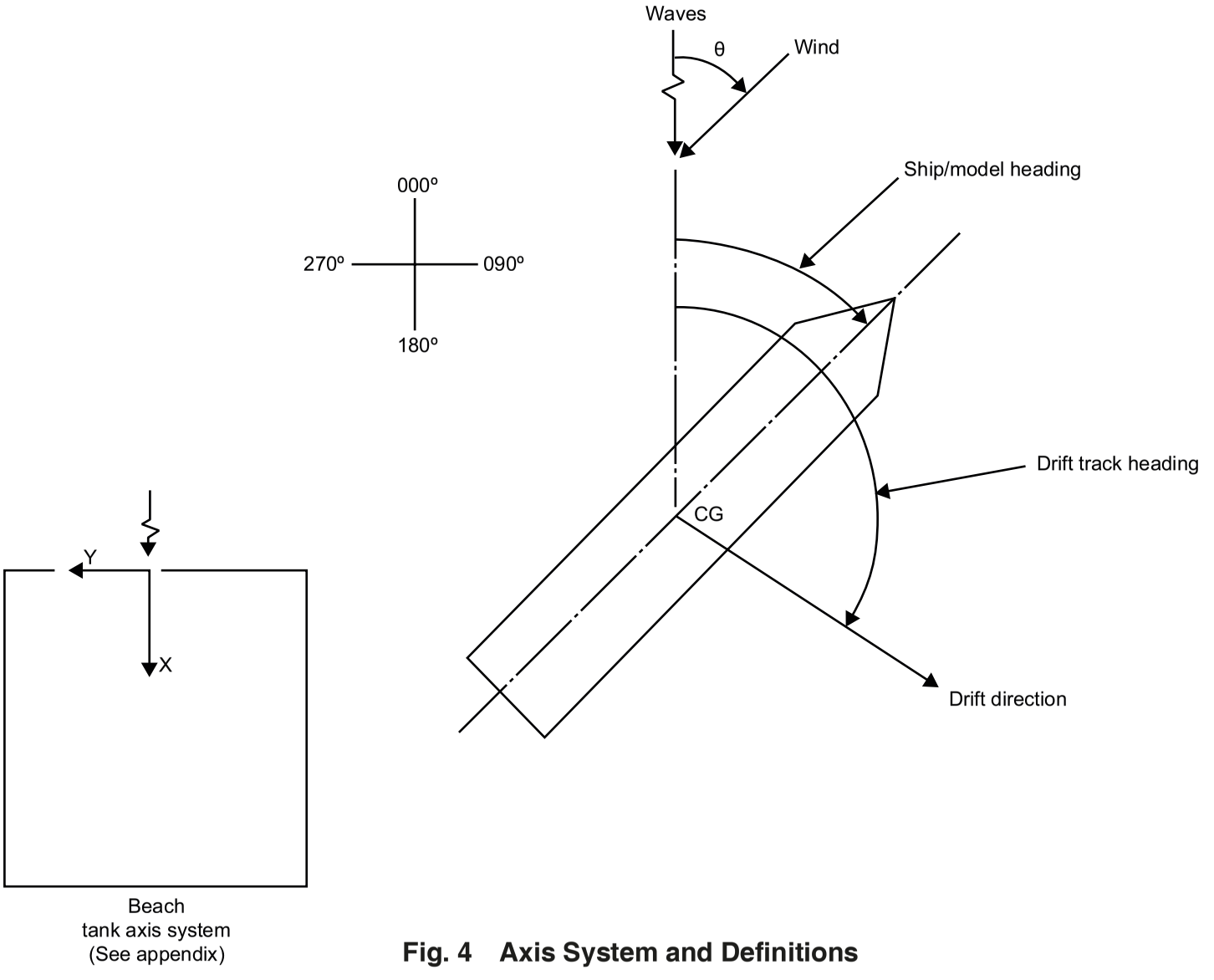


Fig. 4 Axis System and Definitions

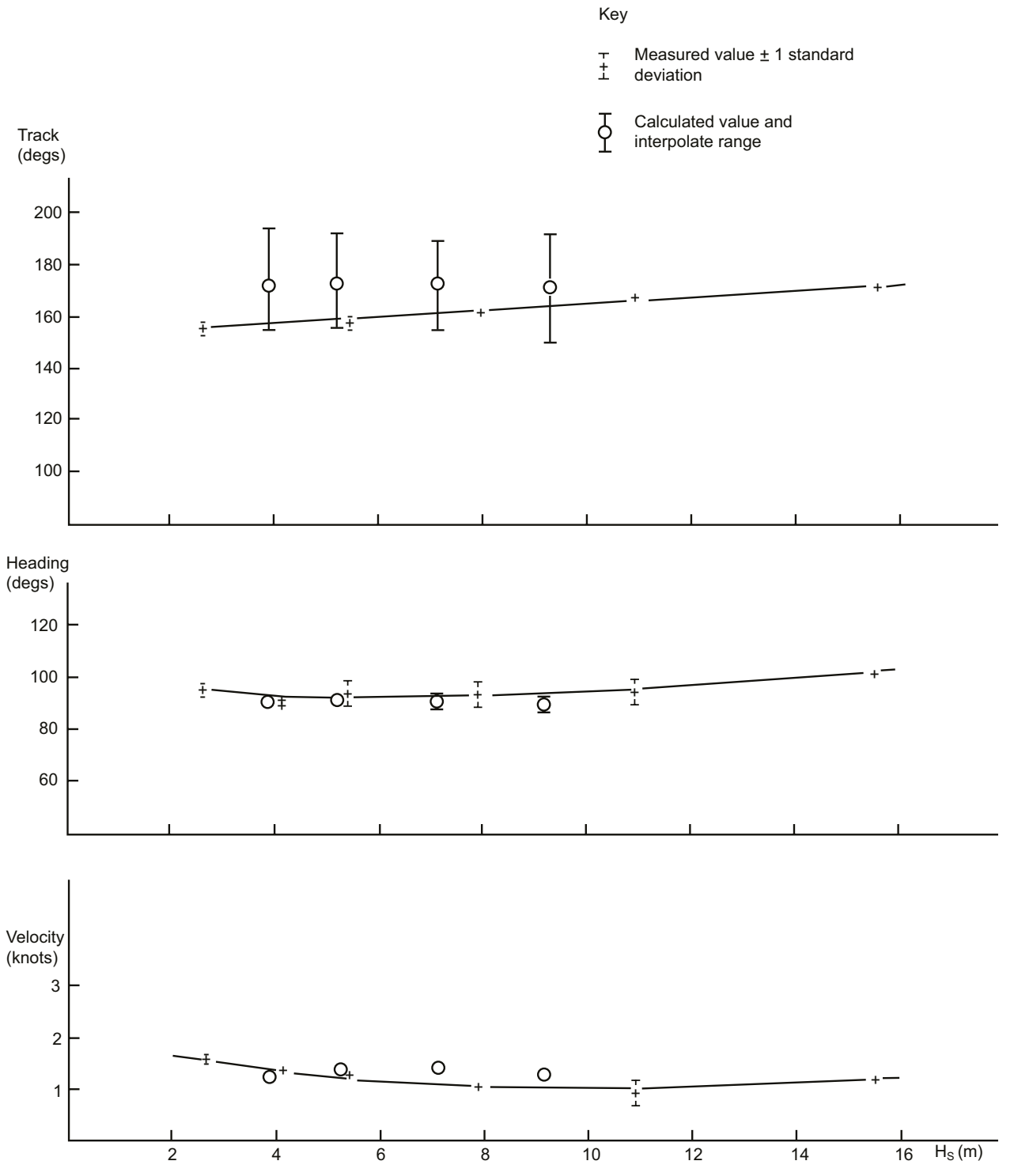


Fig. 5 Model 5528 (Load Draught) – Predicted and Measured Drift in Waves Alone

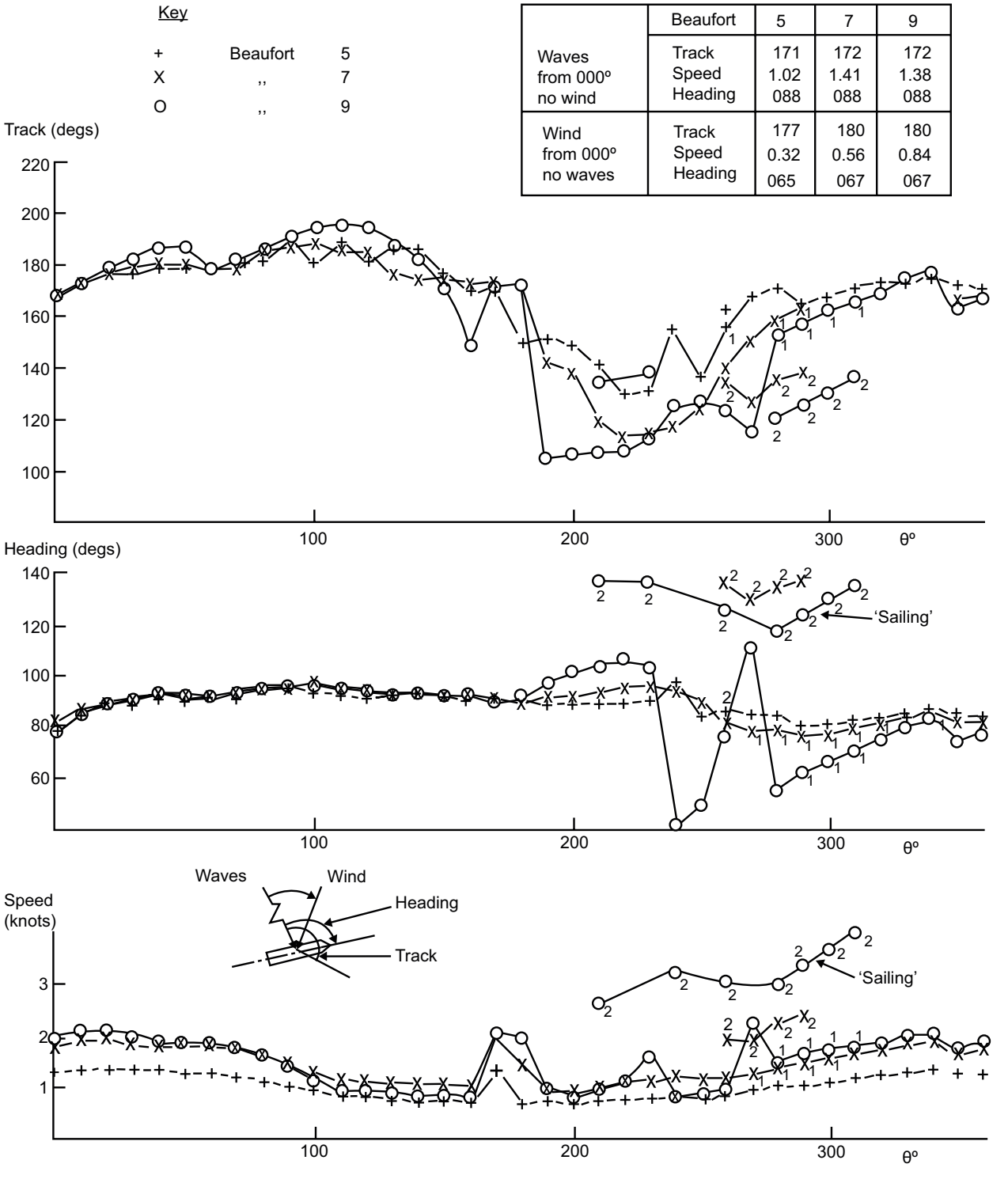


Fig. 6 Drift Prediction for 70,000 Dwt Tanker Effect of Beaufort Number (Load Draught; Latitude 55°N: Bow to Right of Wave Direction)

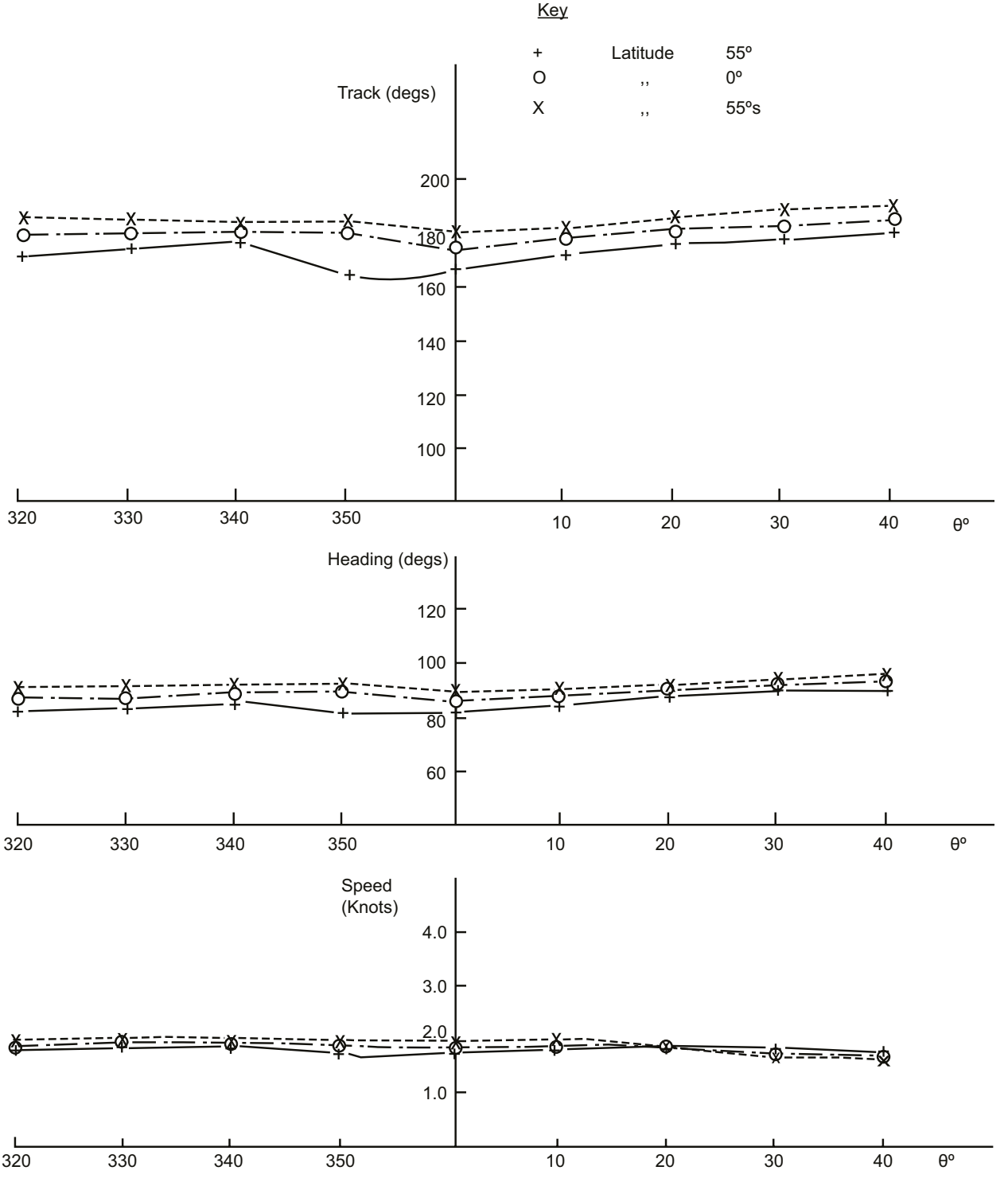


Fig. 7 Drift Prediction for 70,000 Dwt Tanker-Effect of Latitude (Beaufort 7, Load Draught, Bow to Right of Wave Direction)

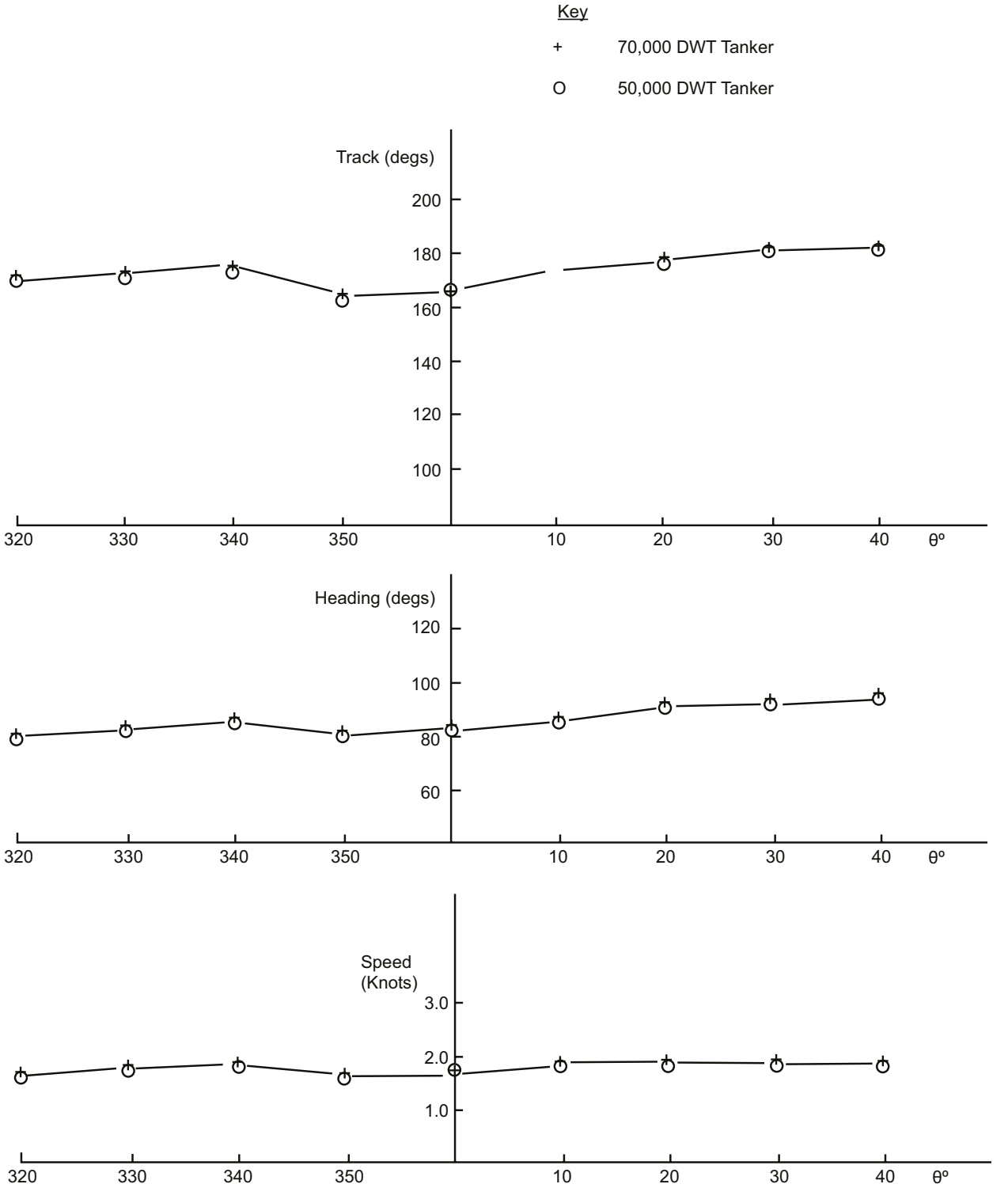


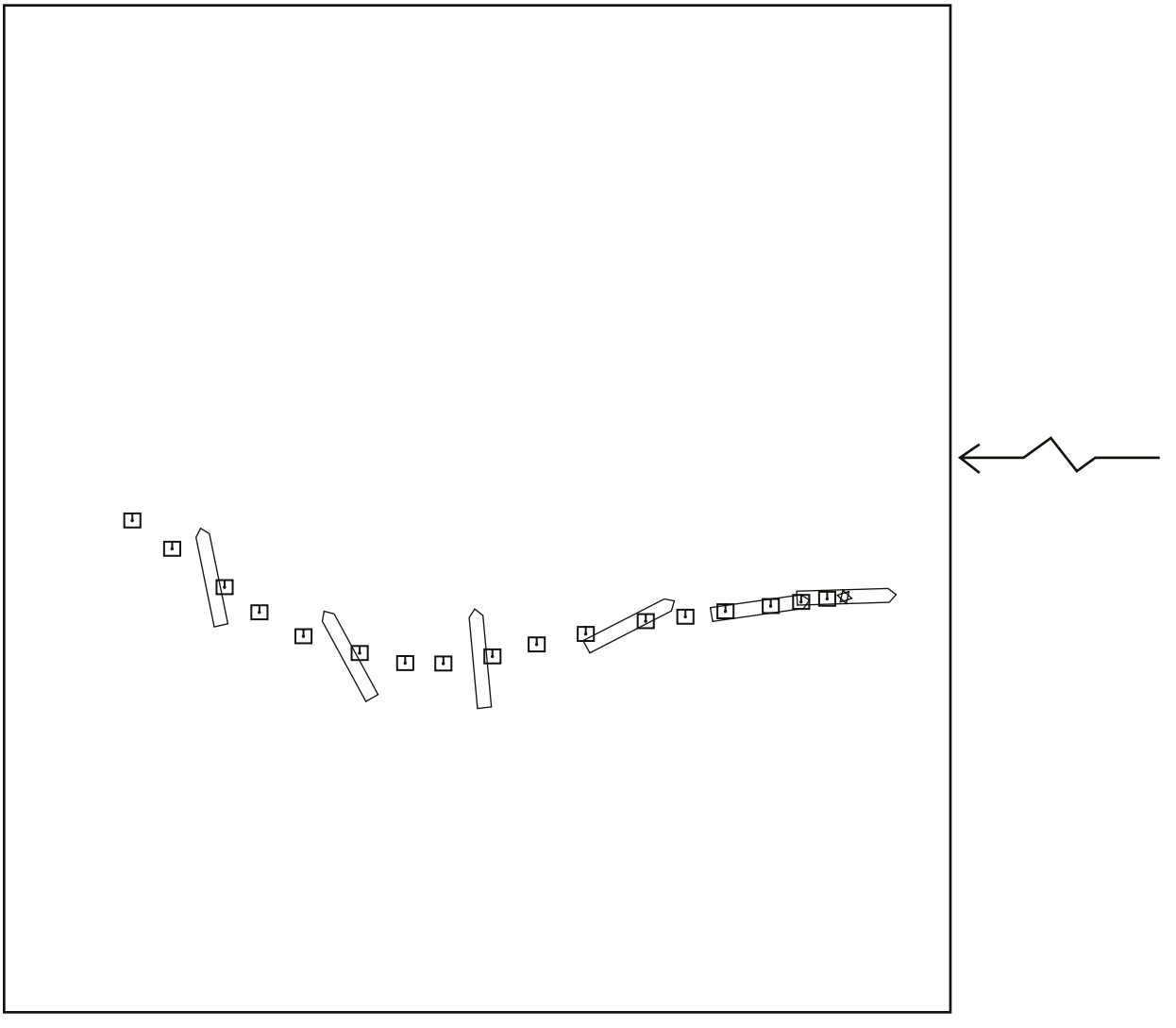
Fig. 8 Drift Prediction for Tankers – Effect of Size
(Beaufort 7 Latitude 55°N Load Draught, Bow to Right of Wave Direction)

APPENDIX

The plottings and tables which follow are taken directly from the experimental results; information on the measured wave conditions is given in Table 4.

It should be noted that on each plot the start of the run is indicated by a star-shaped symbol within the ‘ship’ diagram and the wave direction (taken as from 000°) by the symbol ←⩘—.

RUN NO. 1



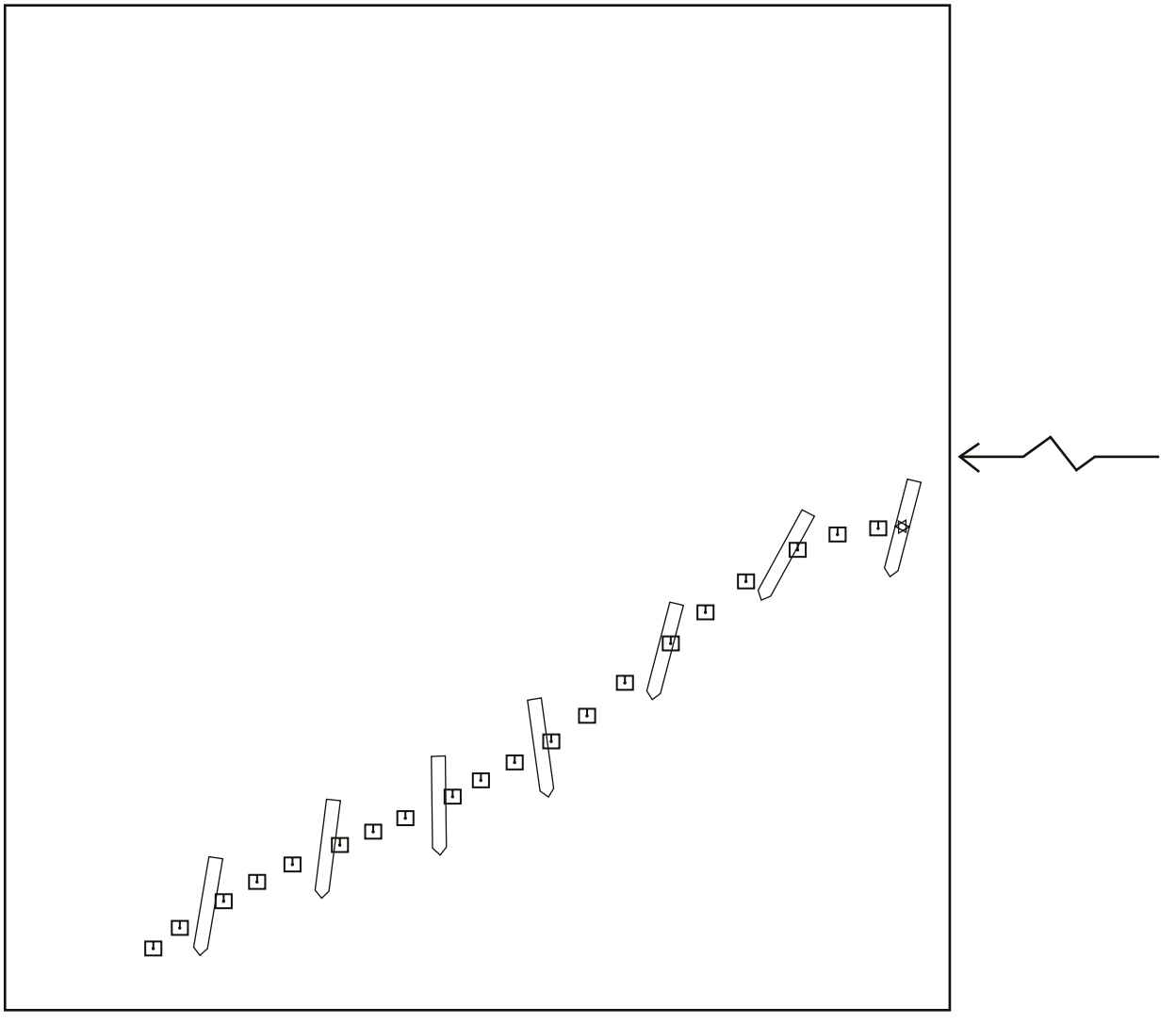
Drifting Tankers

Run Number = 1
Model Number = 5528
Condition = Normal Load
Rudder Amidships, Beaufort 5
All Results Scaled to Full Size, Scale is 1 to 76.178

TIME (MINS)	X NMILES	Y NMILES	SHIPS HDG (DEGS)	TRACK VEL (KTS)	TRACK HDG (DEGS)
1.743	.119	-.100	358.1	.627	
2.325	.126	-.102	358.1	.737	169.4
2.906	.134	-.102	358.1	.826	174.4
3.488	.143	-.103	358.1	.922	173.1
4.070	.152	-.104	357.8	.938	173.8
4.652	.162	-.105	357.2	1.027	173.8
5.234	.172	-.106	356.2	1.107	174.5
5.816	.184	-.108	355.3	1.176	174.2
6.398	.196	-.109	354.3	1.268	173.1
6.979	.209	-.110	353.2	1.334	t74.0
7.561	.222	-.112	352.2	1.354	173.0
8.143	.235	-.113	351.6	1.373	175.8
8.725	.248	-.114	350.7	1.349	177.5
9.307	.263	-.115	349.8	1.542	172.9
9.889	.279	-.119	348.6	1.712	169.3
10.471	.295	-.121	347.2	1.613	172.1
11.053	.311	-.123	345.2	1.628	172.8
11.634	.327	-.125	342.5	1.685	172.5
12.216	.343	-.127	339.5	1.675	171.7
12.798	.358	-.128	335.9	1.591	177.9
13.380	.377	-.133	331.5	1.983	165.5
13.962	.393	-.136	326.4	1.738	168.0
14.544	.412	-.139	320.7	1.954	171.6
15.126	.429	-.143	314.6	1.815	166.4
15.707	.448	-.146	308.9	1.983	170.2
16.289	.465	-.149	303.0	1.742	170.2
16.871	.488	-.155	296.0	2.487	164.7
17.453	.503	-.159	288.2	1.623	168.4
18.035	.526	-.167	280.0	2.420	160.1
18.617	.540	-.169	271.7	1.528	169.9
19.199	.555	-.171	266.2	1.530	171.6
19.781	.570	-.174	261.0	1.613	171.1
20.362	.583	-.175	254.8	1.283	172.4
20.944	.599	-.178	250.4	1.692	171.8
21.526	.611	-.177	244.7	1.238	181.4
22.108	.628	-.178	241.8	1.730	178.5
22.690	.643	-.177	238.7	1.613	183.2
23.272	.658	-.175	237.3	1.548	187.7
23.854	.677	-.174	238.0	1.913	181.3
24.435	.697	-.165	239.8	2.281	205.7
25.017	.709	-.166	242.7	1.337	174.4
25.599	.730	-.157	244.6	2.318	203.4
26.181	.745	-.151	248.5	1.663	202.3
26.763	.763	-.144	250.4	2.009	200.1
27.345	.783	-.133	252.7	2.384	209.4
27.927	.799	-.125	254.1	1.847	207.9

28.509	.815	-.115	255.4	1.879	210.7
29.090	.831	-.106	256.5	1.879	210.7
29.672	.845	-.096	257.7	1.815	215.4
30.254	.857	-.085	258.7	1.668	222.9
30.836	.872	-.073	259.3	1.983	216.3
31.418	.888	-.062	260.5	1.973	217.1
32.000	.903	-.050	261.3	1.981	218.7
32.582	.918	-.039	262.2	1.910	214.8
33.163	.932	-.029	262.4	1.863	216.6
33.745	.947	-.017	262.5	1.901	218.5
34.327	.964	-.006	262.8	2.151	213.8

RUN NO. 2



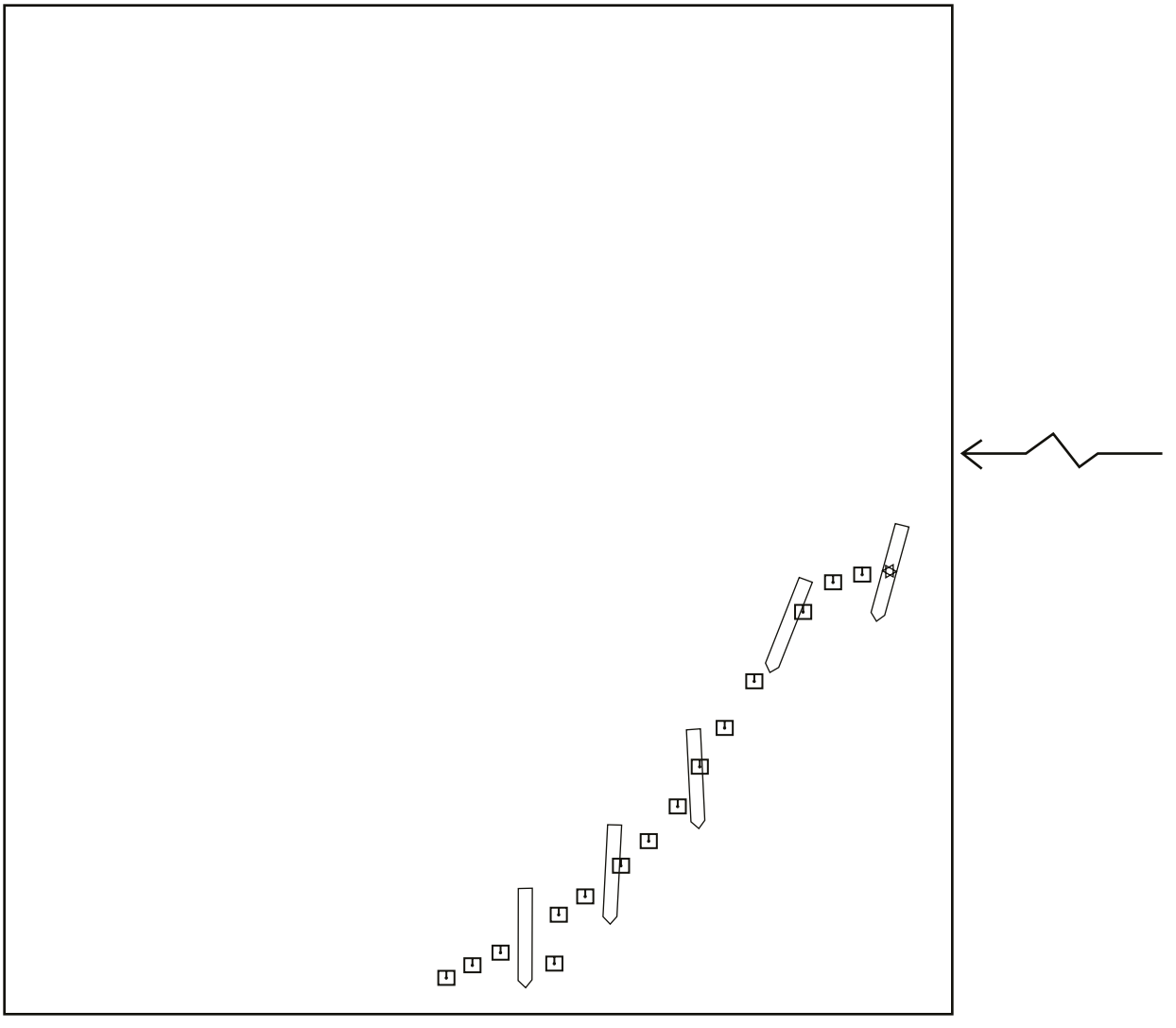
Drifting Tankers

Run Number = 2
Model Number = 5528
Condition = Normal Load
Rudder Amidships, Beaufort 5
All Results Scaled to Full Size, Scale is 1 to 76.178

TIME (MINS)	X NMILES	Y NMILES	SHIPS HDG (DEGS)	TRACK VEL (KTS)	TRACK HDG (DEGS)
1.852	.053	-.030	106.4	1.000	
2.434	.061	-.030	108.0	.841	176.8
3.016	.066	-.030	111.8	.556	183.1
3.597	.081	-.030	114.4	1.480	181.1
4.162	.098	-.030	117.9	1.849	179.3
4.744	.114	-.033	121.0	1.615	169.9
5.324	.129	-.037	121.6	1.681	165.2
5.907	.145	-.041	123.7	1.673	165.2
6.489	.159	-.048	122.4	1.589	154.4
7.071	.177	-.055	121.0	1.971	159.3
7.653	.192	-.063	118.8	1.804	151.2
8.235	.208	-.071	118.0	1.873	154.0
8.817	.225	-.082	115.9	2.053	145.7
9.399	.239	-.092	114.8	1.775	145.7
9.980	.254	-.101	113.8	1.805	150.3
10.562	.271	-.116	111.8	2.385	137.5
11.144	.287	-.128	110.0	2.072	142.7
11.726	.302	-.141	108.6	1.962	139.1
12.308	.316	-.153	107.4	1.906	138.3
12.890	.330	-.165	106.3	1.934	138.7
13.472	.338	-.174	105.6	1.196	136.0
14.054	.354	-.185	103.7	2.058	143.5
14.635	.372	-.200	102.9	2.407	140.8
15.217	.385	-.212	101.2	1.773	137.6
15.799	.405	-.229	99.3	2.793	139.4
16.381	.418	-.240	96.5	1.723	140.6
16.963	.431	-.250	93.1	1.628	141.3
17.545	.448	-.261	91.0	2.098	147.2
18.127	.464	-.272	86.9	2.058	145.1
18.708	.474	-.279	85.0	1.270	144.5
19.290	.486	-.287	83.9	1.490	148.3
19.872	.497	-.293	83.7	1.293	149.9
20.454	.503	-.296	84.3	.682	156.9
21.036	.518	-.305	84.5	1.777	149.5
21.618	.528	-.310	85.2	1.131	150.8
22.200	.542	-.318	85.6	1.707	150.1
22.782	.557	-.326	87.2	1.744	152.2
23.363	.564	-.330	88.4	.817	153.8
23.945	.578	-.336	89.3	1.547	152.9
24.527	.592	-.345	89.3	1.674	149.7
25.109	.608	-.353	89.5	1.921	152.0
25.691	.621	-.360	89.8	1.517	154.9
26.273	.633	-.365	90.2	1.331	154.7
26.855	.648	-.371	90.9	1.658	159.3
27.436	.660	-.375	91.3	1.294	158.5
28.018	.672	-.380	92.3	1.412	158.5

28.599	.686	-.386	93.1	1.555	158.7
29.181	.699	-.391	94.4	1.355	158.7
29.762	.712	-.396	95.6	1.463	159.8
30.344	.726	-.401	97.0	1.572	159.3
30.926	.741	-.406	98.6	1.594	160.3
31.508	.755	-.412	100.3	1.527	158.0
32.090	.769	-.417	101.6	1.625	159.1
32.672	.782	-.423	103.0	1.474	155.7
33.254	.798	-.430	103.4	1.735	157.4
33.836	.812	-.436	103.9	1.641	156.1
34.417	.825	-.443	103.3	1.455	151.3
34.999	.839	-.450	103.0	1.638	152.9
35.581	.851	-.458	102.6	1.468	148.1
36.163	.865	-.466	102.1	1.628	149.8
36.745	.882	-.470	100.3	1.841	165.2
37.327	.890	-.481	98.2	1.410	126.3
37.909	.906	-.489	97.0	1.845	152.8
38.490	.918	-.498	95.5	1.505	143.1
39.072	.928	-.506	93.2	1.376	141.8
39.654	.942	-.512	91.5	1.547	160.0
40.236	.950	-.522	88.2	1.303	126.5
40.818	.966	-.525	85.9	1.726	167.1

RUN NO. 7



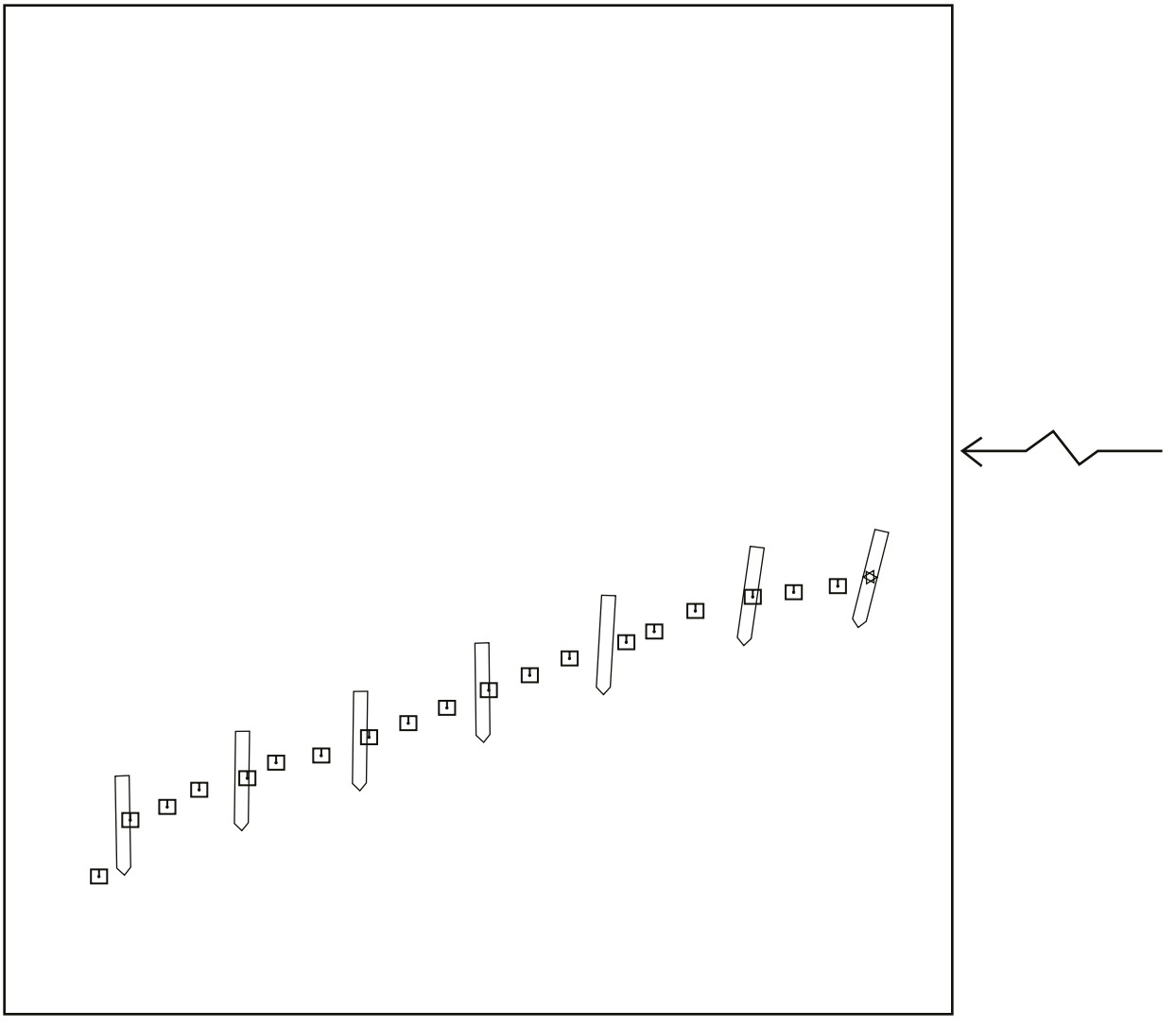
Drifting Tankers

Run Number = 7
Model Number = 5528
Condition = Load Prop Ahead Early On
Rudder 35 Deg. Stbd., Beaufort 6
All Results Scaled to Full Size, Scale is 1 to 76.178

TIME (MINS)	X NMILES	Y NMILES	SHIPS HDG (DEGS)	TRACK VEL (KTS)	TRACK HDG (DEGS)
1.815	.075	-.076	104.7	.848	
2.397	.081	-.076	102.4	.693	175.8
2.979	.096	-.075	103.9	1.541	183.3
3.561	.104	-.078	101.7	.847	162.8
4.143	.120	-.080	100.8	1.662	174.1
4.725	.133	-.082	101.8	1.394	170.2
5.307	.142	-.087	101.6	.996	149.3
5.888	.159	-.091	102.9	1.871	166.9
6.470	.172	-.104	105.4	1.855	134.4
7.052	.180	-.124	110.1	2.253	111.1
7.634	.196	-.140	112.0	2.371	135.1
8.216	.211	-.162	112.1	2.739	123.6
8.798	.224	-.185	111.2	2.649	119.8
9.380	.236	-.207	108.7	2.649	119.8
9.962	.246	-.219	108.1	1.570	130.4
10.543	.256	-.246	103.7	3.047	110.1
11.125	.272	-.263	98.2	2.359	131.9
11.707	.278	-.276	94.0	1.494	116.3
12.289	.284	-.292	90.9	1.743	110.2
12.871	.301	-.310	89.8	2.515	133.8
13.453	.306	-.324	87.3	1.551	109.0
14.035	.312	-.336	88.5	1.424	117.9
14.616	.326	-.349	89.4	1.917	138.9
15.198	.327	-.359	88.9	1.049	93.2
15.780	.341	-.372	89.8	2.008	138.2
16.362	.355	-.382	91.2	1.791	142.0
16.944	.361	-.400	91.9	1.926	109.3
17.526	.378	-.411	92.9	2.066	146.2
18.108	.387	-.421	92.7	1.415	133.1
18.690	.394	-.430	92.4	1.150	126.2
19.271	.404	-.440	92.5	1.477	138.0
19.853	.418	-.449	93.1	1.703	147.3
20.435	.423	-.457	92.6	1.000	119.7
21.017	.436	-.466	92.0	1.658	145.9
21.599	.451	-.475	92.7	1.725	149.6
22.181	.455	-.482	90.5	.851	117.6
22.763	.467	-.490	89.4	1.552	147.3
23.344	.480	-.497	89.4	1.495	148.9
23.926	.483	-.504	88.6	.705	117.2
24.508	.472	-.548	88.7	4.743	76.0
25.090	.507	-.518	89.1	4.842	220.7
25.672	.512	-.524	89.4	.758	124.8
26.254	.527	-.530	89.8	1.686	156.9
26.856	.537	-.536	89.8	1.191	151.1
27.418	.542	-.541	90.6	.764	130.5
27.999	.557	-.541	90.5	1.640	180.0

28.581	.569	-.551	90.9	1.530	139.4
29.163	.576	-.555	91.4	.904	149.6
29.745	.587	-.561	92.5	1.260	150.6
30.327	.599	-.567	93.0	1.425	155.6

RUN NO. 9



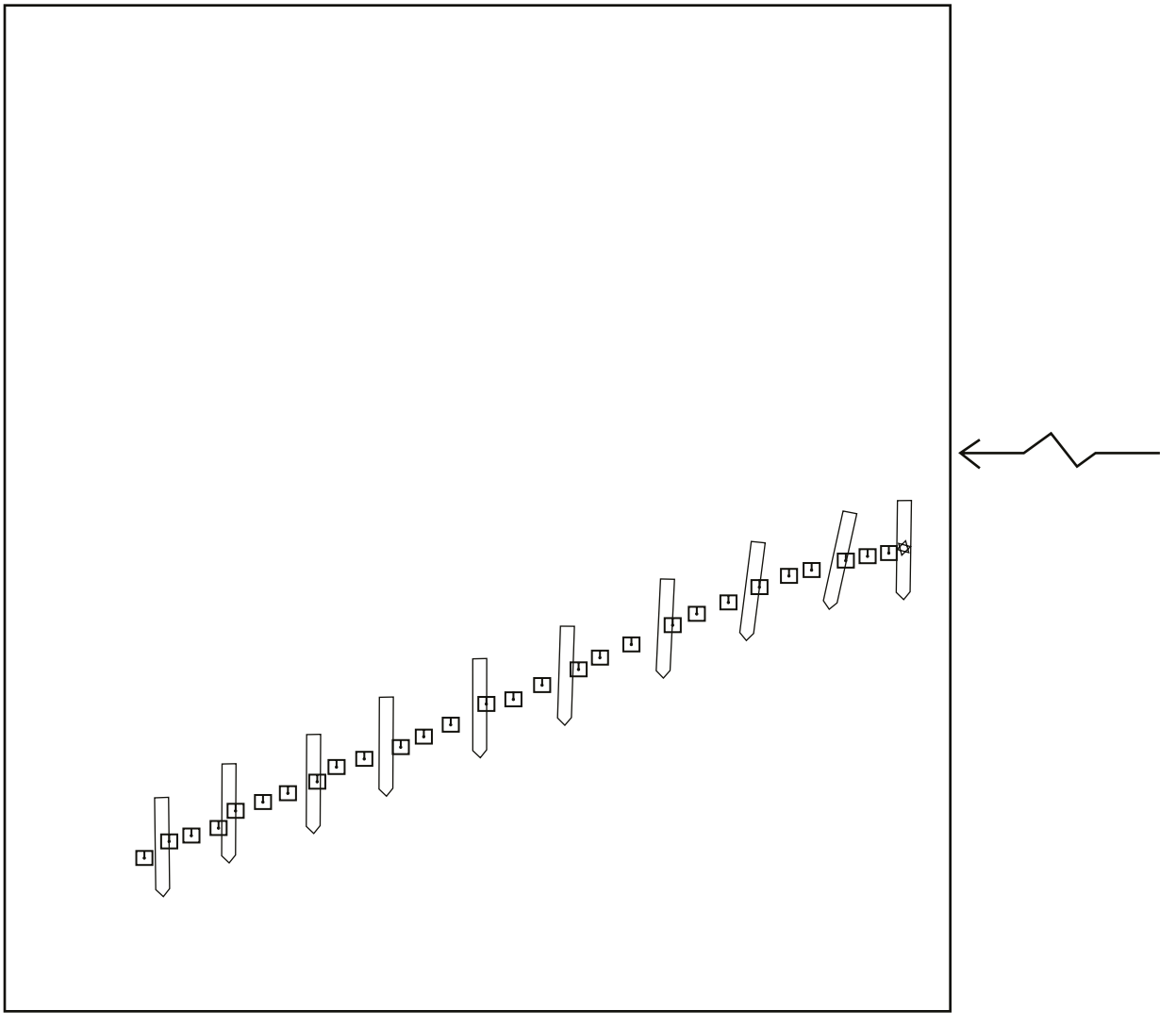
Drifting Tankers

Run Number = 9
Model Number =5528
Condition = Normal Load
Rudder 35 Degs Port, Beaufort 6
All Results Scaled to Full Size, Scale is 1 to 76.178

TIME (MINS)	X NMILES	Y NMILES	SHIPS HDG (DEGS)	TRACK VEL (KTS)	TRACK HDG (DEGS)
1.833	.097	-.084	103.0	2.068	
2.415	.105	-.091	100.7	1.068	140.0
2.997	.125	-.092	99.4	2.094	178.8
3.580	.136	-.094	98.9	1.112	164.1
4.162	.158	-.096	98.1	2.313	175.5
4.744	.170	-.099	97.0	1.319	167.8
5.326	.187	-.101	96.0	1.682	171.2
5.907	.203	-.103	96.8	1.749	173.6
6.489	.215	-.107	96.1	1.259	161.7
7.071	.235	-.109	96.7	2.036	175.6
7.653	.238	-.106	96.6	.419	218.8
8.235	.267	-.117	97.4	3.200	160.3
8.817	.277	-.122	95.4	1.119	151.5
9.399	.302	-.127	97.5	2.703	169.1
9.980	.312	-.137	95.3	1.472	135.3
10.562	.334	-.141	94.6	2.223	169.1
11.144	.351	-.151	93.6	2.054	148.2
11.726	.367	-.157	92.7	1.736	160.9
12.308	.383	-.162	92.7	1.771	161.9
12.890	.384	-.164	92.8	.214	123.7
13.472	.408	-.168	92.8	2.521	169.1
14.054	.416	-.172	92.7	.885	152.3
14.635	.437	-.179	92.5	2.339	162.4
15.217	.450	-.185	91.3	1.423	157.0
15.799	.465	-.191	90.6	1.662	157.8
16.381	.482	-.197	90.9	1.925	160.8
16.963	.497	-.206	89.6	1.766	148.4
17.545	.512	-.208	89.8	1.548	171.3
18.127	.523	-.217	89.8	1.469	140.2
18.708	.545	-.224	89.8	2.397	162.4
19.290	.552	-.229	88.8	.897	146.8
19.872	.572	-.236	89.8	2.098	161.0
20.454	.591	-.246	89.5	2.243	151.1
21.036	.594	-.247	89.8	.401	169.6
21.618	.612	-.253	90.5	1.916	160.5
22.200	.614	-.251	91.0	.302	214.1
22.782	.640	-.265	90.6	3.037	152.8
23.363	.652	-.270	90.1	1.281	153.7
23.945	.673	-.271	89.7	2.213	179.3
24.527	.686	-.283	89.8	1.843	138.4
25.109	.697	-.288	88.5	1.208	152.2
25.691	.718	-.294	89.0	2.246	163.4
26.273	.727	-.299	87.6	1.062	153.4
26.855	.743	-.305	87.3	1.750	158.1
27.436	.760	-.310	87.0	1.826	164.0
28.018	.769	-.314	88.2	1.078	157.6

28.599	.797	-.314	90.5	2.868	179.6
29.181	.800	-.325	89.4	1.131	106.3
29.762	.814	-.330	89.6	1.504	157.1
30.344	.831	-.336	90.1	1.879	163.1
30.926	.837	-.340	90.5	.783	147.6
31.508	.857	-.346	90.4	2.164	162.9
32.090	.874	-.345	90.6	1.664	182.9
32.672	.888	-.350	90.9	1.558	159.8
33.254	.906	-.356	92.5	1.965	161.6
33.836	.909	-.366	91.1	1.048	108.1
34.417	.928	-.372	90.4	2.048	162.2
34.999	.941	-.374	89.6	1.325	170.1
35.581	.952	-.383	89.2	1.441	143.1
36.163	.970	-.388	89.7	2.014	163.2
36.745	.979	-.395	88.2	1.084	141.8
37.327	1.003	-.412	75.3	3.041	145.3
37.909	1.002	-.434	64.5	2.260	88.4
38.490	1.008	-.456	61.3	2.343	103.3

RUN NO. 11



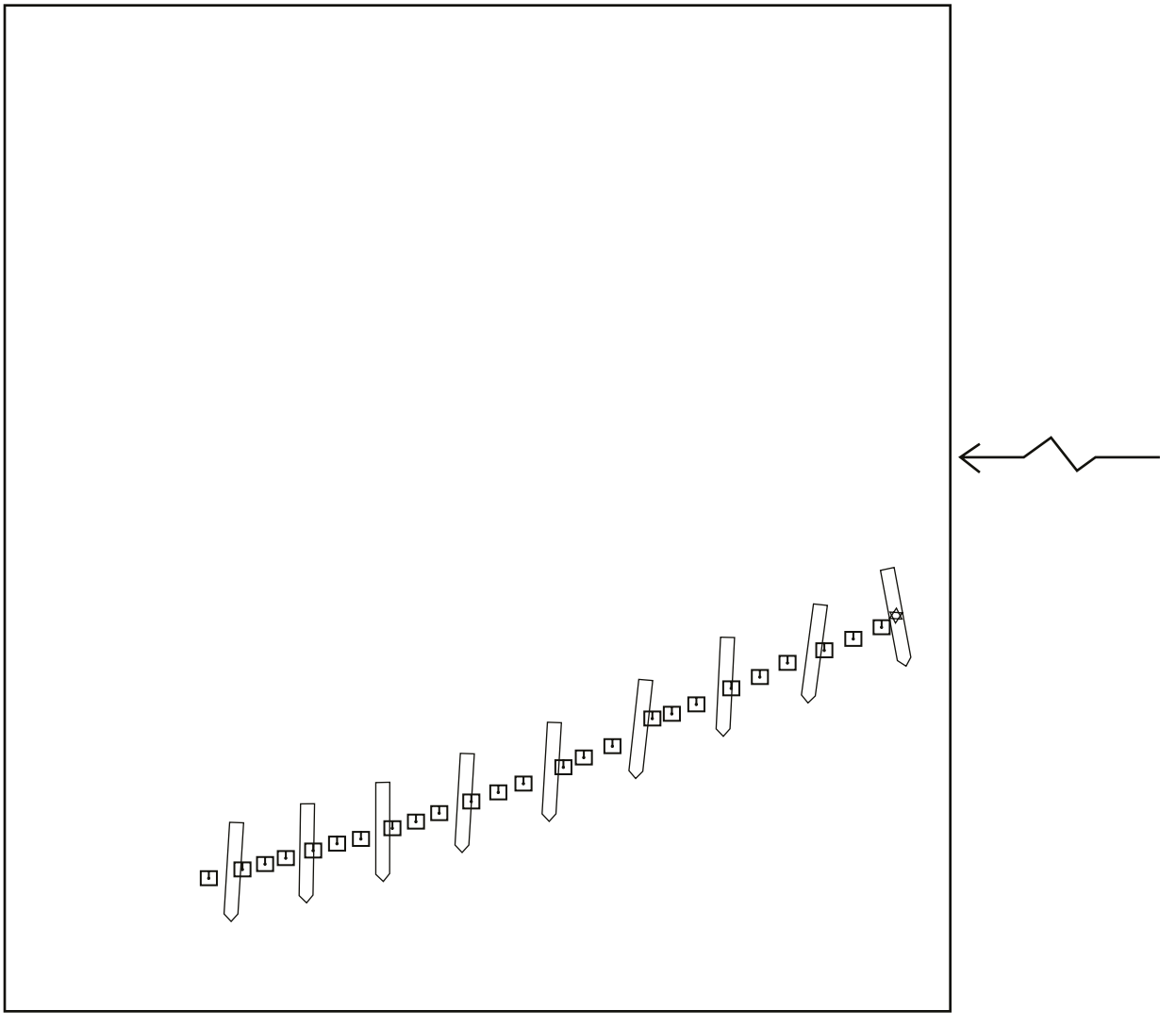
Drifting Tankers

Run Number = 11
Model Number = 5528
Condition = Normal Load
Rudder Amidships, Beaufort 7
All Results Scaled to Full Size, Scale is 1 to 76.178

TIME (MINS)	X NMILES	Y NMILES	SHIPS HDG (DEGS)	TRACK VEL (KTS)	TRACK HDG (DEGS)
1.833	.057	-.052	92.0	.356	
2.415	.063	-.053	93.9	.597	173.5
2.997	.065	-.053	96.2	.298	168.5
3.578	.074	-.055	97.2	.936	172.5
4.160	.079	-.055	99.8	.509	179.5
4.742	.088	-.057	99.9	.904	165.1
5.324	.100	-.058	100.7	1.316	174.5
5.907	.109	-.060	101.0	.887	169.3
6.489	.117	-.061	101.7	.798	173.3
7.071	.126	-.063	100.9	1.010	163.9
7.653	.134	-.062	103.0	.831	188.2
8.235	.148	-.068	102.3	1.573	158.3
8.817	.158	-.070	103.2	1.044	165.2
9.399	.167	-.073	104.5	.940	163.0
9.980	.178	-.075	104.7	1.221	170.4
10.562	.188	-.079	103.2	1.055	155.8
11.144	.195	-.080	102.1	.715	171.8
11.726	.207	-.086	101.1	1.408	155.8
12.308	.211	-.088	100.3	.499	155.4
12.890	.229	-.093	98.7	1.947	162.5
13.472	.238	-.097	97.9	.995	156.4
14.054	.249	-.101	96.6	1.174	159.3
14.635	.258	-.104	96.1	.982	163.4
15.217	.268	-.111	96.1	1.239	142.5
15.799	.284	-.116	94.9	1.701	165.3
16.381	.294	-.120	94.9	1.137	156.0
16.963	.305	-.124	94.4	1.234	159.1
17.545	.313	-.129	94.1	1.005	151.8
18.127	.323	-.133	93.9	1.053	156.0
18.708	.335	-.138	93.8	1.335	159.0
19.290	.344	-.142	94.2	1.012	153.1
19.872	.359	-.146	93.9	1.655	164.4
20.454	.374	-.155	93.9	1.784	150.4
21.036	.385	-.160	94.3	1.207	156.0
21.618	.404	-.170	93.3	2.198	151.8
22.200	.409	-.171	93.4	.560	172.2
22.782	.422	-.175	94.4	1.386	161.5
23.363	.430	-.180	93.3	.952	149.2
23.945	.438	-.184	93.2	1.033	152.4
24.527	.446	-.189	92.9	.933	151.8
25.109	.463	-.198	92.4	1.944	150.5
25.691	.466	-.198	91.8	.348	182.1
26.273	.474	-.200	92.2	.803	165.0
26.855	.490	-.207	91.4	1.846	157.0
27.436	.498	-.210	90.7	.899	156.1
28.018	.507	-.215	91.0	1.017	150.6

28.600	.524	-.223	90.5	2.016	155.0
29.182	.533	-.227	90.9	.931	154.4
29.764	.542	-.228	91.1	1.013	175.0
30.346	.558	-.228	90.6	1.590	179.4
30.928	.565	-.234	90.5	.930	138.0
31.510	.576	-.242	90.9	1.423	143.8
32.091	.586	-.249	90.8	1.202	147.8
32.673	.601	-.253	91.3	1.621	163.1
33.255	.604	-.254	90.7	.411	165.7
33.837	.622	-.262	91.5	2.019	157.1
34.419	.632	-.266	91.6	1.106	155.8
35.001	.638	-.268	91.6	.642	160.7
35.583	.655	-.270	91.0	1.704	173.0
36.164	.659	-.279	90.9	1.026	117.3
36.746	.676	-.279	91.4	1.793	179.9
37.328	.678	-.287	91.1	.864	103.6
37.910	.687	-.291	91.9	.933	154.1
38.492	.703	-.294	91.0	1.689	171.5
39.074	.715	-.298	91.2	1.328	162.0
39.656	.724	-.300	90.7	.944	162.2
40.238	.736	-.303	90.8	1.343	167.2
40.819	.737	-.312	90.6	.846	94.6
41.401	.747	-.316	91.2	1.128	157.0
41.983	.758	-.319	91.6	1.198	165.9
42.565	.762	-.324	91.5	.640	126.1
43.145	.778	-.324	91.9	1.653	179.9
43.727	.785	-.328	92.3	.853	148.2
44.309	.793	-.333	92.2	.945	144.3
44.891	.802	-.335	91.5	1.027	169.1
45.473	.809	-.341	91.4	.898	141.1
46.055	.822	-.343	90.9	1.371	169.5
46.637	.828	-.350	91.0	.927	133.0
47.218	.845	-.351	91.4	1.680	175.1
47.800	.854	-.355	91.9	1.006	158.2
48.382	.863	-.358	91.3	1.006	158.2
48.964	.868	-.362	90.5	.628	146.8
49.546	.876	-.366	89.8	.976	154.5
50.128	.874	-.373	89.5	.818	70.6
50.710	.893	-.373	89.1	1.984	181.5
51.292	.899	-.376	89.1	.720	152.7
51.873	.908	-.383	89.7	1.141	141.6
52.455	.913	-.387	89.4	.710	142.5
53.037	.925	-.391	90.9	1.318	162.2
53.619	.934	-.391	90.0	.878	179.2
54.201	.942	-.397	90.3	1.015	140.6
54.783	.948	-.401	90.3	.781	153.6
55.365	.956	-.404	90.6	.861	154.9
55.946	.961	-.410	90.9	.766	130.7
56.528	.971	-.410	90.8	1.072	180.5

RUN NO. 13



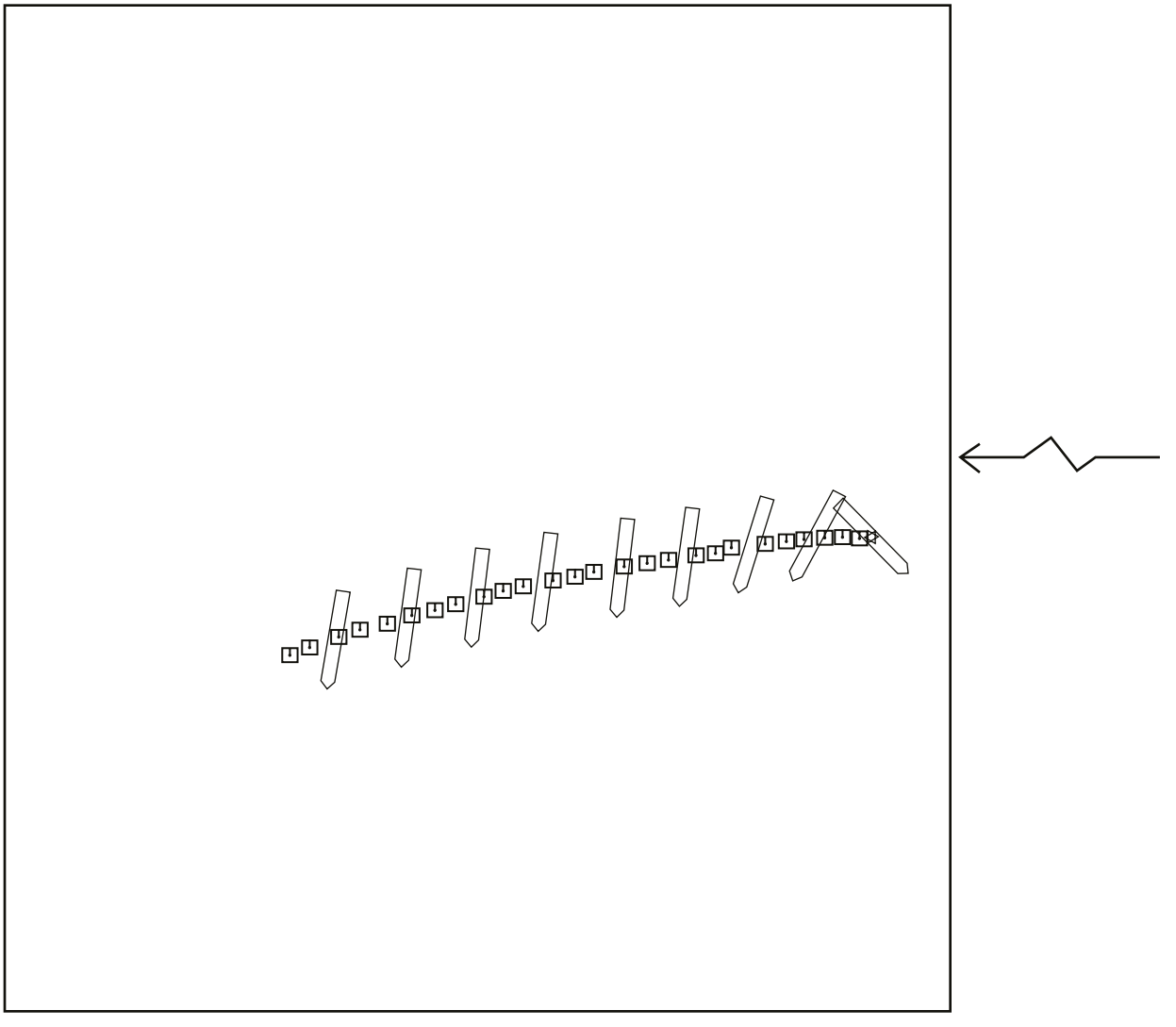
Drifting Tankers

Run Number = 13
Model Number = 5528
Condition = Normal Load
Rudder 35 Degs Port, Beaufort 7
All Results Scaled to Full Size, Scale is 1 to 76.178

TIME (MINS)	X NMILES	Y NMILES	SHIPS HDG (DEGS)	TRACK VEL (KTS)	TRACK HDG (DEGS)
1.779	.066	-.132	78.5	.441	
2.361	.070	-.136	84.7	.595	139.0
2.943	.077	-.140	91.1	.842	152.4
3.525	.082	-.144	97.0	.594	136.7
4.107	.096	-.148	99.4	1.598	163.8
4.688	.105	-.153	101.4	1.003	152.6
5.270	.116	-.157	101.7	1.192	156.1
5.852	.127	-.162	102.1	1.257	159.1
6.434	.138	-.166	100.7	1.197	155.5
7.016	.150	-.171	99.4	1.341	159.6
7.598	.162	-.176	98.5	1.341	159.6
8.180	.175	-.179	98.1	1.377	164.5
8.761	.177	-.172	96.4	.722	255.7
9.343	.193	-.186	95.2	2.228	141.3
9.925	.203	-.192	93.4	1.199	147.3
10.507	.212	-.190	92.7	.890	192.4
11.089	.227	-.203	92.3	2.079	140.8
11.671	.239	-.207	92.4	1.255	159.9
12.253	.228	-.178	93.2	3.200	290.5
12.835	.260	-.215	92.3	5.058	130.8
13.416	.268	-.213	93.2	.886	195.0
13.998	.282	-.226	92.5	1.941	137.4
14.580	.293	-.229	93.5	1.162	166.1
15.162	.301	-.235	93.2	1.065	143.9
15.744	.314	-.239	94.3	1.369	160.8
16.326	.323	-.243	94.6	.998	155.4
16.908	.332	-.246	95.5	1.007	162.1
17.489	.340	-.250	95.1	.904	154.2
18.071	.348	-.251	95.9	.895	169.9
18.653	.353	-.251	95.5	.532	184.6
19.235	.369	-.263	95.5	2.008	140.8
19.817	.384	-.276	94.6	2.008	140.8
20.399	.395	-.280	95.1	1.287	158.8
20.981	.402	-.284	93.8	.839	150.3
21.563	.415	-.289	94.0	1.403	159.5
22.144	.430	-.296	93.6	1.727	153.6
22.726	.436	-.298	93.7	.646	167.9
23.308	.443	-.301	92.9	.769	157.0
23.890	.453	-.305	93.2	1.094	157.2
24.472	.460	-.308	92.6	.861	154.3
25.054	.474	-.313	93.2	1.502	159.5
25.636	.486	-.320	92.8	1.388	153.1
26.217	.495	-.322	93.9	.947	167.3
26.799	.507	-.327	93.7	1.341	155.1
27.381	.518	-.331	94.2	1.193	161.6
27.963	.527	-.334	94.4	1.059	158.9

28.545	.538	-.338	94.6	1.172	161.4
29.127	.548	-.342	94.9	1.126	160.9
29.709	.559	-.345	94.6	1.126	161.6
30.291	.570	-.348	94.9	1.164	162.6
30.872	.578	-.352	94.4	.935	157.6
31.454	.589	-.355	94.2	1.227	162.5
32.036	.598	-.359	93.9	.927	159.7
32.618	.608	-.362	93.0	1.155	161.2
33.200	.617	-.365	92.4	.968	161.9
33.782	.628	-.368	91.6	1.129	161.8
34.364	.636	-.371	91.2	.871	159.2
34.945	.646	-.375	90.7	1.117	163.0
35.527	.656	-.378	90.4	1.103	163.9
36.109	.663	-.379	90.2	.744	165.5
36.691	.675	-.383	90.9	1.252	162.1
37.273	.684	-.386	91.5	.944	163.8
37.855	.694	-.389	92.2	1.110	162.7
38.437	.702	-.391	91.8	.867	164.4
39.019	.711	-.394	91.5	.925	164.3
39.600	.718	-.396	91.0	.830	160.9
40.182	.729	-.399	91.1	1.114	167.0
40.764	.738	-.401	91.0	.950	166.6
41.346	.747	-.403	91.3	.949	165.8
41.928	.757	-.406	91.8	1.123	166.0
42.510	.765	-.408	91.6	.860	164.0
43.092	.774	-.410	92.0	.940	165.9
43.673	.782	-.412	92.1	.828	164.3
44.255	.791	-.415	92.5	.945	165.7
44.837	.799	-.417	92.4	.860	164.0
45.419	.808	-.419	92.3	.970	165.1
46.001	.814	-.421	92.2	.727	165.5
46.583	.824	-.423	92.7	1.048	169.3
47.165	.834	-.425	92.8	.961	167.0
47.747	.841	-.428	92.8	.847	162.8
48.328	.851	-.430	93.6	1.066	166.9
48.910	.859	-.433	93.8	.850	161.4
49.492	.872	-.435	94.9	1.366	168.7
50.074	.881	-.437	94.8	.944	164.9

RUN NO. 14



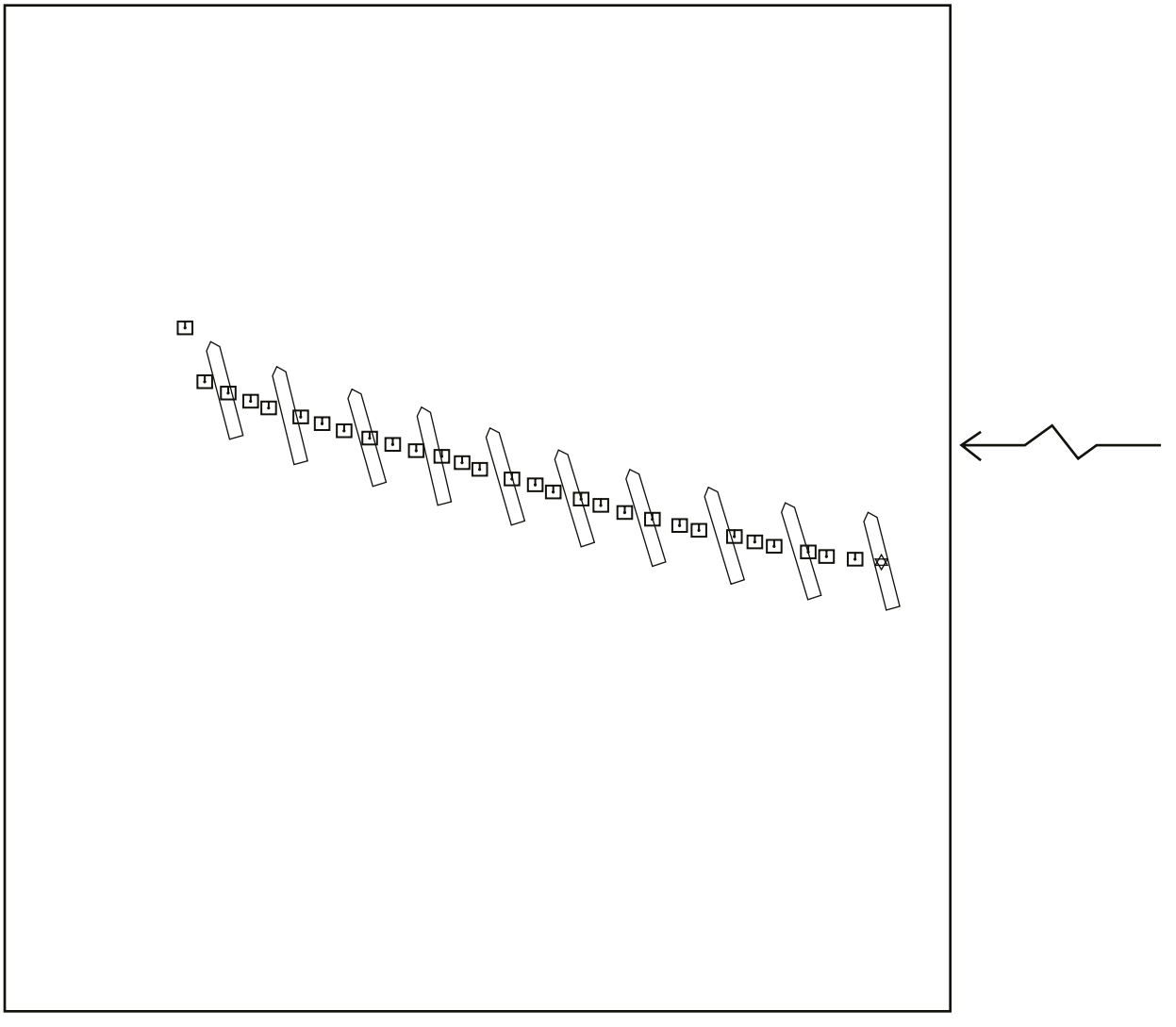
Drifting Tankers

Run Number = 14
Model Number = 5528
Condition = Normal Load
Rudder Amidships, Beaufort 8
All Results Scaled to Full Size, Scale is 1 to 76.178

TIME (MINS)	X NMILES	Y NMILES	SHIPS HDG (DEGS)	TRACK VEL (KTS)	TRACK HDG (DEGS)
1.760	.093	-.038	46.2	.763	
2.343	.099	-.038	56.9	.588	177.5
2.925	.110	-.038	68.7	1.087	183.6
3.507	.110	-.037	78.9	.066	225.0
4.089	.117	-.036	88.4	.694	188.4
4.671	.129	-.036	98.8	1.297	181.3
5.253	.129	-.036	105.7	.034	299.7
5.835	.137	-.036	111.8	.827	177.7
6.417	.145	-.035	114.7	.842	184.9
6.998	.151	-.036	118.1	.596	171.4
7.580	.162	-.036	119.0	1.107	182.0
8.162	.166	-.036	115.8	.470	173.3
8.744	.176	-.037	115.1	1.061	177.7
9.326	.177	-.038	112.4	.151	107.9
9.908	.184	-.039	111.2	.783	174.7
10.490	.200	-.039	111.5	1.581	179.5
11.071	.197	-.041	109.4	.308	38.3
11.653	.210	-.042	108.2	1.345	177.1
12.235	.220	-.042	107.5	.961	175.2
12.817	.223	-.044	107.6	.348	148.4
13.399	.237	-.045	106.6	1.506	175.3
13.981	.241	-.047	105.0	.460	163.4
14.563	.253	-.048	104.7	1.216	172.0
15.145	.264	-.049	104.2	1.081	175.0
15.726	.263	-.051	102.5	.206	75.7
16.308	.274	-.053	101.1	1.103	170.9
16.890	.280	-.054	100.6	.712	169.0
17.472	.293	-.055	101.2	1.347	175.9
18.054	.298	-.057	99.8	.504	155.2
18.636	.304	-.058	99.5	.600	166.9
19.218	.317	-.060	98.6	1.394	174.1
19.799	.321	-.061	98.0	.470	161.1
20.381	.336	-.063	99.1	1.546	174.5
20.963	.337	-.064	97.3	.132	129.8
21.545	.349	-.065	97.7	1.269	172.7
22.108	.352	-.067	97.5	.353	153.4
22.690	.363	-.068	97.0	1.092	173.5
23.272	.374	-.069	97.6	1.168	172.3
23.854	.380	-.071	97.4	.593	166.4
24.435	.390	-.072	97.7	1.094	174.7
25.017	.393	-.074	97.8	.369	149.6
25.599	.405	-.075	98.2	1.237	172.1
26.181	.412	-.077	98.1	.732	169.7
26.763	.427	-.078	99.4	1.497	173.7
27.345	.431	-.080	98.0	.479	157.1
27.927	.438	-.081	98.1	.806	169.7

28.509	.448	-.083	97.5	1.000	171.0
29.090	.458	-.084	98.3	1.027	171.9
29.672	.467	-.086	97.7	.914	169.6
30.254	.474	-.088	97.6	.754	166.7
30.836	.484	-.089	97.8	1.052	171.0
31.418	.496	-.090	98.6	1.282	174.3
32.000	.496	-.093	99.0	.225	94.3
32.582	.510	-.095	99.1	1.447	171.9
33.163	.516	-.096	98.8	.602	161.9
33.745	.527	-.099	98.9	1.136	167.9
34.327	.533	-.101	98.0	.684	162.7
34.909	.541	-.103	98.1	.846	166.4
35.491	.548	-.105	97.2	.783	161.4
36.073	.556	-.107	97.0	.886	165.0
36.655	.565	-.109	96.6	.905	165.9
37.235	.575	-.112	97.1	1.026	166.2
37.818	.584	-.114	96.9	1.021	166.2
38.400	.590	-.116	97.4	.642	163.1
38.982	.595	-.119	97.8	.564	150.7
39.564	.608	-.121	96.5	1.346	170.4
40.146	.614	-.123	96.7	.718	161.8
40.728	.628	-.126	97.2	1.445	165.4
41.310	.635	-.128	96.7	.723	165.4
41.891	.642	-.130	96.8	.723	165.4
42.473	.646	-.133	96.9	.552	151.1
43.055	.654	-.135	97.3	.850	163.2
43.637	.667	-.137	98.5	1.341	171.6
44.219	.671	-.140	98.3	.516	141.3
44.801	.686	-.142	98.8	1.538	170.6
45.383	.692	-.145	98.2	.744	158.3
45.965	.703	-.148	98.6	1.132	164.1
46.546	.714	-.151	99.2	1.158	165.1
47.128	.716	-.153	98.6	.345	133.5
47.710	.728	-.157	98.5	1.315	165.2
48.292	.732	-.160	98.4	.512	140.4
48.874	.745	-.162	97.8	1.322	169.8
49.456	.755	-.165	97.9	1.115	161.8
50.038	.763	-.169	97.7	.898	156.3
50.619	.772	-.171	98.0	.930	164.1
51.201	.776	-.175	97.4	.576	145.5
25.601	.787	-.178	96.7	-.026	160.6

RUN NO. 19



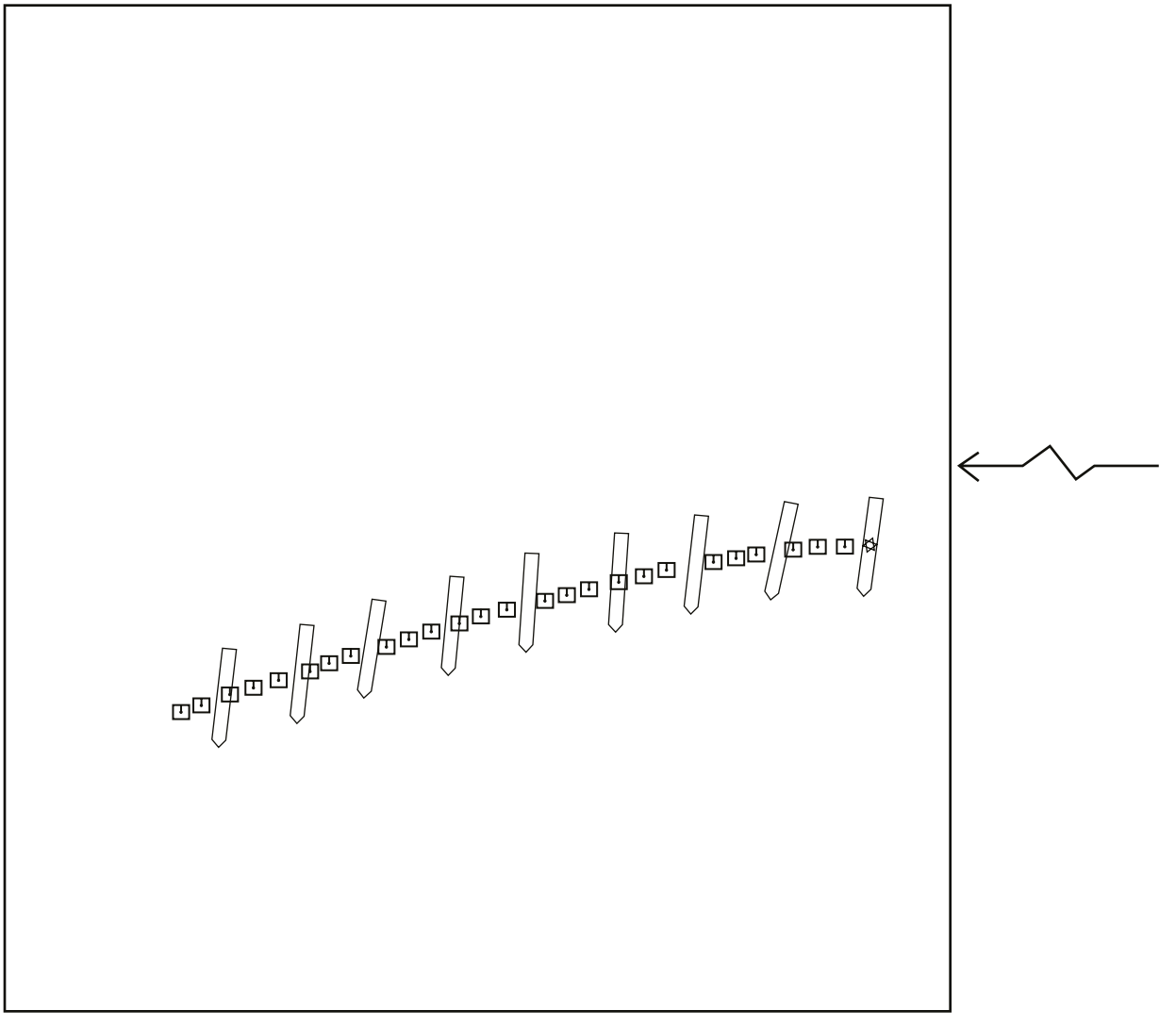
Drifting Tankers

Run Number = 19
Model Number = 5528
Condition = Normal Load
Rudder 35 Deg. Stbd., Beaufort 8
All Results Scaled to Full Size, Scale is 1 to 76.178

TIME (MINS)	X NMILES	Y NMILES	SHIPS HDG (DEGS)	TRACK VEL (KTS)	TRACK HDG (DEGS)
1.797	.081	-.062	253.5	.661	
2.378	.101	-.062	253.8	2.035	179.8
2.960	.102	-.060	252.6	.201	227.6
3.544	.113	-.060	251.8	1.143	183.0
4.125	.130	-.059	251.3	1.739	182.2
4.707	.135	-.057	249.6	.480	200.7
5.289	.146	-.056	250.8	1.229	186.5
5.871	.155	-.055	250.6	.902	187.3
6.453	.165	-.053	249.9	1.018	190.6
7.035	.168	-.051	250.7	.389	208.0
7.617	.177	-.050	251.8	.945	190.9
8.199	.190	-.048	253.0	1.311	186.9
8.780	.196	-.047	252.9	.622	194.6
9.362	.208	-.045	253.9	1.268	186.9
9.944	.213	-.04a	253.3	.604	195.9
10.526	.224	-.042	253.1	1.065	189.4
11.108	.232	-.040	253.2	.932	192.1
11.690	.245	-.039	253.5	1.314	186.5
12.272	.251	-.037	252.6	.664	195.5
12.835	.256	-.035	252.1	.507	202.4
13.416	.269	-.033	252.5	1.362	189.3
13.998	.276	-.031	252.4	.722	191.5
14.580	.290	-.030	253.5	1.519	186.7
15.162	.299	-.028	253.0	.908	192.7
15.744	.305	-.026	252.4	.619	199.2
16.326	.314	-.024	252.9	1.022	190.5
16.908	.321	-.022	253.0	.693	196.3
17.489	.338	-.020	254.1	1.777	187.0
18.071	.341	-.018	253.0	.353	210.3
18.653	.353	-.016	252.7	1.281	190.7
19.235	.363	-.014	252.1	1.059	192.5
19.817	.372	-.012	251.3	.966	191.9
20.399	.386	-.009	252.0	1.404	190.3
20.981	.385	-.007	251.7	.225	274.3
21.563	.400	-.005	252.3	1.472	189.1
22.144	.409	-.003	252.3	1.008	194.6
22.726	.415	-.000	252.2	.623	202.4
23.308	.425	.002	252.4	1.059	191.3
23.890	.427	.004	252.5	.348	228.0
24.472	.438	.007	252.5	1.178	192.9
25.054	.448	.009	252.9	1.042	192.5
25.637	.454	.012	252.3	.647	203.9
26.217	.463	.014	252.7	.950	194.5
26.801	.471	.016	252.2	.946	194.5
27.383	.481	.019	252.9	1.048	194.3
27.965	.487	.021	253.4	.618	202.2

28.546	.493	.023	253.1	.664	199.0
29.128	.502	.026	253.5	1.011	195.3
29.710	.509	.034	254.1	1.048	230.6
30.292	.520	.030	253.4	1.222	163.3
30.874	.529	.033	254.4	.992	196.9
31.456	.538	.035	253.7	.870	195.3
32.038	.547	.038	254.4	.989	194.4
32.619	.559	.040	255.2	1.245	192.4
33.201	.561	.042	254.5	.306	222.8
33.783	.573	.044	254.4	1.269	191.0
34.364	.580	.047	254.5	.763	197.2
34.947	.587	.049	254.5	.759	197.2
35.529	.596	.051	254.5	.976	194.3
36.111	.604	.054	254.9	.871	197.6
36.693	.615	.056	255.0	1.123	189.8
37.273	.618	.057	255.0	.334	214.1
37.855	.629	.060	254.9	1.172	193.4
38.437	.635	.062	254.6	.677	195.3
39.019	.651	.064	255.8	1.636	187.0
39.600	.649	.066	254.2	.277	297.4
40.182	.662	.068	253.5	1.331	187.9
40.764	.672	.070	253.6	1.073	192.6
41.346	.678	.073	252.6	.671	202.7
41.928	.691	.075	253.2	1.319	189.4
42.510	.694	.077	252.7	.409	211.9
43.092	.700	.085	254.0	1.038	233.1
43.673	.713	.081	253.0	1.385	165.3
44.255	.721	.084	252.6	.776	199.1
44.837	.730	.087	252.1	1.046	195.3
45.419	.743	.089	252.4	1.319	190.6
46.001	.747	.091	252.2	.478	211.6
46.583	.754	.094	253.0	.741	201.1
47.165	.764	.097	254.3	1.105	194.9
47.747	.774	.099	255.5	1.029	193.6
48.328	.786	.102	256.0	1.288	193.1
48.910	.786	.104	256.2	.251	254.3
49.492	.802	.107	258.0	1.672	189.6
50.074	.810	.110	256.2	.885	200.2
50.656	.813	.113	255.9	.414	222.5
51.238	.830	.115	257.5	1.707	189.7
51.820	.832	.118	254.7	.399	225.4
52.401	.839	.121	254.8	.740	203.6
52.983	.850	.124	254.8	1.158	195.7
53.565	.859	.127	254.8	.976	198.3
54.147	.864	.130	254.4	.619	210.4
54.729	.877	.133	253.9	1.334	193.6
55.311	.886	.136	253.5	1.038	197.8
55.893	.887	.140	253.4	.345	264.4
56.475	.902	.143	253.3	1.587	192.8
57.056	.910	.158	261.9	1.739	239.4
57.638	.911	.203	286.2	4.714	269.1

RUN NO. 20



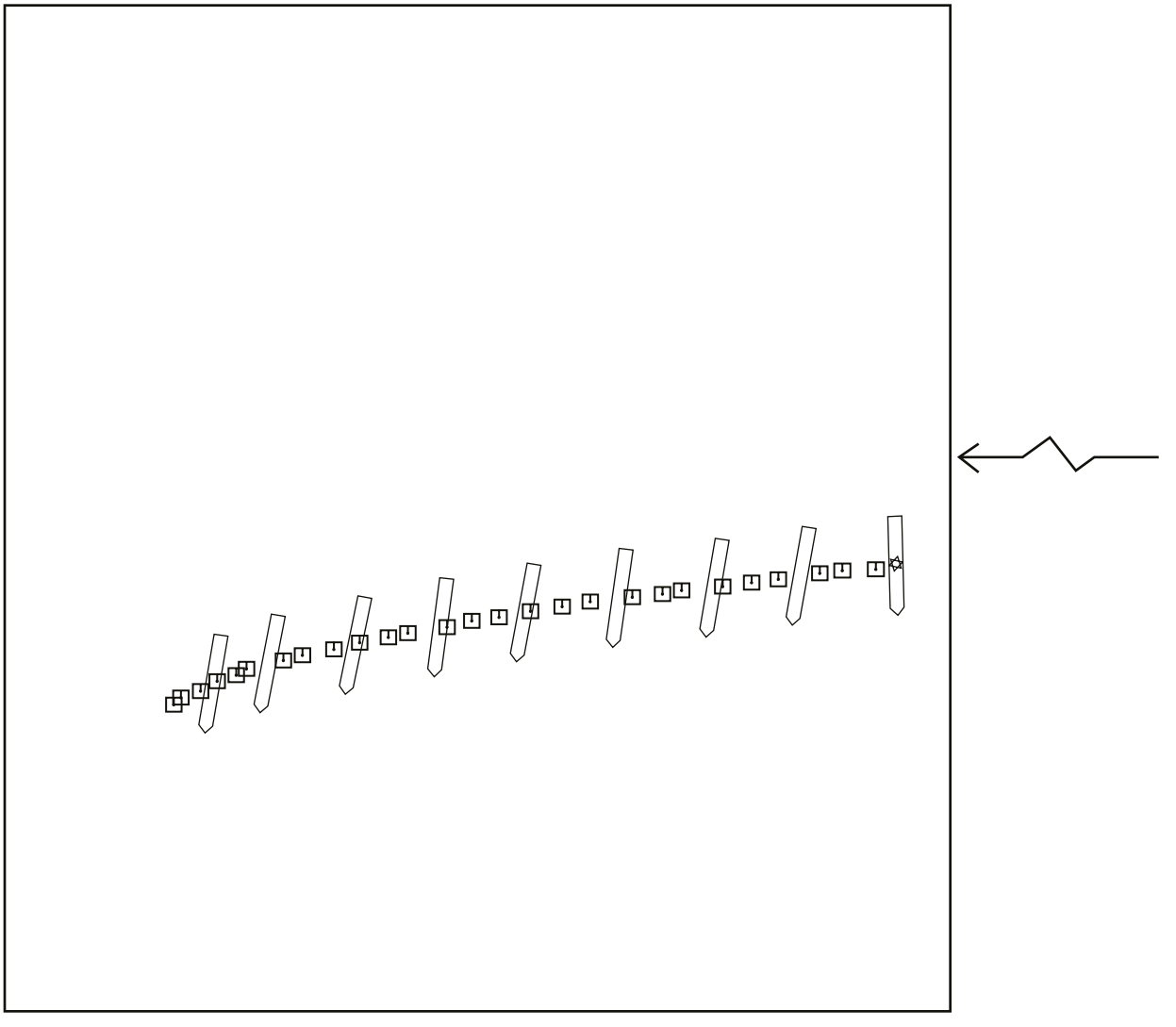
Drifting Tankers

Run Number = 20
Model Number = 5528
Condition = Normal Load
Rudder Amidships, Beaufort 9
All Results Scaled to Full-Size, Scale is 1 to 76.178

TIME (MINS)	X NMILES	Y NMILES	SHIPS HDG (DEGS)	TRACK VEL (KTS)	TRACK HDG (DEGS)
1.834	.098	-.044	98.9	.831	
2.416	.105	-.044	99.5	.711	185.5
2.996	.123	-.043	102.3	1.795	182.7
3.580	.128	-.043	101.1	.505	182.9
4.162	.139	-.043	102.5	1.204	180.6
4.744	.146	-.043	103.5	.696	177.2
5.326	.161	-.043	102.8	1.568	179.7
5.907	.172	-.044	103.4	1.102	175.1
6.489	.179	-.044	104.4	.713	178.0
7.071	.190	-.046	102.9	1.196	173.1
7.653	.206	-.047	103.1	1.580	176.5
8.235	.208	-.047	102.8	.288	162.9
8.817	.222	-.049	101.7	1.410	174.1
9.399	.235	-.050	101.8	1.375	174.7
9.980	.241	-.051	100.8	.619	166.5
10.562	.261	-.052	102.7	2.016	177.0
11.144	.259	-.055	100.4	.276	54.4
11.726	.272	-.056	98.7	1.396	173.0
12.308	.290	-.057	99.9	1.843	176.4
12.890	.287	-.058	99.5	.392	15.7
13.472	.307	-.062	98.2	2.179	171.3
14.054	.319	-.063	98.7	1.185	173.8
14.635	.326	-.065	98.4	.737	158.7
15.217	.342	-.068	97.8	1.741	171.3
15.799	.351	-.069	97.6	.892	173.4
16.381	.356	-.072	96.6	.568	150.0
16.963	.370	-.074	96.6	1.532	170.9
17.545	.377	-.075	96.0	.701	170.3
18.127	.383	-.078	95.6	.684	154.7
18.708	.400	-.080	96.0	1.731	171.6
19.290	.401	-.082	95.8	.210	133.4
19.872	.414	-.084	94.9	1.388	169.6
20.454	.427	-.087	94.4	1.340	167.0
21.036	.436	-.089	93.7	.912	170.1
21.618	.448	-.091	93.6	1.252	171.2
22.200	.453	-.094	93.4	.669	149.5
22.782	.462	-.095	93.4	.941	170.4
23.363	.480	-.097	94.8	1.813	174.8
23.945	.483	-.100	94.2	.504	137.0
24.527	.488	-.102	94.3	.508	155.4
25.109	.507	-.104	94.9	2.030	175.0
25.691	.513	-.107	95.5	.660	155.7
26.273	.520	-.110	95.4	.738	155 2
26.855	.534	-.111	96.0	1.455	173.5
27.436	.542	-.114	96.6	.887	163.9
28.018	.547	-.117	96.9	.651	149.9

28.600	.565	-.119	98.0	1.819	173.2
29.182	.564	-.121	97.8	.269	63.8
29.764	.578	-.125	96.6	1.515	166.9
30.346	.590	-.127	96.3	1.274	167.9
30.928	.598	-.129	96.2	.841	166.6
31.510	.605	-.133	95.4	.838	153.6
32.091	.618	-.136	96.5	1.365	168.0
32.673	.623	-.137	95.6	.509	159.0
33.255	.641	-.140	98.4	1.843	170.6
33.837	.642	-.144	96.5	.369	111.6
34.419	.651	-.145	96.6	.927	168.1
35.001	.660	-.148	97.2	.999	162.7
35.583	.672	-.152	97.7	1.331	164.1
36.164	.676	-.154	98.1	.452	147.7
36.746	.694	-.156	99.6	1.830	173.5
37.328	.694	-.160	98.4	.428	91.7
37.910	.708	-.163	98.5	1.446	170.0
38.492	.719	-.165	98.6	1.163	169.7
39.074	.724	-.169	98.9	.671	140.4
39.656	.736	-.172	98.1	1.257	166.2
40.238	.745	-.174	97.1	.979	169.5
40.819	.750	-.177	97.0	.609	148.1
41.401	.758	-.180	97.1	.935	157.6
41.982	.768	-.183	97.6	1.002	166.1
42.565	.777	-.185	97.8	.997	166.1
43.147	.789	-.189	98.3	1.303	162.4
43.729	.798	-.190	98.3	.879	168.3
44.311	.805	-.193	98.9	.859	160.4
44.892	.818	-.197	99.3	1.309	162.9
45.474	.829	-.199	100.3	1.203	168.4
46.056	.834	-.202	98.7	.550	154.4
46.638	.845	-.205	98.5	1.199	162.7
47.220	.849	-.208	98.2	.515	143.0
47.802	.862	-.210	98.5	1.394	171.3
48.384	.870	-.213	97.9	.835	156.0
48.966	.874	-.216	98.5	.529	144.8
49.546	.883	-.218	98.3	.998	167.2
50.128	.897	-.221	98.6	1.414	167.7
50.710	.900	-.225	98.2	.510	136.3
51.292	.912	-.227	98.4	1.213	170.3
51.873	.920	-.229	97.9	.920	163.4
52.455	.928	-.232	97.6	.874	158.7
53.037	.939	-.237	96.3	1.158	156.7

RUN NO. 24



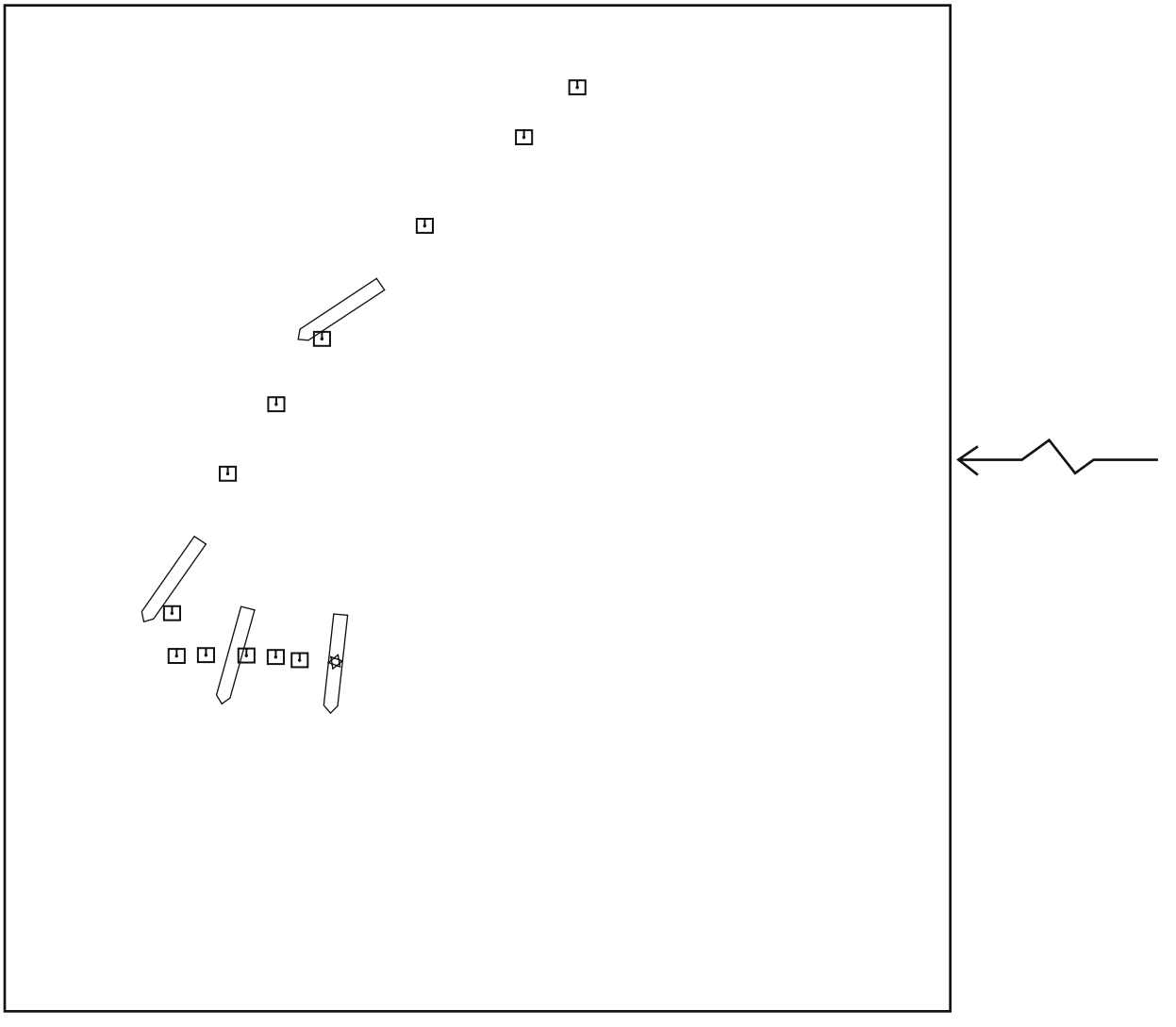
Drifting Tankers

Run Number = 24
Model Number = 5528
Condition = Normal Load
Rudder Amidships, Beaufort 10
All Results Scaled to Full Size, Scale is 1 to 76.178

TIME (MINS)	X NMILES	Y NMILES	SHIPS HDG (DEGS)	TRACK VEL (KTS)	TRACK HDG (DEGS)
1.869	.063	-.066	89.8	.305	
2.451	.069	-.068	90.5	.674	167.3
3.033	.075	-.069	92.2	.563	170.5
3.615	.086	-.070	94.3	1.224	174.5
4.197	.098	-.071	95.6	1.224	174.5
4.780	.115	-.072	96.5	1.716	176.2
5.362	.126	-.073	97.7	1.192	174.5
5.944	.130	-.072	98.7	.378	195.6
6.526	.134	-.071	99.3	.378	195.6
7.107	.155	-.075	99.9	2.218	170.4
7.689	.176	-.078	99.9	2.218	170.4
8.271	.184	-.080	100.4	.854	170.9
8.853	.193	-.081	100.6	.950	170.5
9.435	.202	-.082	100.5	.947	173.6
10.017	.213	-.084	100.7	1.160	170.7
10.599	.220	-.085	100.5	.648	174.0
11.162	.234	-.086	100.9	1.535	173.3
11.744	.248	-.088	101.3	1.485	173.3
12.325	.259	-.089	101.3	1.072	172.7
12.907	.269	-.091	101.1	1.078	170.7
13.489	.278	-.092	100.1	.922	172.2
14.071	.287	-.093	100.0	.922	172.2
14.653	.307	-.095	101.7	2.071	177.0
15.235	.317	-.096	100.5	1.061	172.2
15.817	.326	-.097	100.5	.907	172.2
16.398	.324	-.098	100.1	.174	45.0
16.980	.338	-.100	99.0	1.411	174.8
17.562	.352	-.101	99.0	1.411	174.8
18.144	.372	-.102	100.7	2.120	176.0
18.726	.375	-.104	98.8	.353	157.4
19.308	.391	-.104	98.6	1.591	177.7
19.890	.394	-.106	98.3	.374	156.6
20.472	.417	-.107	100.2	2.380	175.7
21.053	.425	-.108	99.7	.819	173.5
21.635	.437	-.110	100.5	1.203	171.9
22.217	.444	-.112	101.2	.787	161.5
22.799	.459	-.113	100.9	1.558	176.6
23.381	.463	-.115	100.6	.493	158.3
23.963	.480	-.118	99.4	1.734	170.9
24.545	.496	-.119	100.1	1.696	175.6
25.126	.502	-.120	99.8	.640	167.0
25.708	.509	-.123	100.1	.727	156.3
26.290	.524	-.124	99.8	1.574	175.1
26.872	.533	-.126	99.7	.945	167.8
27.454	.542	-.128	99.6	.945	167.8
28.036	.555	-.130	99.3	1.342	172.6

28.618	.566	-.131	98.9	1.113	175.9
29.200	.576	-.134	98.9	1.136	165.1
29.781	.588	-.135	98.3	1.251	173.0
30.363	.596	-.137	97.8	.782	166.5
30.945	.603	-.139	97.7	.782	166.5
31.527	.614	-.141	98.2	1.177	169.4
32.109	.628	-.142	97.7	1.456	173.1
32.691	.642	-.144	98.8	1.456	173.1
33.273	.649	-.146	99.5	.715	163.8
33.854	.653	-.148	100.3	.456	157.0
34.436	.664	-.150	100.6	1.113	170.6
35.018	.678	-.151	100.8	1.477	172.6
35.600	.692	-.153	100.8	1.477	172.6
36.182	.699	-.156	102.0	.791	158.0
36.764	.704	-.158	101.6	.521	162.0
37.346	.714	-.160	102.5	1.007	166.6
37.928	.723	-.162	103.0	1.006	170.5
38.509	.729	-.164	103.3	.698	159.4
39.091	.750	-.166	103.2	2.154	174.6
39.673	.759	-.168	104.2	.907	169.0
40.255	.768	-.170	103.3	.965	163.2
40.837	.781	-.173	103.2	1.389	169.3
41.419	.786	-.175	102.3	.506	155.5
42.001	.790	-.177	102.0	.505	155.5
42.582	.807	-.179	101.4	1.753	171.4
43.164	.812	-.182	100.8	.598	159.3
43.746	.828	-.184	100.6	1.680	172.6
44.328	.833	-.186	100.1	.558	151.9
44.910	.840	-.188	101.8	.718	161.8
45.492	.834	-.191	101.8	.662	26.2
46.074	.845	-.194	100.9	1.120	166.6
46.656	.851	-.197	100.3	.740	154.9
47.237	.869	-.199	101.8	1.889	173.7
47.819	.868	-.201	100.5	.298	65.6
48.401	.873	-.205	100.3	.635	148.6
48.983	.877	-.206	100.4	.455	155.8
49.565	.882	-.209	100.5	.499	150.0
50.147	.886	-.212	100.6	.512	145.1
50.729	.897	-.214	100.4	1.161	169.3
51.310	.901	-.216	100.2	.562	150.1
51.892	.912	-.220	99.9	1.145	162.1
52.474	.916	-.222	99.6	.493	152.3
53.056	.919	-.225	100.3	.413	141.2
53.638	.919	-.228	100.7	.306	79.6

RUN NO. 27

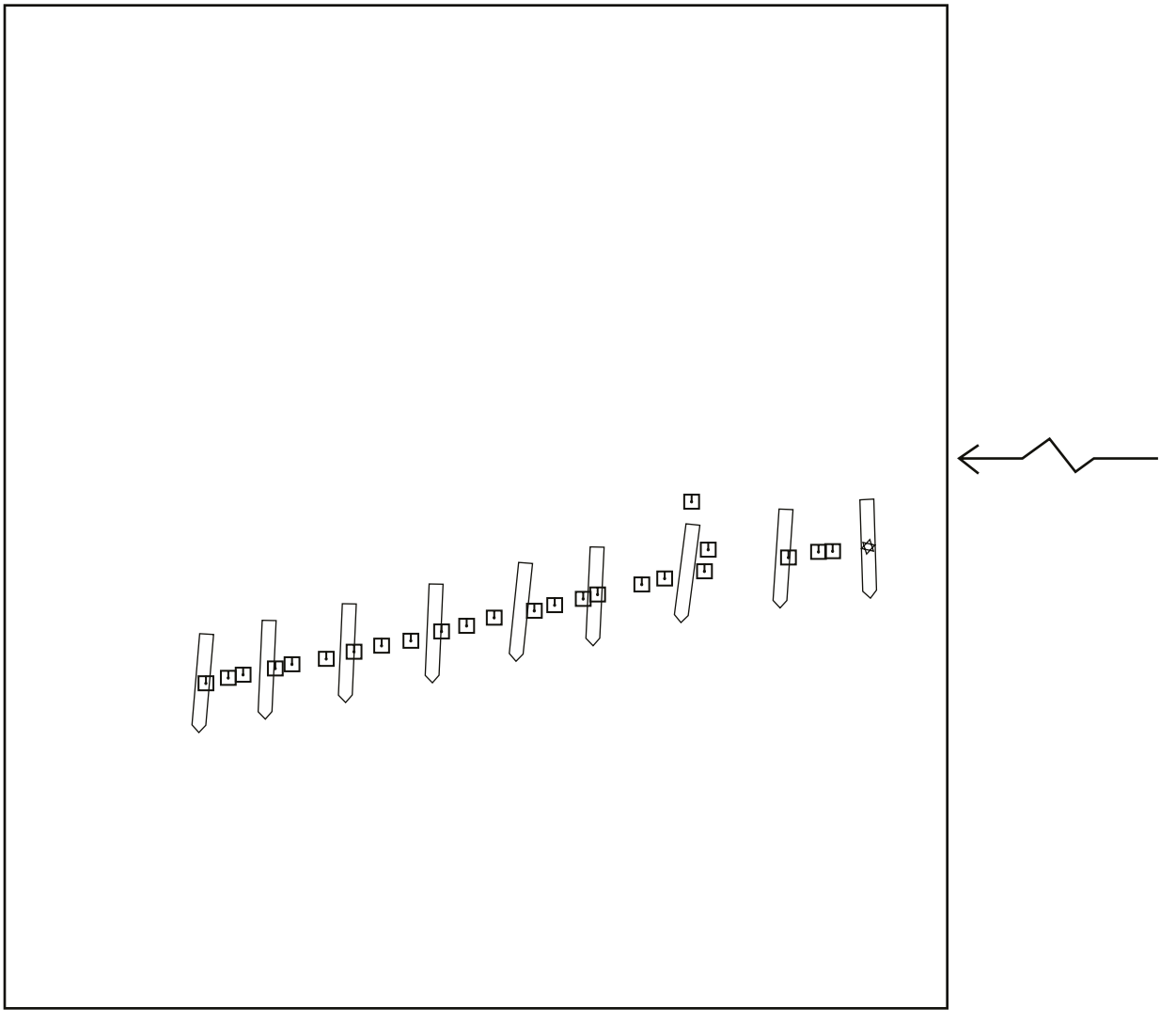


Drifting Tankers

Run Number = 27
Model Number = 5528
Condition = Normal Load
Rudder Amidships, Beaufort 10
All Results Scaled to Full Size, Scale is 1 to 76.178

TIME (MINS)	X NMILES	Y NMILES	SHIPS HDG (DEGS)	TRACK VEL (KTS)	TRACK HDG (DEGS)
1.815	.731	-.174	97.3	.644	
2.397	.754	-.171	98.7	2.450	185.8
2.979	.766	-.170	99.5	1.225	185.8
3.561	.772	-.170	100.8	.612	185.8
4.143	.778	-.169	101.7	.612	185.8
4.725	.789	-.168	102.3	1.116	184.7
5.307	.799	-.167	103.1	1.116	184.7
5.888	.809	-.166	101.9	1.033	184.5
6.470	.821	-.166	104.0	1.191	180.4
7.052	.835	-.166	104.7	1.447	183.0
7.634	.848	-.165	105.8	1.370	184.8
8.216	.854	-.165	105.4	.583	171.2
8.798	.864	-.166	105.3	1.064	179.1
9.380	.883	-.164	104.6	1.907	183.4
9.960	.895	-.165	104.7	1.316	176.0
10.543	.908	-.166	104.7	1.310	176.0
11.125	.917	-.166	103.6	.921	182.6
11.707	.923	-.166	103.7	.645	176.6
12.289	.925	-.153	106.6	1.378	261.0
12.869	.923	-.114	114.4	4.041	273.3
13.453	.921	-.075	124.3	4.021	273.3
14.035	.897	-.025	137.9	5.715	295.3
14.616	.875	.015	140.4	4.634	298.9
15.198	.854	.054	147.1	4.634	298.9
15.780	.826	.083	149.2	4.131	313.9
16.362	.811	.111	146.1	3.297	297.2
16.944	.798	.136	144.3	2.862	298.6
17.526	.783	.160	146.1	2.948	301.2
18.108	.766	.185	142.4	3.146	304.2
18.690	.745	.215	143.5	3.751	305.7
19.271	.723	.247	146.0	3.966	304.3
19.853	.692	.280	146.5	4.683	313.5
20.435	.659	.315	149.0	4.956	312.6
21.017	.622	.350	151.0	5.286	317.5
21.599	.582	.384	151.3	5.436	318.6
22.181	.543	.419	154.7	5.436	318.6
22.763	.502	.454	151.8	5.480	319.8
23.344	.455	.492	154.2	6.206	320.8
23.926	.430	.512	151.3	3.341	320.7
24.508	.439	.513	142.2	.936	184.9

RUN NO. 28



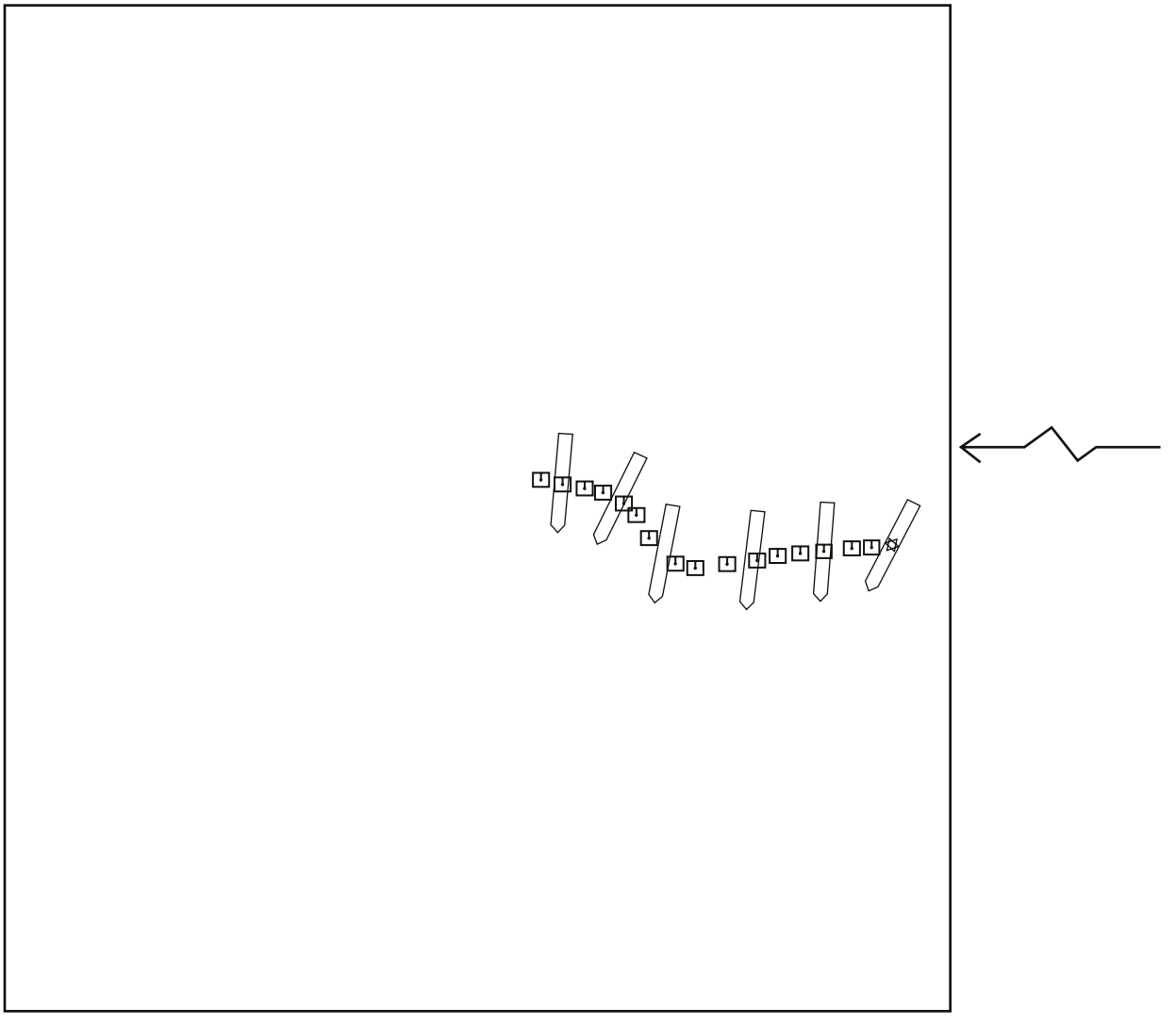
Drifting Tankers

Run Number = 28
Model Number = 5528
Condition = Normal Load
Rudder 35 Deg. Stsd., Beaufort 10
All Results Scaled to Full Size, Scale is 1 to 76.178

TIME (MINS)	X MMILES	Y NMILES	SHIPS HDG (DEGS)	TRACK VEL (KTS)	TRACK HDG (DEGS)
1.833	.092	-.051	89.4	1.407	
2.416	.106	-.052	90.7	1.458	177.9
2.998	.120	-.052	93.4	1.461	177.9
3.578	.135	-.054	91.9	1.596	174.0
4.160	.143	-.055	93.3	.796	174.0
4.744	.147	-.055	92.9	.397	174.0
5.326	.151	-.056	93.4	.398	174.0
5.907	.163	-.057	93.8	1.305	172.2
6.489	.171	-.059	94.1	.851	170.5
7.071	.188	-.060	94.5	1.678	176.1
7.653	.195	-.062	95.0	.737	166.4
8.235	.205	-.063	94.9	1.085	173.0
8.817	.229	-.066	95.7	2.529	173.6
9.399	.303	.010	95.5	10.870	225.7
9.979	.278	-.029	96.4	4.776	57.8
10.562	.254	-.068	96.5	4.752	57.8
11.143	.284	-.050	97.4	3.695	211.6
11.726	.315	-.031	97.5	3.677	211.6
12.308	.284	-.073	98.1	5.391	54.1
12.890	.289	-.076	97.7	.582	152.7
13.472	.310	-.078	98.0	2.131	173.1
14.054	.320	-.079	98.2	1.065	173.1
14.635	.330	-.081	99.2	1.065	173.1
15.217	.336	-.084	97.9	.696	154.4
15.799	.345	-.086	97.9	.898	167.7
16.380	.354	-.088	96.1	1.001	164.1
16.963	.363	-.091	94.2	.996	164.1
17.545	.394	-.098	93.7	3.256	167.5
18.127	.410	-.101	93.0	1.626	167.5
18.707	.417	-.103	93.6	.816	167.5
19.290	.421	-.104	93.1	.406	167.5
19.872	.423	-.104	93.0	.203	167.5
20.454	.425	-.104	92.8	.203	167.5
21.036	.433	-.107	92.5	.846	165.2
21.618	.448	-.109	92.5	1.574	171.9
22.200	.463	-.111	94.3	1.574	171.9
22.782	.469	-.113	93.1	.630	157.7
23.363	.474	-.116	93.9	.630	157.7
23.945	.484	-.118	94.7	.985	165.9
24.527	.493	-.120	95.0	.985	165.9
25.109	.509	-.122	95.7	1.665	173.3
25.691	.518	-.124	95.9	.993	167.9
26.273	.530	-.126	96.5	1.172	168.5
26.855	.540	-.128	96.6	1.145	168.8
27.436	.551	-.131	97.0	1.145	168.8
28.018	.559	-.133	95.7	.865	161.1

28.599	.574	-.136	95.0	1.509	171.2
29.182	.588	-.138	95.2	1.502	171.2
29.764	.597	-.140	93.7	.950	164.5
30.346	.605	-.144	93.7	.855	157.2
30.928	.612	-.145	93.6	.808	166.0
31.510	.620	-.148	94.0	.794	162.9
32.091	.632	-.151	93.8	1.361	166.3
32.673	.641	-.153	93.1	.941	166.7
33.255	.651	-.155	94.2	1.054	170.3
33.837	.661	-.158	94.4	1.016	160.5
34.419	.675	-.160	94.3	1.530	171.4
35.001	.683	-.161	93.8	.801	169.9
35.581	.700	-.165	92.8	1.745	168.5
36.163	.708	-.167	91.8	.871	168.5
36.746	.716	-.168	92.5	.868	168.5
37.327	.726	-.171	93.1	1.038	164.6
37.910	.735	-.174	94.0	1.033	164.6
38.492	.741	-.175	93.9	.620	170.2
39.074	.754	-.177	93.9	1.275	169.8
39.656	.764	-.180	93.9	1.083	164.3
40.238	.783	-.180	94.7	1.973	177.7
40.818	.789	-.183	95.4	.714	158.7
41.401	.796	-.185	94.0	.710	158.7
41.983	.802	-.186	93.9	.677	175.0
42.565	.812	-.188	93.7	1.026	171.0
43.147	.820	-.190	93.5	.917	160.6
43.729	.833	-.191	93.5	1.272	178.3
44.311	.841	-.192	94.2	.867	173.0
44.891	.849	-.194	94.9	.862	167.5
45.474	.857	-.196	94.1	.858	167.5
46.056	.857	-.196	94.0	.052	55.0
46.637	.873	-.200	94.3	1.676	166.8
47.218	.881	-.201	94.0	.836	166.8
47.800	.885	-.202	94.0	.418	166.8
48.384	.889	-.203	94.4	.417	166.8

RUN NO. 33



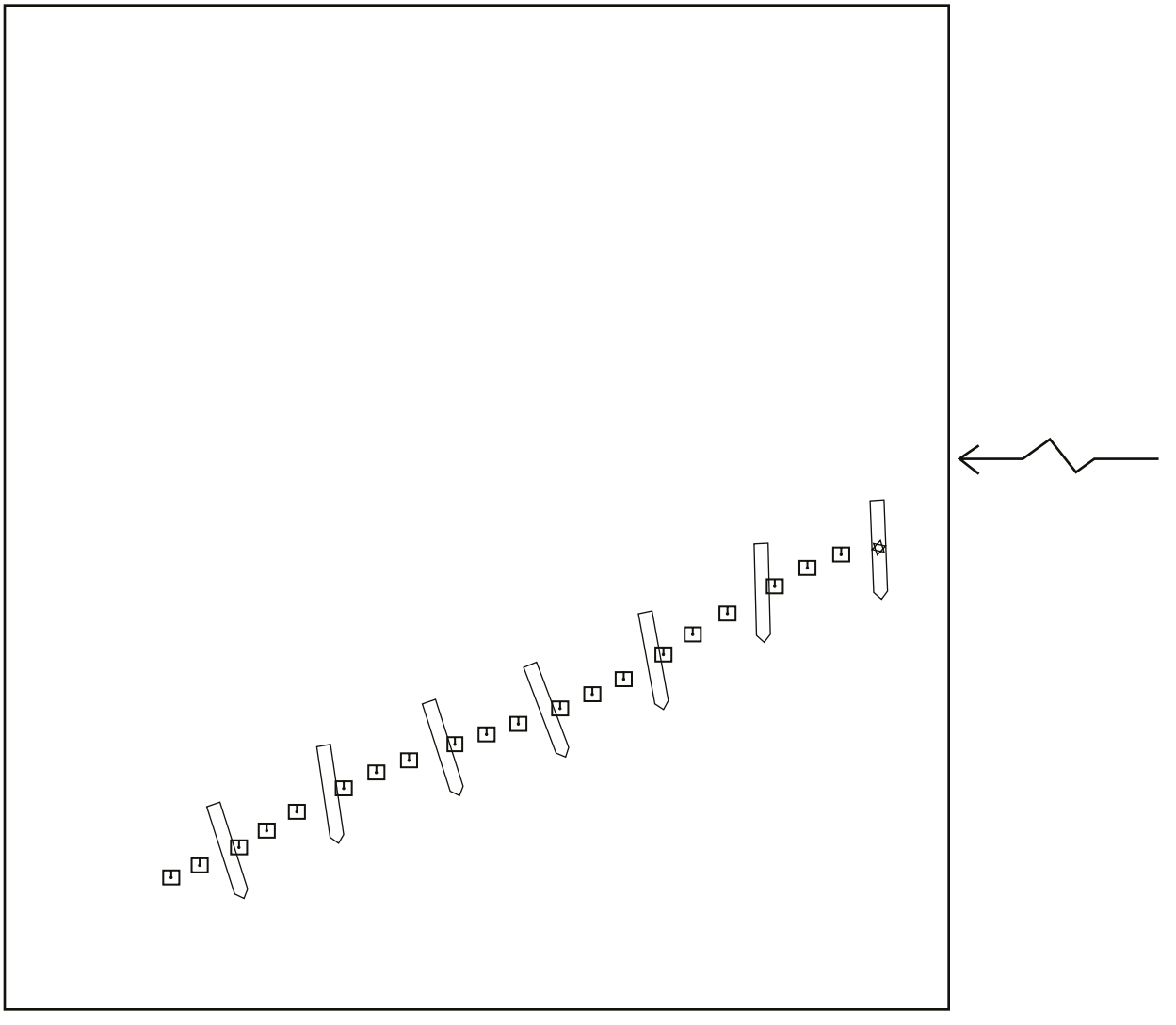
Drifting Tankers

Run Number = 33
Model Number = 5528
Condition = Normal Load
Rudder Amidships, Beaufort 9
All Results Scaled to Full Size, Scale is 1 to 76.178

TIME (MINS)	X NMILES	Y NMILES	SHIPS HDG (DEGS)	TRACK VEL (KTS)	TRACK HDG (DEGS)
1.815	.069	-.043	117.1	.831	
2.397	.076	-.043	112.2	.768	183.2
2.979	.083	-.044	109.5	.705	170.7
3.561	.094	-.045	103.6	1.072	173.0
4.143	.100	-.046	99.6	.718	174.1
4.725	.107	-.047	96.8	.718	174.1
5.307	.114	-.048	93.9	.723	168.2
5.888	.124	-.049	92.1	.978	175.5
6.470	.133	-.049	91.6	.978	175.5
7.052	.149	-.051	93.3	1.641	175.6
7.634	.150	-.052	92.6	.113	124.3
8.216	.162	-.052	93.0	1.279	176.2
8.798	.172	-.053	94.1	1.014	174.0
9.380	.177	-.055	94.9	.579	168.6
9.962	.183	-.056	95.1	.579	168.6
10.543	.190	-.057	95.5	.723	170.2
11.125	.204	-.058	96.7	1.505	175.6
11.707	.202	-.059	96.9	.236	32.6
12.289	.221	-.060	95.4	1.932	176.9
12.871	.228	-.063	94.6	.759	159.7
13.453	.234	-.064	95.7	.589	168.4
14.035	.250	-.066	93.5	1.716	174.5
14.616	.259	-.068	92.9	.972	165.6
15.198	.264	-.069	92.9	.502	166.3
15.780	.282	-.071	93.0	1.885	173.8
16.362	.285	-.073	91.8	.395	144.6
16.944	.301	-.075	92.9	1.591	175.1
17.526	.309	-.075	92.0	.831	178.2
18.108	.317	-.073	94.5	.878	194.0
18.690	.325	-.069	95.6	.916	206.7
19.271	.338	-.058	99.0	1.801	219.4
19.853	.345	-.052	104.2	.901	219.4
20.435	.352	-.047	107.1	.901	219.4
21.017	.356	-.039	109.9	.906	244.5
21.599	.362	-.028	118.5	1.326	238.6
22.181	.360	-.021	121.3	.738	292.3
22.763	.372	-.011	124.8	1.639	218.2
23.344	.372	-.008	122.5	.382	273.2
23.926	.375	-.001	119.3	.755	241.9
24.508	.387	.002	116.3	1.217	197.4
25.090	.393	.007	115.3	.820	218.7
25.672	.399	.009	107.9	.656	199.3
26.254	.408	.013	107.9	1.031	200.4
26.836	.412	.015	106.0	.449	210.7
27.418	.421	.017	102.7	.921	193.2
27.999	.429	.019	101.7	.921	193.2

28.581	.432	.020	98.9	.299	198.2
29.163	.434	.022	97.3	.255	224.3
29.745	.446	.023	94.8	1.277	185.3
30.327	.459	.025	95.3	1.291	187.4
30.909	.461	.026	93.5	.259	211.6
31.491	.465	.026	93.7	.407	181.8
32.074	.485	.028	94.5	2.066	184.6
16.037	.483	.028	93.5	-.005	349.0

RUN NO. 37



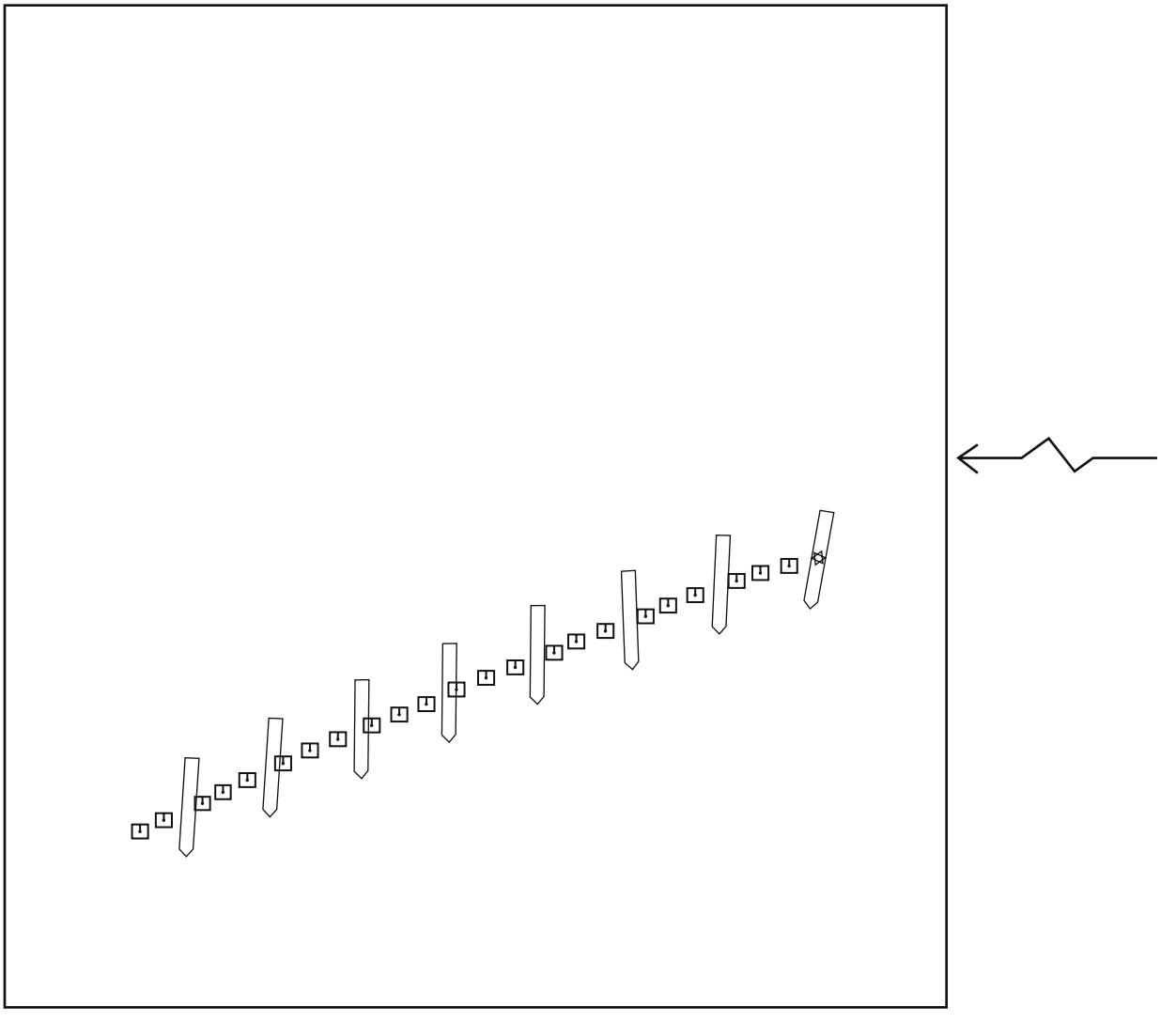
Drifting Tankers

Run Number = 37
Model Number = 5528
Condition = Load Heel 4 Deg. Stbd.
Rudder Amidships, Beaufort 5
All Results Scaled to Full Size, Scale is 1 to 76.178

TIME (MINS)	X NMILES	Y NMILES	SHIPS HDG (DEGS)	TRACK VEL (KTS)	TRACK HDG (DEGS)
1.869	.080	-.047	88.1	1.255	
2.451	.094	-.048	90.4	1.498	176.9
3.034	.108	-.050	93.3	1.441	171.4
3.616	.125	-.053	96.0	1.801	171.2
4.198	.138	-.057	96.1	1.389	162.2
4.780	.150	-.062	96.3	1.389	156.3
5.362	.165	-.068	95.1	1.633	159.2
5.944	.176	-.075	93.5	1.347	149.6
6.526	.192	-.082	91.8	1.738	155.5
7.107	.205	-.089	90.2	1.600	150.3
7.689	.219	-.097	88.7	1.638	150.4
8.271	.234	-.105	86.4	1.760	152.1
8.853	.248	-.113	84.8	1.615	148.5
9.435	.261	-.121	84.8	1.595	147.7
10.017	.277	-.129	84.4	1.890	154.1
10.599	.289	-.138	83.7	1.519	144.3
11.181	.302	-.146	82.9	1.600	148.0
11.762	.315	-.155	82.6	1.580	146.8
12.344	.326	-.163	81.8	1.421	144.2
12.926	.338	-.170	80.3	1.421	146.3
13.508	.349	-.178	78.9	1.442	146.3
14.090	.359	-.185	77.7	1.274	143.9
14.672	.372	-.193	76.0	1.502	150.0
15.254	.384	-.200	74.7	1.476	150.8
15.836	.397	-.206	73.2	1.446	153.7
16.417	.409	-.212	72.6	1.390	152.2
16.999	.422	-.218	72.4	1.435	156.7
17.581	.433	-.223	71.5	1.255	154.4
18.163	.447	-.229	71.3	1.603	158.6
18.745	.460	-.234	70.5	1.435	157.6
19.327	.474	-.239	70.1	1.504	161.8
19.909	.486	-.243	70.5	1.299	158.0
20.490	.501	-.248	70.0	1.721	162.4
21.072	.510	-.252	69.5	1.001	156.8
21.654	.524	-.257	70.2	1.470	160.1
22.236	.536	-.261	70.2	1.369	162.0
22.818	.548	-.265	70.0	1.231	161.3
23.400	.560	-.269	70.7	1.385	162.2
23.982	.572	-.273	71.8	1.239	162.1
24.564	.587	-.277	72.8	1.671	163.5
25.145	.599	-.281	73.6	1.212	160.2
25.727	.615	-.286	75.9	1.811	164.1
26.309	.626	-.290	76.6	1.204	158.3
26.891	.640	-.295	77.3	1.525	160.9
27.473	.652	-.300	78.0	1.334	158.6
28.055	.665	-.305	79.0	1.438	158.2

28.637	.679	-.311	79.8	1.493	156.9
29.218	.691	-.317	80.6	1.422	154.2
29.800	.705	-.323	81.2	1.595	156.5
30.382	.718	-.329	81.9	1.480	153.3
30.964	.733	-.336	81.9	1.682	154.5
31.544	.746	-.343	81.9	1.579	153.3
32.126	.757	-.350	82.1	1.285	146.6
32.708	.773	-.358	81.5	1.858	154.9
33.290	.783	-.365	80.6	1.298	146.1
33.872	.796	-.372	79.6	1.486	149.5
34.454	.810	-.379	78.6	1.587	152.5
35.036	.817	-.386	77.2	.995	139.7
35.618	.833	-.393	75.6	1.817	156.5
36.199	.842	-.399	73.5	1.151	146.7
36.781	.854	-.405	72.0	1.361	152.2
37.363	.865	-.410	70.4	1.253	153.3
37.945	.877	-.415	69.4	1.317	156.5
38.527	.889	-.421	68.8	1.402	155.9
39.109	.901	-.426	68.7	1.367	158.0
39.691	.911	-.431	68.6	1.096	153.3
40.272	.925	-.436	67.3	1.518	158.9
40.854	.934	-.441	66.9	1.109	154.4
41.436	.947	-.446	67.6	1.382	158.8

RUN NO. 39



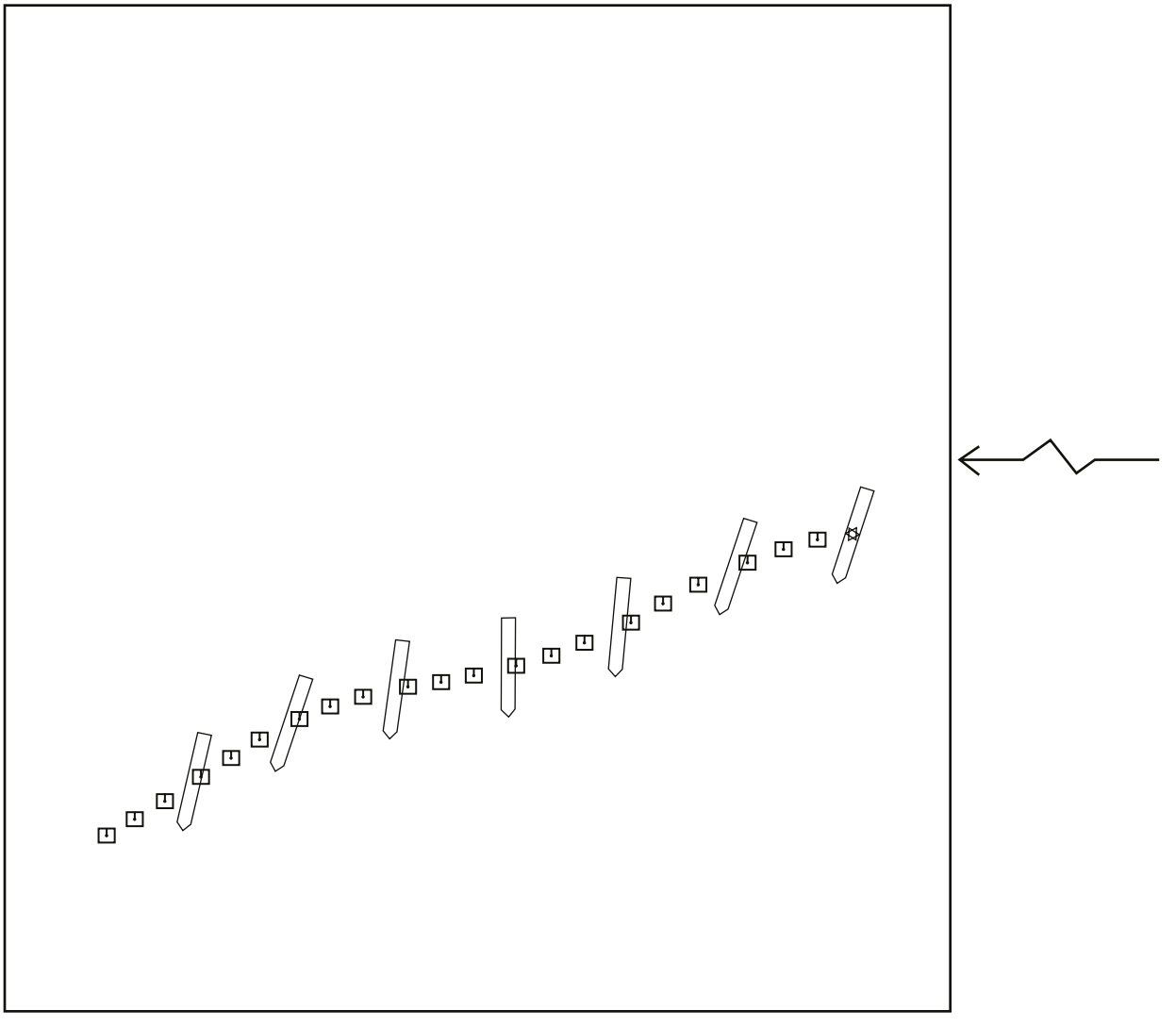
Drifting Tankers

Run Number = 39
Model Number = 5528
Condition = Normal Load 4 Deg. Heel to Stbd.
Rudder Amidships, Beaufort 7
All Results Scaled 10 Full Size, Scale is 1 to 76.178

TIME (MINS)	X NMILES	Y NMILES	SHIPS HDG (DEGS)	TRACK VEL (KTS)	TRACK HDG (DEGS)
1.815	.152	-.058	99.0	1.068	
2.397	.167	-.060	98.8	1.565	171.3
2.979	.176	-.063	97.9	.897	161.0
3.561	.187	-.065	97.0	1.211	166.6
4.143	.197	-.068	96.3	1.082	163.6
4.725	.206	-.072	96.5	.924	159.3
5.307	.221	-.075	94.9	1.644	168.4
5.888	.229	-.078	95.0	.828	157.1
6.470	.246	-.082	93.4	1.798	167.5
7.052	.249	-.085	94.3	.498	141.6
7.634	.268	-.089	92.3	1.949	165.9
8.216	.277	-.094	91.8	1.009	154.6
8.798	.286	-.098	91.7	1.048	156.1
9.380	.299	-.102	90.1	1.378	162.5
9.962	.305	-.106	92.0	.737	146.5
10.543	.324	-.110	89.7	2.058	166.4
11.125	.330	-.115	88.7	.799	146.9
11.707	.339	-.118	88.3	.960	155.5
12.289	.351	-.123	87.8	1.348	160.1
12.871	.359	-.127	87.9	.944	153.3
13.453	.375	-.132	87.9	1.686	163.3
14.035	.381	-.135	87.5	.755	149.3
14.616	.396	-.140	87.9	1.584	162.2
15.198	.405	-.144	87.8	1.009	155.7
15.780	.421	-.149	89.2	1.730	163.8
16.362	.430	-.153	88.8	1.024	155.0
16.944	.440	-.157	88.8	1.169	156.5
17.526	.447	-.162	88.7	.826	146.7
18.108	.463	-.166	90.1	1.656	164.3
18.690	.467	-.171	88.8	.681	137.8
19.271	.484	-.175	90.5	1.784	164.7
19.853	.489	-.180	89.9	.690	137.0
20.435	.506	-.184	90.8	1.764	164.5
21.017	.512	-.189	90.5	.794	143.7
21.599	.527	-.194	90.3	1.657	163.0
22.181	.536	-.198	90.1	1.052	154.5
22.763	.548	-.203	90.1	1.262	157.5
23.344	.560	-.207	90.5	1.313	159.4
23.926	.568	-.212	90.1	.999	152.5
24.508	.582	-.216	90.0	1.493	162.0
25.090	.590	-.220	89.7	.913	150.8
25.672	.599	-.225	89.9	1.104	156.0
26.254	.612	-.229	89.3	1.397	160.1
26.836	.618	-.234	89.6	.710	142.0
27.418	.630	-.236	88.8	1.339	159.6
27.999	.637	-.242	88.7	.834	148.1

28.581	.650	-.247	88.9	1.491	161.8
29.163	.658	-.251	89.7	.907	151.5
29.745	.671	-.256	89.5	1.456	161.1
30.327	.683	-.260	90.2	1.286	159.4
30.909	.694	-.264	90.5	1.194	157.9
31.491	.703	-.269	90.6	1.043	155.0
32.072	.712	-.273	90.7	1.033	154.0
32.654	.724	-.278	91.0	1.297	158.1
33.236	.734	-.282	91.2	1.189	157.4
33.818	.744	-.287	91.9	1.115	154.8
34.400	.756	-.292	92.3	1.352	159.1
34.982	.767	-.296	92.0	1.211	156.0
35.564	.844	-.270	92.3	8.358	198.9
36.146	.790	-.306	92.2	6.686	33.8
36.727	.800	-.311	92.3	1.196	154.2
37.309	.814	-.316	93.8	1.516	160.4
37.891	.818	-.321	92.5	.661	128.0
38.473	.831	-.326	92.8	1.426	158.9
39.055	.842	-.331	92.7	1.210	155.1
39.637	.847	-.336	91.7	.727	139.3
40.219	.861	-.341	92.3	1.498	159.5
40.800	.866	-.345	92.1	.753	140.5
41.382	.879	-.350	92.5	1.404	158.4
41.964	.886	-.355	92.5	.842	146.7
42.546	.900	-.360	93.1	1.551	160.0
43.128	.907	-.365	92.9	.933	146.7
43.710	.920	-.370	93.0	1.373	158.8
44.292	.931	-.375	92.8	1.219	154.7
44.874	.939	-.380	92.4	1.011	149.8
45.455	.953	-.385	92.2	1.564	161.0
46.037	.959	-.390	91.9	.750	138.2
46.619	.973	-.395	91.3	1.542	159.6
47.201	.978	-.400	92.2	.710	136.2

RUN NO. 41



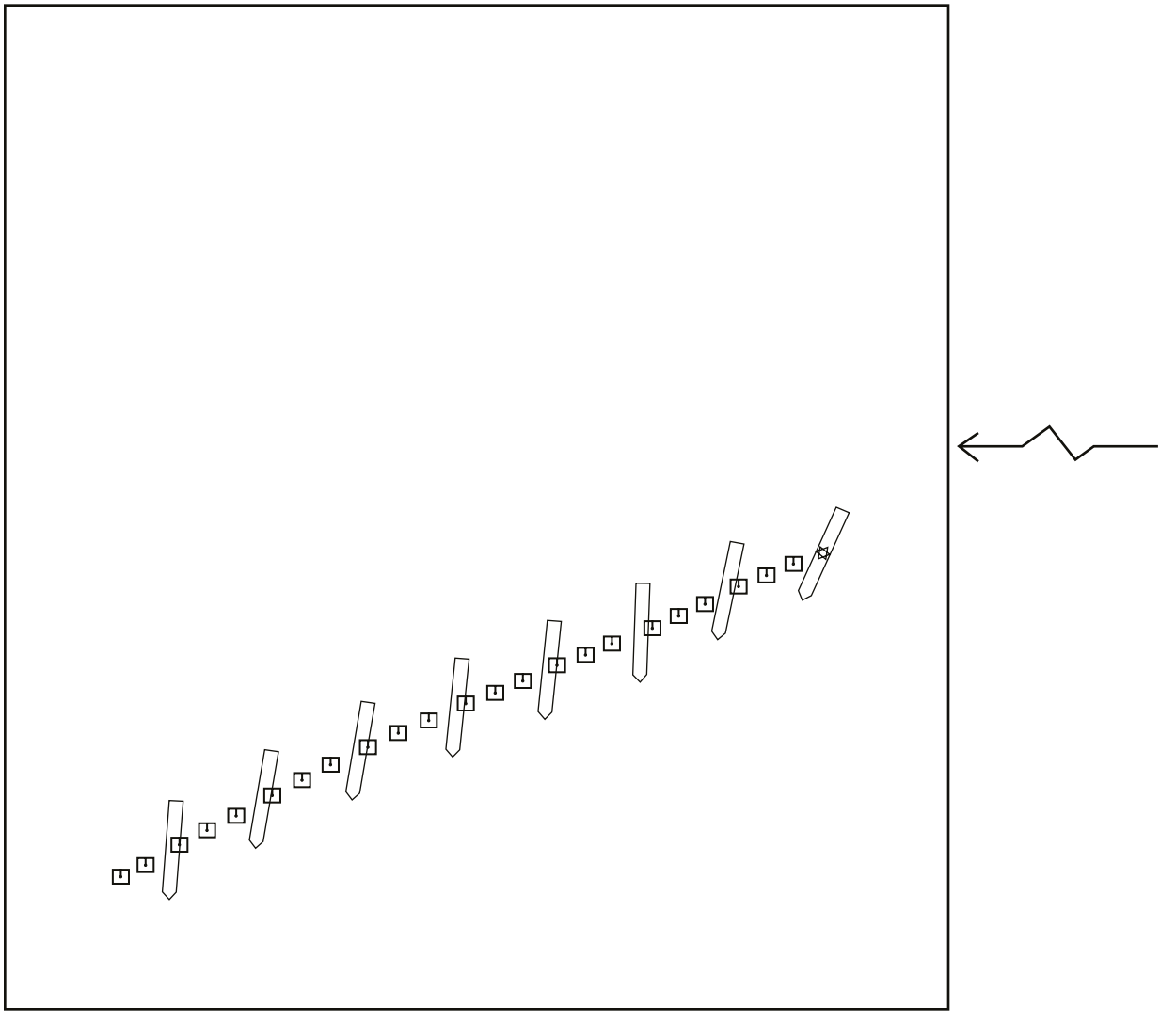
Drifting Tankers

Run Number = 41
Model Number = 5528
Condition = Load, 0 Deg. Heel, Bow Trim
Rudder Amidships, Beaufort 7
All Results Scaled to Full Size, Scale is 1 to 76.178

TIME (MINS)	X NMILES	Y NMILES	SHIPS HDG (DEGS)	TRACK VEL (KTS)	TRACK HDG (DEGS)
1.762	.114	-.029	108.8	1.407	
2.343	.128	-.031	110.9	1.365	173.6
2.925	.141	-.032	110.7	1.415	176.2
3.507	.156	-.034	113.3	1.583	170.1
4.089	.170	-.038	113.7	1.469	166.5
4.671	.184	-.041	112.7	1.458	167.6
5.253	.197	-.045	112.4	1.445	162.4
5.835	.211	-.050	110.8	1.506	159.6
6.417	.225	-.055	110.4	1.517	159.9
6.998	.240	-.061	110.0	1.649	159.4
7.560	.255	-.067	108.4	1.708	158.1
8.162	.268	-.073	105.2	1.490	152.6
8.744	.284	-.080	105.5	1.815	158.3
9.326	.299	-.087	104.8	1.637	155.4
9.908	.313	-.094	102.8	1.635	150.3
10.490	.329	-.102	103.0	1.806	155.6
11.071	.341	-.109	102.2	1.452	150.4
11.653	.356	-.116	101.8	1.744	154.1
12.235	.368	-.123	99.0	1.434	148.0
12.817	.380	-.130	97.8	1.433	150.4
13.399	.394	-.137	96.1	1.659	153.8
13.981	.409	-.144	94.7	1.696	156.9
14.563	.420	-.150	92.9	1.246	151.3
15.145	.435	-.155	92.9	1.666	159.4
15.726	.448	-.160	91.8	1.425	158.5
16.308	.461	-.165	91.0	1.475	159.5
16.890	.476	-.170	90.9	1.531	162.8
17.472	.486	-.174	90.1	1.181	159.0
18.054	.501	-.178	90.7	1.534	164.6
18.636	.517	-.181	91.2	1.681	167.3
19.218	.527	-.185	90.5	1.097	162.7
19.799	.540	-.188	91.0	1.419	166.9
20.381	.554	-.190	91.0	1.501	169.3
20.963	.567	-.193	91.6	1.357	167.9
21.545	.580	-.196	92.0	1.296	167.9
22.127	.593	-.198	92.1	1.384	170.5
22.709	.606	-.200	93.0	1.406	170.3
23.291	.620	-.203	93.6	1.429	169.9
23.873	.632	-.205	94.8	1.263	170.7
24.454	.645	-.207	95.9	1.306	170.7
25.036	.659	-.209	98.0	1.473	170.7
25.618	.672	-.212	100.1	1.375	168.6
26.200	.686	-.215	101.5	1.486	168.1
26.782	.698	-.218	103.1	1.308	165.0
27.364	.712	-.221	104.9	1.496	167.9
27.946	.726	-.225	106.9	1.522	165.2

28.527	.737	-.229	108.0	1.218	158.3
29.109	.750	-.234	109.3	1.411	160.1
29.691	.762	-.239	108.8	1.360	155.5
30.273	.773	-.244	108.9	1.217	156.4
30.855	.785	-.249	108.6	1.337	155.1
31.437	.796	-.256	108.1	1.349	149.4
32.019	.808	-.262	108.4	1.344	154.8
32.601	.821	-.269	108.1	1.500	151.5
33.181	.832	-.276	106.9	1.396	147.8
33.763	.843	-.282	106.8	1.293	148.1
34.345	.855	-.290	106.4	1.495	148.9
34.927	.867	-.297	105.5	1.424	148.0
35.508	.878	-.304	105.4	1.339	147.7
36.090	.889	-.312	104.6	1.418	145.0
36.672	.899	-.319	103.3	1.281	144.2
37.254	.912	-.327	103.0	1.489	149.0
37.836	.923	-.334	101.9	1.417	147.2
38.418	.935	-.341	101.5	1.392	147.8
39.000	.945	-.349	100.5	1.301	144.5
39.581	.956	-.356	100.3	1.388	148.1
40.163	.969	-.363	99.5	1.487	151.8
40.745	.978	-.369	96.7	1.182	143.5
41.327	.989	-.376	97.0	1.310	150.5
41.909	1.002	-.382	97.0	1.485	155.2

RUN NO. 43



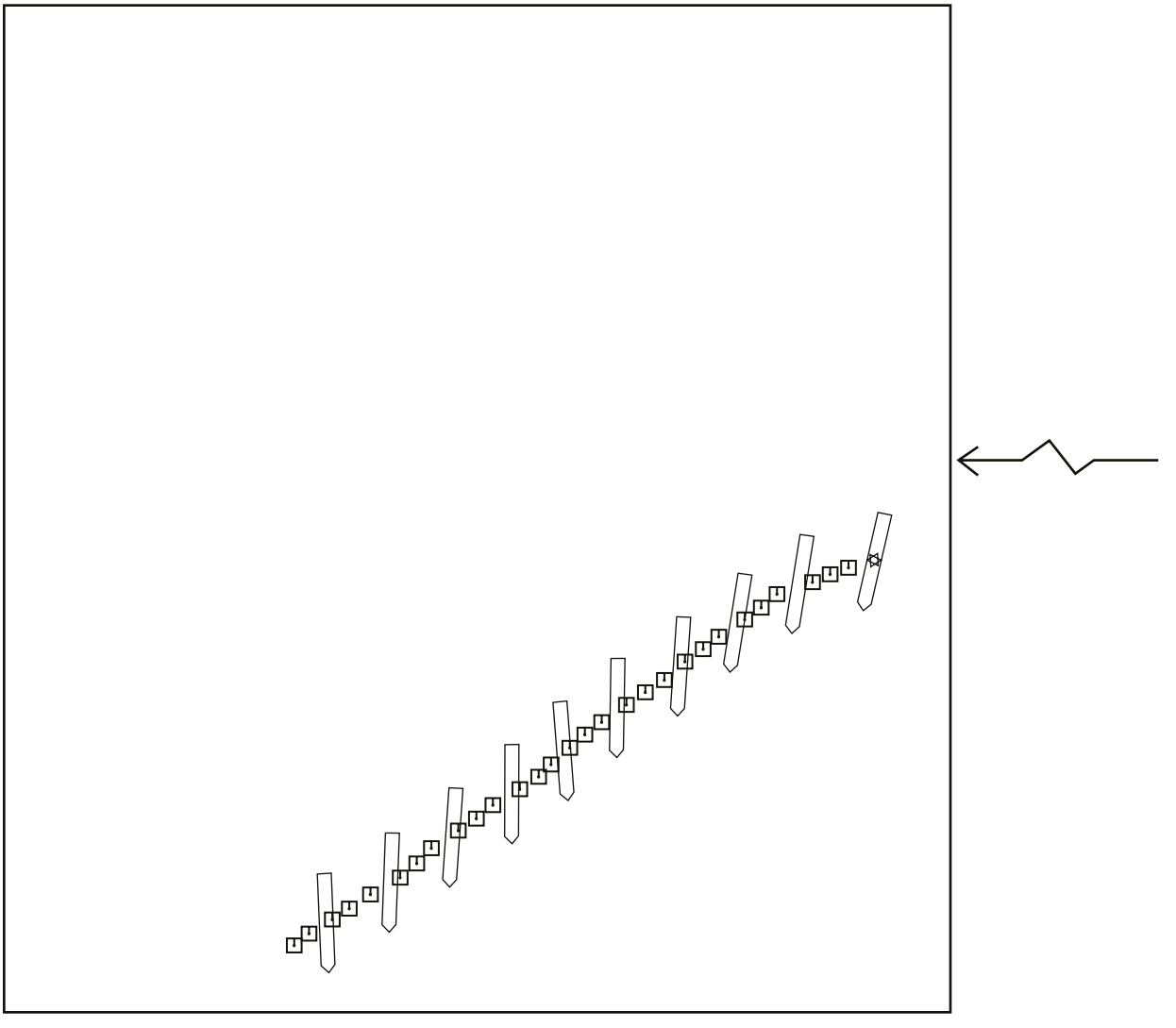
Drifting Tankers

Run Number = 43
Model Number = 5528
Condition = Normal Load ,Stern Trim 1.5 m
Rudder Amidships, Beaufort 7
All Results Scaled to Full Size, Scale is 1 to 76.178

TIME (MINS)	X NMILES	Y NMILES	SHIPS HDG (DEGS)	TRACK VEL (KTS)	TRACK HDG (DEGS)
1.798	.147	-.059	112.9	1.594	
2.380	.156	-.063	109.6	.931	157.5
2.962	.169	-.066	111.2	1.438	168.1
3.544	.181	-.069	110.8	1.237	161.6
4.125	.189	-.074	108.0	.966	146.4
4.707	.203	-.078	108.5	1.516	164.8
5.289	.212	-.083	105.8	1.105	153.8
5.871	.226	-.088	104.9	1.465	161.6
6.453	.237	-.093	103.3	1.225	154.6
7.035	.246	-.098	101.1	1.126	150.4
7.617	.260	-.103	102.0	1.495	160.8
8.199	.266	-.108	99.0	.831	138.1
8.780	.279	-.113	99.0	1.472	159.8
9.362	.286	-.118	97.7	.880	141.3
9.944	.295	-.124	96.2	1.094	150.3
10.526	.307	-.129	94.9	1.381	157.4
11.106	.316	-.134	93.5	.981	148.8
11.690	.324	-.139	93.2	1.034	151.3
12.272	.336	-.143	92.2	1.315	157.7
12.853	.349	-.148	92.0	1.371	159.0
13.435	.360	-.153	92.0	1.308	156.9
14.017	.371	-.158	92.7	1.220	157.5
14.599	.382	-.162	92.9	1.261	157.1
15.181	.395	-.167	93.3	1.335	159.0
15.763	.407	-.172	93.5	1.340	157.5
16.345	.415	-.176	93.9	1.008	153.5
16.926	.426	-.181	94.5	1.175	156.4
17.508	.437	-.186	94.2	1.302	157.6
18.090	.447	-.190	95.1	1.045	155.8
18.672	.460	-.195	94.2	1.495	159.8
19.254	.470	-.199	94.4	1.083	154.7
19.836	.480	-.204	94.9	1.203	156.3
20.418	.491	-.209	94.5	1.218	157.7
21.000	.499	-.213	95.6	.963	150.2
21.581	.512	-.218	94.5	1.413	158.9
22.163	.521	-.223	94.5	1.015	151.3
22.745	.532	-.228	94.1	1.209	155.8
23.327	.540	-.232	94.5	.994	152.0
23.909	.554	-.238	94.0	1.546	159.6
24.491	.566	-.243	94.2	1.370	157.2
25.073	.577	-.248	94.7	1.235	155.0
25.654	.589	-.252	95.2	1.261	157.1
26.236	.600	-.258	96.2	1.278	154.9
26.818	.611	-.263	96.8	1.270	153.9
27.400	.622	-.268	97.0	1.264	155.8
27.982	.635	-.274	96.9	1.472	157.1

28.564	.646	-.279	97.1	1.249	153.2
29.146	.657	-.285	97.6	1.295	154.2
29.728	.671	-.290	98.7	1.507	158.6
30.309	.681	-.296	98.1	1.217	150.1
30.891	.692	-.301	98.5	1.280	153.4
31.473	.704	-.307	98.8	1.340	153.9
32.055	.715	-.313	99.8	1.299	152.6
32.637	.726	-.319	99.0	1.259	152.3
33.219	.737	-.325	99.0	1.298	150.7
33.801	.750	-.330	99.9	1.507	157.3
34.381	.760	-.336	99.9	1.198	148.3
34.963	.775	-.342	101.1	1.610	157.6
35.545	.782	-.349	99.4	.964	138.7
36.127	.795	-.355	99.2	1.490	154.7
36.709	.805	-.361	98.9	1.255	150.2
37.290	.817	-.367	98.6	1.393	152.7
37.872	.829	-.373	98.7	1.358	152.1
38.454	.837	-.379	97.0	1.013	141.1
39.036	.850	-.386	97.4	1.532	155.1
39.618	.860	-.392	97.0	1.233	148.5
40.200	.871	-.398	96.3	1.237	149.3
40.782	.883	-.404	96.4	1.410	152.8
41.363	.891	-.410	95.2	1.055	142.7
41.945	.905	-.417	95.0	1.545	156.0
42.527	.912	-.422	93.7	.990	142.0
43.109	.925	-.429	93.0	1.456	154.1
43.691	.933	-.434	92.8	1.006	143.6
44.273	.944	-.440	91.6	1.308	153.4
44.855	.951	-.446	91.0	.961	143.4
45.437	.964	-.452	90.0	1.474	155.4
46.018	.972	-.457	90.1	.908	143.0
46.600	.985	-.463	89.4	1.467	156.0
47.182	.995	-.469	88.9	1.260	151.0

RUN NO. 45



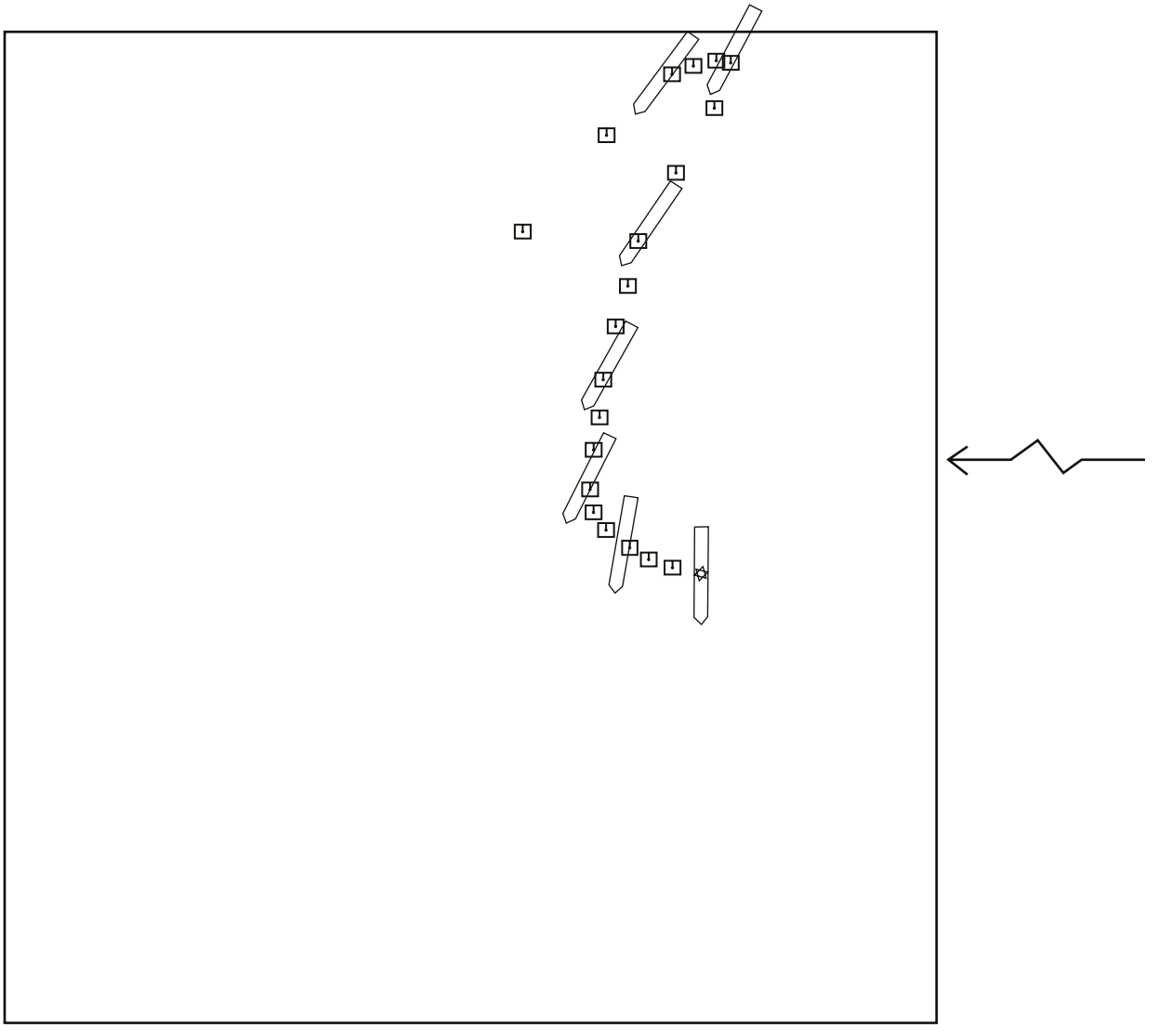
Drifting Tankers

Run Number = 45
Model Number = 5528
Condition = Load, Stern Trim
Rudder Amidships, Beaufort 9
All Results Scaled to Full Size, Scale is 1 to 76.178

TIME (MINS)	X NMILES	Y NMILES	SHIPS HDG (DEGS)	TRACK VEL (KTS)	TRACK HDG (DEGS)
2.361	.089	-.065	103.8	46.609	
2.943	.108	-.066	106.1	1.954	179.0
3.525	.111	-.069	105.3	.486	132.2
4.107	.120	-.072	105.7	1.007	164.1
4.688	.130	-.075	104.5	1.007	164.1
5.270	.138	-.077	105.0	.895	167.4
5.852	.142	-.080	101.0	.544	144.8
6.434	.156	-.082	102.1	1.441	168.3
7.014	.160	-.086	102.3	.517	141.0
7.598	.164	-.089	99.6	.514	141.0
8.180	.180	-.093	100.0	1.700	164.8
8.761	.186	-.097	103.2	.775	148.5
9.343	.193	-.101	100.6	.775	148.5
9.925	.206	-.104	103.0	1.447	167.3
10.507	.215	-.108	103.7	1.033	153.4
11.089	.218	-.113	103.1	.550	116.6
11.671	.224	-.118	101.4	.832	145.9
12.253	.231	-.122	101.0	.832	145.9
12.835	.236	-.128	101.8	.785	134.6
13.416	.244	-.132	101.5	.966	150.3
13.998	.254	-.137	99.4	1.143	153.6
14.580	.264	-.142	100.7	1.143	153.6
15.162	.320	-.099	99.8	7.313	217.7
15.744	.276	-.152	97.0	7.199	50.2
16.326	.282	-.158	96.4	.821	139.8
16.908	.289	-.162	97.2	.848	145.1
17.489	.295	-.167	96.8	.848	145.1
18.071	.302	-.173	96.0	.909	140.3
18.653	.311	-.178	95.6	1.107	150.4
19.235	.317	-.182	95.7	.763	144.7
19.817	.324	-.188	95.2	.876	137.0
20.399	.336	-.193	95.3	1.385	157.1
20.981	.339	-.198	95.2	.597	119.1
21.563	.342	-.203	94.9	.597	119.1
22.144	.355	-.209	92.3	1.463	158.4
22.726	.361	-.213	92.7	.800	142.1
23.308	.364	-.218	91.5	.602	123.8
23.890	.376	-.223	91.3	1.334	156.2
24.472	.387	-.228	93.3	1.187	155.5
25.054	.387	-.234	90.9	.552	94.0
25.636	.398	-.238	91.8	1.274	157.7
26.217	.409	-.243	92.2	1.232	154.8
26.799	.410	-.248	90.7	.523	101.2
27.381	.417	-.254	90.0	.905	141.5
27.963	.425	-.259	89.2	.966	148.8
28.545	.433	-.264	90.2	.980	148.4

29.127	.437	-.269	89.4	.667	128.5
29.709	.445	-.274	87.7	.919	145.6
30.291	.452	-.279	89.3	.919	145.6
30.872	.456	-.284	88.0	.657	126.9
31.150	.463	-.289	87.2	.943	146.9
32.036	.471	-.294	88.9	.929	146.9
32.618	.474	-.299	88.6	.609	124.8
33.200	.478	-.304	89.2	.623	124.6
33.782	.481	-.309	89.3	.623	124.6
34.361	.490	-.313	90.0	1.038	151.4
34.945	.492	-.318	89.8	.518	109.6
35.527	.499	-.323	89.4	.916	142.7
36.109	.507	-.328	90.1	.977	148.5
36.691	.515	-.333	90.5	.977	148.5
37.273	.524	-.338	90.5	1.048	152.8
37.855	.533	-.343	90.9	1.042	148.6
38.437	.540	-.347	92.9	.890	151.2
39.019	.548	-.352	91.6	.951	148.4
39.600	.556	-.357	93.2	.951	148.4
40.182	.562	-.362	93.2	.805	139.3
40.764	.568	-.368	92.1	.828	137.9
41.346	.578	-.372	94.3	1.134	155.3
41.928	.581	-.378	94.9	.649	118.9
42.510	.589	-.382	95.1	.975	152.0
43.092	.595	-.388	95.2	.887	135.8
43.673	.607	-.393	96.8	1.317	158.5
44.255	.612	-.398	96.3	.737	135.9
44.836	.622	-.403	97.4	1.107	150.4
45.119	.631	-.408	96.6	1.101	150.4
46.001	.638	-.414	97.0	.909	140.3
46.583	.638	-.420	96.6	.619	91.6
47.165	.649	-.425	95.3	1.295	157.9
47.747	.654	-.430	94.1	.751	128.4
48.328	.657	-.436	95.0	.629	117.3
48.910	.668	-.441	92.8	1.268	156.3
49.492	.675	-.446	92.7	.876	142.1
50.074	.680	-.451	92.9	.753	138.0
50.656	.692	-.456	91.7	1.349	157.1
51.238	.700	-.461	92.1	.932	146.8
51.820	.707	-.466	91.0	.932	146.8
52.401	.718	-.473	90.5	1.298	143.8
52.983	.729	-.475	91.3	1.156	169.2
53.565	.732	-.481	90.3	.656	124.2
54.147	.738	-.485	89.8	.738	140.8
51.729	.746	-.490	88.5	.946	149.9
55.311	.756	-.495	88.0	1.204	155.2
55.893	.759	-.499	86.0	.549	122.7
56.473	.768	-.504	85.3	1.045	152.7
57.056	.777	-.508	83.8	1.040	152.7
57.638	.782	-.512	83.5	.587	142.6
58.220	.783	-.516	83.4	.481	108.0

RUN NO. 47



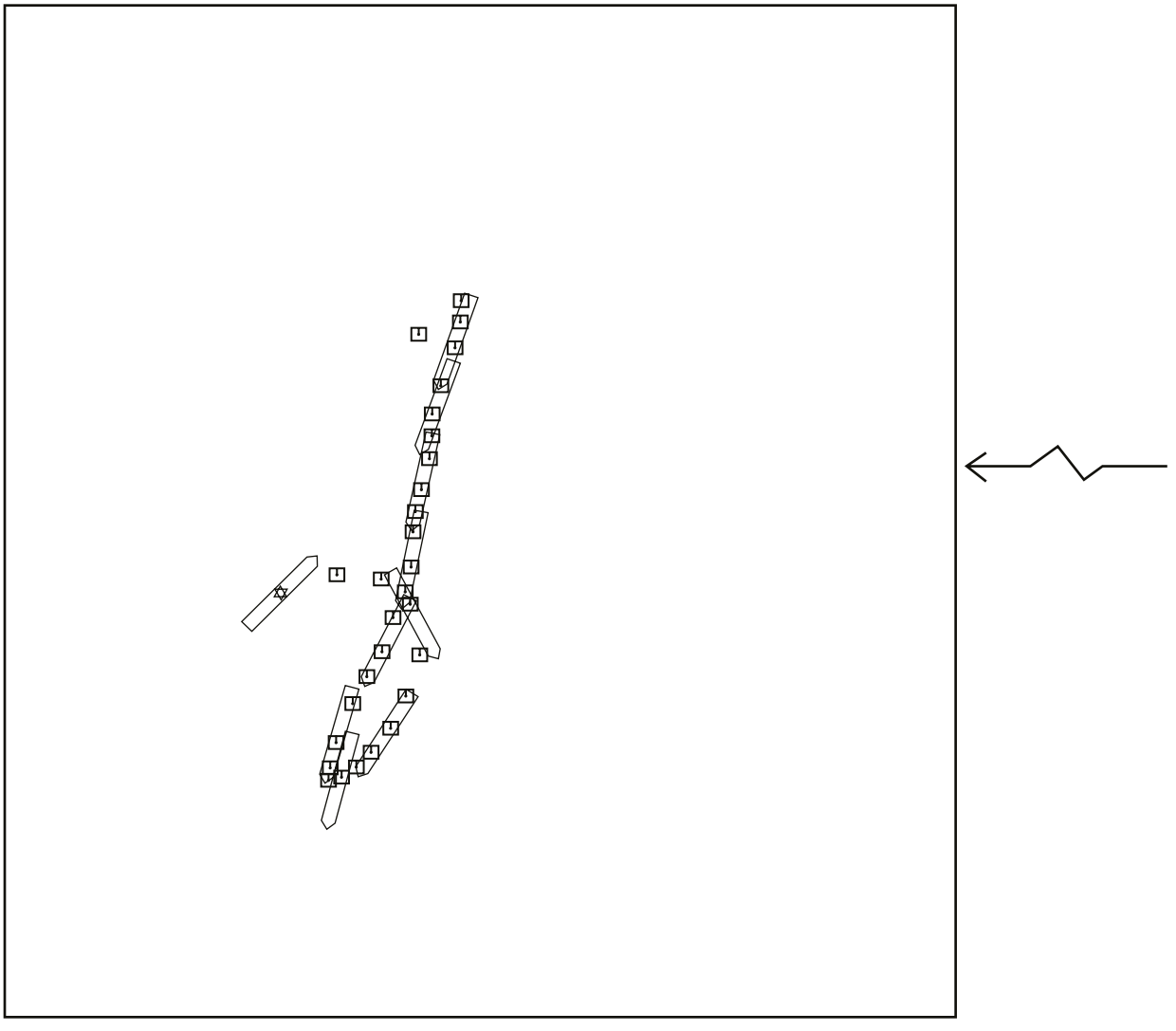
Drifting Tankers

Run Number = 47
Model Number = 5528
Condition = Load Level Trim, With Power
Rudder Amidships, Beaufort 9
All Results Scaled to Full Size, Scale is 1 to 76.178

TIME (MINS)	X NMILES	Y NMILES	SHIPS HDG (DEGS)	TRACK VEL (KTS)	TRACK HDG (DEGS)
1.762	.278	-.058	89.2	.085	
2.343	.295	-.057	88.9	1.800	185.0
2.925	.305	-.055	90.6	1.057	190.9
3.507	.313	-.052	91.0	.851	199.8
4.089	.321	-.049	92.1	.851	199.8
4.671	.332	-.046	94.6	1.209	197.5
5.253	.342	-.042	97.9	1.115	201.4
5.835	.344	-.039	97.2	.409	236.0
6.417	.363	-.033	99.6	1.963	196.6
6.998	.364	-.029	100.3	.456	251.6
7.580	.373	-.024	99.0	1.082	209.6
8.162	.380	-.018	100.5	.885	219.4
8.744	.386	-.013	102.3	.885	219.4
9.326	.393	-.006	102.2	.972	222.9
9.908	.400	-.001	101.6	.899	218.5
10.490	.407	.007	105.2	1.140	229.7
11.071	.410	.015	105.8	.830	252.2
11.653	.412	.023	108.5	.830	252.2
12.235	.418	.033	114.4	1.248	240.0
12.817	.413	.043	114.9	1.154	300.7
13.399	.416	.054	116.4	1.243	251.5
13.981	.417	.067	120.9	1.288	265.5
14.561	.413	.079	119.1	1.293	288.6
15.145	.409	.090	119.9	1.287	288.6
15.726	.408	.106	124.4	1.598	274.1
16.308	.402	.118	119.3	1.441	298.1
16.890	.404	.132	118.3	1.398	259.2
17.471	.401	.147	118.6	1.626	282.9
18.054	.397	.162	117.8	1.618	282.9
18.636	.400	.177	119.0	1.521	258.8
19.216	.394	.192	117.7	1.735	291.9
19.799	.388	.208	116.7	1.727	291.9
20.381	.390	.225	118.9	1.798	263.0
20.963	.385	.241	118.6	1.703	286.6
21.545	.383	.258	118.4	1.725	275.5
22.125	.378	.274	120.1	1.751	289.6
22.709	.372	.290	119.4	1.742	289.6
23.291	.373	.308	121.7	1.930	267.6
23.873	.364	.325	121.4	1.971	298.7
24.453	.360	.345	120.7	2.054	281.3
25.035	.347	.364	122.9	2.415	302.0
25.617	.335	.384	122.6	2.415	302.0
26.199	.331	.406	122.7	2.307	279.3
26.780	.316	.428	122.3	2.753	306.4
27.362	.305	.451	121.9	2.614	294.7
27.944	.295	.473	123.2	2.483	294.7

28.526	.271	.507	121.6	4.337	304.3
29.108	.271	.518	123.1	1.082	272.7
29.690	.262	.537	121.8	2.165	294.2
30.272	.251	.563	117.0	2.879	293.2
30.853	.250	.577	116.0	1.491	275.9
31.435	.250	.576	130.8	.163	117.9
32.017	.254	.575	141.4	.357	176.6
32.599	.270	.565	148.4	1.954	147.8
33.181	.278	.563	151.2	.837	165.3
33.763	.282	.562	149.1	.450	161.9
34.345	.297	.558	145.6	1.666	165.7
34.927	.306	.555	142.1	.890	159.7
35.510	.314	.551	134.9	.985	157.9
36.090	.323	.548	128.8	.990	157.9
36.672	.330	.551	124.9	.779	204.8
37.254	.353	.523	123.6	3.706	129.6
37.836	.375	.502	122.0	3.154	136.4
38.418	.399	.473	117.7	3.880	129.6
39.000	.432	.439	118.7	4.920	133.5
39.583	.462	.399	119.5	5.137	127.1
40.165	.498	.355	121.9	5.900	129.4
40.747	.534	.306	121.8	6.191	125.8

RUN NO. 48(1)



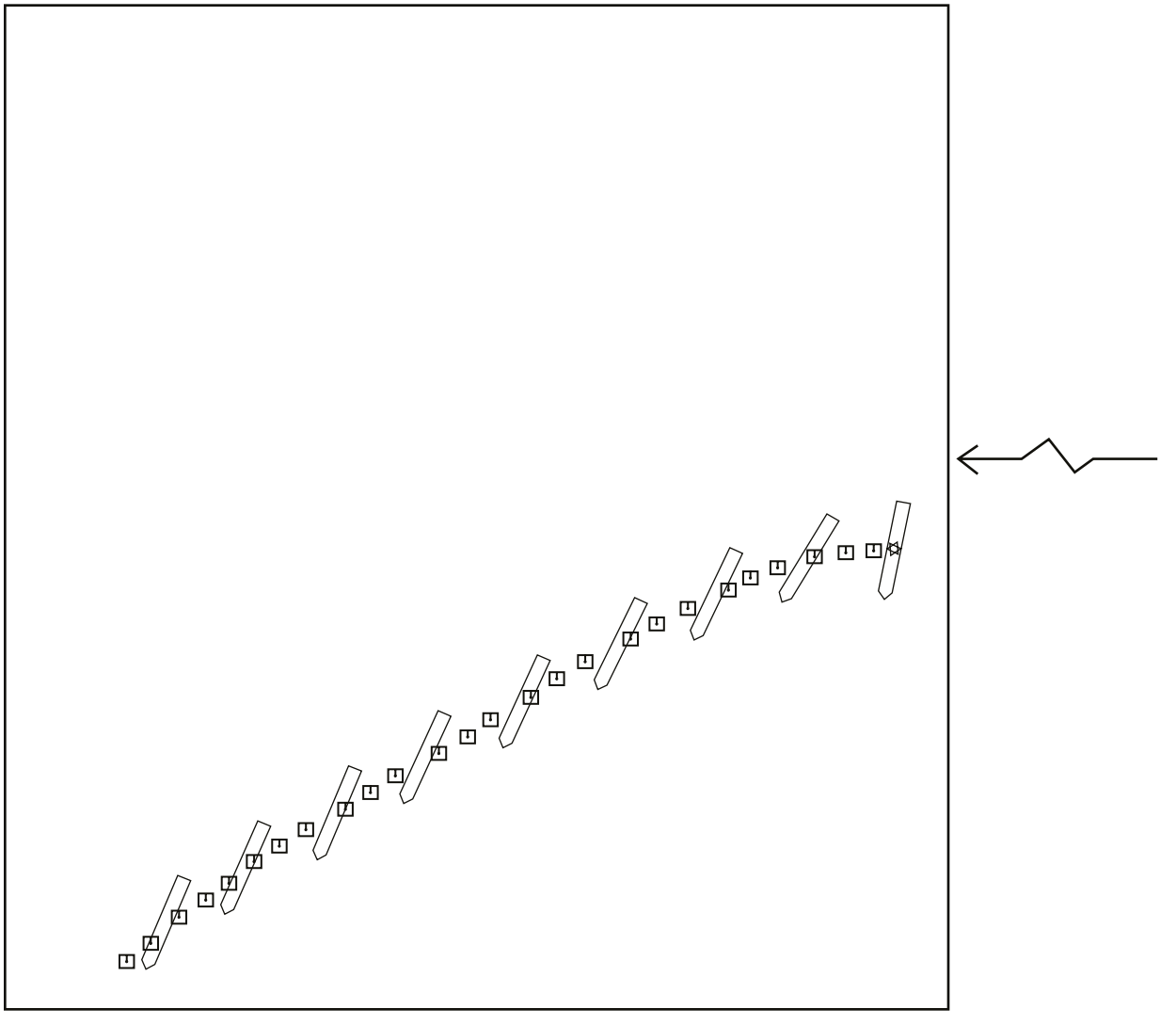
Drifting Tankers

Run Number = 48(1)
Model Number = 5528
Condition = Load Level, With Power
Rudder 35 Deg. Stbd, Beaufort 9
All Results Scaled to Full Size, Scale is 1 to 76.178

TIME (MINS)	X NMILES	Y NMILES	SHIPS HDG (DEGS)	TRACK VEL (KTS)	TRACK HDG (DEGS)
1.834	.800	-.085	315.0	2.628	
2.416	.776	-.076	319.7	2.665	340.9
2.997	.755	-.071	326.1	2.180	345.4
3.580	.735	-.066	331.2	2.170	345.4
4.162	.715	-.065	321.9	2.039	358.8
4.744	.701	-.067	13.5	1.517	7.2
5.326	.682	-.072	22.0	1.951	14.3
5.907	.668	-.080	35.4	1.657	29.3
6.489	.662	-.090	44.6	1.245	57.2
7.071	.651	-.102	53.2	1.670	46.5
7.653	.644	-.115	63.1	1.579	63.7
8.235	.642	-.130	70.8	1.551	81.7
8.817	.641	-.146	78.8	1.596	87.1
9.399	.639	-.162	86.5	1.688	82.6
9.980	.642	-.179	92.6	1.752	102.9
10.562	.648	-.196	101.3	1.882	107.3
11.144	.655	-.212	109.4	1.807	112.8
11.726	.659	-.227	114.2	1.562	105.6
12.308	.666	-.239	116.8	1.505	119.5
12.890	.674	-.249	119.7	1.348	130.2
13.470	.681	-.258	122.5	1.120	128.9
14.054	.688	-.266	124.3	1.114	128.9
14.635	.658	-.246	123.8	3.748	325.4
15.217	.697	-.280	122.2	5.355	139.2
15.799	.707	-.285	121.4	1.149	150.1
16.381	.712	-.291	121.4	.784	126.9
16.963	.715	-.296	117.9	.627	126.5
17.543	.721	-.301	113.1	.734	141.7
18.127	.726	-.305	110.0	.730	141.7
18.708	.734	-.309	108.2	.853	153.4
19.290	.735	-.312	105.5	.349	117.5
19.872	.735	-.314	100.9	.288	80.7
20.454	.742	-.314	98.0	.791	184.6
21.036	.747	-.312	97.0	.501	204.0
21.618	.744	-.308	95.8	.480	313.6
22.200	.744	-.302	94.7	.615	267.6
22.782	.745	-.296	95.9	.655	261.8
23.363	.747	-.287	98.6	.959	256.5
23.945	.742	-.278	102.4	1.086	301.3
24.527	.738	-.267	104.7	1.230	285.2
25.109	.735	-.256	107.5	1.151	286.0
25.691	.735	-.244	111.4	1.242	271.6
26.273	.726	-.231	115.1	1.598	307.0
26.853	.718	-.220	117.4	1.421	303.0
27.436	.711	-.208	117.7	1.414	303.0
28.018	.760	-.160	119.8	7.128	224.6

28.600	.701	-.187	122.0	6.732	25.0
29.182	.692	-.177	122.1	1.408	311.7
29.764	.686	-.168	119.0	1.167	303.0
30.346	.683	-.158	117.5	1.088	284.9
30.928	.677	-.148	117.4	1.186	301.0
31.510	.668	-.137	114.2	1.414	310.1
32.091	.667	-.128	109.2	.956	274.1
32.673	.669	-.117	109.7	1.169	263.5
33.255	.661	-.108	106.8	1.258	311.9
33.837	.656	-.097	104.1	1.173	291.2
34.400	.656	-.088	102.0	.995	272.0
34.982	.655	-.078	102.3	1.019	275.1
35.564	.654	-.068	103.4	1.019	275.1
36.146	.649	-.058	104.0	1.222	298.6
36.727	.647	-.049	101.2	.932	280.7
37.309	.652	-.039	101.7	1.126	243.1
37.891	.648	-.030	102.0	.986	294.9
38.473	.645	-.016	102.2	1.510	282.7
39.055	.643	-.009	100.7	.755	282.7
39.638	.641	-.002	99.7	.753	282.7
40.220	.642	.008	101.8	.963	268.0
40.802	.637	.017	103.9	1.113	296.5
41.384	.633	.026	102.2	.948	294.8
41.966	.634	.036	101.1	1.057	263.8
42.546	.634	.045	102.0	.906	272.4
43.128	.633	.055	105.3	1.060	275.5
43.710	.626	.063	104.7	1.087	309.5
44.292	.626	.072	102.5	.955	272.5
44.874	.628	.081	104.7	.982	257.3
45.455	.625	.090	106.2	.931	286.9
46.037	.621	.099	105.1	1.018	295.4
46.619	.618	.107	104.2	.907	286.6
47.201	.620	.117	105.4	.983	259.6
47.783	.620	.125	109.4	.890	268.6
48.365	.615	.134	110.4	1.029	302.4
48.947	.610	.142	110.1	.964	303.3
49.528	.610	.151	109.9	.929	267.6
50.110	.610	.158	110.8	.794	273.1
50.692	.609	.167	114.5	.868	277.3
51.274	.604	.174	113.9	.891	304.1
51.856	.635	.220	113.3	5.739	235.6
52.438	.600	.189	113.1	4.809	41.3
53.020	.600	.197	116.1	.816	274.5
53.602	.593	.204	114.6	1.028	313.8
54.183	.592	.211	109.9	.757	274.5
54.765	.639	.185	108.8	5.569	150.5
55.347	.591	.227	108.6	6.625	319.0
55.929	.586	.234	104.7	.872	305.7
56.511	.586	.242	100.4	.880	271.2
57.093	.586	.251	99.4	.880	271.2
57.675	.584	.259	98.7	.875	280.6
58.256	.582	.268	94.0	.875	280.6

RUN NO. 49



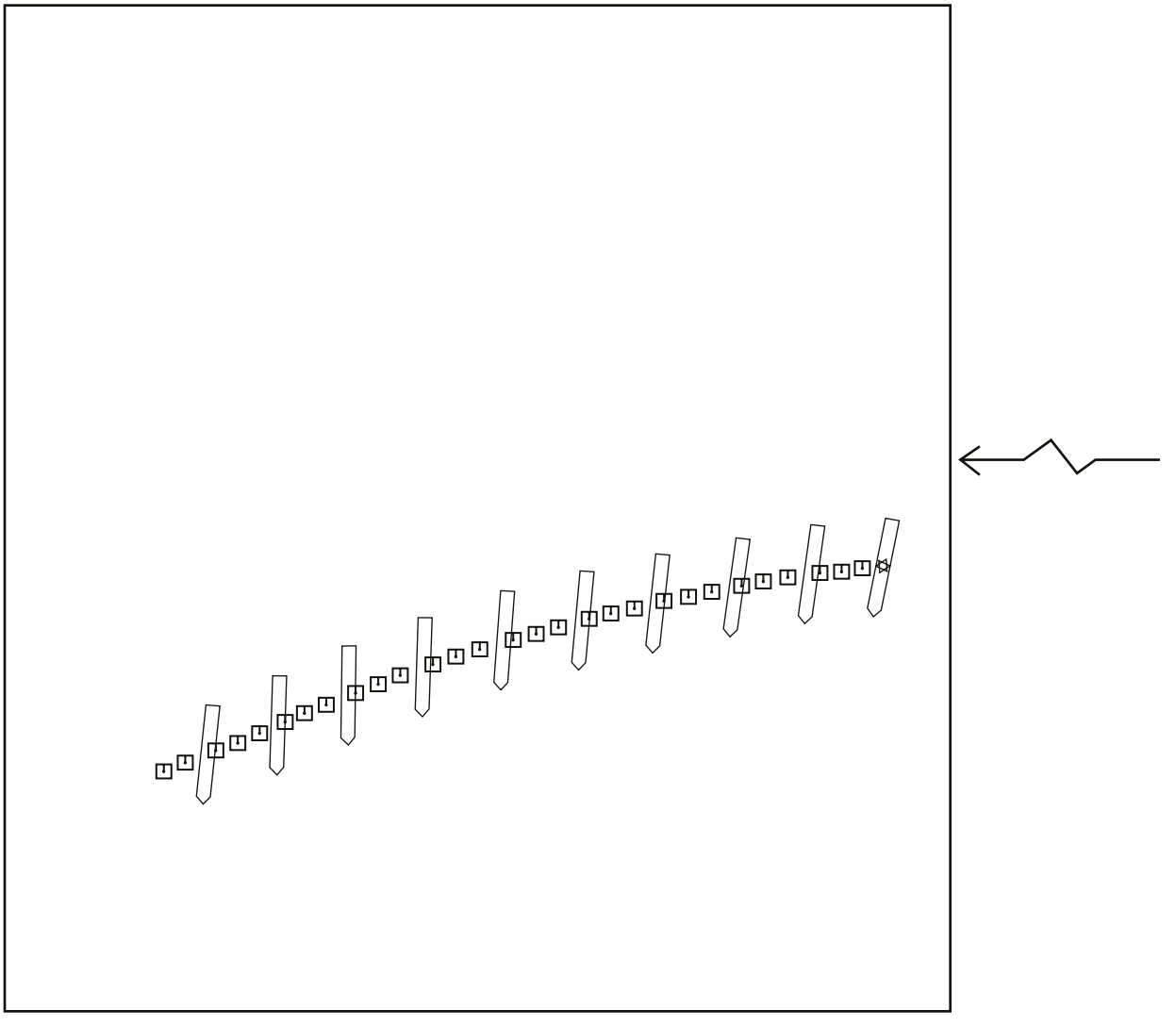
Drifting Tankers

Run Number = 49
Model Number = 5528
Condition = Load Level
Fly Free with Power, Beaufort 9
All Results Scaled to Full Size, Scale is 1 to 76.178

TIME (MINS)	X NMILES	Y NMILES	SHIPS HDG (DEGS)	TRACK VEL (KTS)	TRACK HDG (DEGS)
1.869	.062	-.043	101.8	.170	
2.451	.065	-.043	102.5	.231	171.6
3.033	.080	-.043	105.8	1.560	181.2
3.615	.087	-.043	105.5	.717	178.6
4.179	.094	-.044	108.0	.746	172.9
4.780	.101	-.045	110.7	.701	172.9
5.362	.119	-.046	110.7	1.905	177.4
5.944	.131	-.047	113.8	1.283	173.7
6.507	.144	-.049	115.6	1.340	170.4
7.089	.156	-.051	117.0	1.296	170.4
7.670	.164	-.054	119.8	.873	158.8
8.252	.172	-.057	119.3	.873	158.8
8.834	.190	-.060	122.6	1.913	170.4
9.416	.200	-.064	119.7	1.063	156.2
9.998	.209	-.069	116.4	1.063	156.2
10.580	.221	-.073	117.3	1.261	160.8
11.162	.232	-.077	115.4	1.247	156.6
11.744	.243	-.082	113.2	1.247	156.6
12.325	.253	-.088	114.3	1.179	152.1
12.907	.258	-.092	111.5	.692	135.2
13.489	.273	-.098	114.2	1.683	158.7
14.071	.283	-.104	116.2	1.168	151.4
14.653	.290	-.109	115.8	.887	139.8
15.235	.305	-.116	117.7	1.713	157.0
15.817	.313	-.122	120.3	1.059	139.9
16.398	.326	-.128	118.8	1.463	157.1
16.980	.341	-.135	118.8	1.730	155.7
17.562	.348	-.141	117.0	.987	139.9
18.144	.366	-.147	115.3	1.916	160.5
18.726	.372	-.154	116.2	.938	135.6
19.308	.386	-.161	114.8	1.643	151.3
19.890	.405	-.168	116.4	2.002	159.7
20.472	.409	-.175	116.6	.816	121.0
21.053	.427	-.181	115.2	1.975	159.7
21.635	.436	-.188	116.1	1.220	143.5
22.217	.446	-.195	114.8	1.220	143.5
22.799	.459	-.202	114.6	1.542	153.3
23.381	.472	-.209	115.7	1.542	153.3
23.963	.480	-.216	114.3	1.112	135.8
24.545	.489	-.224	114.7	1.227	142.3
25.126	.499	-.231	113.9	1.227	142.3
25.708	.517	-.237	114.6	1.926	162.3
26.290	.526	-.243	117.6	1.166	143.1
26.872	.537	-.252	114.6	1.406	143.3
27.454	.554	-.257	114.2	1.871	162.5
28.036	.615	-.217	115.4	7.529	213.0

28.618	.565	-.272	113.4	7.680	47.5
29.200	.584	-.279	113.6	2.061	160.4
29.781	.590	-.286	115.1	.945	132.3
30.363	.599	-.293	112.5	1.200	141.3
30.945	.617	-.300	113.6	1.956	158.4
31.527	.621	-.306	114.6	.784	121.3
32.109	.634	-.313	113.2	1.509	152.6
32.691	.650	-.320	114.6	1.847	158.0
33.273	.654	-.326	113.4	.762	123.4
33.854	.665	-.334	112.9	1.412	144.2
34.436	.680	-.341	114.9	1.651	155.7
35.018	.687	-.347	111.9	.979	138.5
35.600	.699	-.353	114.2	1.363	152.0
36.182	.709	-.360	115.2	1.310	145.9
36.764	.721	-.367	112.1	1.377	151.3
37.346	.731	-.372	115.2	1.226	150.6
37.928	.737	-.380	115.0	.996	130.0
38.509	.756	-.386	114.1	2.000	161.3
39.091	.762	-.393	115.8	.913	130.2
39.673	.767	-.400	114.2	.913	130.2
40.255	.787	-.406	113.9	2.167	163.1
40.837	.795	-.412	113.1	1.012	142.3
41.419	.798	-.420	110.9	.861	109.9
42.001	.817	-.425	110.5	2.075	164.2
42.581	.829	-.435	112.9	1.624	140.4
43.163	.836	-.440	111.4	.810	140.4
43.746	.842	-.445	113.0	.808	140.4
44.327	.847	-.452	114.2	.900	127.7
44.910	.852	-.459	113.0	.895	127.7
45.492	.872	-.466	111.8	2.186	160.8
46.0 74	.874	-.473	111.5	.719	104.7
46.654	.887	-.480	108.9	1.504	149.7
47.237	.899	-.487	110.2	1.496	149.7
47.819	.906	-.493	109.8	.987	140.2
48.401	.923	-.501	111.6	1.849	154.9
48.983	.926	-.509	108.9	.950	113.1
49.565	.929	-.518	106.5	.893	108.3
50.147	.940	-.526	105.3	1.358	142.7
50.729	.945	-.533	105.1	.980	126.0
51.310	.954	-.540	102.2	1.161	141.4
51.892	.966	-.548	102.3	1.494	149.3

RUN NO. 58



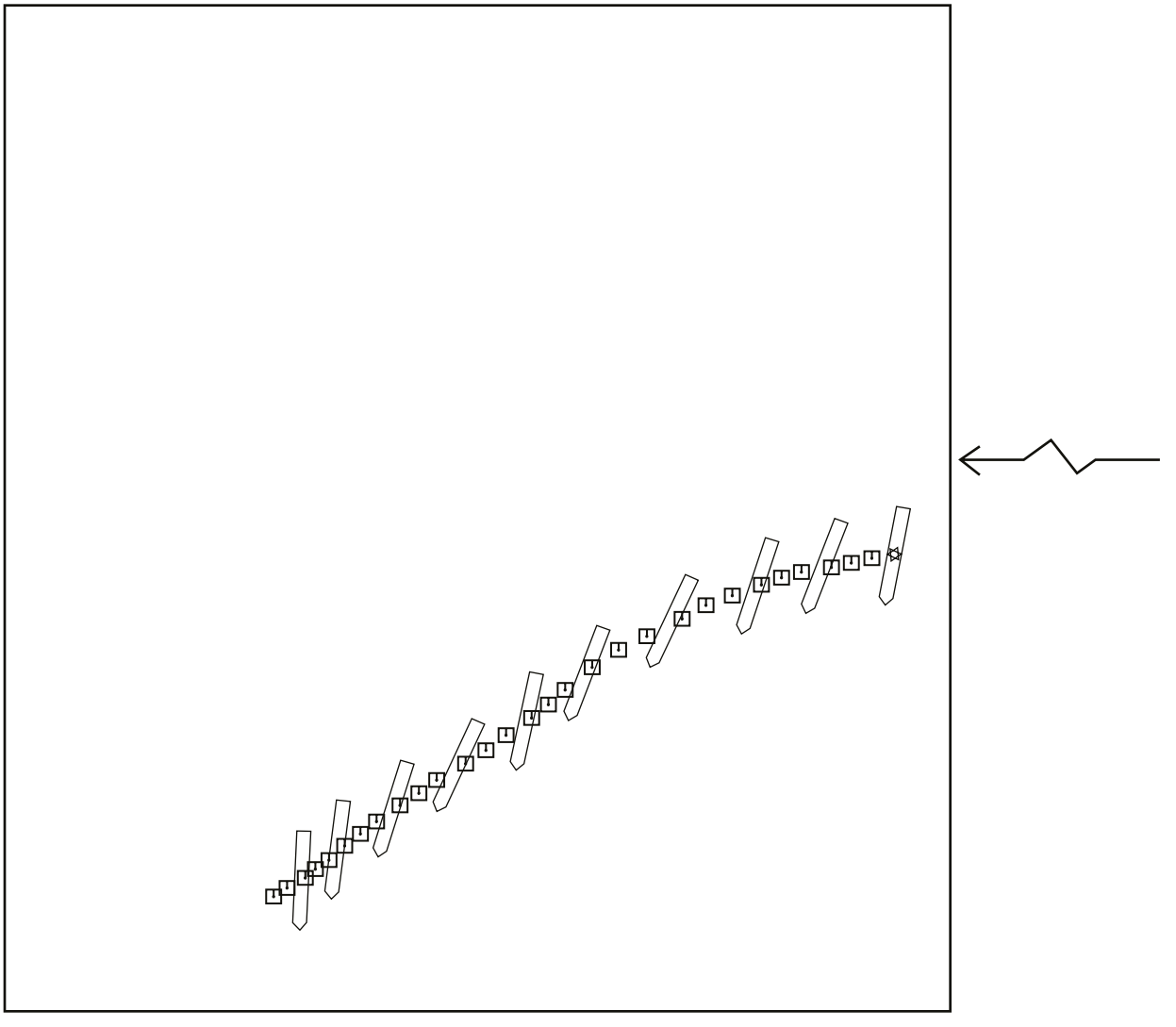
Drifting Tankers

Run Number = 58
Model Number = 5528
Condition = Ballast 5 by Stern
Rudder Amidships, Beaufort 5
All Results Scaled to Full Size, Scale is 1 to 76.178

TIME (MINS)	X NMILES	Y NMILES	SHIPS HDG (DEGS)	TRACK VEL (KTS)	TRACK HDG (DEGS)
1.760	.077	-.070	102.1	.746	
2.342	.085	-.070	102.3	.880	175.6
2.924	.092	-.071	102.3	.750	174.2
3.506	.102	-.072	102.8	.967	174.2
4.088	.110	-.073	102.9	.861	173.8
4.671	.118	-.074	102.8	.859	173.8
5.253	.127	-.075	101.8	.919	172.8
5.835	.136	-.076	100.6	.898	175.1
6.417	.144	-.077	99.5	.888	170.9
6.998	.153	-.078	98.2	.872	172.5
7.580	.163	-.079	97.8	1.047	174.7
8.162	.172	-.080	97.2	.932	172.4
8.744	.182	-.082	97.1	1.023	172.1
9.326	.191	-.083	97.2	.956	171.3
9.908	.200	-.085	97.6	.988	169.4
10.490	.211	-.086	97.7	1.123	173.1
11.071	.220	-.088	98.2	.986	169.8
11.653	.229	-.090	98.3	.893	169.3
12.235	.238	-.091	97.9	.935	168.2
12.817	.247	-.093	97.3	.910	169.5
13.399	.254	-.095	97.1	.834	167.4
13.981	.263	-.096	96.8	.949	169.4
14.563	.273	-.098	97.0	1.020	170.0
15.145	.283	-.100	97.5	.983	169.3
15.726	.292	-.102	97.4	.978	168.3
16.308	.302	-.104	97.5	1.015	170.1
16.890	.311	-.105	97.7	1.002	169.0
17.472	.321	-.107	97.6	1.020	170.0
18.054	.330	-.109	96.8	.982	168.5
18.636	.339	-.111	97.0	.924	167.8
19.218	.348	-.113	96.6	.963	167.8
19.799	.357	-.115	96.5	.923	165.6
20.381	.366	-.117	97.2	.994	167.4
20.963	.376	-.119	97.3	1.038	168.5
21.545	.386	-.121	97.0	1.020	167.5
22.127	.395	-.123	96.6	.950	166.6
22.709	.403	-.126	96.1	.878	166.0
23.291	.411	-.128	95.9	.888	165.6
23.873	.420	-.130	96.4	.914	163.8
24.454	.429	-.132	95.6	.960	166.2
25.036	.437	-.135	94.9	.868	164.1
25.618	.446	-.137	94.7	.987	166.1
26.200	.456	-.139	94.6	1.035	167.0
26.782	.465	-.142	94.4	.962	164.7
27.364	.474	-.144	94.9	.993	165.7
27.946	.483	-.147	94.8	.967	163.7

28.527	.492	-.149	94.0	.941	164.6
29.109	.500	-.152	94.0	.883	162.7
29.691	.510	-.154	94.1	1.021	165.3
30.273	.519	-.157	93.8	1.010	163.2
30.855	.529	-.160	94.1	1.050	165.7
31.437	.538	-.162	94.3	.985	163.7
32.019	.548	-.165	94.2	1.083	165.3
32.601	.558	-.168	93.5	1.058	163.2
33.182	.568	-.171	93.2	1.017	163.5
33.764	.578	-.174	93.3	1.101	163.4
34.346	.588	-.177	92.9	1.047	162.1
34.928	.596	-.180	92.6	.963	160.4
35.510	.606	-.183	92.3	1.047	162.8
36.092	.616	-.186	91.7	1.036	160.2
36.674	.625	-.190	91.6	1.051	161.4
37.255	.635	-.193	92.0	1.031	159.6
37.837	.644	-.196	91.6	.987	159.4
38.419	.653	-.200	91.7	1.004	157.7
39.001	.662	-.204	91.4	1.007	159.8
39.583	.670	-.207	91.3	.973	157.5
40.165	.679	-.211	90.6	1.002	157.9
40.747	.688	-.214	90.5	.954	159.7
41.329	.697	-.218	90.4	.975	157.8
41.910	.705	-.221	90.4	.944	157.0
42.492	.714	-.225	90.4	.989	159.2
43.074	.722	-.228	90.6	.917	156.9
43.656	.732	-.232	90.4	1.024	158.6
44.238	.741	-.235	90.4	1.044	159.1
44.820	.749	-.239	91.0	.929	157.2
45.402	.759	-.242	90.8	.913	156.8
45.983	.766	-.246	91.3	.944	157.0
46.565	.774	-.249	91.6	.877	156.0
47.147	.781	-.253	91.6	.871	155.6
47.729	.789	-.256	91.6	.872	154.7
48.311	.797	-.260	92.0	.930	157.8
48.893	.805	-.263	92.3	.825	154.1
49.475	.813	-.267	92.2	.895	155.4
50.057	.821	-.271	91.8	.909	155.5
50.637	.830	-.274	92.3	1.026	159.4
51.219	.838	-.278	92.9	.911	156.4
51.801	.846	-.281	93.2	.947	156.0
52.383	.854	-.285	93.4	.914	157.4
52.964	.663	-.288	94.1	.992	158.7
53.546	.871	-.292	94.5	.853	154.7
54.128	.881	-.296	95.1	1.124	159.9
54.710	.890	-.299	95.3	1.021	159.1
55.292	.899	-.303	95.1	.920	155.8
55.874	.907	-.306	95.3	.972	158.2
56.456	.916	-.310	95.3	.971	157.7
57.037	.925	-.314	95.7	.981	155.8
57.619	.933	-.317	95.6	.930	156.4
58.201	.941	-.321	95.8	.944	157.0

RUN NO. 59



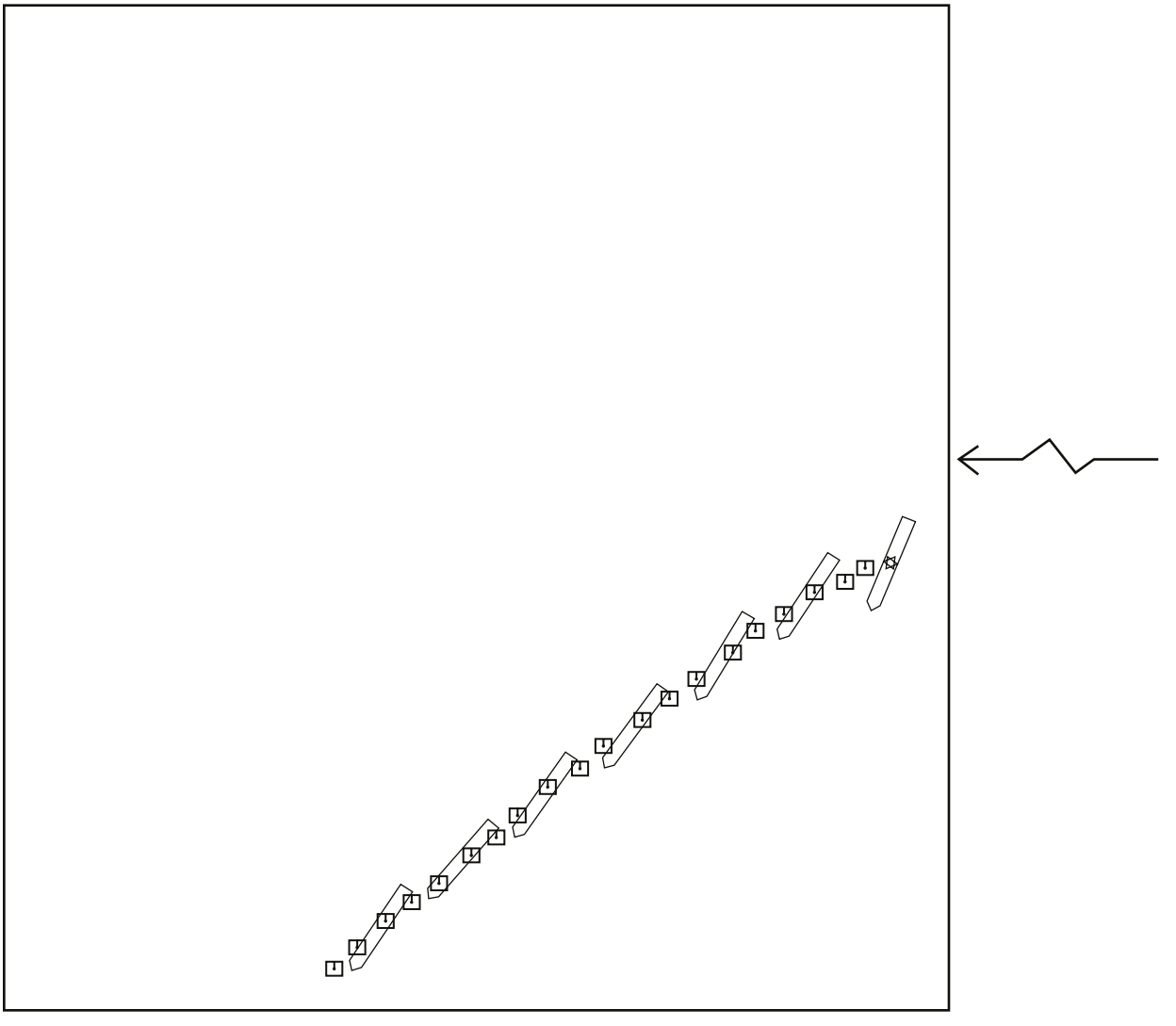
Drifting Tankers

Run Number = 59
Model Number = 5528
Condition = Ballast 5 by Stern
Rudder Amidships, Beaufort 6
All Results Scaled to Full Size, Scale is 1 to 76.178

TIME (MINS)	X NMILES	Y NMILES	SHIPS HDG (DEGS)	TRACK VEL (KTS)	TRACK HDG (DEGS)
1.743	.067	-.047	101.0	.153	
2.325	.076	-.048	104.3	.971	174.5
2.906	.086	-.048	106.5	1.030	180.2
3.488	.094	-.050	106.8	.776	165.1
4.070	.101	-.051	108.7	.820	169.0
4.652	.110	-.052	109.6	.936	175.1
5.234	.117	-.055	108.9	.770	154.6
5.816	.125	-.056	110.4	.818	172.0
6.398	.134	-.057	110.4	.964	173.7
6.979	.141	-.060	110.2	.793	155.4
7.561	.150	-.061	110.1	.947	176.4
8.143	.158	-.064	108.6	.818	158.1
8.725	.166	-.066	110.2	.886	168.7
9.307	.176	-.067	110.5	.996	172.7
9.889	.183	-.070	109.4	.808	154.5
10.471	.193	-.071	108.1	1.002	173.9
11.053	.200	-.074	105.0	.776	160.9
11.634	.204	-.077	104.8	.604	141.8
12.216	.214	-.080	106.5	1.017	166.3
12.798	.224	-.082	108.8	1.101	169.1
13.380	.230	-.086	107.6	.722	144.1
13.962	.236	-.090	109.4	.808	145.5
14.544	.247	-.093	112.1	1.161	164.5
15.126	.258	-.096	113.5	1.152	166.2
15.707	.265	-.101	112.1	.917	141.4
16.289	.275	-.106	112.8	1.105	153.3
16.871	.289	-.108	115.1	1.458	171.3
17.453	.299	-.113	115.4	1.130	156.8
18.035	.306	-.119	112.6	1.033	140.8
18.617	.316	-.125	112.4	1.161	149.5
19.199	.330	-.128	114.5	1.428	168.4
19.781	.340	-.132	114.8	1.142	155.9
20.362	.347	-.139	112.7	1.059	137.8
20.944	.357	-.145	112.6	1.219	146.9
21.526	.372	-.150	114.4	1.576	164.4
22.108	.382	-.155	114.9	1.222	150.5
22.690	.390	-.163	111.7	1.160	135.7
23.272	.400	-.171	110.6	1.258	138.4
23.854	.413	-.177	111.9	1.497	158.2
24.435	.423	-.183	111.3	1.165	147.2
25.017	.430	-.191	109.9	1.117	131.6
25.599	.439	-.197	110.5	1.166	147.9
26.181	.449	-.203	109.0	1.114	148.1
26.763	.455	-.210	106.7	1.009	129.4
27.345	.462	-.216	105.5	.958	143.6
27.927	.469	-.222	103.2	.936	140.3

28.509	.474	-.228	101.3	.828	127.9
29.090	.481	-.233	100.5	.896	145.4
29.672	.486	-.238	98.9	.718	128.8
30.254	.493	-.244	99.1	.903	142.1
30.836	.501	-.248	101.3	.951	150.4
31.418	.505	-.254	101.4	.759	132.1
32.000	.511	-.260	103.2	.839	130.7
32.582	.523	-.265	106.6	1.314	156.8
33.163	.532	-.270	111.3	1.117	152.7
33.745	.539	-.277	110.3	1.049	136.3
34.327	.547	-.283	110.8	.998	141.0
34.909	.557	-.287	111.9	1.138	157.0
35.491	.564	-.294	111.3	.938	135.2
36.073	.571	-.300	112.6	1.029	140.0
36.655	.581	-.304	114.2	1.087	157.5
37.237	.590	-.310	111.6	1.093	146.1
37.818	.596	-.316	110.5	.912	138.0
38.400	.606	-.320	109.2	1.066	155.1
38.982	.614	-.325	107.9	.983	151.1
39.564	.619	-.331	107.0	.846	129.5
40.146	.627	-.336	108.8	.952	146.8
40.728	.635	-.340	107.6	.948	155.2
41.310	.641	-.346	105.4	.854	134.4
41.891	.648	-.352	104.8	.914	141.6
42.473	.658	-.355	106.3	1.103	159.1
43.055	.665	-.360	105.2	.835	144.3
43.636	.671	-.366	104.2	.853	138.1
44.219	.677	-.371	104.0	.849	138.1
44.801	.686	-.375	105.2	1.018	157.0
45.383	.691	-.380	103.7	.756	137.7
45.965	.696	-.386	104.1	.752	127.9
46.546	.702	-.391	104.7	.802	141.4
47.128	.710	-.395	101.9	.926	151.0
47.710	.714	-.400	99.0	.689	129.8
48.292	.722	-.404	97.0	.967	151.8
48.874	.727	-.409	94.8	.621	133.1
49.456	.730	-.413	92.5	.601	130.4
50.038	.734	-.417	91.5	.591	136.5
50.619	.738	-.421	90.6	.513	135.3
51.201	.741	-.424	89.8	.473	128.8
51.783	.748	-.428	90.6	.819	154.9
52.365	.752	-.431	91.6	.577	139.2
52.947	.756	-.435	91.7	.516	136.3
53.529	.760	-.438	92.2	.548	140.6
54.111	.765	-.441	91.9	.628	148.2
54.693	.772	-.445	92.5	.739	153.4
55.274	.779	-.447	94.0	.827	159.0
55.856	.782	-.451	93.4	.462	127.9
56.438	.787	-.455	94.5	.607	142.1
57.020	.793	-.457	94.9	.747	157.7
57.602	.797	-.461	95.4	.552	136.9
58.184	.804	-.464	97.2	.787	154.1

RUN NO. 61



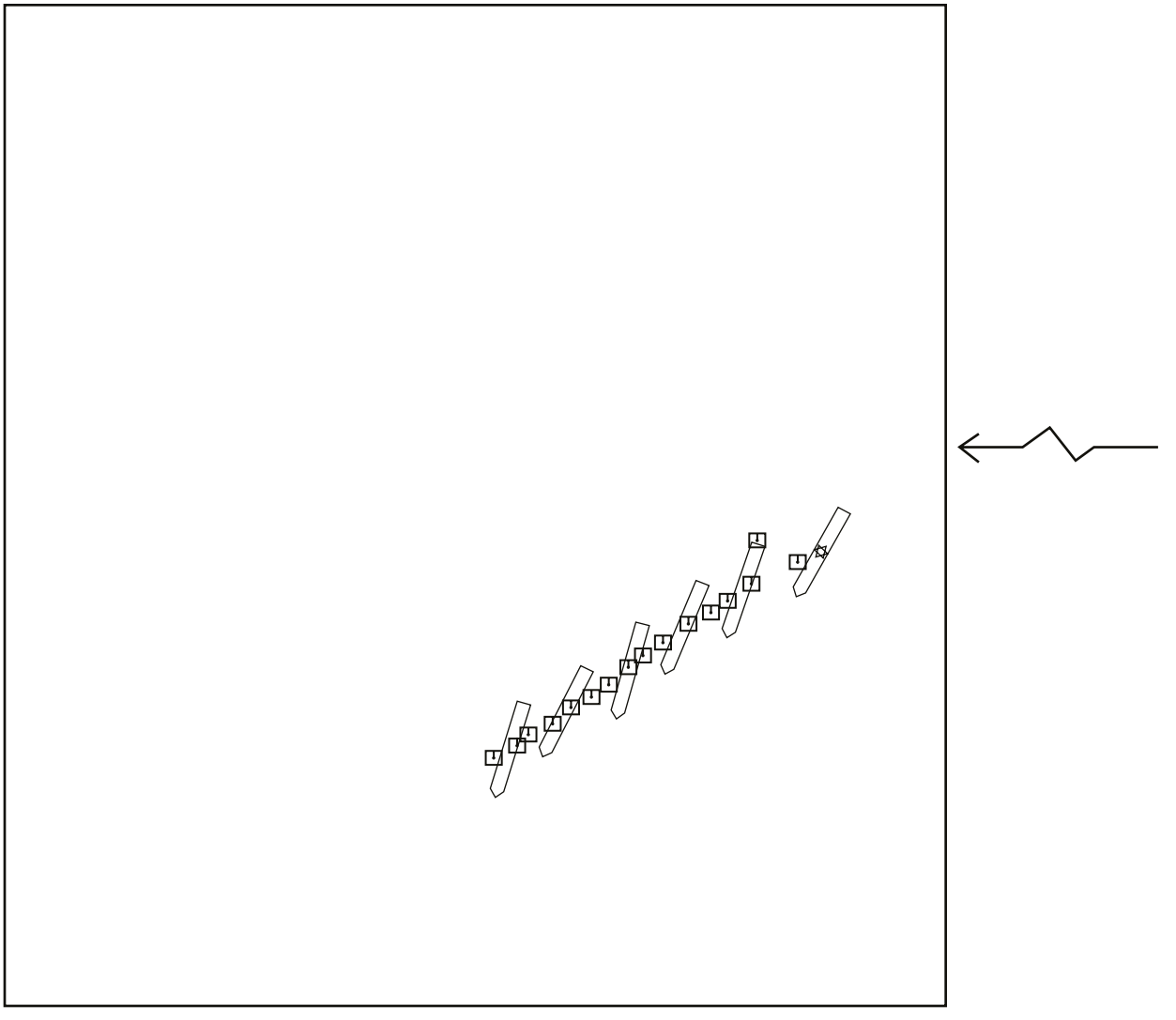
Drifting Tankers

Run Number = 61
Model Number = 5528
Condition = Ballast 12 by Stern
Rudder Amidships, Beaufort 7
All Results Scaled to Full Size, Scale is 1 to 76.178

TIME (MINS)	X NMILES	Y NMILES	SHIPS HDG (DEGS)	TRACK VEL (KTS)	TRACK HDG (DEGS)
1.797	.063	-.065	112.9	.373	
2.378	.070	-.068	117.7	.803	161.9
2.960	.081	-.069	121.6	1.104	173.8
3.542	.092	-.070	127.0	1.119	171.5
4.124	.101	-.076	128.2	1.098	149.9
4.706	.109	-.082	127.0	1.052	142.5
5.288	.117	-.086	127.0	.948	152.3
5.871	.130	-.090	126.0	1.361	161.3
6.453	.142	-.094	125.4	1.309	164.0
7.035	.154	-.098	125.2	1.381	159.9
7.617	.164	-.106	123.5	1.222	142.9
8.199	.170	-.114	121.1	1.035	124.1
8.780	.181	-.120	121.2	1.322	151.5
9.362	.190	-.126	121.3	1.141	144.8
9.944	.201	-.132	122.0	1.340	152.3
10.526	.215	-.138	124.3	1.533	159.1
11.108	.226	-.145	123.6	1.283	146.7
11.690	.238	-.153	123.0	1.520	147.1
12.272	.246	-.162	120.0	1.293	128.7
12.853	.253	-.171	119.6	1.142	130.8
13.435	.266	-.177	121.0	1.455	151.6
14.017	.278	-.185	123.7	1.502	150.0
14.599	.286	-.194	122.6	1.303	129.9
15.181	.297	-.202	123.7	1.371	143.8
15.763	.305	-.212	123.7	1.290	130.3
16.345	.315	-.220	124.6	1.350	142.9
16.926	.329	-.226	126.6	1.559	156.8
17.508	.341	-.234	127.9	1.405	144.8
18.090	.353	-.242	128.4	1.507	145.8
18.672	.361	-.251	126.6	1.334	133.3
19.254	.372	-.260	126.4	1.412	139.1
19.836	.382	-.268	125.8	1.282	142.5
20.418	.396	-.274	126.5	1.568	157.6
21.000	.408	-.281	126.6	1.504	148.0
21.581	.420	-.290	126.4	1.504	145.1
22.163	.429	-.300	124.6	1.401	132.4
22.745	.437	-.309	123.7	1.288	128.7
23.327	.449	-.316	124.0	1.410	148.7
23.909	.462	-.323	125.9	1.517	151.6
24.491	.474	-.332	127.1	1.533	145.5
25.073	.480	-.343	124.6	1.273	118.9
25.654	.489	-.351	123.9	1.236	137.5
26.236	.501	-.357	123.9	1.392	151.3
26.818	.511	-.365	124.6	1.358	141.6
27.400	.520	-.373	123.6	1.237	138.6
27.982	.528	-.383	122.7	1.293	132.7

28.564	.536	-.392	122.6	1.216	127.3
29.146	.544	-.400	123.0	1.199	136.1
29.728	.554	-.408	125.5	1.337	140.7
30.309	.566	-.414	127.6	1.309	155.1
30.891	.578	-.420	131.0	1.433	152.1
31.473	.589	-.429	131.0	1.460	143.3
32.055	.595	-.439	127.8	1.251	119.4
32.635	.605	-.446	127.5	1.215	143.5
33.217	.618	-.451	128.5	1.533	159.1
33.799	.630	-.459	128.7	1.441	146.6
34.381	.637	-.469	125.4	1.264	124.8
34.963	.644	-.478	123.9	1.169	126.7
35.545	.655	-.484	124.4	1.300	150.5
36.127	.667	-.491	126.1	1.475	151.9
36.709	.675	-.501	123.4	1.262	129.4
37.290	.682	-.510	121.1	1.152	124.5
37.872	.690	-.517	119.8	1.146	139.7
38.454	.702	-.523	122.2	1.424	152.9
39.036	.714	-.530	125.6	1.405	148.9
39.618	.722	-.540	125.9	1.276	131.6
40.200	.730	-.549	125.1	1.258	127.3
40.782	.740	-.556	126.0	1.278	147.7
41.363	.753	-.563	128.5	1.511	151.7

RUN NO. 64



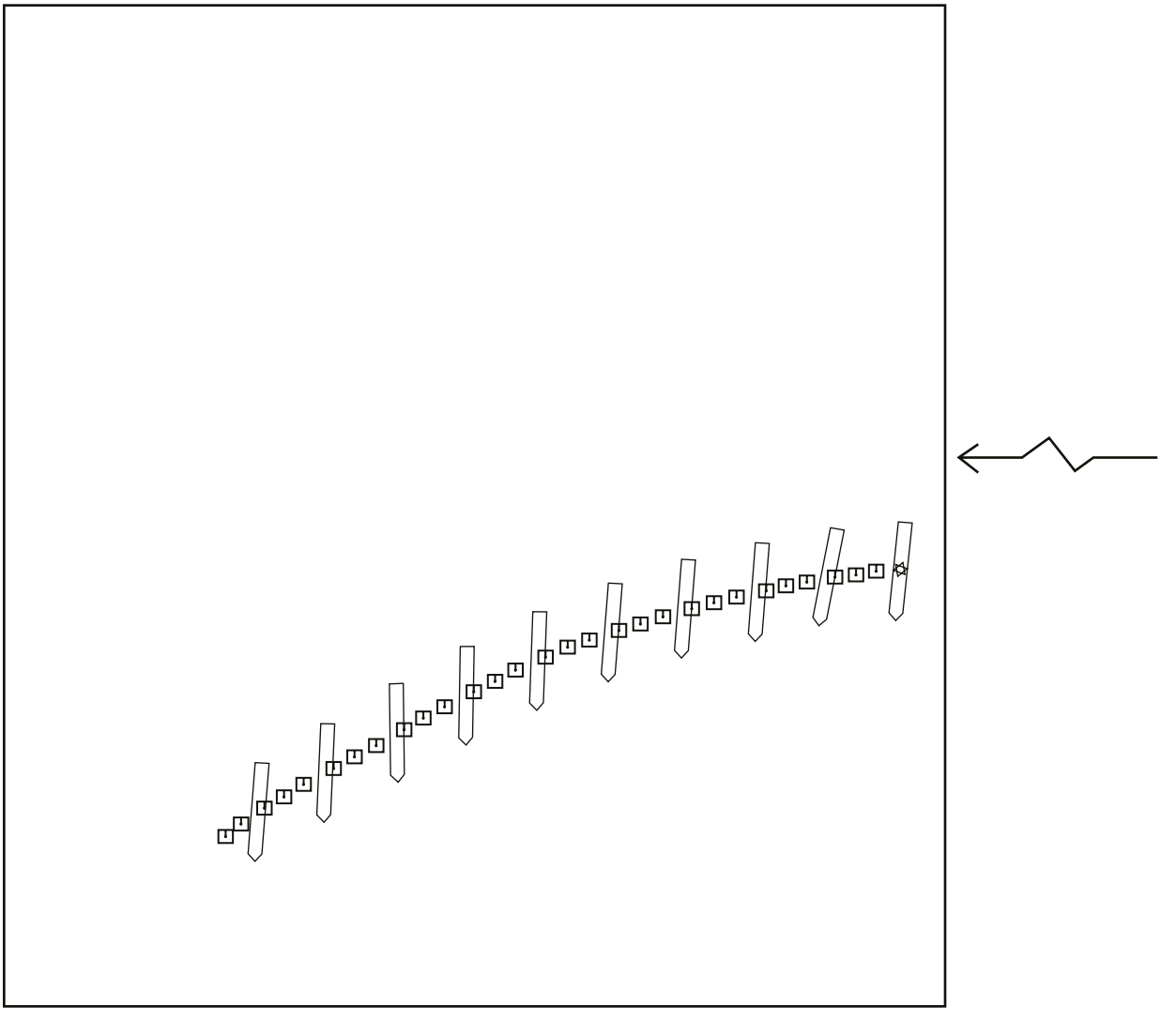
Drifting Tankers

Run Number = 64
Model Number = 5528
Condition = Ballast 12 by Stern
Rudder Amidships, Beaufort 10
All Results Scaled to Full Size, Scale is 1 to 76.178

TIME (MINS)	X NMILES	Y NMILES	SHIPS HDG (DEGS)	TRACK VEL (KTS)	TRACK HDG (DEGS)
1.798	.151	-.053	118.1	.899	
2.378	.162	-.056	117.8	1.128	162.0
2.962	.172	-.060	121.1	1.123	162.0
3.544	.178	-.065	118.7	.807	140.8
4.125	.184	-.070	117.8	.807	140.8
4.707	.192	-.075	116.6	.934	144.8
5.289	.226	-.040	113.3	5.057	226.0
5.871	.206	-.083	109.2	4.957	65.7
6.453	.218	-.087	107.1	1.318	161.0
7.035	.232	-.092	108.8	1.571	162.2
7.617	.242	-.099	108.4	1.217	142.6
8.197	.247	-.103	108.2	.610	142.6
8.780	.251	-.106	109.4	.607	142.6
9.361	.260	-.113	109.7	1.164	141.5
9.943	.264	-.117	108.6	.581	141.5
10.526	.269	-.120	107.2	.579	141.5
11.108	.279	-.126	103.8	1.247	150.5
11.690	.292	-.131	106.3	1.434	160.5
12.272	.296	-.136	106.6	.642	123.7
12.853	.307	-.141	109.5	1.214	155.2
13.434	.310	-.147	110.5	.716	123.5
14.017	.314	-.153	111.4	.712	123.5
14.599	.327	-.159	110.8	1.401	154.8
15.181	.335	-.164	110.1	1.051	147.0
15.763	.346	-.169	110.4	1.225	154.1
16.345	.353	-.175	108.6	.907	140.7
10.926	.359	-.180	109.3	.907	140.7
17.508	.362	-.185	106.4	.578	118.4
18.090	.371	-.190	106.7	1.000	151.4
18.672	.375	-.195	105.9	.701	129.9
19.254	.375	-.200	104.9	.475	92.0
19.836	.386	-.205	105.6	1.243	155.6
20.418	.393	-.210	109.0	.932	142.8
21.000	.400	-.215	109.7	.860	143.0
21.580	.408	-.220	110.6	.989	150.7
22.163	.417	-.225	113.1	.984	150.7
22.745	.420	-.231	112.0	.694	118.4
23.327	.428	-.235	112.7	.984	154.2
23.909	.437	-.239	116.2	.984	154.2
24.489	.444	-.244	114.7	.886	142.8
25.073	.451	-.249	116.1	.881	142.8
25.654	.455	-.254	116.5	.672	132.4
26.236	.460	-.259	115.8	.724	136.8
26.818	.465	-.264	114.8	.724	136.8
27.400	.473	-.269	112.6	.926	144.1
27.982	.483	-.273	111.2	1.178	159.3

28.564	.494	-.277	110.6	1.207	159.7
29.144	.499	-.281	110.1	.687	137.9
29.728	.504	-.286	108.8	.684	137.9
30.309	.507	-.290	107.3	.506	123.0
30.891	.517	-.296	105.2	1.231	150.4
31.472	.522	-.299	104.7	.617	150.4
32.055	.528	-.302	104.3	.614	150.4
32.637	.535	-.306	105.2	.819	152.2
33.217	.542	-.310	108.2	.918	152.4
16.609	.550	-.314	109.2	-.032	152.4

RUN NO. 66



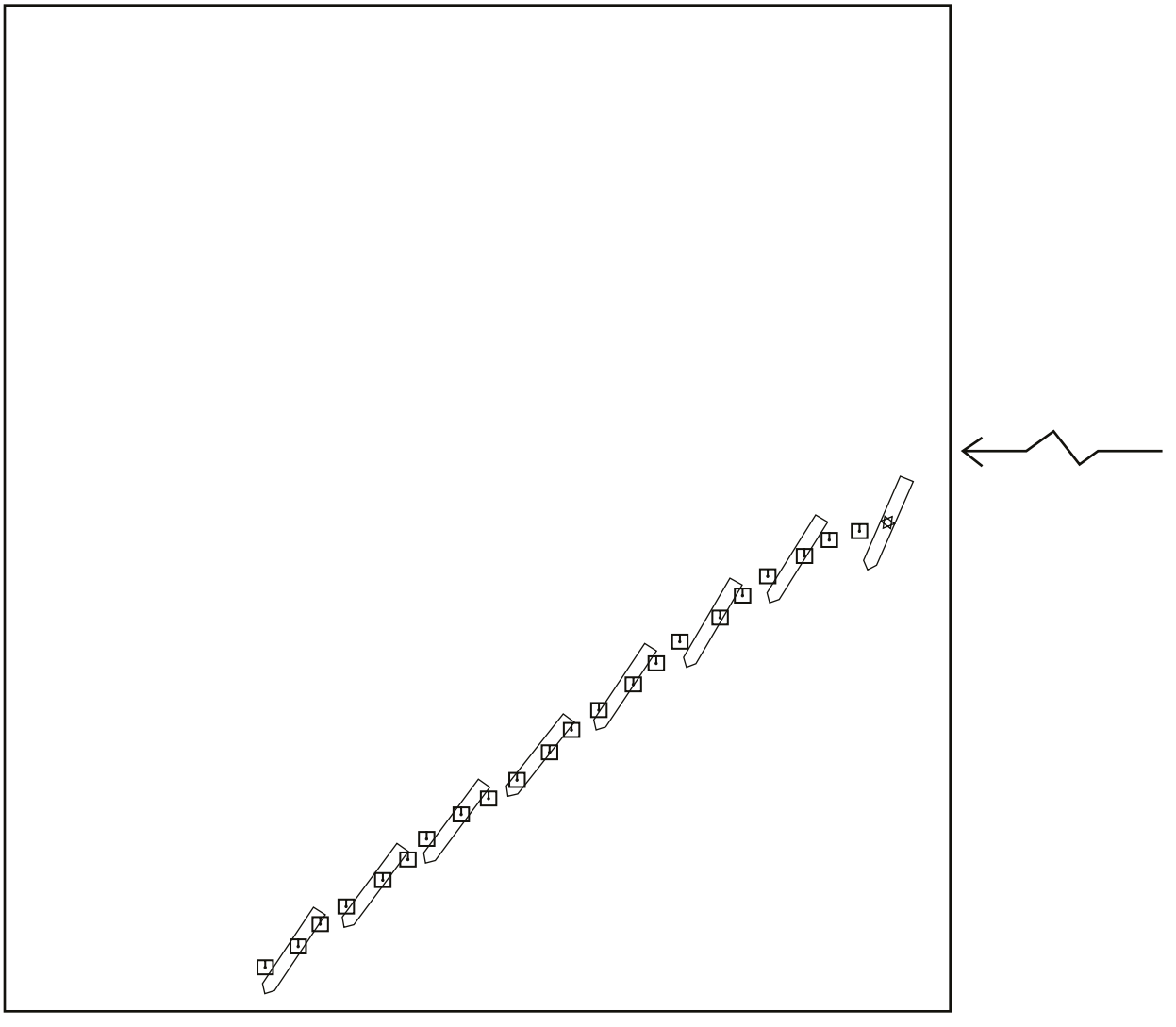
Drifting Tankers

Run Number = 66
Model Number = 5528
Condition = Ballast 12 by Stern
Rudder Amidships, Beaufort 5
All Results Scaled to Full Size, Scale is 1 to 76.178

TIME (MINS)	X NMILES	Y NMILES	SHIPS HDG (DEGS)	TRACK VEL (KTS)	TRACK HDG (DEGS)
1.797	.052	-.077	97.2	.237	
2.378	.062	-.077	98.5	.992	181.2
2.960	.071	-.077	100.1	.907	178.7
3.542	.082	-.078	102.3	1.128	178.1
4.124	.089	-.078	103.5	.812	175.8
4.706	.098	-.079	103.8	.909	173.6
5.288	.107	-.080	104.2	.897	175.4
5.870	.116	-.081	103.8	.909	171.4
6.453	.124	-.082	103.2	.882	173.1
7.035	.133	-.083	102.3	.927	172.9
7.617	.141	-.085	101.4	.820	170.8
8.199	.150	-.086	100.3	.982	171.3
8.780	.159	-.087	99.4	.915	172.5
9.362	.167	-.089	98.6	.791	168.9
9.944	.174	-.090	98.0	.822	170.2
10.526	.183	-.092	97.4	.889	169.3
11.108	.191	-.094	96.8	.875	168.0
11.690	.199	-.095	95.7	.840	168.3
12.272	.207	-.097	95.2	.825	168.7
12.853	.215	-.099	95.2	.882	167.2
13.435	.225	-.101	95.2	.978	168.3
14.017	.234	-.102	94.7	.964	168.6
14.599	.243	-.104	94.8	.976	167.7
15.181	.251	-.106	95.0	.866	167.0
15.763	.261	-.108	95.0	1.008	169.6
16.345	.269	-.110	94.6	.855	166.2
16.926	.278	-.112	94.8	.995	166.2
17.508	.286	-.114	94.8	.860	166.0
18.090	.296	-.117	95.2	1.003	166.3
18.672	.305	-.119	95.3	1.003	165.3
19.254	.314	-.121	95.4	.919	166.7
19.836	.322	-.123	95.5	.878	164.9
20.418	.331	-.126	95.7	.971	163.3
21.000	.340	-.128	95.3	.949	165.8
21.581	.348	-.131	95.3	.888	163.6
22.163	.357	-.133	95.1	.922	162.9
22.745	.366	-.136	95.1	1.002	163.8
23.327	.374	-.139	95.0	.851	162.0
23.909	.383	-.141	95.1	.957	164.1
24.491	.392	-.144	94.7	.975	163.8
25.073	.401	-.147	94.5	.996	163.2
25.654	.410	-.150	94.0	.897	160.1
26.236	.419	-.152	94.0	.983	162.4
26.818	.428	-.155	93.5	.991	161.8
27.400	.436	-.158	93.5	.932	160.3
27.982	.445	-.162	93.1	.929	160.0

28.564	.454	-.165	92.9	.983	160.1
29.146	.463	-.168	92.8	.998	159.1
29.728	.472	-.172	92.9	.994	159.0
30.309	.480	-.175	92.7	.934	156.5
30.891	.489	-.179	92.8	1.023	157.6
31.473	.498	-.183	92.7	.997	156.7
32.055	.507	-.187	92.6	1.002	155.5
32.637	.516	-.191	92.5	1.002	156.0
33.219	.523	-.195	92.2	.868	149.8
33.801	.532	-.199	92.1	.990	154.6
34.382	.541	-.203	92.1	1.022	155.2
34.964	.550	-.208	92.0	1.036	155.8
35.546	.558	-.212	91.7	.951	150.9
36.128	.566	-.216	91.7	.971	153.5
36.710	.575	-.220	91.6	.965	153.1
37.292	.583	-.225	91.1	.999	153.0
37.874	.592	-.229	90.9	.959	152.1
38.456	.601	-.234	90.9	1.071	154.4
39.037	.610	-.238	91.1	1.022	152.6
39.619	.618	-.243	90.9	.993	152.6
40.201	.627	-.247	90.7	1.003	152.0
40.783	.634	-.252	90.5	.903	149.2
41.365	.643	-.256	90.1	.962	151.3
41.947	.650	-.261	89.6	.927	149.8
42.529	.659	-.265	89.8	1.013	152.0
43.111	.668	-.270	90.3	1.024	151.8
43.692	.675	-.275	90.1	.915	148.4
44.274	.684	-.279	89.9	.962	151.3
44.856	.692	-.284	89.8	1.017	151.6
45.438	.701	-.288	90.4	1.007	152.1
46.020	.709	-.293	90.8	.958	151.2
46.602	.718	-.298	91.1	1.007	151.1
47.184	.727	-.302	91.7	1.054	153.7
47.765	.735	-.307	92.3	.990	151.4
48.347	.744	-.311	92.8	1.050	152.1
48.929	.752	-.316	93.0	.975	149.4
49.511	.762	-.321	93.8	1.065	154.0
50.091	.770	-.326	94.1	1.018	150.8
50.673	.778	-.330	94.6	.967	149.7
51.255	.786	-.335	94.8	.946	149.3
51.837	.794	-.340	94.8	.927	147.3
52.419	.801	-.345	94.8	.924	147.5
53.001	.809	-.349	95.1	.951	150.4
53.583	.817	-.354	95.4	.981	149.3
54.165	.826	-.359	95.3	.964	150.5
54.746	.833	-.364	94.9	.892	146.2
55.328	.840	-.368	94.6	.878	146.6
55.910	.847	-.373	94.1	.900	147.5
56.492	.853	-.377	93.4	.783	144.2
57.074	.859	-.382	92.6	.749	140.3
57.656	.866	-.387	92.2	.862	146.2
58.238	.872	-.391	91.7	.760	144.5

RUN NO. 68



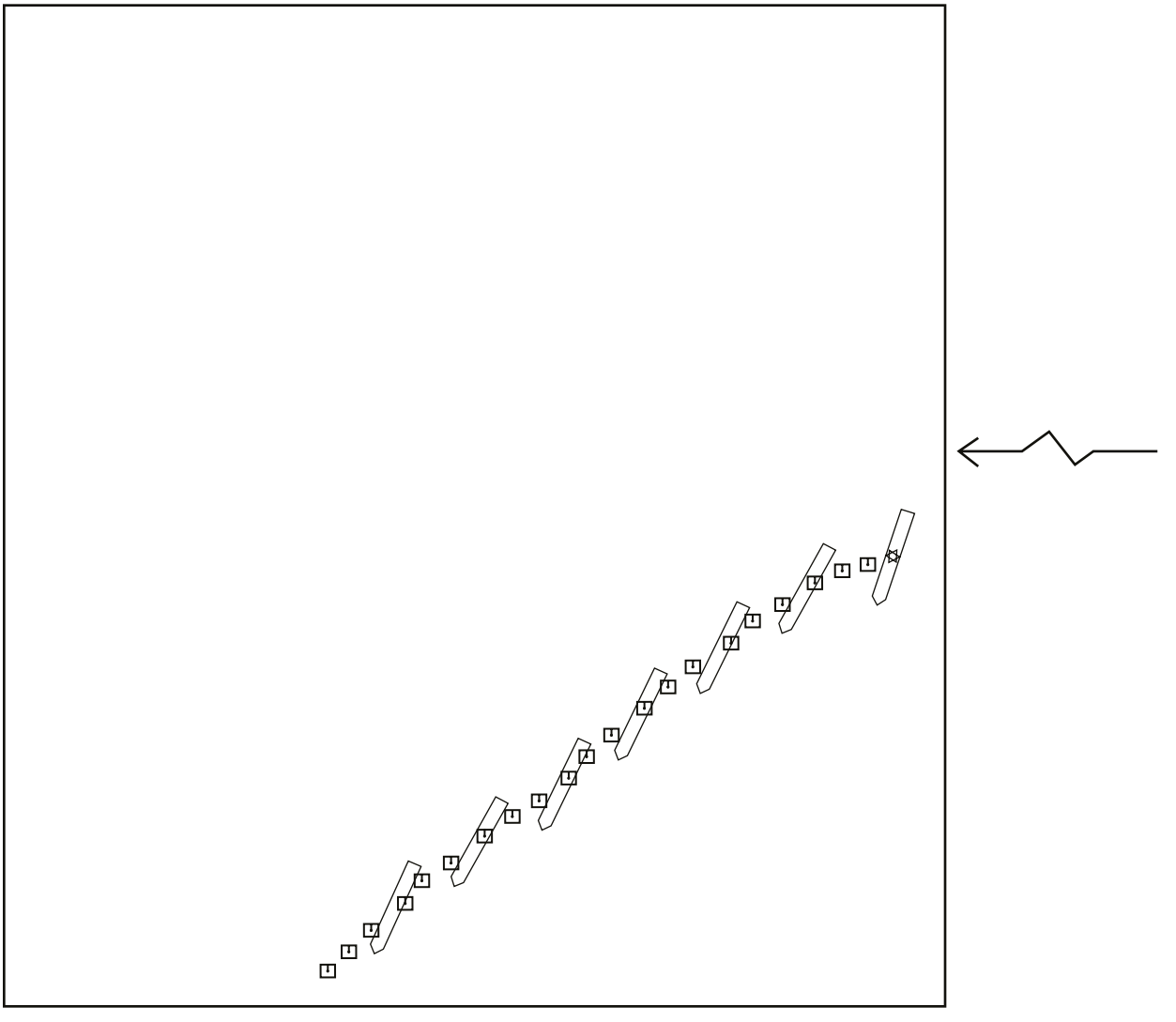
Drifting Tankers

Run Number = 68
Model Number = 5528
Condition = Ballast 12 by Stern
Rudder 35 Deg. Stbd, Beaufort 7
All Results Scaled to Full Size, Scale is 1 to 76.178

TIME (MINS)	X NMILES	Y NMILES	SHIPS HDG (DEGS)	TRACK VEL (KTS)	TRACK HDG (DEGS)
1.833	.073	-.018	113.2	.610	
2.416	.086	-.021	117.4	1.518	168.1
2.998	.095	-.024	119.7	1.042	160.0
3.580	.106	-.028	120.7	1.145	160.8
4.162	.116	-.030	122.8	1.130	168.3
4.744	.129	-.033	125.8	1.378	165.3
5.324	.140	-.038	126.0	1.269	155.6
5.907	.152	-.043	125.5	1.263	155.6
6.489	.163	-.050	123.8	1.366	151.0
7.071	.171	-.058	121.2	1.115	133.8
7.653	.181	-.063	120.3	1.173	150.6
8.235	.194	-.068	120.9	1.475	162.1
8.817	.206	-.074	122.1	1.395	150.3
9.399	.214	-.084	118.9	1.249	129.6
9.980	.221	-.093	115.5	1.160	127.9
10.562	.230	-.100	114.9	1.263	141.1
11.144	.242	-.107	116.7	1.413	151.9
11.726	.255	-.113	120.0	1.496	152.9
12.308	.264	-.123	118.8	1.389	132.4
12.890	.270	-.133	118.0	1.189	121.6
13.472	.279	-.141	119.0	1.252	138.4
14.054	.292	-.147	121.1	1.439	152.8
14.635	.305	-.155	125.4	1.516	151.1
15.217	.316	-.162	126.0	1.398	145.2
15.799	.325	-.172	124.6	1.394	135.6
16.381	.333	-.181	122.5	1.220	130.8
16.963	.344	-.187	123.1	1.332	149.2
17.545	.358	-.194	125.5	1.585	155.0
18.127	.364	-.205	122.3	1.271	120.2
18.708	.371	-.213	121.1	1.133	126.5
19.290	.383	-.219	122.0	1.369	152.7
19.872	.395	-.226	124.7	1.481	151.5
20.454	.402	-.237	121.8	1.303	122.2
21.036	.411	-.245	120.9	1.245	137.1
21.618	.420	-.253	121.7	1.245	137.1
22.200	.434	-.260	123.9	1.576	155.4
22.782	.444	-.269	125.2	1.412	136.6
23.363	.485	-.252	124.3	4.641	203.1
23.945	.459	-.239	123.8	4.764	55.0
24.527	.470	-.296	125.0	1.361	149.3
25.109	.483	-.303	127.3	1.534	153.9
25.691	.494	-.312	126.1	1.436	139.1
26.273	.498	-.322	121.6	1.192	113.9
26.855	.508	-.330	120.8	1.249	140.1
27.436	.521	-.336	123.6	1.500	156.7
28.018	.533	-.343	126.1	1.390	149.0

28.600	.541	-.352	124.4	1.305	130.5
29.182	.548	-.361	122.9	1.158	130.4
29.764	.560	-.366	123.7	1.376	156.2
30.346	.573	-.372	126.5	1.468	154.7
30.926	.581	-.382	126.3	1.270	130.7
31.510	.589	-.391	125.7	1.264	130.7
32.091	.602	-.396	125.9	1.381	158.9
32.673	.614	-.403	126.2	1.440	151.3
33.255	.619	-.413	122.2	1.230	115.5
33.837	.625	-.421	122.0	1.032	126.0
34.417	.636	-.427	122.2	1.285	152.4
34.999	.648	-.434	124.9	1.422	152.7
35.581	.659	-.441	125.8	1.340	142.8
36.163	.666	-.451	124.6	1.266	124.9
36.745	.676	-.459	125.0	1.368	143.9
37.327	.684	-.469	124.6	1.258	128.3
37.909	.694	-.476	124.0	1.310	144.6
38.490	.707	-.483	123.6	1.479	151.6
39.072	.717	-.491	121.7	1.289	142.8
39.654	.727	-.497	120.8	1.250	146.9
40.236	.738	-.505	121.3	1.366	145.6
40.818	.747	-.513	121.9	1.209	137.7
41.400	.756	-.521	123.5	1.307	136.8
41.982	.763	-.531	122.9	1.223	127.8
42.564	.771	-.538	123.1	1.121	135.0
43.145	.781	-.545	123.3	1.217	147.8
43.727	.792	-.550	125.6	1.250	151.9
44.309	.803	-.557	129.3	1.329	148.0
44.891	.811	-.567	128.5	1.289	131.1

RUN NO. 69



Drifting Tankers

Run Number = 69
Model Number = 5528
Condition = Ballast 12 by Stern
Rudder 35 A'port, Beaufort 7
All Results Scaled to Full Size, Scale is 1 to 76.178

TIME (MINS)	X NMILES	Y NMILES	SHIPS HDG (DEGS)	TRACK VEL (KTS)	TRACK HDG (DEGS)
1.797	.062	-.062	108.0	.526	
2.378	.072	-.065	112.0	1.010	165.9
2.960	.082	-.068	114.4	1.062	165.0
3.542	.092	-.070	117.6	1.074	166.1
4.124	.102	-.072	119.1	1.040	166.8
4.706	.112	-.075	121.3	1.115	165.0
5.289	.123	-.078	123.0	1.138	166.7
5.871	.135	-.082	122.9	1.253	161.3
6.453	.145	-.087	122.7	1.208	154.4
7.035	.156	-.092	121.7	1.259	153.6
7.617	.166	-.099	118.6	1.249	144.5
8.199	.174	-.106	115.4	1.125	137.9
8.780	.183	-.113	114.1	1.194	144.4
9.362	.195	-.119	112.6	1.329	153.7
9.944	.207	-.125	112.1	1.412	154.2
10.526	.220	-.131	114.0	1.426	154.7
11.108	.231	-.138	116.7	1.375	149.0
11.690	.242	-.147	116.8	1.416	139.5
12.272	.250	-.156	115.5	1.229	131.2
12.853	.257	-.164	115.2	1.144	131.5
13.435	.269	-.170	116.0	1.387	151.3
14.017	.282	-.176	118.4	1.499	155.6
14.599	.294	-.184	119.7	1.408	147.8
15.181	.302	-.193	117.8	1.298	134.6
15.763	.310	-.202	116.7	1.273	130.0
16.345	.318	-.210	116.4	1.169	133.5
16.926	.332	-.217	117.2	1.545	154.5
17.508	.344	-.224	118.8	1.465	149.2
18.090	.353	-.233	117.8	1.370	135.6
18.672	.360	-.243	115.8	1.211	126.0
19.254	.366	-.251	115.4	1.113	125.4
19.836	.377	-.260	115.5	1.330	141.3
20.418	.388	-.267	114.8	1.408	146.2
21.000	.400	-.275	115.1	1.458	147.5
21.581	.411	-.283	116.1	1.445	144.9
22.163	.421	-.292	115.4	1.380	137.7
22.745	.430	-.301	114.0	1.274	134.3
23.327	.439	-.309	114.1	1.277	136.3
23.909	.445	-.318	113.6	1.121	124.8
24.491	.451	-.326	114.0	1.042	125.6
25.073	.457	-.335	115.6	1.079	127.5
25.654	.466	-.342	118.4	1.170	142.5
26.236	.476	-.348	120.4	1.237	147.5
26.818	.486	-.354	121.3	1.193	149.7
27.400	.497	-.361	120.3	1.295	147.3
27.982	.507	-.366	117.4	1.231	151.3

28.564	.519	-.373	117.6	1.332	150.7
29.146	.531	-.379	120.1	1.447	152.6
29.728	.543	-.387	122.2	1.441	146.6
30.309	.552	-.396	120.4	1.385	134.0
30.891	.560	-.405	118.3	1.175	130.8
31.473	.568	-.414	118.4	1.274	135.9
32.055	.581	-.421	118.8	1.502	151.3
32.637	.592	-.428	117.6	1.384	144.0
33.219	.604	-.434	115.1	1.395	154.4
33.799	.616	-.442	114.8	1.444	148.6
34.381	.626	-.450	114.3	1.308	139.3
34.963	.632	-.459	112.1	1.156	123.6
35.545	.637	-.468	111.8	1.100	120.3
36.127	.646	-.476	112.4	1.235	139.0
36.709	.658	-.483	114.4	1.411	151.3
37.290	.671	-.490	118.0	1.444	149.7
37.872	.679	-.499	117.8	1.295	133.9
38.454	.687	-.509	115.9	1.289	127.2
39.036	.695	-.518	114.6	1.248	130.2
39.618	.705	-.526	113.7	1.339	140.0
40.200	.714	-.535	113.1	1.357	138.3
40.782	.725	-.543	112.1	1.341	141.0
41.363	.732	-.552	110.7	1.160	133.7
41.945	.740	-.559	108.3	1.085	133.4