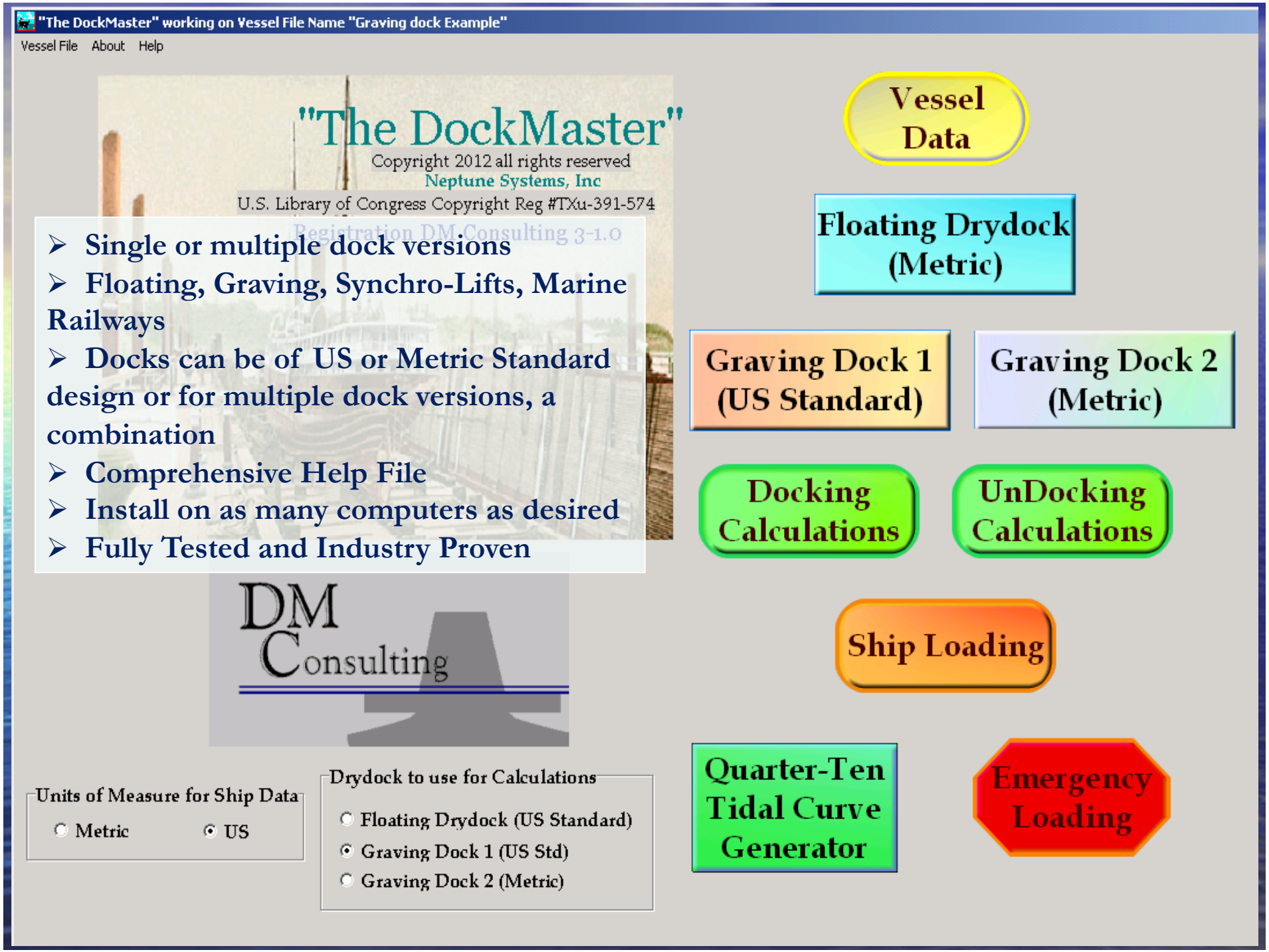
"The DockMaster" © 2012

for Windows

- An Engineering Tool
  - *Specifically designed* to meet the needs of dry dock personnel – other Naval Architecture/Engineering type software tools that can be used to perform some dry dock calculations are expensive, difficult to use, and require extensive training
  - In addition to providing standard docking and undocking calculations the "DockMaster" calculates dock/tank loading, generates pumping plans, and is user friendly.
- A Management & Planning tool
  - Quickly make decisions on your ability to dock a particular ship for bid purposes.
  - Determine changes required to bring ship into proper list/trim conditions prior to docking/undocking.
  - Track changes to ship's condition while in dock.
- A Training tool
  - Train Dry Dock personnel in acceptable docking/undocking prerequisites and how to prevent or correct unacceptable scenarios.


"The DockMaster" working on Vessel File Name "Graving dock Example"
Vessel File
About
Help
"The DockMaster"
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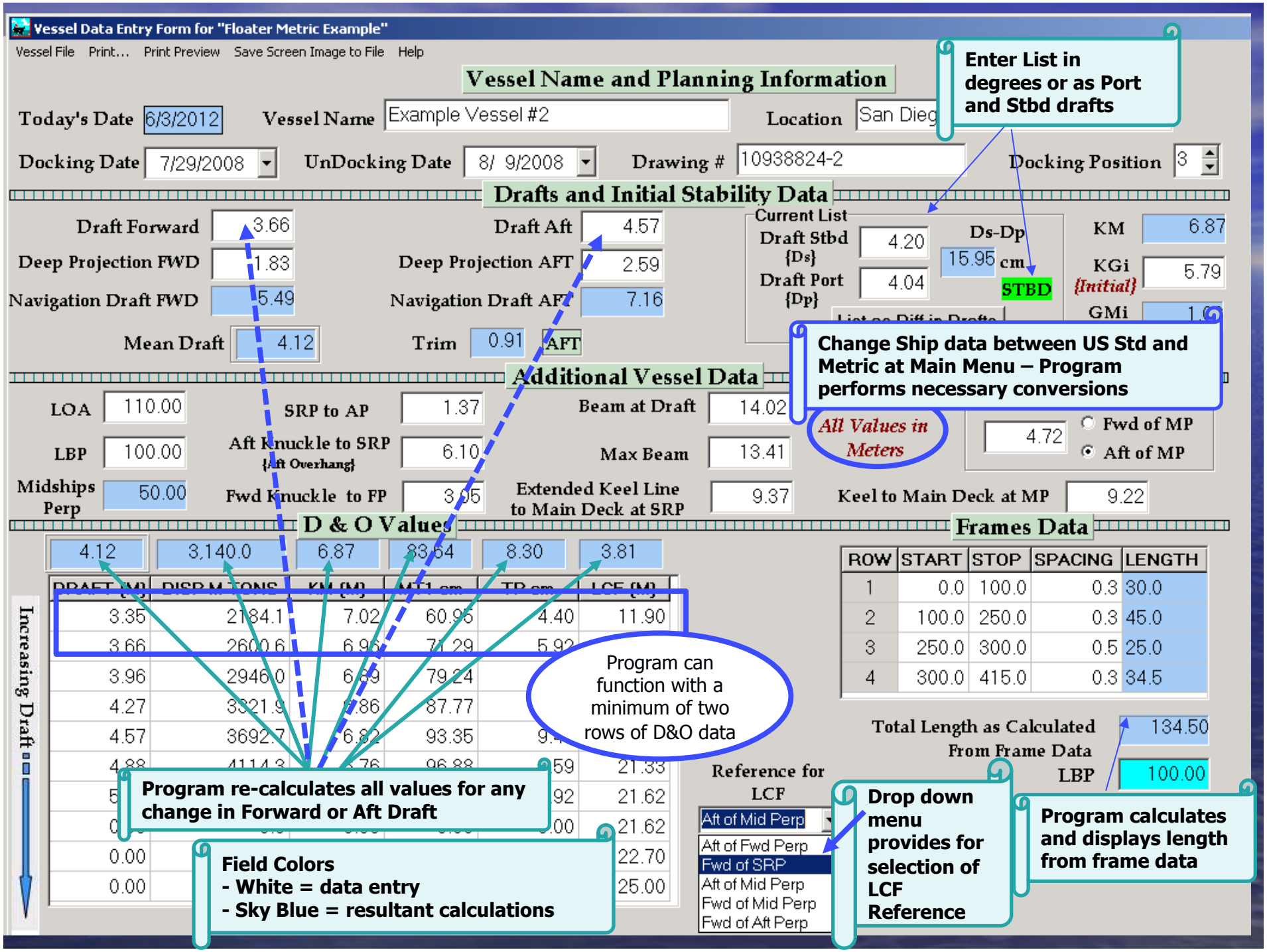
Registration DM Consulting 3-1.0
Single or multiple dock versions
Floating, Graving, Synchro-Lifts, Marine Railways
Docks can be of US or Metric Standard design or for multiple dock versions, a combination
Comprehensive Help File
Install on as many computers as desired
Fully Tested and Industry Proven
DM Consulting
Vessel Data
Floating Drydock (Metric)
Graving Dock 1 (US Standard)
Graving Dock 2 (Metric)
Docking Calculations
UnDocking Calculations
Ship Loading
Quarter-Ten Tidal Curve Generator
Emergency Loading
Units of Measure for Ship Data
Metric
US
Drydock to use for Calculations
Floating Drydock (US Standard)
Graving Dock 1 (US Std)
Graving Dock 2 (Metric)

Vessel Data

- *"The DockMaster"*© uses vessel data provided by the User to perform calculations; results output to the screen and printer.
- Single, User Friendly Screen for Entering Data
- Required Vessel Data
  - Basic data such as Drafts and Other Curves (D&O) information, List, KG, LCG, Length Overall, Length Between Perpendiculars
  - Frame Spacing (for tracking weight changes while vessel is in dock or to calculate offsetting weights to remove excess trim or list)

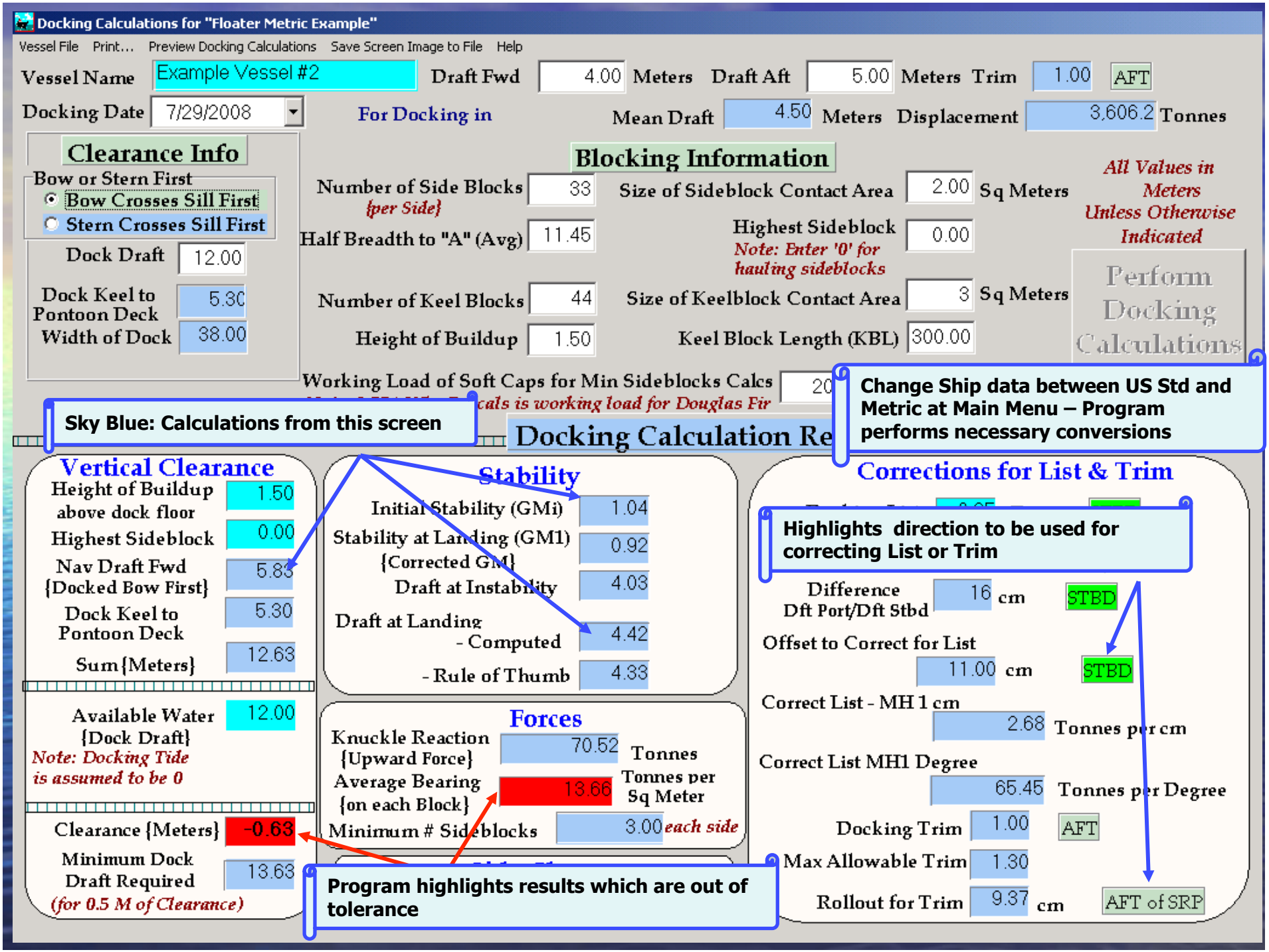

Vessel Data Entry Form for "Floater Metric Example"
Vessel File Print... Print Preview Save Screen Image to File Help
Vessel Name and Planning Information
Today's Date 6/3/2012
Vessel Name Example Vessel #2
Location San Dieg
Docking Date 7/29/2008
UnDocking Date 8/ 9/2008
Drawing # 10938824-2
Docking Position 3
Drafts and Initial Stability Data
Draft Forward 3.66
Deep Projection FWD 1.83
Navigation Draft FWD 5.49
Mean Draft 4.12
Trim 0.91 AFT
Draft Aft 4.57
Deep Projection AFT 2.59
Navigation Draft AFT 7.16
Current List
Draft Stbd {Ds} 4.20
Draft Port {Dp} 4.04
Ds-Dp 15.95 cm
STBD
KM 6.87
KGi {Initial} 5.79
GMi
Enter List in degrees or as Port and Stbd drafts
Change Ship data between US Std and Metric at Main Menu – Program performs necessary conversions
All Values in Meters
Additional Vessel Data
LOA 110.00
LBP 100.00
Midships Perp 50.00
SRP to AP 1.37
Aft Knuckle to SRP {Aft Overhang} 6.10
Fwd Knuckle to FP 3.05
Beam at Draft 14.02
Max Beam 13.41
Extended Keel Line to Main Deck at SRP 9.37
4.72
Fwd of MP
Aft of MP
Keel to Main Deck at MP 9.22
D & O Values
4.12 3,140.0 6.87 83.64 8.30 3.81
3.35 2184.1 7.02 60.96 4.40 11.90
3.66 2600.6 6.96 71.29 5.92
3.96 2946.0 6.89 79.24
4.27 3321.9 6.86 87.77
4.57 3692.7 6.82 93.35 9.
4.88 4114.3 6.76 96.88 59 21.33
5 92 21.62
0 00 21.62
0.00 22.70
0.00 25.00
Increasing Draft
Program can function with a minimum of two rows of D&O data
Program re-calculates all values for any change in Forward or Aft Draft
Field Colors
- White = data entry
- Sky Blue = resultant calculations
Frames Data
ROW START STOP SPACING LENGTH
1 0.0 100.0 0.3 30.0
2 100.0 250.0 0.3 45.0
3 250.0 300.0 0.5 25.0
4 300.0 415.0 0.3 34.5
Total Length as Calculated From Frame Data 134.50
LBP 100.00
Program calculates and displays length from frame data
Reference for LCF
Aft of Mid Perp
Aft of Fwd Perp
Fwd of SRP
Aft of Mid Perp
Fwd of Mid Perp
Fwd of Aft Perp
Drop down menu provides for selection of LCF Reference

Docking Calculations

- Calculates:
  - Initial stability
  - Changes in stability during landing
  - Predicted Draft of instability
  - Knuckle block loading, Average loading on blocks
  - Corrections for List and Trim
  - Clearance over the blocks and side clearance

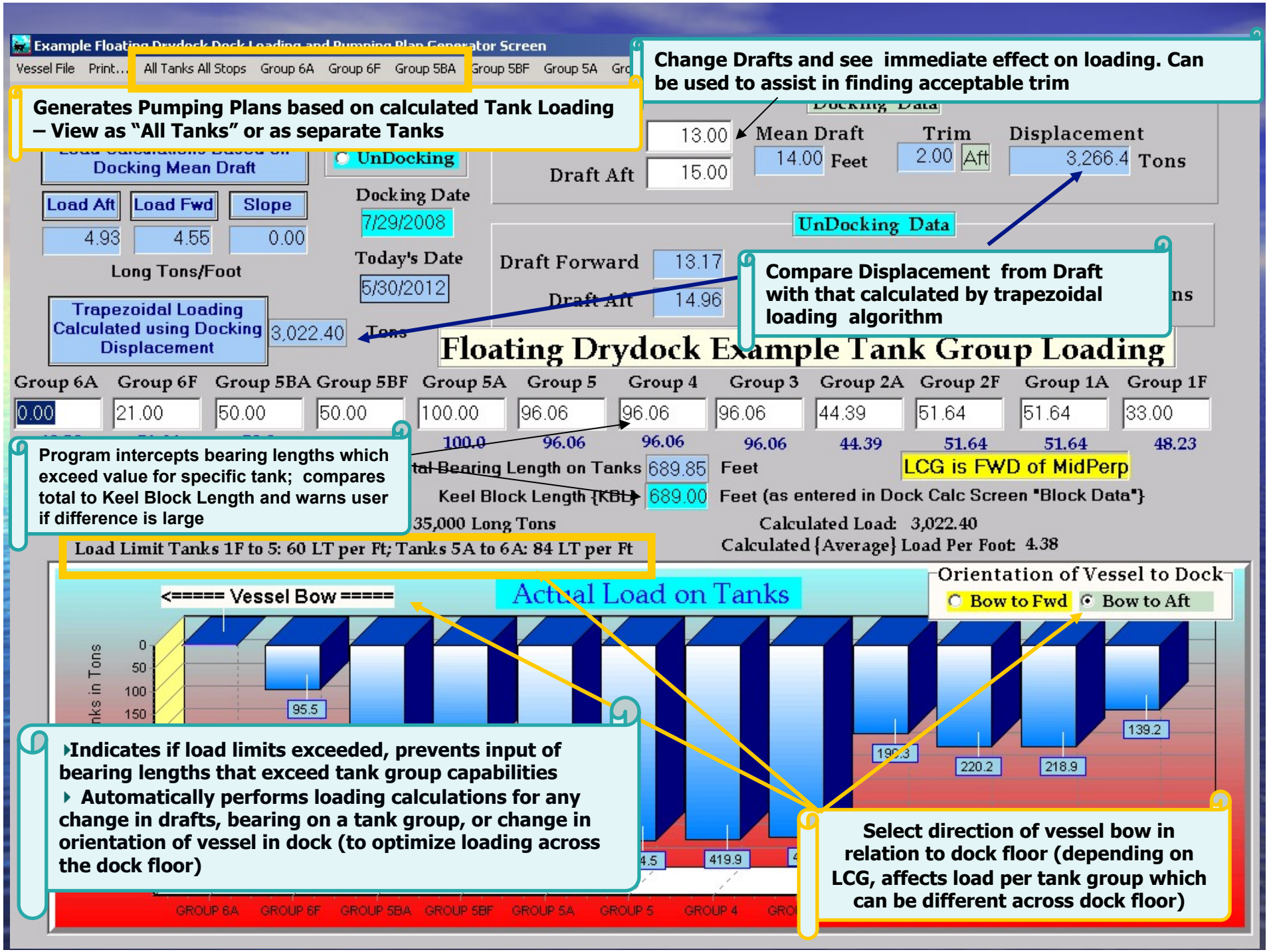
- Quickly determine how changes in various factors affect stability: for example, change Draft Forward or Draft Aft and all associated calculations are automatically re-computed

- Automatically highlights any results that are out of acceptable tolerance (i.e. clearances, stability, loading, etc.) on screen and in printed reports


Docking Calculations for "Floater Metric Example"
Vessel File
Print...
Preview Docking Calculations
Save Screen Image to File
Help
Vessel Name
Example Vessel #2
Draft Fwd
4.00
Meters
Draft Aft
5.00
Meters
Trim
1.00
AFT
Docking Date
7/29/2008
For Docking in
Mean Draft
4.50
Meters
Displacement
3,606.2
Tonnes
Clearance Info
Bow or Stern First
Bow Crosses Sill First
Stern Crosses Sill First
Dock Draft
12.00
Dock Keel to Pontoon Deck
5.30
Width of Dock
38.00
Blocking Information
Number of Side Blocks
(per Side)
33
Size of Sideblock Contact Area
2.00
Sq Meters
Half Breadth to "A" (Avg)
11.45
Highest Sideblock
Note: Enter '0' for hauling sideblocks
0.00
All Values in Meters Unless Otherwise Indicated
Number of Keel Blocks
44
Size of Keelblock Contact Area
3
Sq Meters
Height of Buildup
1.50
Keel Block Length (KBL)
300.00
Perform Docking Calculations
Working Load of Soft Caps for Min Sideblocks Calcs
20
cals is working load for Douglas Fir
Sky Blue: Calculations from this screen
Change Ship data between US Std and Metric at Main Menu – Program performs necessary conversions
Docking Calculation Re
Vertical Clearance
Height of Buildup above dock floor
1.50
Highest Sideblock
0.00
Nav Draft Fwd {Docked Bow First}
5.83
Dock Keel to Pontoon Deck
5.30
Sum{Meters}
12.63
Available Water {Dock Draft}
12.00
Note: Docking Tide is assumed to be 0
Clearance {Meters}
-0.63
Minimum Dock Draft Required
(for 0.5 M of Clearance)
13.63
Stability
Initial Stability (GMi)
1.04
Stability at Landing (GM1) {Corrected GM}
0.92
Draft at Instability
4.03
Draft at Landing - Computed
4.42
- Rule of Thumb
4.33
Forces
Knuckle Reaction {Upward Force}
70.52
Tonnes
Average Bearing {on each Block}
13.66
Tonnes per Sq Meter
Minimum # Sideblocks
3.00
each side
Corrections for List & Trim
Highlights direction to be used for correcting List or Trim
Difference Dft Port/Dft Stbd
16
cm
STBD
Offset to Correct for List
11.00
cm
STBD
Correct List - MH 1 cm
2.68
Tonnes per cm
Correct List MH1 Degree
65.45
Tonnes per Degree
Docking Trim
1.00
AFT
Max Allowable Trim
1.30
Rollout for Trim
9.37
cm
AFT of SRP
Program highlights results which are out of tolerance

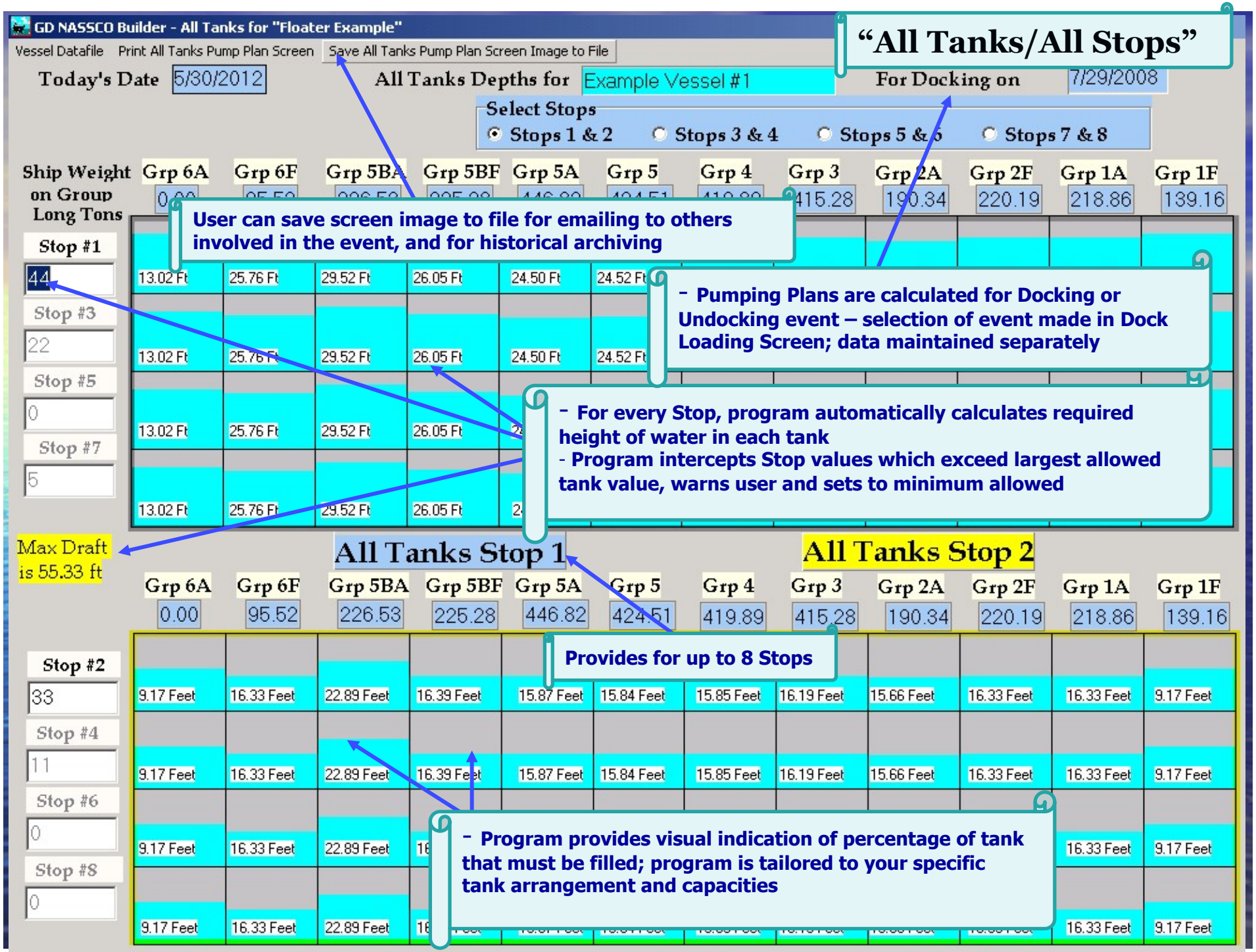
Floating Dry Dock (Metric)

- Calculates and provides numeric and graphical results for Trapezoidal Load, Average Load on Dock/Tanks and Weight Per Unit length
- Uniquely tailored to Purchaser's Floating Dry Dock
  - Tank specifications (number, name of tanks, "A" and "B" curve data)
  - Dock specs necessary for calculations resides as permanent data in program.
- Dock Loading results used as input to generate Pumping Plans.
  - Input up to 8 Stops for Docking or Undocking
  - View as All Tanks or individually

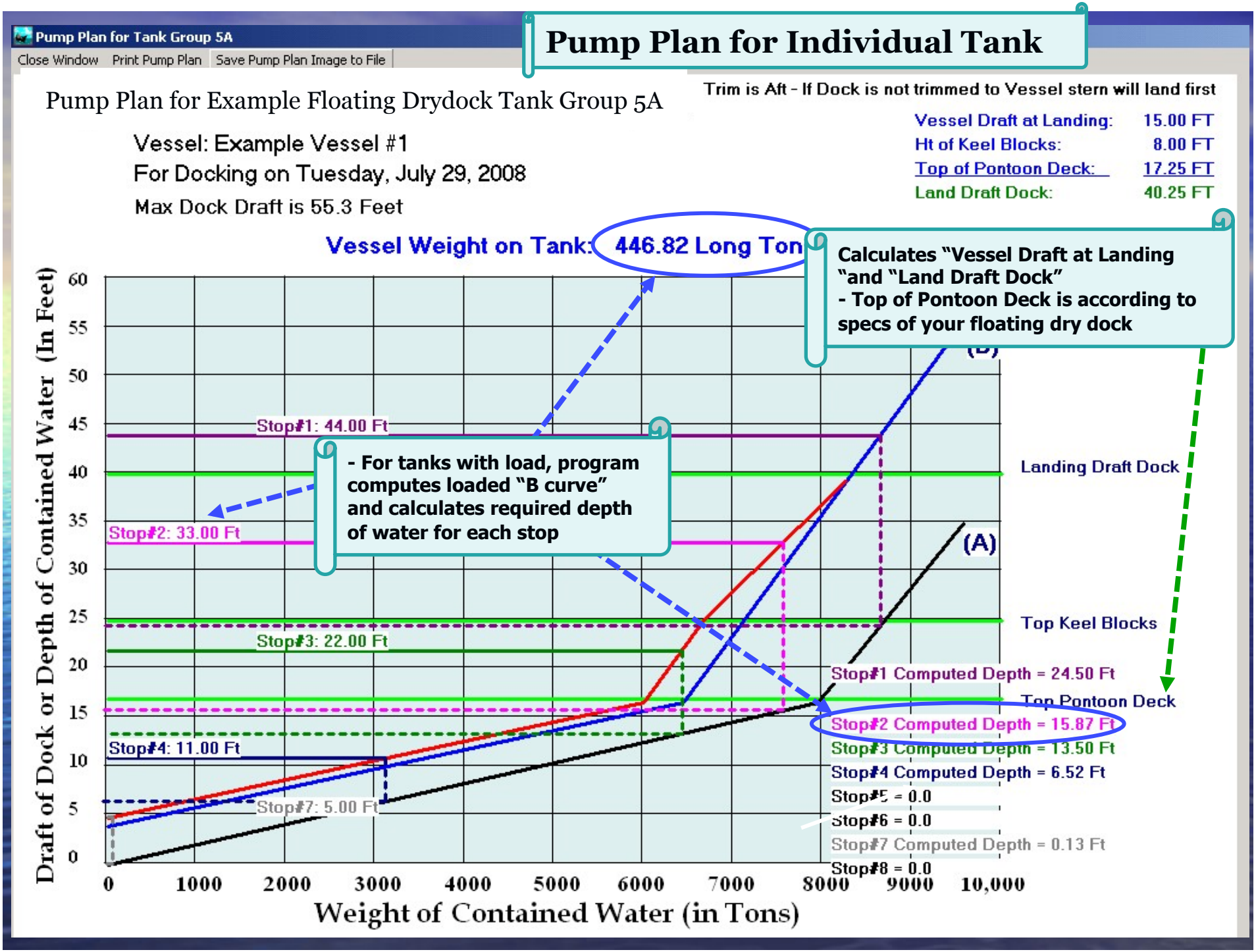

Example Floating Drydock Dock Loading and Pumping Plan Generator Screen
Vessel File
Print...
All Tanks All Stops
Group 6A
Group 6F
Group 5BA
Group 5BF
Group 5A
Generates Pumping Plans based on calculated Tank Loading – View as "All Tanks" or as separate Tanks
Change Drafts and see immediate effect on loading. Can be used to assist in finding acceptable trim
Docking Mean Draft
UnDocking
Load Aft
Load Fwd
Slope
4.93
4.55
0.00
Long Tons/Foot
Docking Date
7/29/2008
Today's Date
5/30/2012
Trapezoidal Loading Calculated using Docking Displacement
3,022.40
Tons
13.00
Mean Draft
14.00
Feet
Trim
2.00
Aft
Displacement
3,266.4
Tons
Draft Aft
15.00
UnDocking Data
Draft Forward
13.17
Draft Aft
14.96
Compare Displacement from Draft with that calculated by trapezoidal loading algorithm
Floating Drydock Example Tank Group Loading
Group 6A
Group 6F
Group 5BA
Group 5BF
Group 5A
Group 5
Group 4
Group 3
Group 2A
Group 2F
Group 1A
Group 1F
0.00
21.00
50.00
50.00
100.00
96.06
96.06
96.06
44.39
51.64
51.64
33.00
100.0
96.06
96.06
96.06
44.39
51.64
51.64
48.23
Program intercepts bearing lengths which exceed value for specific tank; compares total to Keel Block Length and warns user if difference is large
tal Bearing Length on Tanks
689.85
Feet
LCG is FWD of MidPerp
Keel Block Length {KBL}
689.00
Feet (as entered in Dock Calc Screen "Block Data"}
35,000 Long Tons
Calculated Load: 3,022.40
Load Limit Tanks 1F to 5: 60 LT per Ft; Tanks 5A to 6A: 84 LT per Ft
Calculated {Average} Load Per Foot: 4.38
Actual Load on Tanks
<===== Vessel Bow =====
Orientation of Vessel to Dock
Bow to Fwd
Bow to Aft
nks in Tons
0
50
100
150
95.5
419.9
220.2
218.9
139.2
GROUP 6A
GROUP 6F
GROUP 5BA
GROUP 5BF
GROUP 5A
GROUP 5
GROUP 4
Indicates if load limits exceeded, prevents input of bearing lengths that exceed tank group capabilities
Automatically performs loading calculations for any change in drafts, bearing on a tank group, or change in orientation of vessel in dock (to optimize loading across the dock floor)
Select direction of vessel bow in relation to dock floor (depending on LCG, affects load per tank group which can be different across dock floor)

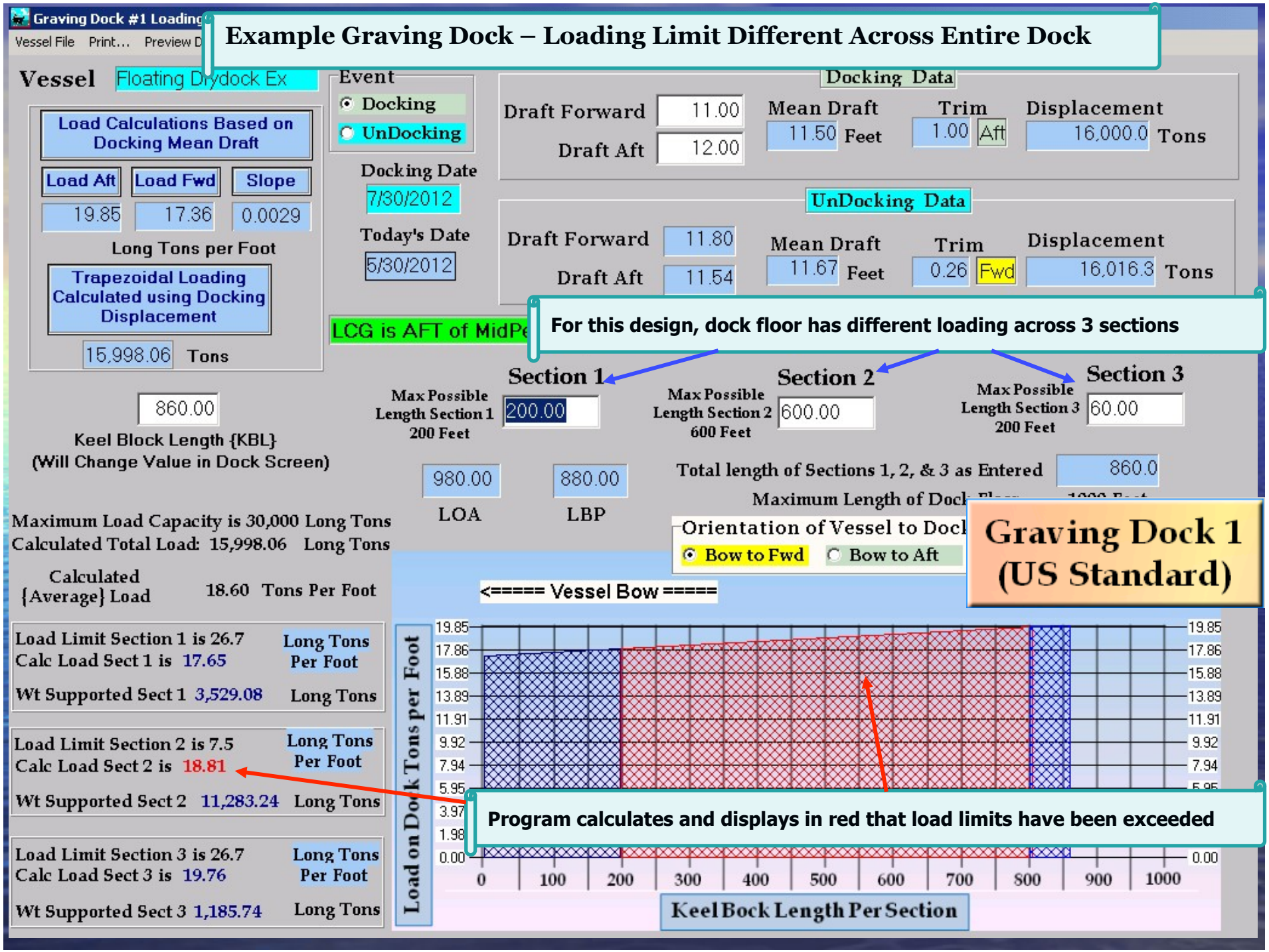
Pumping Plans

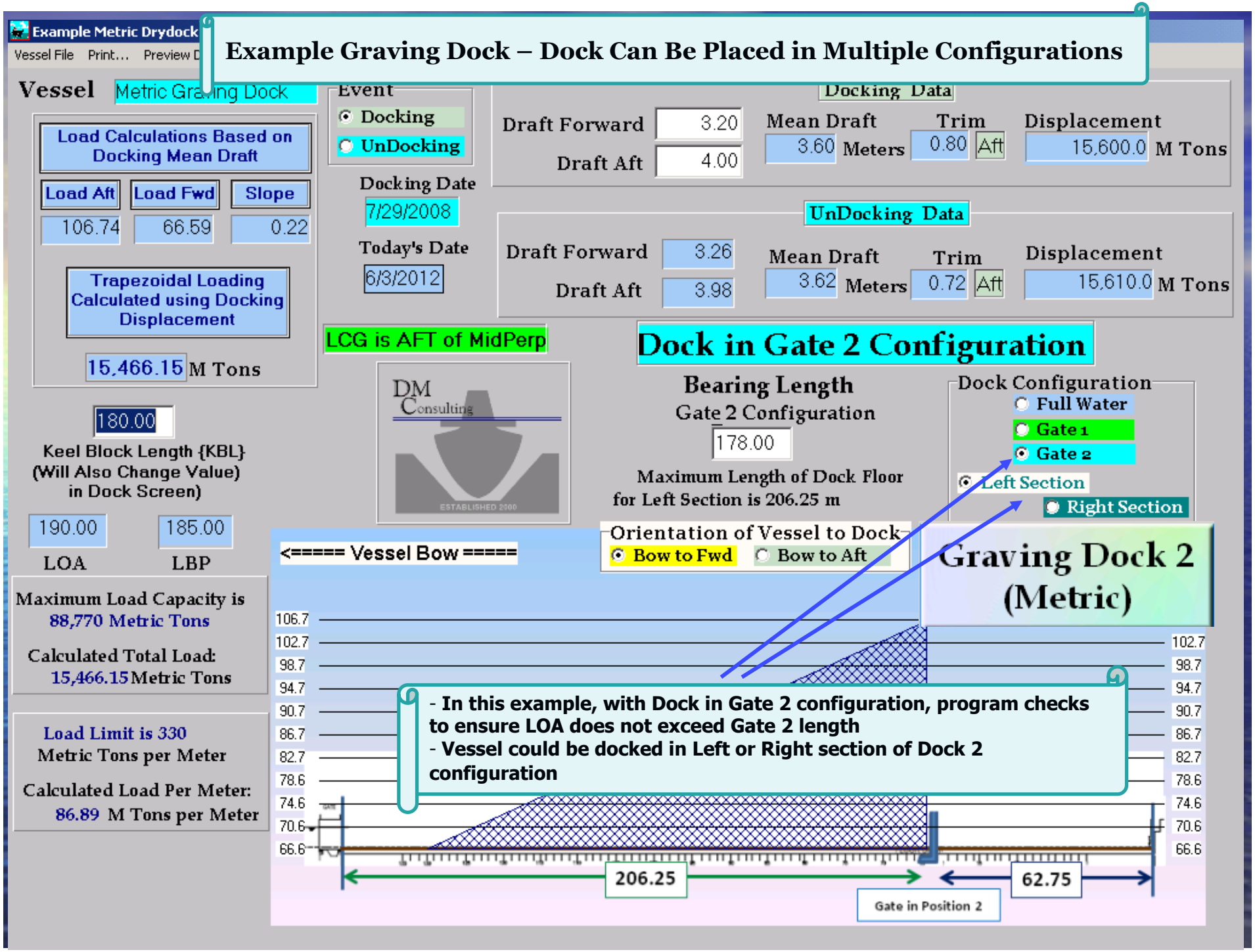
- Displayed as consolidated “All Tanks/All Stops” Plan and as individual Tank Plans (as graphs)
- Plans generated for Docking or Undocking events
  - Results maintained as separate data
- Print to local or network printer or send images as email attachments so Docking Team Members have necessary data for the event


GD NASSCO Builder - All Tanks for "Floater Example"
Vessel Datafile
Print All Tanks Pump Plan Screen
Save All Tanks Pump Plan Screen Image to File
"All Tanks/All Stops"
Today's Date 5/30/2012
All Tanks Depths for Example Vessel #1
For Docking on 7/29/2008
Select Stops
Stops 1 & 2
Stops 3 & 4
Stops 5 & 6
Stops 7 & 8
Ship Weight on Group Long Tons
Grp 6A Grp 6F Grp 5BA Grp 5BF Grp 5A Grp 5 Grp 4 Grp 3 Grp 2A Grp 2F Grp 1A Grp 1F
415.28 190.34 220.19 218.86 139.16
User can save screen image to file for emailing to others involved in the event, and for historical archiving
- Pumping Plans are calculated for Docking or Undocking event – selection of event made in Dock Loading Screen; data maintained separately
- For every Stop, program automatically calculates required height of water in each tank
- Program intercepts Stop values which exceed largest allowed tank value, warns user and sets to minimum allowed
Stop #1
44
Stop #3
22
Stop #5
0
Stop #7
5
13.02 Ft 25.76 Ft 29.52 Ft 26.05 Ft 24.50 Ft 24.52 Ft
Max Draft is 55.33 ft
All Tanks Stop 1
All Tanks Stop 2
Grp 6A Grp 6F Grp 5BA Grp 5BF Grp 5A Grp 5 Grp 4 Grp 3 Grp 2A Grp 2F Grp 1A Grp 1F
0.00 95.52 226.53 225.28 446.82 424.51 419.89 415.28 190.34 220.19 218.86 139.16
Provides for up to 8 Stops
Stop #2
33
Stop #4
11
Stop #6
0
Stop #8
0
9.17 Feet 16.33 Feet 22.89 Feet 16.39 Feet 15.87 Feet 15.84 Feet 15.85 Feet 16.19 Feet 15.66 Feet 16.33 Feet 16.33 Feet 9.17 Feet
- Program provides visual indication of percentage of tank that must be filled; program is tailored to your specific tank arrangement and capacities

Pump Plan for Individual Tank

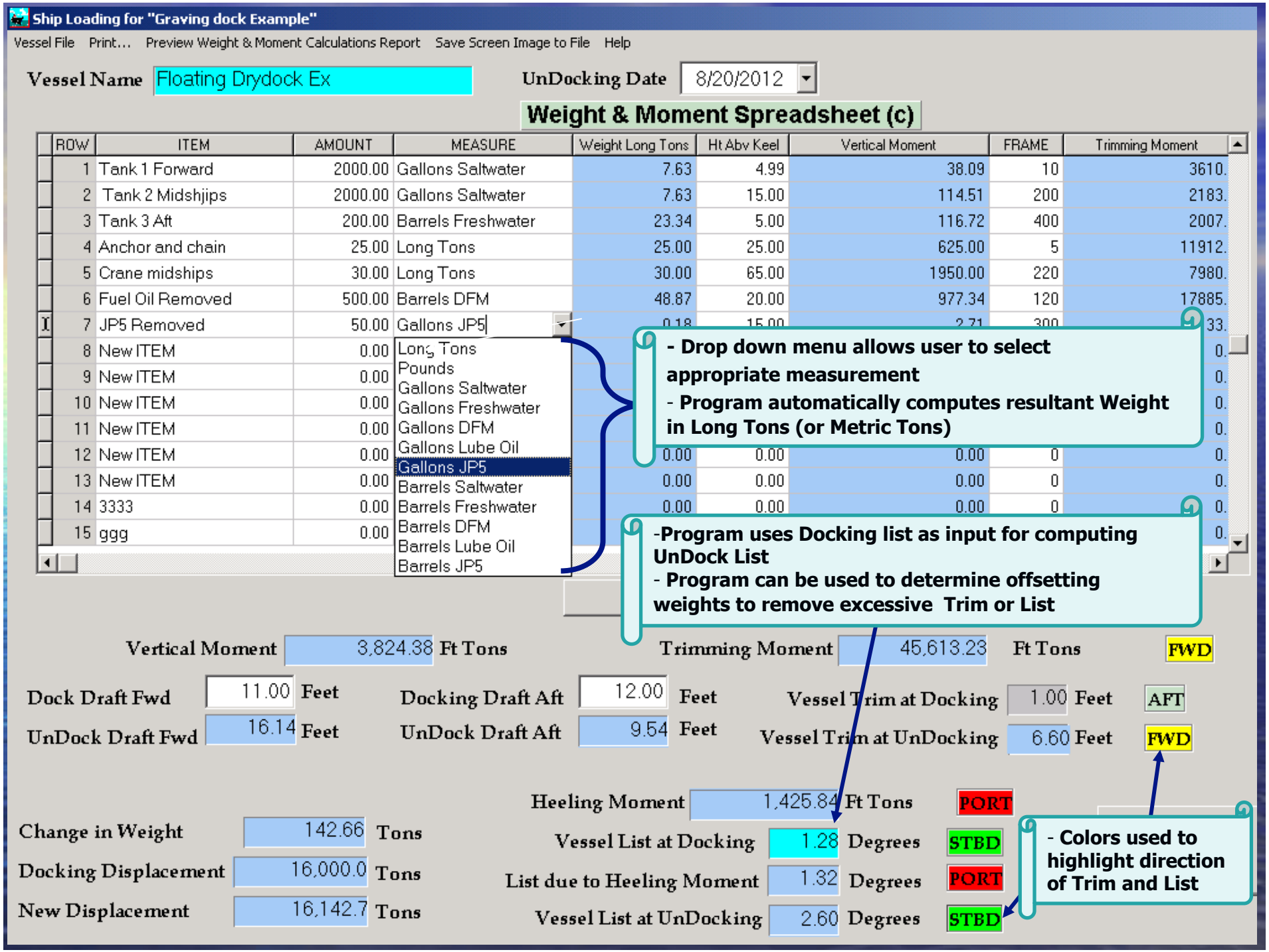



Graving Dock #1 Loading
Vessel File Print... Preview D
Example Graving Dock – Loading Limit Different Across Entire Dock
Vessel
Floating Drydock Ex
Event
Docking
UnDocking
Docking Data
Draft Forward 11.00
Draft Aft 12.00
Mean Draft 11.50 Feet
Trim 1.00 Aft
Displacement 16,000.0 Tons
Load Calculations Based on Docking Mean Draft
Load Aft 19.85
Load Fwd 17.36
Slope 0.0029
Long Tons per Foot
Trapezoidal Loading Calculated using Docking Displacement
15,998.06 Tons
Docking Date 7/30/2012
Today's Date 5/30/2012
UnDocking Data
Draft Forward 11.80
Draft Aft 11.54
Mean Draft 11.67 Feet
Trim 0.26 Fwd
Displacement 16,016.3 Tons
LCG is AFT of MidPe
For this design, dock floor has different loading across 3 sections
Section 1
Section 2
Section 3
Max Possible Length Section 1 200 Feet
200.00
Max Possible Length Section 2 600 Feet
600.00
Max Possible Length Section 3 200 Feet
60.00
860.00
Keel Block Length {KBL}
(Will Change Value in Dock Screen)
980.00 LOA
880.00 LBP
Total length of Sections 1, 2, & 3 as Entered 860.0
Maximum Length of Dock Floor
Maximum Load Capacity is 30,000 Long Tons
Calculated Total Load: 15,998.06 Long Tons
Orientation of Vessel to Dock
Bow to Fwd
Bow to Aft
Graving Dock 1 (US Standard)
Calculated {Average} Load 18.60 Tons Per Foot
<===== Vessel Bow =====
Load Limit Section 1 is 26.7 Long Tons Per Foot
Calc Load Sect 1 is 17.65
Wt Supported Sect 1 3,529.08 Long Tons
Load Limit Section 2 is 7.5 Long Tons Per Foot
Calc Load Sect 2 is 18.81
Wt Supported Sect 2 11,283.24 Long Tons
Load Limit Section 3 is 26.7 Long Tons Per Foot
Calc Load Sect 3 is 19.76
Wt Supported Sect 3 1,185.74 Long Tons
Program calculates and displays in red that load limits have been exceeded
Load on Dock Tons per Foot
19.85
17.86
15.88
13.89
11.91
9.92
7.94
5.95
3.97
1.98
0.00
0
100
200
300
400
500
600
700
800
900
1000
Keel Bock Length Per Section


Example Metric Drydock
Vessel File
Print...
Preview D
Example Graving Dock – Dock Can Be Placed in Multiple Configurations
Vessel
Metric Graving Dock
Event
Docking
UnDocking
Docking Data
Draft Forward
3.20
Draft Aft
4.00
Mean Draft
3.60
Meters
Trim
0.80
Aft
Displacement
15,600.0
M Tons
Load Calculations Based on Docking Mean Draft
Load Aft
Load Fwd
Slope
106.74
66.59
0.22
Docking Date
7/29/2008
Today's Date
6/3/2012
UnDocking Data
Draft Forward
3.26
Draft Aft
3.98
Mean Draft
3.62
Meters
Trim
0.72
Aft
Displacement
15,610.0
M Tons
Trapezoidal Loading Calculated using Docking Displacement
15,466.15
M Tons
LCG is AFT of MidPerp
Dock in Gate 2 Configuration
DM Consulting
ESTABLISHED 2000
Bearing Length
Gate 2 Configuration
178.00
Maximum Length of Dock Floor for Left Section is 206.25 m
Dock Configuration
Full Water
Gate 1
Gate 2
Left Section
Right Section
180.00
Keel Block Length {KBL} (Will Also Change Value) in Dock Screen)
190.00
LOA
185.00
LBP
Orientation of Vessel to Dock
Bow to Fwd
Bow to Aft
<===== Vessel Bow =====
Graving Dock 2 (Metric)
Maximum Load Capacity is
88,770 Metric Tons
Calculated Total Load:
15,466.15 Metric Tons
Load Limit is 330
Metric Tons per Meter
Calculated Load Per Meter:
86.89 M Tons per Meter
106.7
102.7
98.7
94.7
90.7
86.7
82.7
78.6
74.6
70.6
66.6
- In this example, with Dock in Gate 2 configuration, program checks to ensure LOA does not exceed Gate 2 length
- Vessel could be docked in Left or Right section of Dock 2 configuration
206.25
62.75
Gate in Position 2

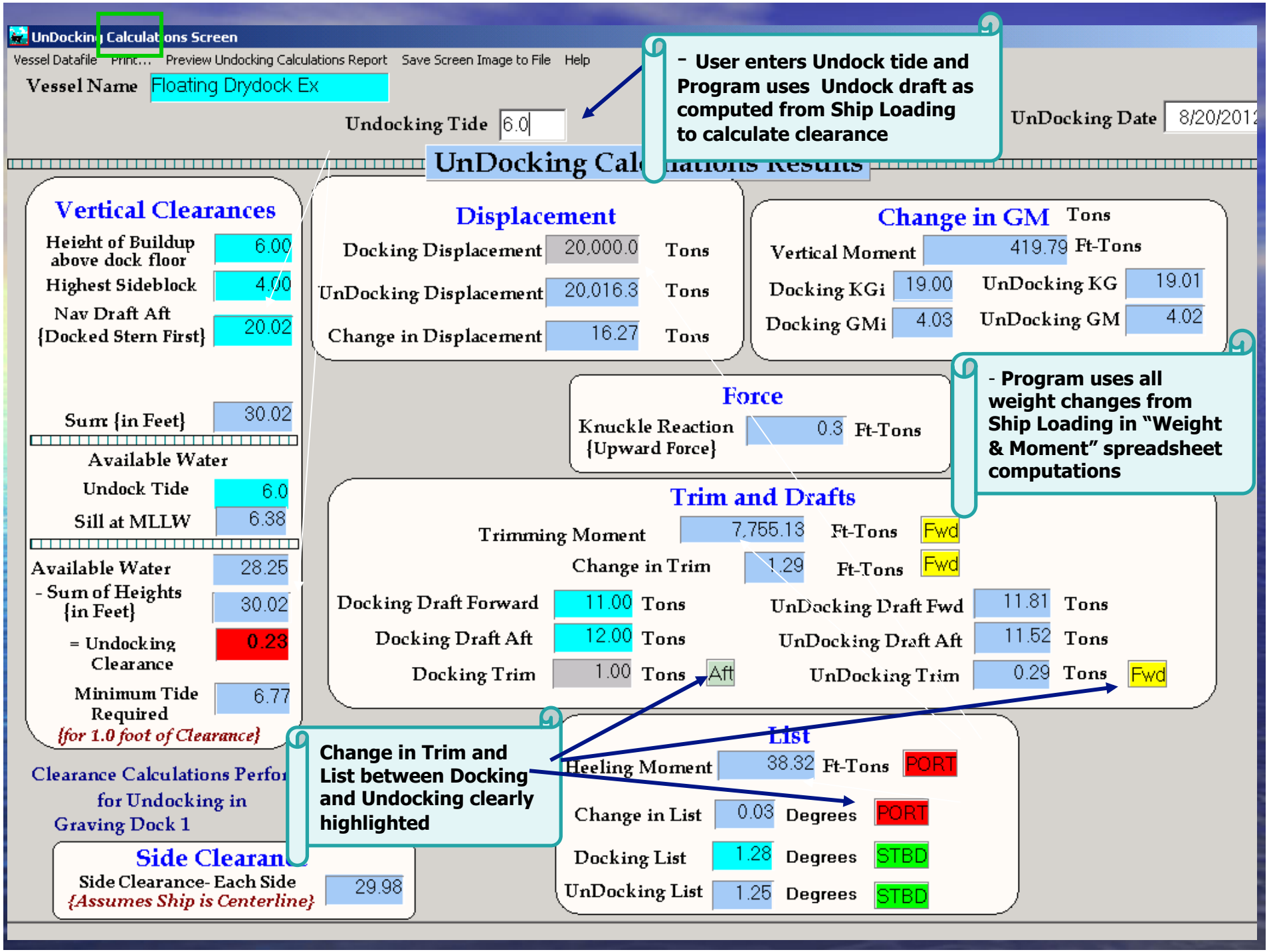
Ship Loading

- Ship Loading while in dock is tracked using the "Weight & Moment Spreadsheet ©"
  - A powerful, fully integrated tool for managing weight changes
  - Can also be used prior to docking to determine amount and location of offsetting weights to counter unacceptable list or trim.
- Select type of Measurement: Spreadsheet automatically calculates weight in Long Tons (or if Metric Vessel data, in Tonnes).
  - Tons, Pounds, Gallons/Barrels of Salt Water, Fuel Oil, Diesel Oil, JP5, Fresh Water - Other measures can be added if needed.
  - If Metric is active, User can select Metric Tons, Kilograms, etc
- Enter Frame Location - Distance to LCG and Trimming Moments are automatically calculated.
- Select PORT or STBD and distance off centerline - Spreadsheet calculates appropriate Heeling Moment.
- Integrates all new List, Trim, Displacement/Drafts and Stability information into undocking calculations.


Ship Loading for "Graving dock Example"
Vessel File
Print...
Preview Weight & Moment Calculations Report
Save Screen Image to File
Help
Vessel Name
Floating Drydock Ex
UnDocking Date
8/20/2012
Weight & Moment Spreadsheet (c)
ROW
ITEM
AMOUNT
MEASURE
Weight Long Tons
Ht Abv Keel
Vertical Moment
FRAME
Trimming Moment
1 Tank 1 Forward 2000.00 Gallons Saltwater 7.63 4.99 38.09 10 3610.
2 Tank 2 Midshjips 2000.00 Gallons Saltwater 7.63 15.00 114.51 200 2183.
3 Tank 3 Aft 200.00 Barrels Freshwater 23.34 5.00 116.72 400 2007.
4 Anchor and chain 25.00 Long Tons 25.00 25.00 625.00 5 11912.
5 Crane midships 30.00 Long Tons 30.00 65.00 1950.00 220 7980.
6 Fuel Oil Removed 500.00 Barrels DFM 48.87 20.00 977.34 120 17885.
7 JP5 Removed 50.00 Gallons JP5
8 New ITEM 0.00
9 New ITEM 0.00
10 New ITEM 0.00
11 New ITEM 0.00
12 New ITEM 0.00
13 New ITEM 0.00
14 3333 0.00
15 ggg 0.00
Long Tons
Pounds
Gallons Saltwater
Gallons Freshwater
Gallons DFM
Gallons Lube Oil
Gallons JP5
Barrels Saltwater
Barrels Freshwater
Barrels DFM
Barrels Lube Oil
Barrels JP5
- Drop down menu allows user to select appropriate measurement
- Program automatically computes resultant Weight in Long Tons (or Metric Tons)
-Program uses Docking list as input for computing UnDock List
- Program can be used to determine offsetting weights to remove excessive Trim or List
Vertical Moment 3,824.38 Ft Tons
Trimming Moment 45,613.23 Ft Tons FWD
Dock Draft Fwd 11.00 Feet
Docking Draft Aft 12.00 Feet
Vessel Trim at Docking 1.00 Feet AFT
UnDock Draft Fwd 16.14 Feet
UnDock Draft Aft 9.54 Feet
Vessel Trim at UnDocking 6.60 Feet FWD
Heeling Moment 1,425.84 Ft Tons PORT
Change in Weight 142.66 Tons
Vessel List at Docking 1.28 Degrees STBD
Docking Displacement 16,000.0 Tons
List due to Heeling Moment 1.32 Degrees PORT
New Displacement 16,142.7 Tons
Vessel List at UnDocking 2.60 Degrees STBD
- Colors used to highlight direction of Trim and List

UnDocking Calculations

- Calculations based on weight additions/ removals and moments from the Ship Loading Tool and Undocking Draft (Floating Dry Dock) and Tide:
  - Stability - Undock KG and GM
  - Knuckle block loading
  - Clearance over the blocks
  - Tide requirement for Safe Clearance


UnDocking Calculations Screen
Vessel Datafile
Print...
Preview Undocking Calculations Report
Save Screen Image to File
Help
Vessel Name
Floating Drydock Ex
Undocking Tide
6.0
UnDocking Date
8/20/2012
- User enters Undock tide and Program uses Undock draft as computed from Ship Loading to calculate clearance
UnDocking Calculations Results
Vertical Clearances
Height of Buildup above dock floor
6.00
Highest Sideblock
4.00
Nav Draft Aft {Docked Stern First}
20.02
Sum {in Feet}
30.02
Available Water
Undock Tide
6.0
Sill at MLLW
6.38
Available Water
28.25
- Sum of Heights {in Feet}
30.02
= Undocking Clearance
0.23
Minimum Tide Required
6.77
{for 1.0 foot of Clearance}
Clearance Calculations Perfor
for Undocking in
Graving Dock 1
Side Clearan
Side Clearance- Each Side
{Assumes Ship is Centerline}
29.98
Displacement
Docking Displacement
20,000.0
Tons
UnDocking Displacement
20,016.3
Tons
Change in Displacement
16.27
Tons
Change in GM
Tons
Vertical Moment
419.79
Ft-Tons
Docking KGi
19.00
UnDocking KG
19.01
Docking GMi
4.03
UnDocking GM
4.02
Force
Knuckle Reaction {Upward Force}
0.3
Ft-Tons
- Program uses all weight changes from Ship Loading in "Weight & Moment" spreadsheet computations
Trim and Drafts
Trimming Moment
7,755.13
Ft-Tons
Fwd
Change in Trim
1.29
Ft-Tons
Fwd
Docking Draft Forward
11.00
Tons
UnDocking Draft Fwd
11.81
Tons
Docking Draft Aft
12.00
Tons
UnDocking Draft Aft
11.52
Tons
Docking Trim
1.00
Tons
Aft
UnDocking Trim
0.29
Tons
Fwd
Change in Trim and List between Docking and Undocking clearly highlighted
List
Heeling Moment
38.32
Ft-Tons
PORT
Change in List
0.03
Degrees
PORT
Docking List
1.28
Degrees
STBD
UnDocking List
1.25
Degrees
STBD

Emergency Loading

- Calculates required number of side blocks required for seismic and hurricane conditions based on overturning moments
- Calculates individual hurricane overturning moments for each surface area entered using wind force in knots or m.p.h.
- Provides user with summary of side blocks:
  - Number entered in docking screen
  - Calculated number from docking calculations
  - Calculated number to resist seismic forces
  - Calculated number to resist hurricane forces

Emergency Loading Screen for "Graving dock Example"

Vessel File Print... Preview Calculations Report Save Screen Image to File Help

Vessel Name: Floating Drydock Ex

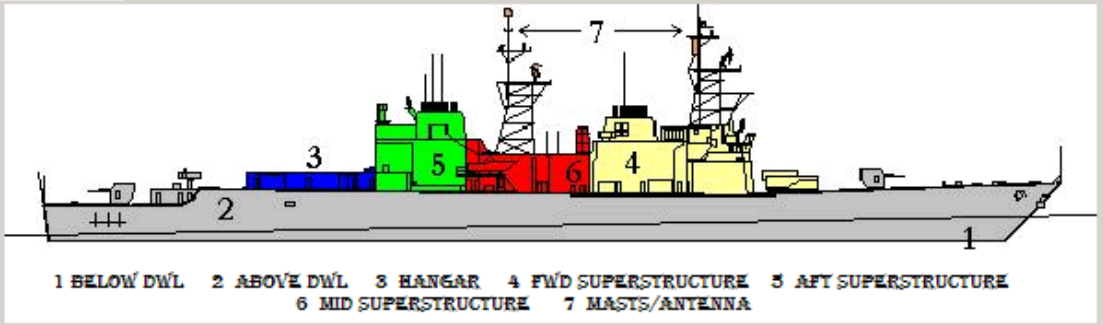
Displacement: 16,000.0 Tons

Avg Half Breadth to "A": 11.45 Feet

Load Rating of Caps Used for Min Side Block Calcs: 370.00 PSI

Size of Side Block Contact Area: 2.00 Sq Feet

Max Load Rating of Caps to use for Emergency Loading Calculations: 340.00 PSI



Hurricane Velocity: 70.0 (knots / mph)

Horizontal Earthquake Accleration: 0.10 * "g"

ROW	ITEM	AREA {Sq Feet}	LEVER {Feet}	OVERTURNING MOMENT {Foot-Lbs}
1	Below DWL	400.0	7.5	58,800.0
2	Above DWL	900.0	23.6	416,304.0
3	Bow Section	240.0	33.5	157,584.0
4	Deck House	120.0	51.5	121,128.0
5	Aft Deck House	310.0	49.5	300,762.0
6	Fwd Mast	100.0	55.0	107,800.0
7	Aft Mast	80.0	32.0	50,176.0
8	New Item	0.0	0.0	0.0
9	New Item	0.0	0.0	0.0
10	New Item	0.0	0.0	0.0

Delete Row

1,212,554.00 Total Hurricane Overturning Moment Foot-pounds

Number Side Blocks Entered in Docking Screen: 30

Minimum Number Side Blocks Required For Non-Emergency Conditions {as determined in Docking Calculations Screen}: 28.00

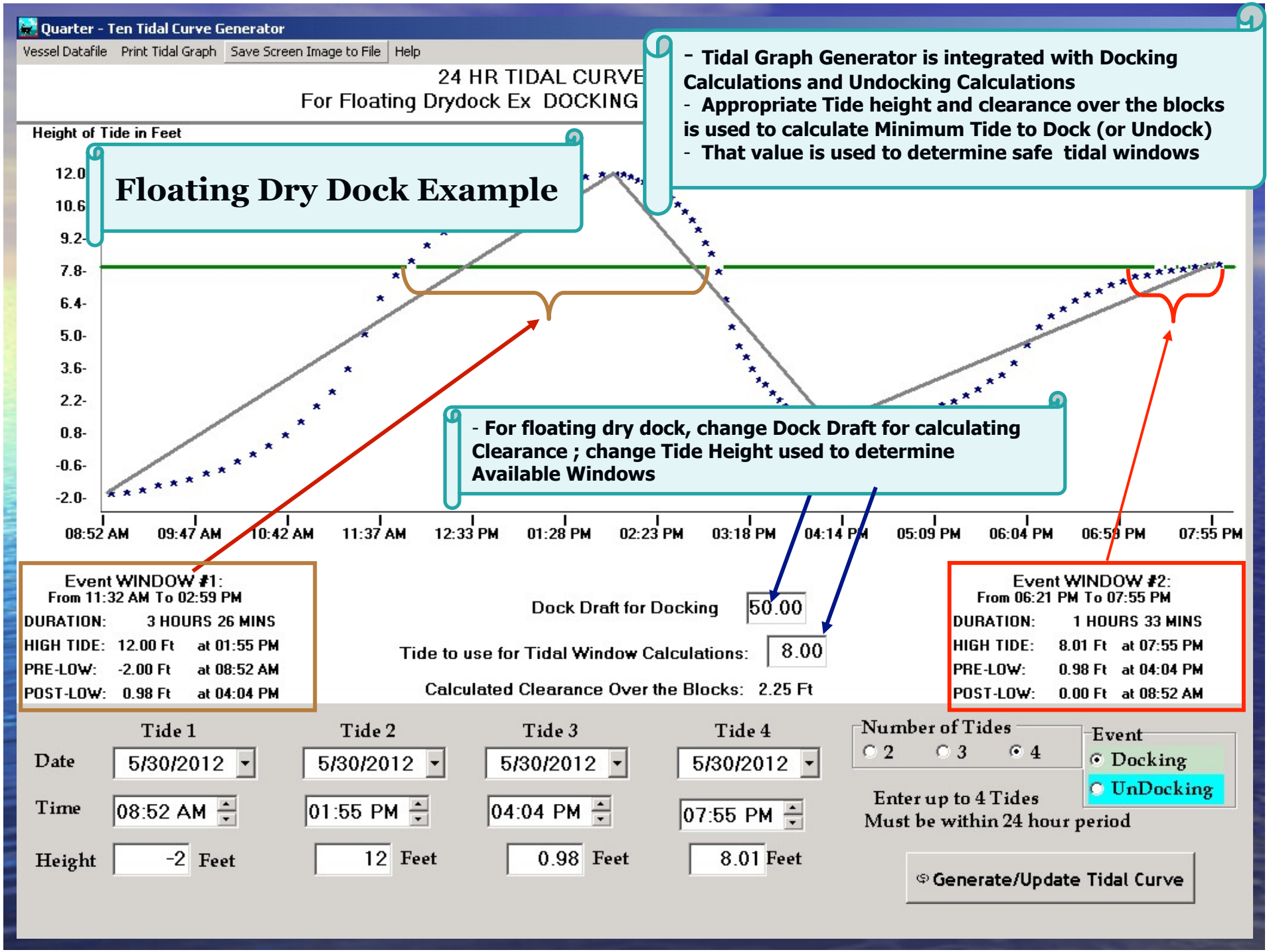
Required Number Side Blocks (Per Side) to Resist Seismic Forces Including Dead Load: 89.00

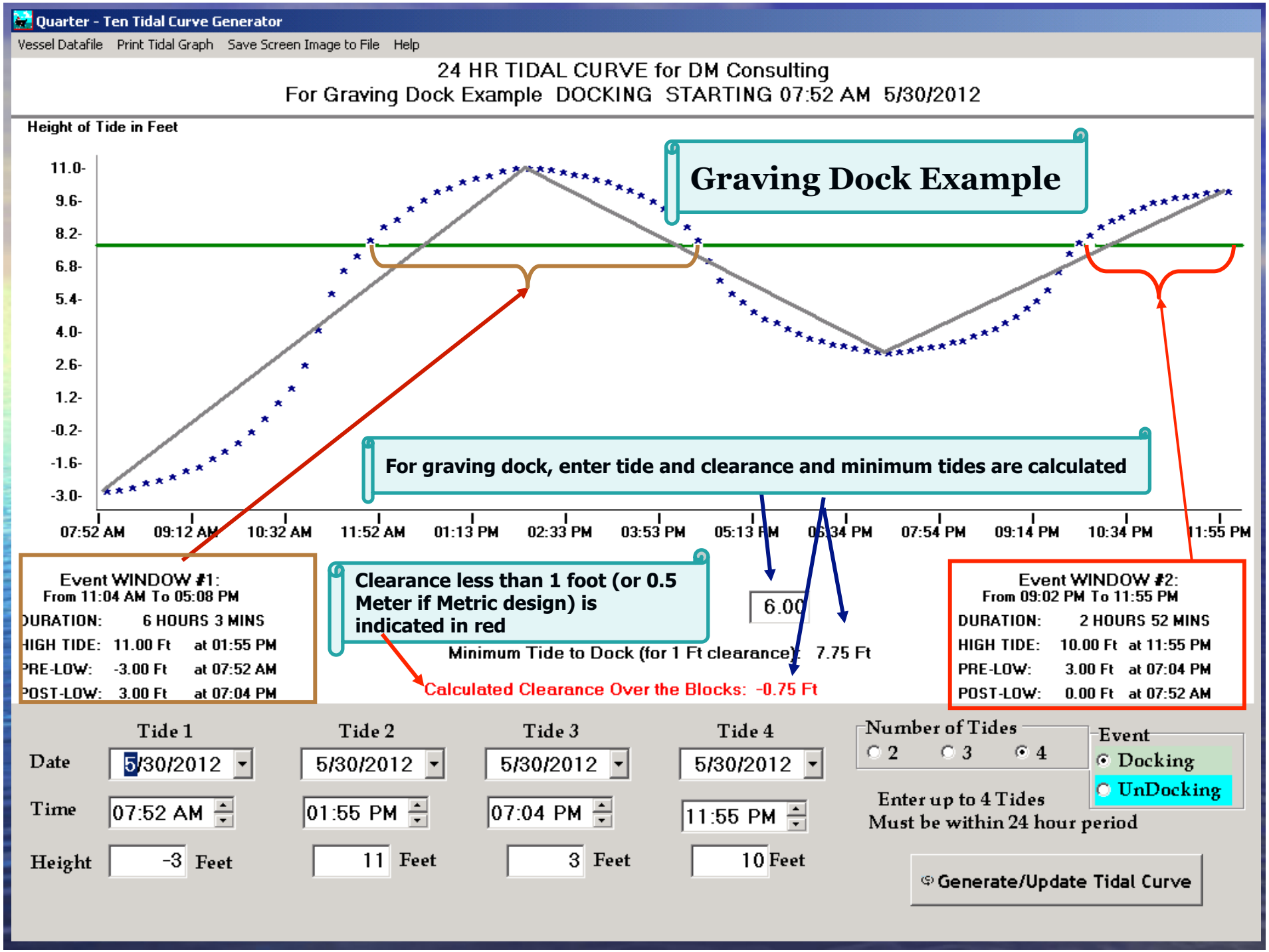
Required Number Side Blocks (Per Side) to Resist Hurricane Including Dead Load: 29.00

Overturning Moment Due to Seismic Forces: 68,096,000.00 Foot-pounds

Quarter-Ten Tidal Curve Generator ©

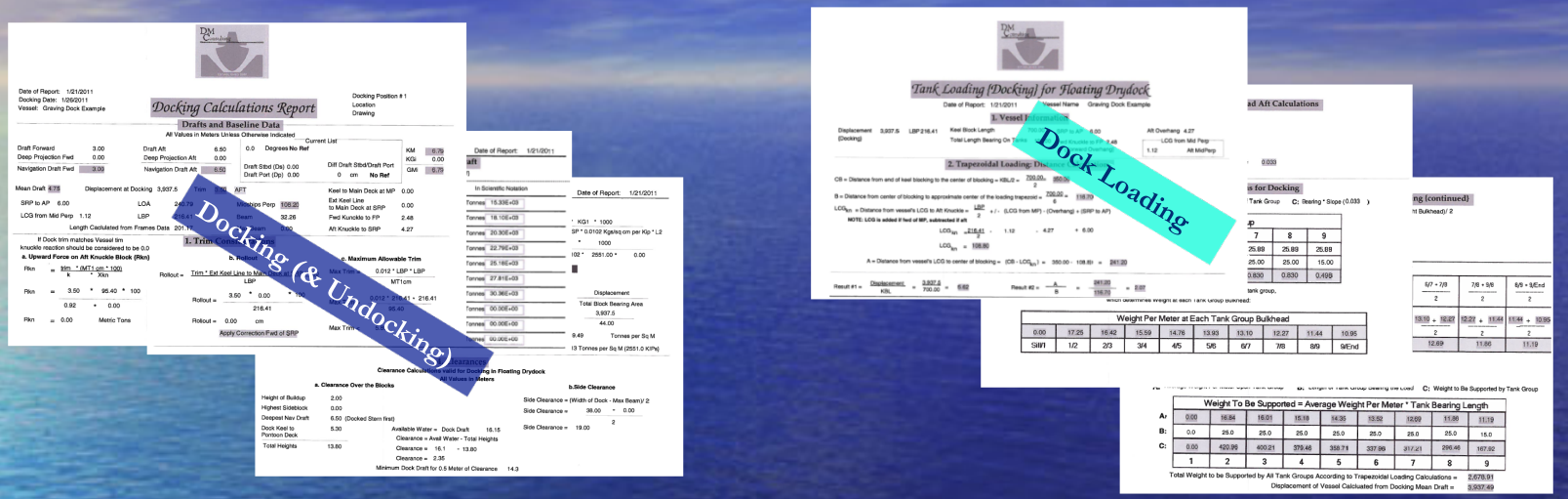
- Fully integrated - uses results from calculated docking/undocking clearances as baseline data.
- A graphics based generator that automatically computes and displays a quarter-ten tidal curve.
- Determines available windows for safe dockings within a 24 hour tidal period.
- User friendly - protects the user from entering invalid dates and times – input 2, 3 or 4 tides within one diurnal period


Quarter - Ten Tidal Curve Generator
Vessel Datafile
Print Tidal Graph
Save Screen Image to File
Help
24 HR TIDAL CURVE
For Floating Drydock Ex DOCKING
Height of Tide in Feet
Floating Dry Dock Example
- Tidal Graph Generator is integrated with Docking Calculations and Undocking Calculations
- Appropriate Tide height and clearance over the blocks is used to calculate Minimum Tide to Dock (or Undock)
- That value is used to determine safe tidal windows
12.0
10.6
9.2
7.8
6.4
5.0
3.6
2.2
0.8
-0.6
-2.0
08:52 AM
09:47 AM
10:42 AM
11:37 AM
12:33 PM
01:28 PM
02:23 PM
03:18 PM
04:14 PM
05:09 PM
06:04 PM
06:58 PM
07:55 PM
- For floating dry dock, change Dock Draft for calculating Clearance ; change Tide Height used to determine Available Windows
Event WINDOW #1:
From 11:32 AM To 02:59 PM
DURATION: 3 HOURS 26 MINS
HIGH TIDE: 12.00 Ft at 01:55 PM
PRE-LOW: -2.00 Ft at 08:52 AM
POST-LOW: 0.98 Ft at 04:04 PM
Dock Draft for Docking 50.00
Tide to use for Tidal Window Calculations: 8.00
Calculated Clearance Over the Blocks: 2.25 Ft
Event WINDOW #2:
From 06:21 PM To 07:55 PM
DURATION: 1 HOURS 33 MINS
HIGH TIDE: 8.01 Ft at 07:55 PM
PRE-LOW: 0.98 Ft at 04:04 PM
POST-LOW: 0.00 Ft at 08:52 AM
Tide 1
Tide 2
Tide 3
Tide 4
Date
5/30/2012
5/30/2012
5/30/2012
5/30/2012
Time
08:52 AM
01:55 PM
04:04 PM
07:55 PM
Height
-2 Feet
12 Feet
0.98 Feet
8.01 Feet
Number of Tides
2
3
4
Event
Docking
UnDocking
Enter up to 4 Tides
Must be within 24 hour period
Generate/Update Tidal Curve


Quarter - Ten Tidal Curve Generator
Vessel Datafile
Print Tidal Graph
Save Screen Image to File
Help
24 HR TIDAL CURVE for DM Consulting
For Graving Dock Example DOCKING STARTING 07:52 AM 5/30/2012
Height of Tide in Feet
11.0-
9.6-
8.2-
6.8-
5.4-
4.0-
2.6-
1.2-
-0.2-
-1.6-
-3.0-
07:52 AM
09:12 AM
10:32 AM
11:52 AM
01:13 PM
02:33 PM
03:53 PM
05:13 PM
06:34 PM
07:54 PM
09:14 PM
10:34 PM
11:55 PM
Graving Dock Example
For graving dock, enter tide and clearance and minimum tides are calculated
Event WINDOW #1:
From 11:04 AM To 05:08 PM
DURATION: 6 HOURS 3 MINS
HIGH TIDE: 11.00 Ft at 01:55 PM
PRE-LOW: -3.00 Ft at 07:52 AM
POST-LOW: 3.00 Ft at 07:04 PM
Clearance less than 1 foot (or 0.5 Meter if Metric design) is indicated in red
6.00
Minimum Tide to Dock (for 1 Ft clearance): 7.75 Ft
Calculated Clearance Over the Blocks: -0.75 Ft
Event WINDOW #2:
From 09:02 PM To 11:55 PM
DURATION: 2 HOURS 52 MINS
HIGH TIDE: 10.00 Ft at 11:55 PM
PRE-LOW: 3.00 Ft at 07:04 PM
POST-LOW: 0.00 Ft at 07:52 AM
Tide 1
Tide 2
Tide 3
Tide 4
Date
5/30/2012
5/30/2012
5/30/2012
5/30/2012
Time
07:52 AM
01:55 PM
07:04 PM
11:55 PM
Height
-3 Feet
11 Feet
3 Feet
10 Feet
Number of Tides
2
3
4
Event
Docking
UnDocking
Enter up to 4 Tides
Must be within 24 hour period
Generate/Update Tidal Curve

Other Features

- Detailed reports with all formulas print on standard size paper



- Help/User Manual and example vessels supplied with the program.
- Install on as many computers as desired
- Email vessel data and pumping plans to members of docking team
- Technical support through DM Consulting