User Guide for iPhone

Ton Miles Calculator

Available on the App Store

Version: 1.0
Ton Miles Calculator

Disclaimer

These tools and materials are provided 'as is' without warranties of any kind, express or implied.

Please verify the tools provided by this application by yourself before you use them. Ensure you understand the impact of using these tools.

Any use you choose to make of these tools & materials is undertaken by you entirely at your own risk.

Note:

This app was created with an educational proposal to help students and teachers of drilling engineering and has no intention of replace the professional software provided by oil field companies. It is also an useful tool for other professionals in the oilfield, such as technicals and engineers.

Thanks
This application provides an useful tools for use of Wire Rope (Drilling Line) for Oil Field Service and in the drilling engineering schools.

This app was developed based on API Recommended Practice RP 9B.

Applied for Oil Field Operations:

- Round-Trip
- Half Trip
- Short Trip
- Drilling
- Coring
- Setting Casing
- Setting Liner
- Running Riser

Also can be applied for tripping on workover operations

This app was the first application available on the App Store about this ton-miles calculation for drilling operations.
Main Menu

Recommended Practice for a better experience with this tool applied on oil field operations:

1. Select a data file
2. Set the unit system
3. Set rig data parameters
4. Set drilling line parameters
5. For single calculations:
   Access directly the operations
6. For control and historical
   Access “Ton Miles Control”

7. Check the formulas used by this application and compare the results with other applications.
CAPÍTULO 3

Data Files

This app work with the extension *.tmfd

It’s recommended first to create a data file to work with this app and to enable the “Auto Save”.

Data Files on My Device

This application opens only data files in the local documents folder of this application.

iCloud (iOS 7 or greater)
- Use this option to retrieve data files sent to iCloud from other compatible apps on iOS 7 or OS X.
- Use this option also to share data with other apps compatible installed in this device.

iCloud Drive (iOS 8 or greater)
- Use the iCloud Drive option to download/upload data files on iCloud Drive or other storage providers accessible via iCloud Drive interface.

Dropbox (iOS 8 or greater)
Import a data file from Dropbox.

Open in...

Open the selected file with other apps like file managers, storage providers (Dropbox, ...).
SEÇÃO 1

Data File on iCloud

1. Check iCloud Settings
2. iCloud Drive --> ON

User Name
Apple ID

Family information is not available.

Storage
3.4 GB Available

iCloud Drive

iCloud Container:

- Use this option to retrieve data files sent to iCloud from iOS 7 or OS X.

Data Files on iCloud

TM 01 test iCloud Drive.tmdf
TM 01 test iCloud.tmdf
TM 01.tmdf
TM 04 to iCloud iPad.tmdf
**iCloud Driver:**

Use this option to download/upload data files on iCloud Drive or other storage providers accessible via iCloud Drive interface.

1. Use iCloud Drive on a Mac or PC to create a directory to storage your files.
2. Import/export data files with extension (*.tmfd) from/to iCloud Drive.
Accessing other Storage Providers via iCloud Drive interface:
SEÇÃO 2

Data Files on Dropbox

1. Install the Dropbox app on your device
2. Do a login in the Dropbox app

Download from Dropbox:
This tool can only to import from Dropbox provider.

<table>
<thead>
<tr>
<th>File Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>TM 01 test Dropbox.tmdf</td>
</tr>
<tr>
<td>TM 01 test iCloud Drive.tmdf</td>
</tr>
<tr>
<td>TM 01-1.tmdf</td>
</tr>
<tr>
<td>TM 01.tmdf</td>
</tr>
<tr>
<td>TM 02 test Dropbox.tmdf</td>
</tr>
<tr>
<td>TM 02 test iCloud Drive.tmdf</td>
</tr>
<tr>
<td>TM 02 test iCloud.tmdf</td>
</tr>
<tr>
<td>TM 02.tmdf</td>
</tr>
<tr>
<td>TM 04 to iCloud iPad.tmdf</td>
</tr>
<tr>
<td>ton-miles 1.tmdf</td>
</tr>
</tbody>
</table>

Please Install the Dropbox App

With Dropbox installed, you can access all your stuff in your favorite apps, like this one!

Install Dropbox
Upload to Dropbox:

To submit a data file to Dropbox provider, use the **Open In...** button and open it in the Dropbox app:

Current: **TM 02 test Dropbox.tmdf**
SEÇÃO 3

Creating a New File

1. Input the file name in text box and tap on [+ New File] button.
2. Confirm (Yes)
3. The file is created with values = 0.
Open a Data File

When TAP on “Open” button, the data that are on the Data File Highlighted are loaded.

The current text shows the data file open.
**Save As...**

1. Input the File Name in the TextBox.
2. TAP on **Save** button.
3. The data in memory are saved in the data file.
4. This feature is also useful to copy or duplicate a data file.
SEÇÃO 6

Delete a Data File

1. Tap on data file to select.
2. Tap on button.
3. Note: Delete the file selected and not the current file.
Section 7

Send a data file by e-mail

1. Tap on data file to select.
2. Tap on ⌨️ button.
3. Note: Send the file selected and not the current

1. Input the mail address to send:
2. Edit the subject.
Note: Configure an account mail on Mail app

Cancel Ton Miles Calculator Send

To: email_to_send
Cc/Bcc:
Subject: Ton Miles Calculator

> test 4.tmdf
The Unit System

1. Select the units per parameters
2. or select per system: Metric, SI or Oilfield

Note: The unit conversion in this application is OilField based.
### The Rig Data

Set the parameters of rig / equipments
- Rig Name
- Traveling Block Assembly
- Number of Lines in the system
- Draw Work Drum Diameter
- Maker and Model
- Drum Type: Plain or Gloved
- Drilling System: Top Drive or Kelly

#### Note:
All data used in this manual are hypothetical to facilitate the explanation only

<table>
<thead>
<tr>
<th>Rig Data</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rig Name</td>
<td>my rig</td>
</tr>
<tr>
<td>Traveling Block Assembly</td>
<td></td>
</tr>
<tr>
<td>Total Weight</td>
<td>120000 lb</td>
</tr>
<tr>
<td>Number of Lines</td>
<td>12</td>
</tr>
<tr>
<td>Draw Work</td>
<td></td>
</tr>
<tr>
<td>Drum Diameter</td>
<td>36.00 in</td>
</tr>
<tr>
<td>Maker</td>
<td>DW Maker</td>
</tr>
<tr>
<td>Model</td>
<td>DW M</td>
</tr>
<tr>
<td>Drum Type</td>
<td>Plain Gloved</td>
</tr>
<tr>
<td>Drilling System</td>
<td></td>
</tr>
<tr>
<td>Top Drive</td>
<td>Kelly</td>
</tr>
</tbody>
</table>

Traveling Block Assembly includes:
Blocks, Top Drive, Elevator, etc
### The Drilling Line

Set the parameters of the Drilling Line.

#### Drilling Line

<table>
<thead>
<tr>
<th>Nr.</th>
<th>Maker</th>
<th>Diameter</th>
<th>Construction</th>
<th>Original Length</th>
<th>Installation Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>09</td>
<td>wire rope</td>
<td>1.5000 in</td>
<td>6 x 19</td>
<td>2000 ft</td>
<td>01/05/2015</td>
</tr>
</tbody>
</table>

#### Drilling Line

<table>
<thead>
<tr>
<th>Units</th>
<th>Ton Miles to Slip</th>
<th>Length to Slip</th>
<th>Ton Miles to Cut Off</th>
<th>Length to Cut Off</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>4000 TM</td>
<td>100.00 ft</td>
<td>12000 TM</td>
<td>300.00 ft</td>
</tr>
</tbody>
</table>

#### Drilling Line

<table>
<thead>
<tr>
<th>Units</th>
<th>Cumulative to Slip</th>
<th>Cumulative to Cut Off</th>
<th>Length on Reel</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>650 TM</td>
<td>7500 TM</td>
<td>2000.0 ft</td>
</tr>
</tbody>
</table>
CAPÍTULO 7

Ton Miles for Tripping

1. Set the parameters of the drill string and depths.
2. Select the operation for calculations:
   - Round Trip or Half Trip
   - Complete or Short Trip

Round Trip

\[ T_r = \frac{D(L_s + D)W_m}{10,560,000} + \frac{D(M + \frac{1}{2} C)}{2,640,000} \]

\( T_r \) = ton-miles [weight in short tons (2,000 lb) times distance moved in miles]
\( D \) = measured depth of drill string, ft.
\( L_s \) = length of one drill-pipe stand, ft.
\( W_m \) = effective (buoyed) weight per foot of drill-pipe in drilling fluid, lb.
\( M \) = total weight of traveling block-elevator assembly, lb.
\( C \) = effective (buoyed) weight of bottom hole assembly (BHA) in drilling fluid minus the effective (buoyed) weight of the same length of drill-pipe in drilling fluid, lb.

Half Trip = 1/2 \( T_r \)

Short Trip = \( T_r \), deeper - \( T_r \), shallower

Measured Depth

- 3000.00 ft

Shallower Depth
- 2000.00 ft

Deeper Depth
- 3000.00 ft
## Ton Miles Calculator for iPhone

### DRILLPIPE / TUBING

- **Outer Diameter**: 5.0 inches
- **Nominal Weight**: 19.50 lb/ft
- **Stand Length**: 93.00 ft

### Mud Weight

- **Weight**: 9.50 ppg
- **Blowout Preventer (BF)**: 0.855

### Traveling Block

- **Weight**: 120000 lb

### Ton Miles

- **Ton Miles**: 347.35

### Section Details

<table>
<thead>
<tr>
<th>Section</th>
<th>Length (ft)</th>
<th>Weight (lb)</th>
<th>Effective (lb)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DP/TUB</td>
<td>3326.00</td>
<td>43581.84</td>
<td>37260.80</td>
</tr>
<tr>
<td>HW</td>
<td>558.00</td>
<td>27509.40</td>
<td>23519.49</td>
</tr>
<tr>
<td>DC</td>
<td>1116.00</td>
<td>103787.99</td>
<td>88734.77</td>
</tr>
<tr>
<td>Others</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>5000.00</strong></td>
<td><strong>174879.23</strong></td>
<td><strong>149515.06</strong></td>
</tr>
</tbody>
</table>

### Completion Details

- **Complete/Short Trip**: Complete

### Measured Depth

- **Depth**: 5000.00 ft
Saving the calculations

Tap on Save button to the next view and edit the data.

<table>
<thead>
<tr>
<th>Ton Miles</th>
<th>347.35</th>
<th>Round Trip</th>
</tr>
</thead>
</table>

**By** toolpusher  **Date** 2015-05-16

**Well Name** well 100

**Well Depth** 5000.00 ft

**Operation** round trip to change drill bit

**Safety Factor** 10 %  **TM w/ SF** 382.08

After editing the parameters, tap on Add To Control:

<table>
<thead>
<tr>
<th>Ton Miles</th>
<th>347.35</th>
<th>Round Trip</th>
</tr>
</thead>
</table>

**By** toolpusher  **Date** 2015-05-16

**Well Name** well 100

**Well Depth** 5000.00 ft

**Operation** round trip to change drill bit

**Safety Factor** 10 %  **TM w/ SF** 382.08

**Add To Control**

<table>
<thead>
<tr>
<th>Cumulative To Slip</th>
<th>0 / 4000</th>
<th></th>
<th>Cumulative To Cut Off</th>
<th>0 / 12000</th>
<th>Line Length on Reel</th>
<th>2000.0 ft</th>
</tr>
</thead>
</table>

Current 1 / 1

<table>
<thead>
<tr>
<th>Item</th>
<th>Date</th>
<th>Description</th>
<th>Type</th>
<th>Ton Miles</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>May 14, 2015</td>
<td>starting new reel</td>
<td>Comment</td>
<td>0.00</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Item</th>
<th>Date</th>
<th>Description</th>
<th>Type</th>
<th>Ton Miles</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>2015-05-16</td>
<td>round trip to change drill bit...</td>
<td>Round Trip</td>
<td>382.08</td>
</tr>
</tbody>
</table>
Set the parameters of the drill string and depths.

Ton Miles for Drilling

Ton Miles for Drilling

\[ T_r = \frac{D(L_s + D)W_m}{10,560,000} + \frac{D(M + \frac{1}{2} C)}{2,640,000} \]

Tr = ton-miles [weight in short tons (2,000 lb) times distance moved in miles]
D = measured depth, ft.
Ls = length of drill-pipe stand, ft.
Wm = effective (buoyed) weight per foot of drill-pipe in drilling fluid, lb.
M = total weight of traveling block-elevator assembly, lb.
C = effective (buoyed) weight of bottom hole assembly (BHA) in drilling fluid minus the effective (buoyed) weight of the same length of drill-pipe in drilling fluid, lb.

With Kelly:
- with Reaming: \( TM = 3 \times (Tr_{end} - Tr_{start}) \)
- without Reaming: \( TM = 2 \times (Tr_{end} - Tr_{start}) \)

With Top Drive:
- with Reaming: \( TM = 2 \times (Tr_{end} - Tr_{start}) \)
- without Reaming: \( TM = (Tr_{end} - Tr_{start}) \)
**Ton Miles for Drilling**

**Units**

**Save**

**Top Drive**

**Kelly**

**Not**

**Reaming**

**DRILLPIPE**

**Outer Diameter**

5.0000 inches

**Nominal Weight**

19.50 lb/ft

**Stand Length**

93.00 ft

**Mud Weight**

9.50 ppg

**BF**

0.855

**Traveling Block**

120000 lb

**Ton Miles**

78.94

<table>
<thead>
<tr>
<th>Section</th>
<th>Length ft</th>
<th>Weight lb</th>
<th>Effective lb</th>
</tr>
</thead>
<tbody>
<tr>
<td>DP</td>
<td>4326.00</td>
<td>56685.21</td>
<td>48463.69</td>
</tr>
<tr>
<td>HW</td>
<td>558.00</td>
<td>27509.40</td>
<td>23519.49</td>
</tr>
<tr>
<td>DC</td>
<td>1116.00</td>
<td>103787.99</td>
<td>88734.77</td>
</tr>
<tr>
<td>Others</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td></td>
<td>6000.00</td>
<td>187982.59</td>
<td>160717.94</td>
</tr>
</tbody>
</table>

**DC**

<table>
<thead>
<tr>
<th>OD inches</th>
<th>Weight lb/ft</th>
<th>Length ft</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>6.5000</td>
<td>93.00</td>
</tr>
<tr>
<td>2</td>
<td>0.0000</td>
<td>0.00</td>
</tr>
<tr>
<td>3</td>
<td>0.0000</td>
<td>0.00</td>
</tr>
</tbody>
</table>

**DRILLING**

**Measured Depth Start**

5000.00 ft

**Measured Depth End**

6000.00 ft
Saving the calculations

Tap on Save button to the next view and edit the data.

Ton Miles 78.94 Drilling

By toolpusher Date 2015-05-16
Well Name well 100
Well Depth 5000.00 ft
Operation Drilling 5000 @ 6000
Safety Factor 10 % TM w/ SF 86.84

Add To Control

Cumulative To Slip 382 / 4000
Cumulative To Cut Off 382 / 12000
Line Length on Reel 2000.0 ft

Current 2 / 2

<table>
<thead>
<tr>
<th>Item</th>
<th>Date</th>
<th>Description</th>
<th>Type</th>
<th>Ton Miles</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>May 14, 2015</td>
<td>starting new reel</td>
<td>Comment</td>
<td>0.00</td>
</tr>
<tr>
<td>2</td>
<td>2015-05-16</td>
<td>round trip to change drill...</td>
<td>Round Trip</td>
<td>382.08</td>
</tr>
</tbody>
</table>

Ton Miles 78.94 Drilling

By toolpusher Date 2015-05-16
Well Name well 100
Well Depth 5000.00 ft
Operation Drilling 5000 @ 6000
Safety Factor 10 % TM w/ SF 86.84

Add To Control

Cumulative To Slip 469 / 4000
Cumulative To Cut Off 469 / 12000
Line Length on Reel 2000.0 ft

Current 3 / 3

<table>
<thead>
<tr>
<th>Item</th>
<th>Date</th>
<th>Description</th>
<th>Type</th>
<th>Ton Miles</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>May 14, 2015</td>
<td>starting new reel</td>
<td>Comment</td>
<td>0.00</td>
</tr>
<tr>
<td>2</td>
<td>2015-05-16</td>
<td>round trip to change drill...</td>
<td>Round Trip</td>
<td>382.08</td>
</tr>
<tr>
<td>3</td>
<td>2015-05-16</td>
<td>Drilling 5000 @ 6000</td>
<td>Drilling</td>
<td>86.84</td>
</tr>
</tbody>
</table>
Ton Miles for Coring

Set the parameters of the drill string and depths.

\[
T_r = \frac{D(L_s + D)W_m}{10,560,000} + \frac{D(M + \frac{1}{2}C)}{2,640,000}
\]

- \(T_r\) = ton-miles [weight in short tons (2,000 lb) times distance moved in miles]
- \(D\) = measured depth on coring, ft.
- \(L_s\) = length of drill-pipe stand, ft.
- \(W_m\) = effective (buoyed) weight per foot of drill-pipe in drilling fluid, lb.
- \(M\) = total weight of traveling block-elevator assembly, lb.
- \(C\) = effective (buoyed) weight of bottom hole assembly (BHA) in drilling fluid minus the effective (buoyed) weight of the same length of drill-pipe in drilling fluid, lb.

\[
TM = 2 \times (T_r,\text{end} - T_r,\text{start})
\]
**Ton Miles Calculator for iPhone**

### DRILLPIPE

- **Outer Diameter:** 5.0000 inches
- **Nominal Weight:** 19.50 lb/ft
- **Stand Length:** 93.00 ft

**Mud Weight:**
- **Mud Weight:** 9.50 ppg
- **BF:** 0.855

**Traveling Block:** 120000 lb

**Ton Miles:** 8.06

### Section Details

<table>
<thead>
<tr>
<th>Section</th>
<th>Length ft</th>
<th>Weight lb</th>
<th>Effective lb</th>
</tr>
</thead>
<tbody>
<tr>
<td>DP</td>
<td>4376.00</td>
<td>57340.39</td>
<td>49023.84</td>
</tr>
<tr>
<td>HW</td>
<td>558.00</td>
<td>27509.40</td>
<td>23519.49</td>
</tr>
<tr>
<td>DC</td>
<td>1116.00</td>
<td>103787.99</td>
<td>88734.77</td>
</tr>
<tr>
<td>Others</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
</tbody>
</table>

**Total Length:** 6050.00 ft

**Weight Total:** 188637.78 lb

**Effective Weight Total:** 161278.09 lb
**Saving the calculations**

Tap on Save button to the next view and edit the data.

- **Ton Miles:** 8.06
- **Coring**

**Add To Control**

- **Cumulative To Slip:** 469 / 4000
- **Cumulative To Cut Off:** 469 / 12000
- **Line Length on Reel:** 2000.0 ft

**Current:** 3 / 3

---

**Ton Miles Calculator for iPhone**

**Ton Miles:** 8.06  Coring

**By:** toolpusher  **Date:** 2015-05-16

- **Well Name:** well 100
- **Well Depth:** 6050 ft
- **Operation:** Coring 6000 @ 6050
- **Safety Factor:** 10 %  **TM w/ SF:** 8.87

**Add To Control**

- **Cumulative To Slip:** 478 / 4000
- **Cumulative To Cut Off:** 478 / 12000
- **Line Length on Reel:** 2000.0 ft

**Current:** 4 / 4

---

<table>
<thead>
<tr>
<th>Item</th>
<th>Date</th>
<th>Description</th>
<th>Type</th>
<th>Ton Miles</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>May 14, 2015</td>
<td>starting new reel</td>
<td>Comment</td>
<td>0.00</td>
</tr>
<tr>
<td>2</td>
<td>2015-05-16</td>
<td>round trip to change drill...</td>
<td>Round Trip</td>
<td>382.08</td>
</tr>
<tr>
<td>3</td>
<td>2015-05-16</td>
<td>Drilling 5000 @ 6000</td>
<td>Drilling</td>
<td>86.84</td>
</tr>
<tr>
<td>4</td>
<td>2015-05-16</td>
<td>Coring 6000 @ 6050</td>
<td>Coring</td>
<td>8.87</td>
</tr>
</tbody>
</table>
Ton Miles for Setting Casing

Set the parameters of the drill string and depths.

Running Casing

\[ TM = \frac{1}{2} \times \left( \frac{D(L_{cs} + D)W_{cm}}{10,560,000} + \frac{DM}{2,640,000} \right) \]

- \( Tr \) = ton-miles [weight in short tons (2,000 lb) times distance moved in miles]
- \( D \) = total casing length, ft.
- \( L_{cs} \) = length of one casing joint, ft.
- \( W_{cm} \) = effective (buoyed) weight per foot of one casing joint in drilling fluid, lb.
- \( M \) = total weight of traveling block-elevator assembly, lb.
### Ton Miles Calculator for Casing

**Units**

- **Average Length /joint**: 36 ft
- **Weight /joint**: 1: 47.00 lb/ft, 2: 0.00 lb/ft
- **Total Length**: 1: 6000.00 ft, 2: 0.00 ft
- **Mud Weight**: 9.50 ppg
- **Buoyancy Factor**: 0.855
- **Traveling Block**: 120000 lb

**Save**

- **Ton Miles**: 205.27

**By** toolpusher  **Date**: 2015-05-17

**Well Name**: well 100

**Well Depth**: 6050.00 ft

**Operation**: casing @ 6000

**Safety Factor**: 10%  **TM w/ SF**: 225.80

---

### Add To Control

- **Cumulative To Slip**: 478 / 4000
- **Cumulative To Cut Off**: 478 / 12000
- **Line Length on Reel**: 2000.00 ft

### Current

- **4 / 4**

---

### Saving the calculations

Tap on Save button to the next view and edit the data.
Ton Miles Calculator for iPhone

www.wellcontrol.com.br

Ton Miles Calculator for iPhone

Ton Miles with Landing String to Setting Casing, normally on Subsea stack operations (deep water):

\[ TM = \frac{1}{2} \times \left( \frac{D(L_{cs} + D)W_{cm} + DM}{10,560,000 + 2,640,000} \right) \]

- \( Tr \) = ton-miles [weight in short tons (2,000 lb) times distance moved in miles]
- \( D \) = total casing length, ft.
- \( Lcs \) = length of one casing joint, ft.
- \( Wcm \) = effective (buoyed) weight per foot of one casing joint in drilling fluid, lb.
- \( M \) = total weight of traveling block-elevator assembly, lb.

2. Landing String with Casing / Liner

\[ TM = \frac{1}{2} \times \left( \frac{D(L_s + D)W_m + D(M + \frac{1}{2} C)}{10,560,000 + 2,640,000} \right) \]

- \( D \) = landing string length, ft.
- \( Ls \) = length of landing string stand, ft.
- \( Wm \) = effective weight per foot, lb (of one pipe)
- \( C \) = effective (buoyed) weight of excess BHA plus total casing/liner weight in drilling fluid, lb.

3. Landing String Tripping out (half trip)

\[ TM = \frac{1}{2} \times \left( \frac{D(L_s + D)W_m + D(M + \frac{1}{2} C)}{10,560,000 + 2,640,000} \right) \]

- \( C \) = effective (buoyed) weight of excess BHA, lb.

Add To Control

- Cumulative To Slip: 704 / 4000
- Cumulative To Cut Off: 704 / 12000
- Line Length on Reel: 2000.0 ft
- Current: 5 / 5

<table>
<thead>
<tr>
<th>Item</th>
<th>Date</th>
<th>Description</th>
<th>Type</th>
<th>Ton Miles</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>2015-05-16</td>
<td>round trip to change drill...</td>
<td>Round Trip</td>
<td>382.08</td>
</tr>
<tr>
<td>3</td>
<td>2015-05-16</td>
<td>Drilling 5000 @ 6000</td>
<td>Drilling</td>
<td>86.84</td>
</tr>
<tr>
<td>4</td>
<td>2015-05-16</td>
<td>Coring 6000 @ 6050</td>
<td>Coring</td>
<td>8.87</td>
</tr>
<tr>
<td>5</td>
<td>2015-05-17</td>
<td>casing @ 6000</td>
<td>Casing</td>
<td>225.80</td>
</tr>
</tbody>
</table>
Ton Miles Calculator for iPhone

**Ton Miles for Casing**

- **Average Length / joint**: 36.00 ft
- **Weight / joint**: 1: 47.00 lb/ft, 2: 0.00 lb/ft
- **Total Length**: 1: 4000.00 ft, 2: 0.0 ft
- **Mud Weight**: 9.50 ppg
- **Buoyancy Factor**: 0.855
- **Traveling Block**: 120000 lb

**Editing the Landing String**

- **Tap on icon**

**Landing String**

- **Outer Diameter**: 5.0000 inches
- **Nominal Weight**: 19.50 lb/ft
- **Stand Length**: 93.00 ft

**Stand**

- **Landing String**: 2000.00 ft
- **Casing Length**: 4000.00 ft
- **Casing Shoe**: 6000.00 ft

**Running Casing Joints**: 121.62 ft
**Landing String w/ Casing**: 95.18 ft
**Landing String Tripping out**: 64.73 ft

**Ton Miles**: 281.53 ft
CAPÍTULO 11

Ton Miles for Setting Liner

Set the parameters of the drill string and depths.

1. Running Liner joints

\[ TM = \frac{1}{2} \times \left( \frac{D(L_{cs} + D)W_{cm}}{10,560,000} + \frac{DM}{2,640,000} \right) \]

- \( Tr \) = ton-miles [weight in short tons (2,000 lb) times distance moved in miles]
- \( D \) = total liner length, ft.
- \( L_{cs} \) = length of one liner joint, ft.
- \( W_{cm} \) = effective (buoyed) weight per foot of one liner joint in drilling fluid, lb.
- \( M \) = total weight of traveling block-elevator assembly, lb.

2. Landing String with Casing / Liner

\[ TM = \frac{1}{2} \times \left( \frac{D(L_{s} + D)W_{m}}{10,560,000} + \frac{DM + \frac{1}{2}C}{2,640,000} \right) \]

- \( D \) = landing string length, ft.
- \( L_{s} \) = length of landing string stand, ft.
- \( W_{m} \) = effective weight per foot, lb (of one pipe)
- \( C \) = effective (buoyed) weight of excess BHA plus total casing/liner weight in drilling fluid, lb.

3. Landing String Tripping out (half trip)

\[ TM = \frac{1}{2} \times \left( \frac{D(L_{s} + D)W_{m}}{10,560,000} + \frac{DM + \frac{1}{2}C}{2,640,000} \right) \]

- \( C \) = effective (buoyed) weight of excess BHA, lb.
**Ton Miles for Liner**

- **Average Length /joint**: 36.00 ft
- **Weight /joint**: 1: 26.00 lb/ft, 2: 0.00 lb/ft
- **Total Length**: 1: 2000.0 ft, 2: 0.0 ft
- **Mud Weight**: 9.50 ppg
- **Buoyancy Factor**: 0.855
- **Traveling Block**: 120000 lb

**Landing String**

- **Outer Diameter**: 5.0000 inches
- **Nominal Weight**: 19.50 lb/ft
- **Stand Length**: 93.00 ft

**Additional Measurements**

- **Landing String**: 4000.00 ft
- **Liner Length**: 2000.00 ft
- **Liner Shoe**: 6000.00 ft
- **Running Liner Joints**: 49.74
- **Landing String w/ Liner**: 152.62
- **Landing String Tripping out**: 135.78

**Ton Miles**: 338.14
**Ton Miles Calculator for iPhone**

- **Ton Miles**: 338.14
- **Liner**:

**By** toolpusher  **Date**: 2015-05-17

**Well Name**: well 100

**Well Depth**: 6050.00 ft

**Operation**: Setting Liner @ 6000

**Safety Factor**: 10 %  **TM w/ SF**: 371.96

---

**Add To Control**

<table>
<thead>
<tr>
<th>Cumulative To Slip</th>
<th>1076 / 4000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cumulative To Cut Off</td>
<td>1076 / 12000</td>
</tr>
<tr>
<td>Line Length on Reel</td>
<td>2000.0 ft</td>
</tr>
</tbody>
</table>

**Current**: 6 / 6

<table>
<thead>
<tr>
<th>Item</th>
<th>Date</th>
<th>Description</th>
<th>Type</th>
<th>Ton Miles</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>2015-05-16</td>
<td>Drilling 5000 @ 6000</td>
<td>Drilling</td>
<td>86.84</td>
</tr>
<tr>
<td>4</td>
<td>2015-05-16</td>
<td>Coring 6000 @ 6050</td>
<td>Coring</td>
<td>8.87</td>
</tr>
<tr>
<td>5</td>
<td>2015-05-17</td>
<td>casing @ 6000</td>
<td>Casing</td>
<td>225.80</td>
</tr>
<tr>
<td>6</td>
<td>2015-05-17</td>
<td>Setting Liner @ 6000</td>
<td>Liner</td>
<td>371.96</td>
</tr>
</tbody>
</table>
## Ton Miles for Running Riser

Set the parameters of the drill string and depths.

### Round Trip

\[
T_r = \frac{D(L_r + D)W_m}{10,560,000} + \frac{D(M + \frac{1}{2}C)}{2,640,000}
\]

- \(T_r\) = ton-miles [weight in short tons (2,000 lb) times distance moved in miles]
- \(D\) = total riser length, ft.
- \(L_r\) = length of one riser joint, ft.
- \(W_m\) = effective (buoyed) weight per foot of one riser joint in sea water, lb.
- \(M\) = total weight of traveling block-elevator assembly, lb.
- \(C\) = effective (buoyed) weight of BOP (subsea stack) in sea water, lb.

**Half Trip** = \(1/2 \times T_r\)
## Ton Miles Calculator for iPhone

### Toolpusher: well 100

<table>
<thead>
<tr>
<th>Item</th>
<th>Date</th>
<th>Description</th>
<th>Type</th>
<th>Ton Miles</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>2015-05-16</td>
<td>Drilling 5000 @ 6000</td>
<td>Drilling</td>
<td>86.84</td>
</tr>
<tr>
<td>4</td>
<td>2015-05-16</td>
<td>Coring 6000 @ 6050</td>
<td>Coring</td>
<td>8.87</td>
</tr>
<tr>
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<td>2015-05-17</td>
<td>casing @ 6000</td>
<td>Casing</td>
<td>225.80</td>
</tr>
<tr>
<td>6</td>
<td>2015-05-17</td>
<td>Setting Liner @ 6000</td>
<td>Liner</td>
<td>371.96</td>
</tr>
<tr>
<td>7</td>
<td>2015-05-17</td>
<td>Riser w/ BOP @ 2000</td>
<td>Subsea</td>
<td>132.64</td>
</tr>
</tbody>
</table>

- **Well Name**: well 100
- **Well Depth**: 6050.00 ft
- **Operation**: Riser w/ BOP @ 2000
- **Safety Factor**: 10%
- **TM w/ SF**: 132.64

### Toolpusher: well 100

<table>
<thead>
<tr>
<th>Item</th>
<th>Date</th>
<th>Description</th>
<th>Type</th>
<th>Ton Miles</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>2015-05-16</td>
<td>Coring 6000 @ 6050</td>
<td>Coring</td>
<td>8.87</td>
</tr>
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<td>2015-05-17</td>
<td>casing @ 6000</td>
<td>Casing</td>
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<td>2015-05-17</td>
<td>Setting Liner @ 6000</td>
<td>Liner</td>
<td>371.96</td>
</tr>
<tr>
<td>7</td>
<td>2015-05-17</td>
<td>Riser w/ BOP @ 2000</td>
<td>Subsea</td>
<td>132.64</td>
</tr>
</tbody>
</table>

- **Well Name**: well 100
- **Well Depth**: 6050.00 ft
- **Operation**: Riser w/ BOP @ 2000
- **Safety Factor**: 10%
- **TM w/ SF**: 132.64

---

**Add To Control**

- **Cumulative To Slip**: 1076 / 4000
- **Cumulative To Cut Off**: 1076 / 12000
- **Line Length on Reel**: 2000.0 ft

**Current**: 6 / 6

---

**Add To Control**

- **Cumulative To Slip**: 1208 / 4000
- **Cumulative To Cut Off**: 1208 / 12000
- **Line Length on Reel**: 2000.0 ft

**Current**: 7 / 7
CAPÍTULO 13
Ton Miles Control

Control the ton miles calculations for operational sequence in the oil field.

Note:
The following sequences are just for explanation to show the results of ton miles calculations for different operations.
1. email screenshot and file in csv text format to import by Numbers, Excel, etc

2. open in... a file in csv text format to import by excel

Tap and Drag the finger into the table to show other parameters (column) and to show other items (rows).

Editing an item
for example, select item 2 to edit text of operation

<table>
<thead>
<tr>
<th>2 / 7</th>
<th>Round Trip</th>
</tr>
</thead>
<tbody>
<tr>
<td>round trip to change drill bit</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>May 14, 2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015-05-16</td>
</tr>
<tr>
<td>2015-05-16</td>
</tr>
<tr>
<td>2015-05-17</td>
</tr>
</tbody>
</table>

Ton Miles 382.08
Safety Factor 10 %
TM to Slip 382.08
TM to Cut Off 382.08
Line on Reel 2000.00 ft
Well Name well 100
Well Depth 5000.00 ft

By toolpusher

After editing an item, all items will be recalculated starting on selected item until the last item.
Ton Miles Calculator for iPhone

Ton Miles - Edit Item

Item: 2 / 7  
Date: 2015-05-16

Round Trip: round trip to change drill bit

Ton Miles: 382.08  
Well: well 100

Depth: 5000.00 ft  
By: toolpusher

Traveling Block Weight: 120000 lb

Change the operation:

Round Trip

Ton Miles for Tripping

Units:  
Save:

Round Trip  
Half Trip

DRILLPIPE / TUBING

Outer Diameter: 5.0000 inches
Nominal Weight: 19.50 lb/ft
Stand Length: 93.00 ft

Mud Weight: 9.50 ppg  
BF: 0.855

Traveling Block: 120000 lb

Ton Miles: 347.35

<table>
<thead>
<tr>
<th>Section</th>
<th>Length (ft)</th>
<th>Weight (lb)</th>
<th>Effective (lb)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DP/TUB</td>
<td>3326.00</td>
<td>43581.84</td>
<td>37260.80</td>
</tr>
<tr>
<td>HW</td>
<td>558.00</td>
<td>27509.40</td>
<td>23519.49</td>
</tr>
<tr>
<td>DC</td>
<td>1116.00</td>
<td>103787.99</td>
<td>88734.77</td>
</tr>
<tr>
<td>Others</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td></td>
<td>5000.00</td>
<td>174879.23</td>
<td>149515.06</td>
</tr>
</tbody>
</table>
## Ton Miles Calculator for iPhone

**Ton Miles:** 347.35  
**Round Trip:**

**By:** toolpusher  
**Date:** 2015-05-16  
**Well Name:** well 100  
**Well Depth:** 5000.00 ft  
**Operation:** round trip to new bit  
**Safety Factor:** 10%  
**TM w/ SF:** 382.08  

**Save Item**

- **Cumulative To Slip:** 382 / 4000
- **Cumulative To Cut Off:** 382 / 12000
- **Line Length on Reel:** 2000.0 ft

**Current:** 2 / 7

<table>
<thead>
<tr>
<th>Item</th>
<th>Date</th>
<th>Description</th>
<th>Type</th>
<th>Ton Miles</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>May 14, 2015</td>
<td>starting new reel</td>
<td>Comment</td>
<td>0.00</td>
</tr>
<tr>
<td>2</td>
<td>2015-05-16</td>
<td>round trip to new bit</td>
<td>Round Trip</td>
<td>382.08</td>
</tr>
<tr>
<td>3</td>
<td>2015-05-16</td>
<td>Drilling 5000 @ 6000</td>
<td>Drilling</td>
<td>86.84</td>
</tr>
<tr>
<td>4</td>
<td>2015-05-16</td>
<td>Coring 6000 @ 6050</td>
<td>Coring</td>
<td>8.87</td>
</tr>
<tr>
<td>5</td>
<td>2015-05-17</td>
<td>casing @ 6000</td>
<td>Casing</td>
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<td>6</td>
<td>2015-05-17</td>
<td>Setting Liner @ 6000</td>
<td>Liner</td>
<td>371.96</td>
</tr>
<tr>
<td>7</td>
<td>2015-05-17</td>
<td>Riser w/ BOP @ 2000</td>
<td>Riser</td>
<td>132.64</td>
</tr>
</tbody>
</table>

**TM to Slip:** 1208 / 4000  
**to Cut Off:** 1208 / 12000

**Round Trip**  
round trip to new bit  

**May 14, 2015**

**2015-05-16**

**2015-05-16**

**2015-05-16**

**2015-05-16**

**2015-05-17**

**By:** toolpusher
Inserting an item

for example, select item 4 to insert a **round trip** operation

<table>
<thead>
<tr>
<th>Item</th>
<th>Date</th>
<th>Coring</th>
<th>Depth</th>
<th>Well Name</th>
<th>By</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 / 7</td>
<td>2015-05-16</td>
<td>8.87</td>
<td>6050.00</td>
<td>well 100</td>
<td>toolpusher</td>
</tr>
<tr>
<td></td>
<td>2015-05-17</td>
<td>10%</td>
<td>2000.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2015-05-16</td>
<td>477.79</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2015-05-17</td>
<td>477.79</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

After to insert an item, all items will be recalculated starting on selected item until the last item.

When tap on insert button, is created a default operation to comment with ton miles = 0 and with date, operation, and by name empty to edit.

Select the operation to insert
Ton Miles Calculator for iPhone

**Ton Miles for Tripping**

- **Units**
  - Round Trip
  - Half Trip
  - Complete
  - Short Trip

**Measured Depth**

- 6000.00 ft

**DP/Tubing**

- **HW**
  - Mud Weight: 9.50 ppg
  - BF: 0.855

- **DC**
  - Traveling Block: 120000 lb

**Ton Miles**

- 426.29

---

**Ton Miles**

- 426.29
  - **Round Trip**

**By**

- driller 2

**Date**

- 2015-05-16

**Well Name**

- well 100

**Well Depth**

- 6000 ft

**Operation**

- round trip for coring

**Safety Factor**

- 10%

**TM w/ SF**

- 468.92

**Save Item**

- Cumulative To Slip
  - 938 / 4000

- Cumulative To Cut Off
  - 938 / 12000

- Line Length on Reel
  - 2000.0 ft

**Current**

- 4 / 8

<table>
<thead>
<tr>
<th>Item</th>
<th>Date</th>
<th>Description</th>
<th>Type</th>
<th>Ton Miles</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>May 14, 2015</td>
<td>starting new reel</td>
<td>Comment</td>
<td>0.00</td>
</tr>
<tr>
<td>2</td>
<td>2015-05-16</td>
<td>round trip to new bit</td>
<td>Round Trip</td>
<td>382.08</td>
</tr>
<tr>
<td>3</td>
<td>2015-05-16</td>
<td>Drilling 5000 @ 6000</td>
<td>Drilling</td>
<td>86.84</td>
</tr>
<tr>
<td>4</td>
<td>2015-05-16</td>
<td>round trip for coring</td>
<td>Round Trip</td>
<td>468.92</td>
</tr>
</tbody>
</table>
### Ton Miles Control

<table>
<thead>
<tr>
<th>Item</th>
<th>Date</th>
<th>Operation</th>
<th>Type</th>
<th>Ton Miles</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>May 14, 2015</td>
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<td>Round Trip</td>
<td>468.92</td>
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<td>5</td>
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<td>Liner</td>
<td>371.96</td>
</tr>
<tr>
<td>8</td>
<td>2015-05-17</td>
<td>Riser w/ BOP @ 2000</td>
<td>Riser</td>
<td>132.64</td>
</tr>
</tbody>
</table>

### Deleting an Item

For example, select item 6 to delete.

<table>
<thead>
<tr>
<th>Item</th>
<th>Date</th>
<th>Type</th>
<th>Ton Miles</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>2015-05-16</td>
<td>Setting Casing cas @ 6000</td>
<td>225.80</td>
</tr>
<tr>
<td>7</td>
<td>2015-05-17</td>
<td>Line on Reel</td>
<td>2000.00 ft</td>
</tr>
<tr>
<td>8</td>
<td>2015-05-17</td>
<td>Well Depth</td>
<td>6050.00 ft</td>
</tr>
</tbody>
</table>

After to delete an item, all items will be recalculated starting on selected item until the last item.
Ton Miles Calculator for iPhone

www.wellcontrol.com.br

Ton Miles Control

Units

TM to Slip: 1451 / 4000

to Cut Off: 1451 / 12000

<table>
<thead>
<tr>
<th>Date</th>
<th>Operation</th>
<th>Type</th>
<th>Ton Miles</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015-05-16</td>
<td>Ton Miles</td>
<td>Safety Factor</td>
<td>8.87</td>
</tr>
<tr>
<td>2015-05-16</td>
<td>Coring 6000 @ 6050</td>
<td></td>
<td>10%</td>
</tr>
<tr>
<td>2015-05-17</td>
<td>Drilling 5000 @ 6000</td>
<td>Round Trip</td>
<td>2000.00 ft</td>
</tr>
<tr>
<td>2015-05-17</td>
<td>Setting Liner @ 6000</td>
<td>Liner</td>
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<tr>
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<td>Riser</td>
<td>132.64</td>
</tr>
</tbody>
</table>

Adding a New Item

For example, let’s add a half trip to drilling. After tap on Add button, in the next view, tap on tripping button:

- Traveling Block Weight: 120000 lb
- Ton Miles To Slip: 1451 / 4000
- Ton Miles To Cut Off: 1451 / 12000

Ton Miles - Add New Item

- Comment
- Slip the Line
- Slip and Cut Off
- Tripping
- Drilling
- Coring
- Setting Casing
- Setting Liner
- Running Riser

By toolpusher
Select the HALF TRIP option, edit the parameters and tap on save button:

**Ton Miles for Tripping**  
Units  
Save  

- Round Trip  
- Half Trip  
- Complete  
- Short Trip  

**Measured Depth**  
6000.00 ft

**DP/Tubing**  
**HW**  
**DC**  
**Others**  
**Depth**

- **Mud Weight**  
  9.50 ppg  
  BF 0.855

- **Traveling Block**  
  120000 lb

**Ton Miles**  
213.15

---

**Ton Miles**  
213.15  
Half Trip

**By**  
Driller 2

**Date**  
2015-05-16

**Well Name**  
Well 100

**Well Depth**  
6000.00 ft

**Operation**  
Half trip for drilling

**Safety Factor**  
10 %  
TM w/ SF 234.46

---

**Add To Control**

- **Cumulative To Slip**  
  1686 / 4000

- **Cumulative To Cut Off**  
  1686 / 12000

- **Line Length on Reel**  
  2000.0 ft

---

**Current**  
8 / 8

---

**Item**  | **Date**  | **Description**  | **Type**  | **Ton Miles**
---|---|---|---|---
5 | 2015-05-16 | Coring 6000 @ 6050 | Coring | 8.87
6 | 2015-05-17 | Setting Liner @ 6000 | Liner | 371.96
7 | 2015-05-17 | Riser w/ BOP @ 2000 | Subsea | 132.64
8 | 2015-05-16 | half trip for drilling | Half Trip | 234.46
# Ton Miles Control

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<th>Date</th>
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<th>Ton Miles</th>
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<td>half trip for drilling</td>
<td>Half Trip</td>
<td>234.46</td>
</tr>
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</table>

## Units
- **TM to Slip**: 1686 / 4000
- **to Cut Off**: 1686 / 12000
- **Safety Factor**: 10%
- **TM to Slip**: 1685.76
- **TM to Cut Off**: 1685.76
- **Line on Reel**: 2000.00 ft
- **Well Name**: well 100
- **Well Depth**: 6000.00 ft

*By driller 2*

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### Printing a screenshot

#### Sending By E-Mail

Send a screenshot in PNG and PDF and a csv text format file to import by Numbers, Excel, etc.

#### Open In...

Open a file in csv text format in other application compatibles or share via storage servers like iCloud Drive, Dropbox, Drive, OneDrive, etc.
About

This app was developed based on our experience. There is no comparison with any other software.

Our goal was to create a low-cost application with the help of experts to share with drilling engineers, technicians, drillers, students and teachers of drilling engineering.

There is no intention to replace the professional softwares.

You can contribute with suggestions for improvements, correcting the translation to English, reporting bugs and spreading it to your friends.

Please visit our support url and see other applications for Oil & Gas for iPhone, iPod Touch, iPhone and Mac.