

Run ref: 14' draft, 60 degrees loading direction, 320'x4" 4-part nylon lines, 45 kt wind

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This program solves the specific problem of a vessel in a two-point mooring, subject to lateral and longitudinal loads from wind, waves, and current. The program is designed for low (or zero) pretension situations in relatively shallow water (where the horizontal projected lengths of the mooring lines are several times greater than the vertical distance between the vessel chocks and the sea bed). The solution is numerical and iterative and can account for the stretch of the lines where this is of importance. The lines are considered to be straight between the anchors and the chocks, and no catenary effects are considered. Hence the resulting tensions may be slightly non-conservative, depending upon the line weights used (heavy chains will give higher than predicted tensions).

The user may adjust the graph x and y scales to keep aspect ratio reasonable.

Fx and Fy forces may be computed with the WIND\_CUR sheet within this workbook.

Use the "Solve Equilibrium" button, below, when the message:

Warning! Equilibrium position not yet found. Click "Solve Equilibrium" button

appears above the diagram below.

You may have to solve more than once.

Solve Equilibrium

## INPUT CONTROL DATA BELOW

-5	Fx1, applied longitudinal load at ship bow (kip)
-5	Fx2, applied longitudinal load at ship stern (kip)
103	Fy1, applied lateral load at ship bow (kip)
59	Fy2, applied lateral load at ship stern (kip)
205	r1, unstretched (horiz. projection) length bow line to buoy (ft)
290	r2, unstretched length of stern line to buoy (horiz. projection) (ft)
625	L, length of ship between bow and stern lines (ft)
1420	D, horizontal distance between anchors (ft)
3265	Average value for AE for bow and stern lines (kips)
80	zmax, height from sea bed to chocks (ft)
150	initial distance (x-direction) from buoys to anchors (ft)

Help

Wind &amp; Current

Simple Geometry Warning

D is feasible.

## PRINCIPAL RESULTS BELOW

263	T1, tension in bow line in horizontal plane (kips)
266	T2, tension in stern line in horizontal plane (kips)
252	T3, tension induced in ship (kips)
134	y1, lateral deflection of bow (ft)
117	y2, lateral deflection of stern (ft)
16.51	stretch in bow line (ft)
23.64	stretch in stern line (ft)
372	r1', stretched length bow line/anchor (horiz. proj.) (ft)
464	r2', stretched length stern line/anchor (horiz. proj.) (ft)
269	T1, tension in bow line w/water depth correction (kips)
270	T2, tension stern line w/water depth correction (kips)

Simple Line Stretch Warnings

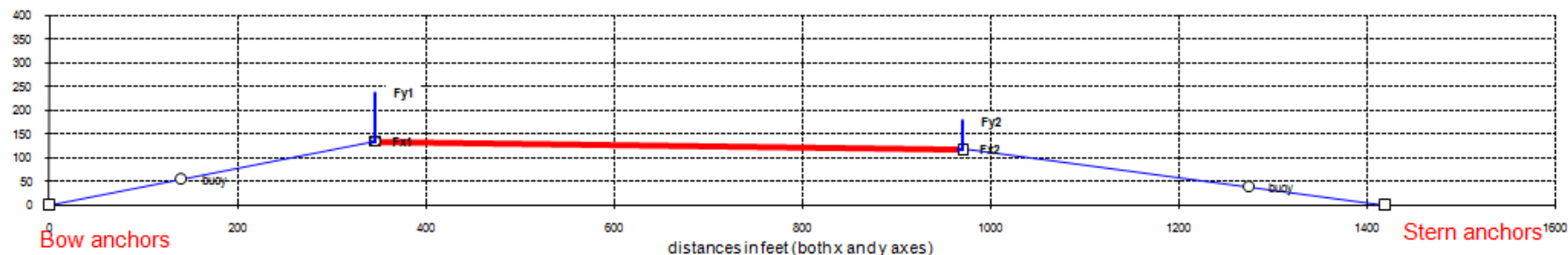
AE does not look too small.

AE does not look too small.

Equilibrium position has been found.

## PLAN VIEW OF MOORING

Ship's Heading = 1.53°



The above mooring plan view is approximately to scale. The user input forces Fx1, Fx2, Fy1, and Fy2, are drawn such that their line lengths are proportionate to their input values. The moored vessel is indicated by the heavy red line in the middle of the diagram.