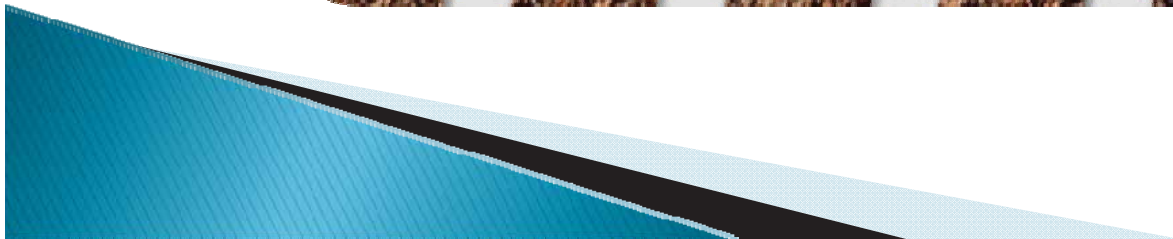


TMS

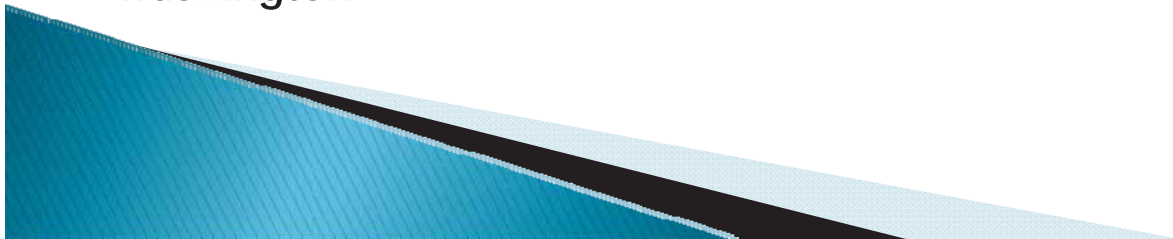
Thursday 2:15 PM April 7, 2011



Log Yard Inventory Measurements

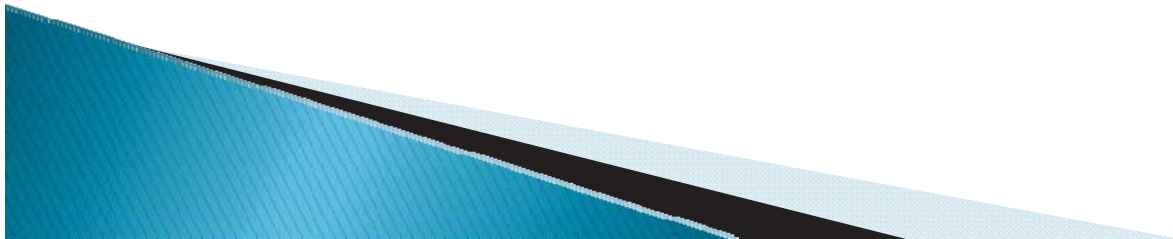
2011 Update

John Calkins,
Check Scaler/Log Quality
Simpson Lumber Company
Tacoma, Shelton, Longview
Washington



Original Goals

1. Improve the Physical Log Deck Measure for more Accurate Log Accounting.
2. Take More Measurements using One Person.
3. Devise a Procedure that is Easy to Understand and Replicate.
4. Devise a Procedure that is Acceptable to Accountants and Auditors.





Commencement
Bay Operations

The Challenge

Mountains to Measure

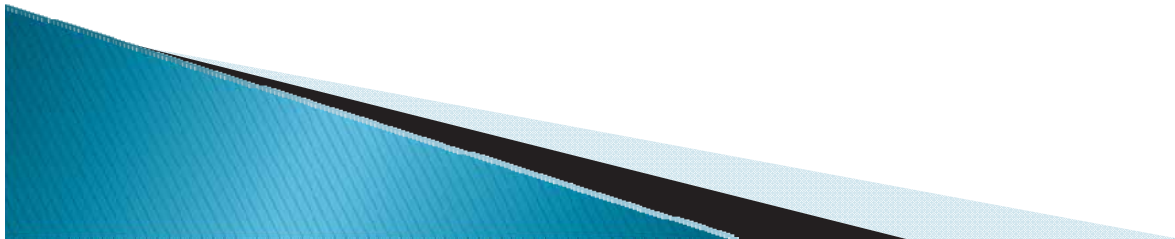


(I Have Found)
There are 3 Accepted Ways to
Inventory Log Decks

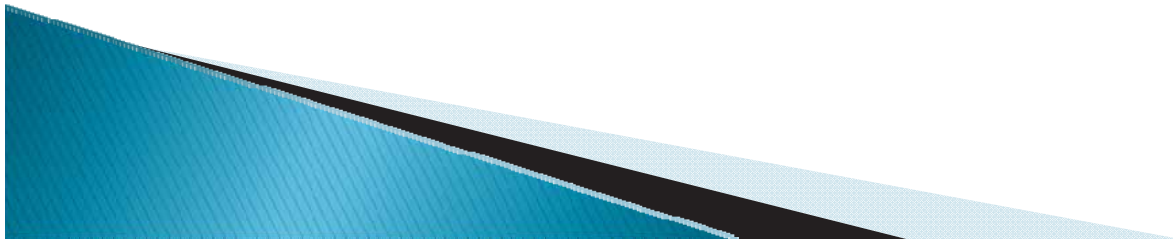
- ▶ 1. Closed Deck: Knowing the exact volumes put into each deck.
- ▶ 2. Load Averages: Counting the Load Receipts in each deck.
- ▶ 3. Square Foot Deck Factors: $\text{Log Deck Volumes} / \text{Log Deck Square Foot Surface Area}$.



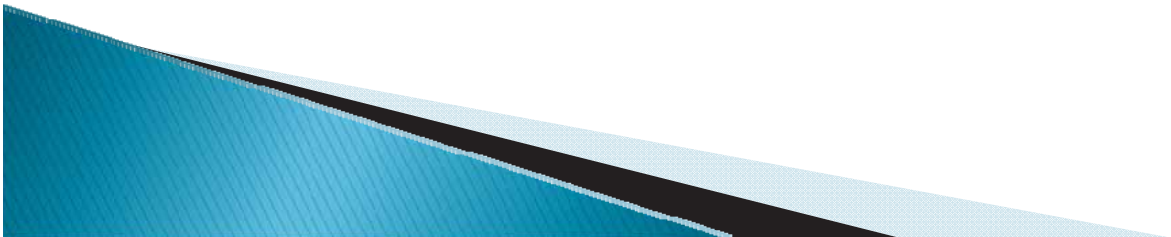
**This is
The Square Foot Deck Factor
Method**



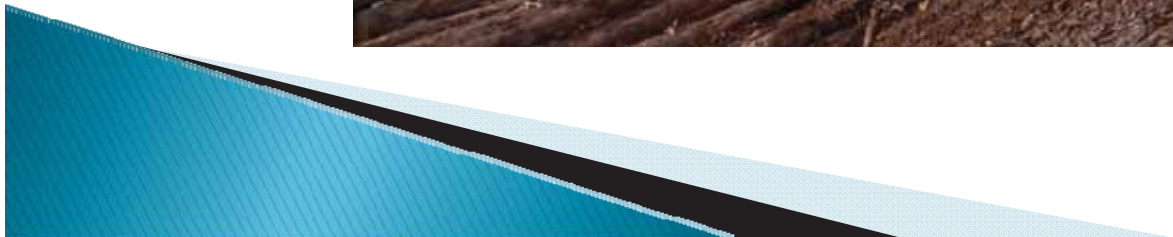
Recognize the Geometric Shapes



Use the Simple Geometric Areas of Right Triangles and Rectangles to figure the Square Foot Surface Area of any Log Deck.

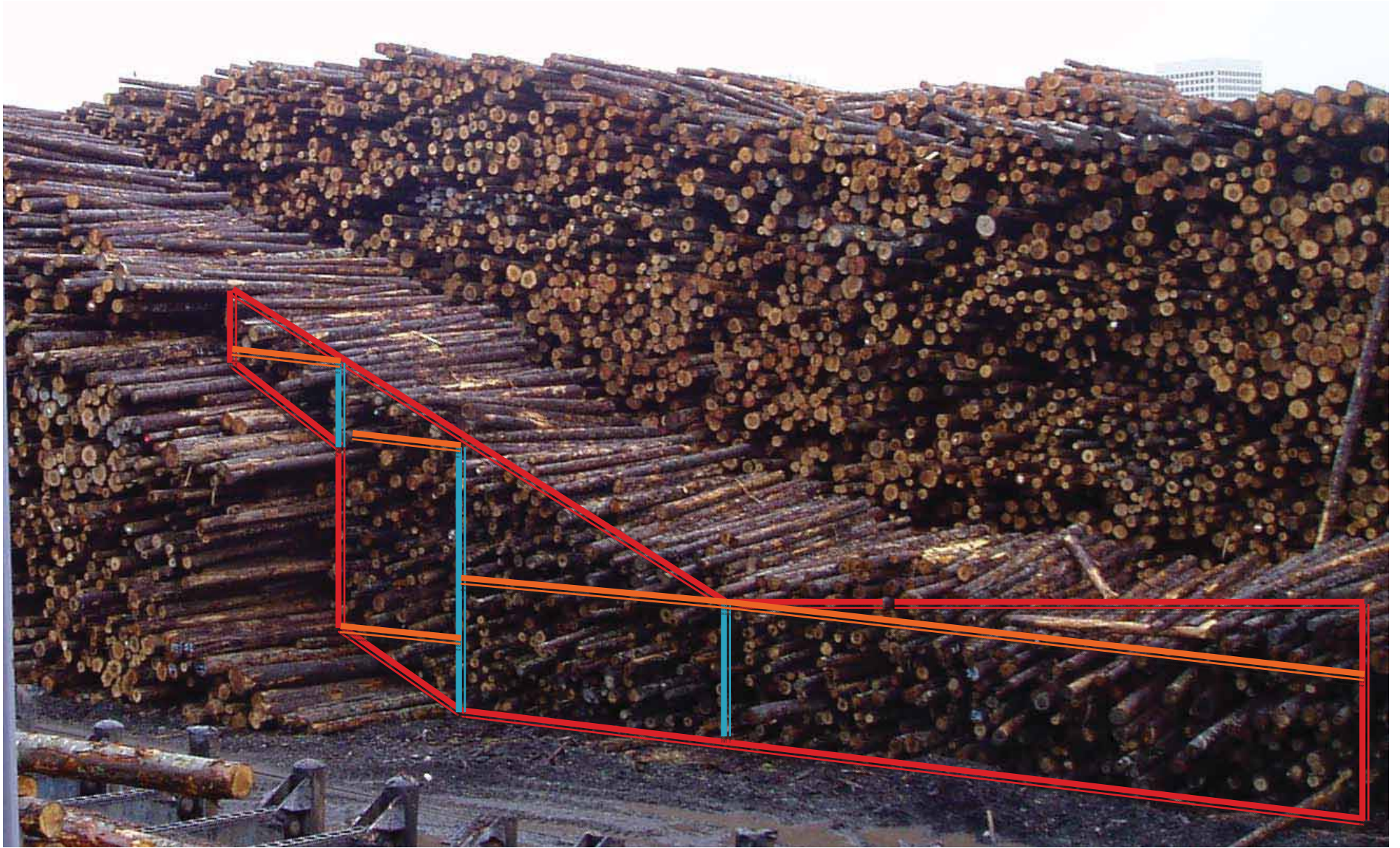


Vantage Points are Key



Learn Why Decks are Built the Way They Are.
Spot the Geometric Shapes.

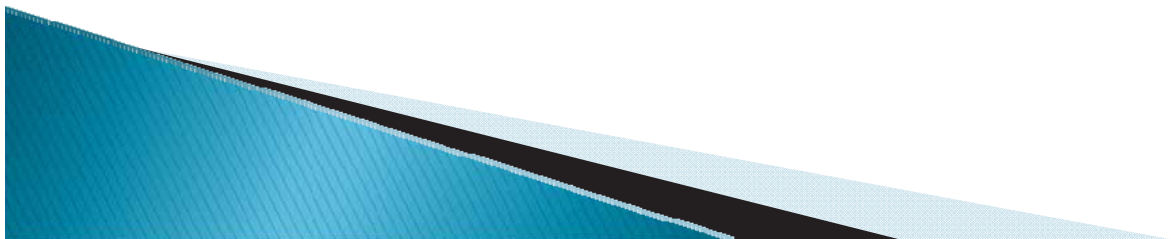




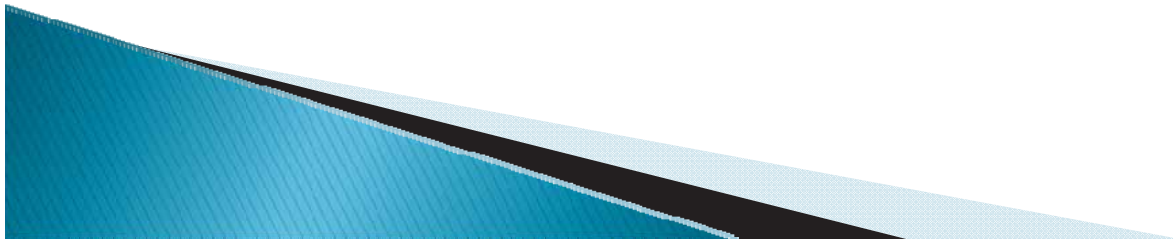
Find the Area of these Right Triangles and Rectangles for the SqFt. Measurement



This method is the easiest to understand even under complex shapes.



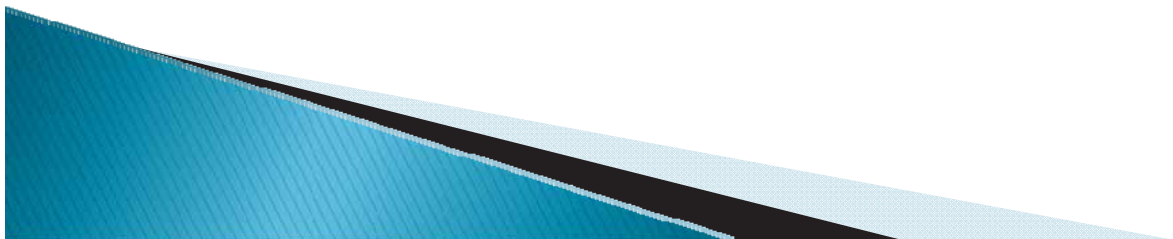
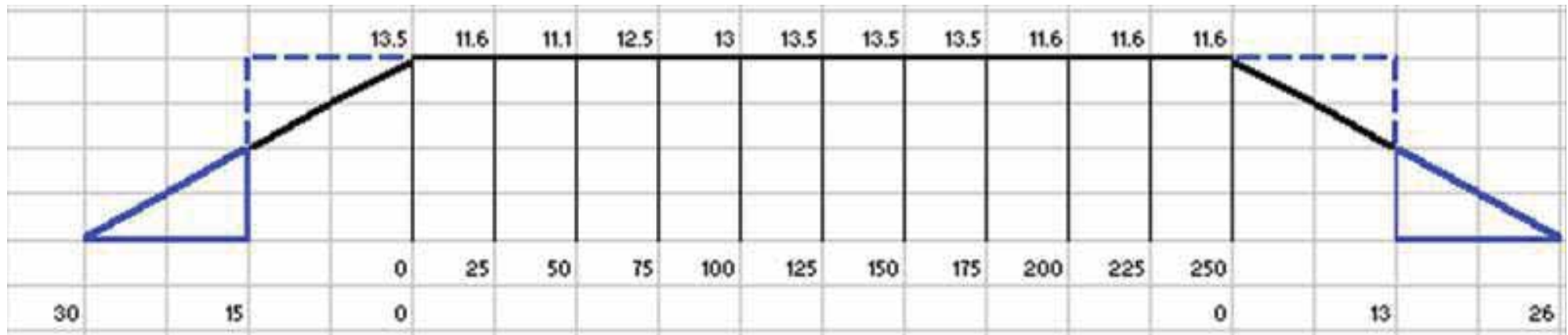
So at what point do we stop measuring the finer detail and use reasonable incremental measurements?



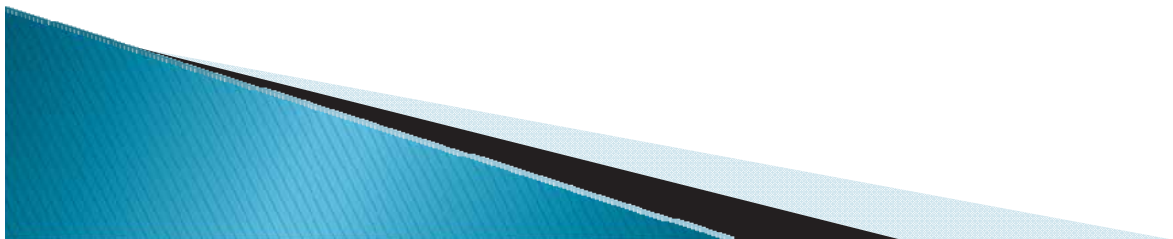
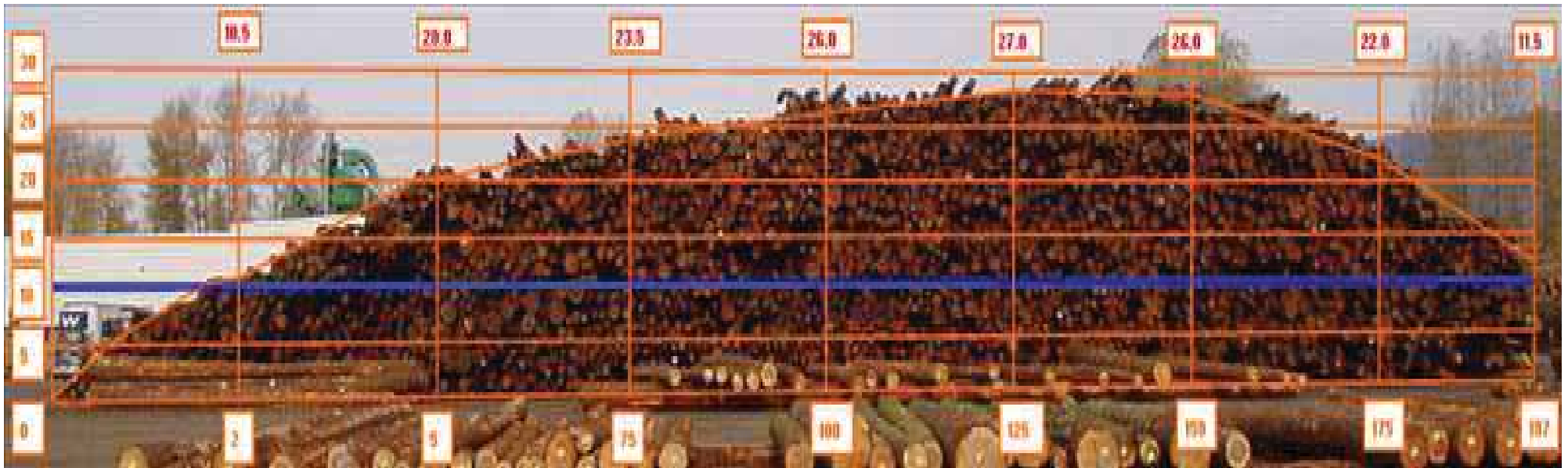
It Time To Use The New Technologies



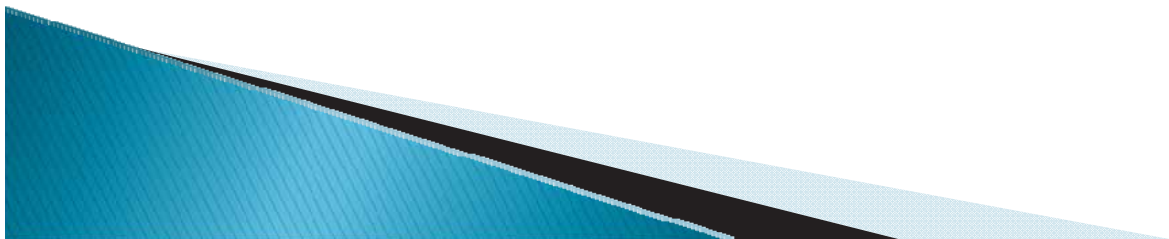
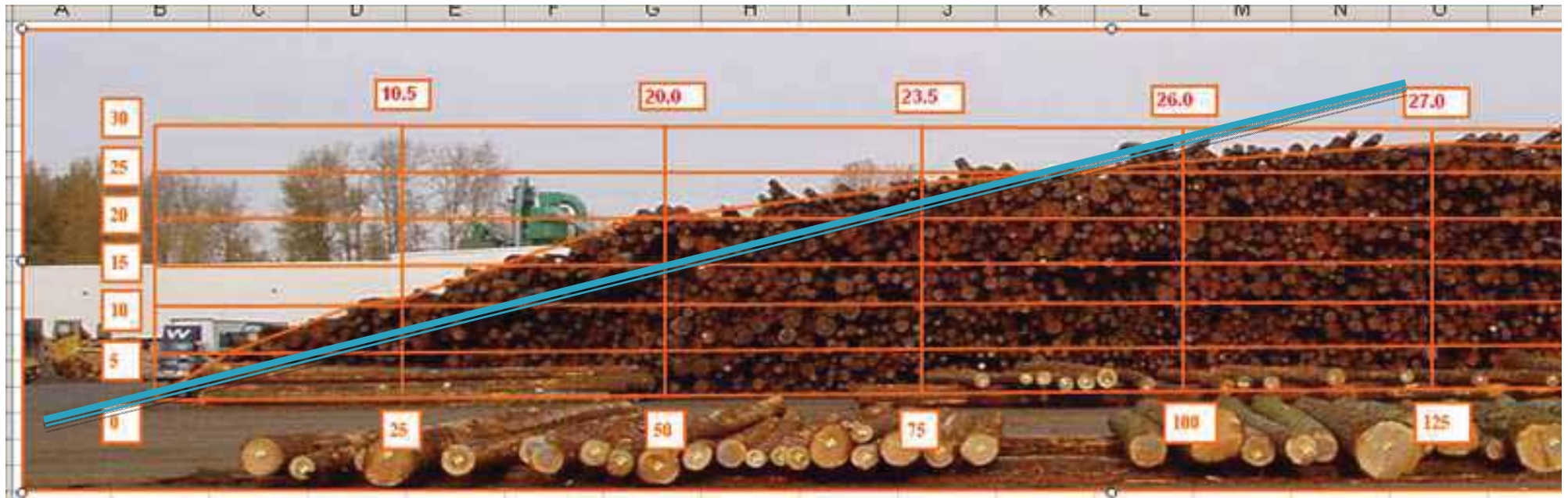
This is an accepted method used to visually fold the triangle ends up in the field then measure at regular intervals to average the top rectangle shape of the deck.



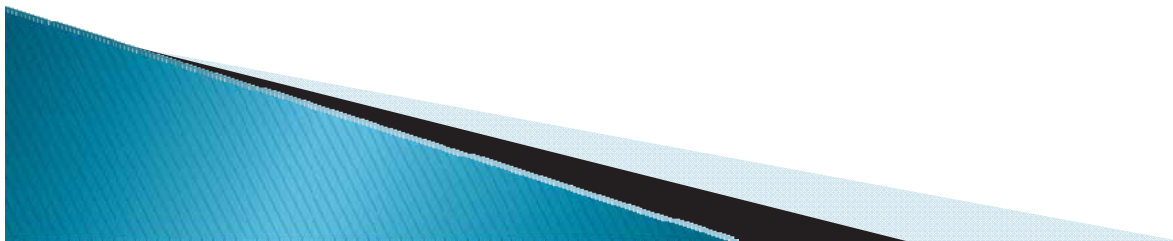
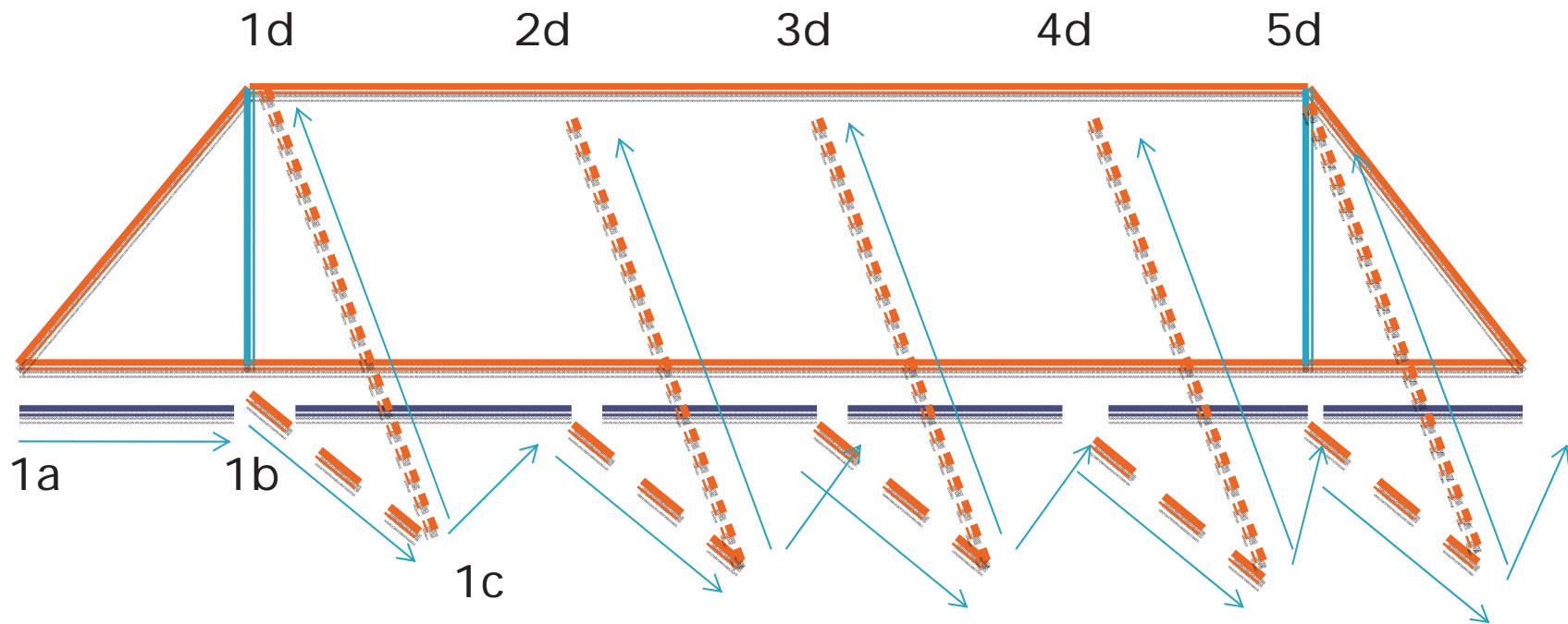
I used a camera and graphs to determine the size of decks by painting physical marks on the decks to line up with the graph.



I broke down the decks into smaller geometric shapes to see how much error there is in visually creating the larger Right Triangle and Rectangle shapes.



Clinometer Procedure

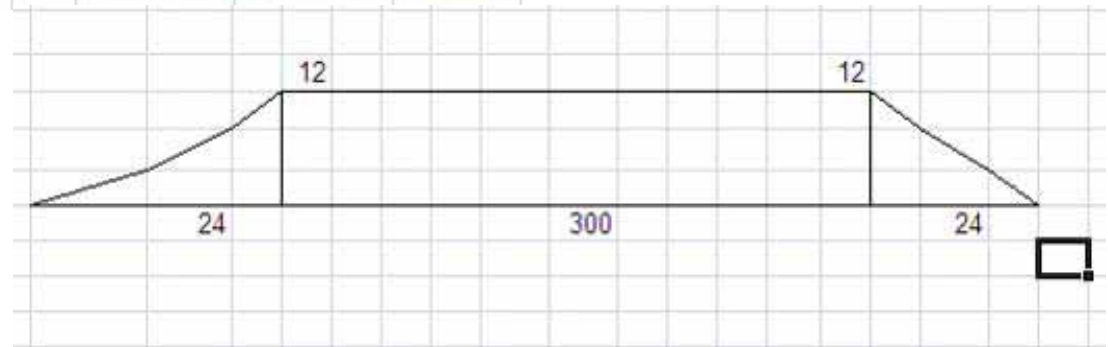


Clinometer and 50' Tape



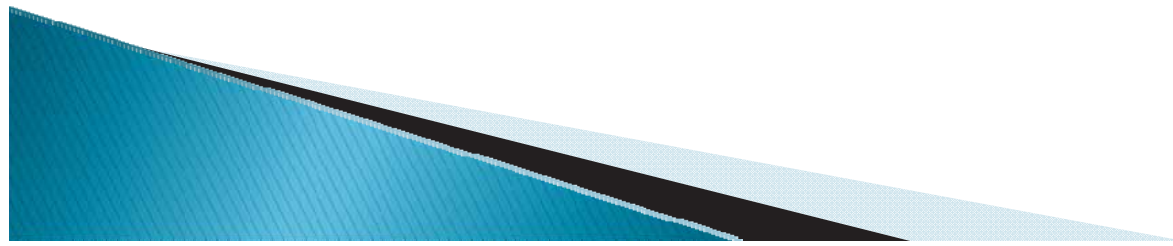
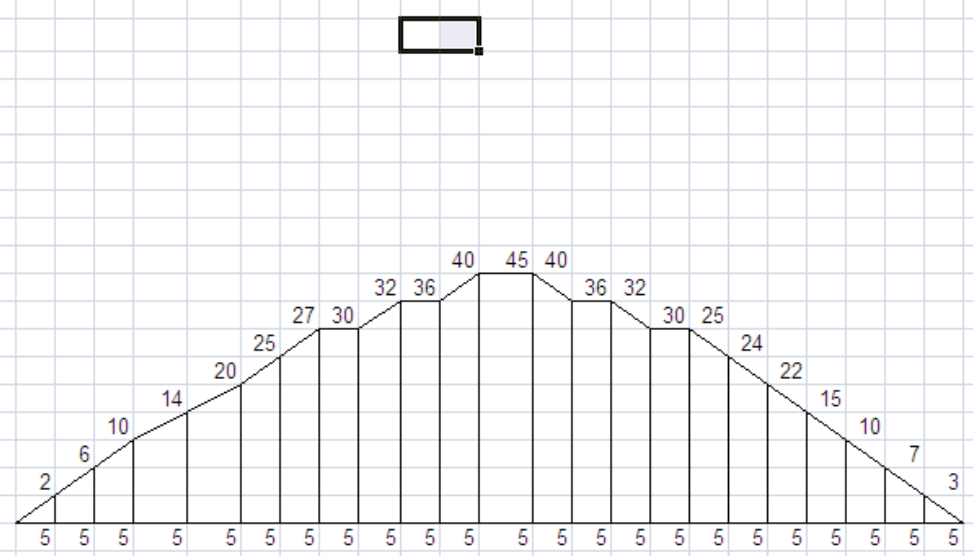
Clinometer Worksheet Method

	A	B	C	D	E	F	G
1	Method 1						
2	Deck Measurements		Clinometer Measurements			Height	
3	Deck Parts	ClinDistToDeck	Down -	Up+	Below Eye	Above Eye	
4	Average Height	25	10	17	4.4	7.6	12.1
5		25	5	24	2.2	11.1	13.3
6		25	3	25	1.3	11.7	13.0
7		25	1	29	0.4	13.9	14.3
8		25	6	28	2.6	13.3	15.9
9		25	2	28	0.9	13.3	14.2
10		25	5	20	2.2	9.1	11.3
11		25	6	19	2.6	8.6	11.2
12		25	5	26	2.2	12.2	14.4
13							
14							
15	Average Deck Height						13.3
16	Big Rectangle Length	390					
17	Triangle 1 Length	34	17				
18	Triangle 2 Length	18	9				
19	Total Deck Length		416		<i>Total Deck Square Feet:</i>		<i>5,529.1</i>



Need More Measurements

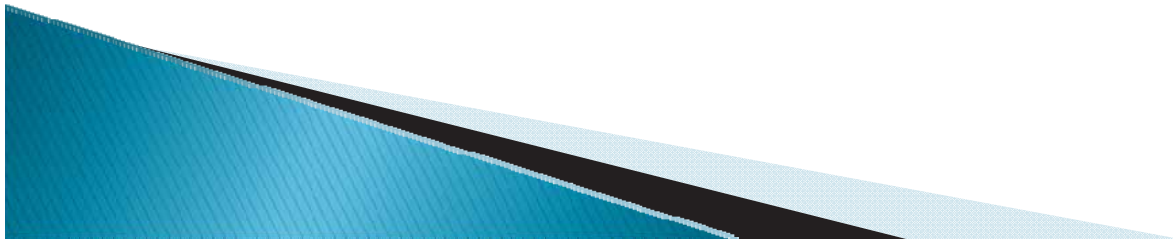
44						
45	Clinometer Measurements			Height	Width	Area
46	Down -	Up+	Below Eye	Above Eye		
47	12	15	5.3	6.7	12.0	0
48	12		5.3	-	5.3	0
49	12		5.3	-	5.3	0
50	12		5.3	-	5.3	0
51	12		5.3	-	5.3	0
52	12		5.3	-	5.3	0
53	12		5.3	-	5.3	0
54	12		5.3	-	5.3	0
55	12		5.3	-	5.3	0
56	12		5.3	-	5.3	0
57	12		5.3	-	5.3	0
58	12		5.3	-	5.3	0
59	12		5.3	-	5.3	0
60	12		5.3	-	5.3	0
61	12		5.3	-	5.3	0
62	12		5.3	-	5.3	0
63	12		5.3	-	5.3	0
64	12		5.3	-	5.3	0
65	12		5.3	-	5.3	0
66	12		5.3	-	5.3	0
67	12		5.3	-	5.3	0
68	12		5.3	-	5.3	0
69						
70						0
71						



Constantly Changing



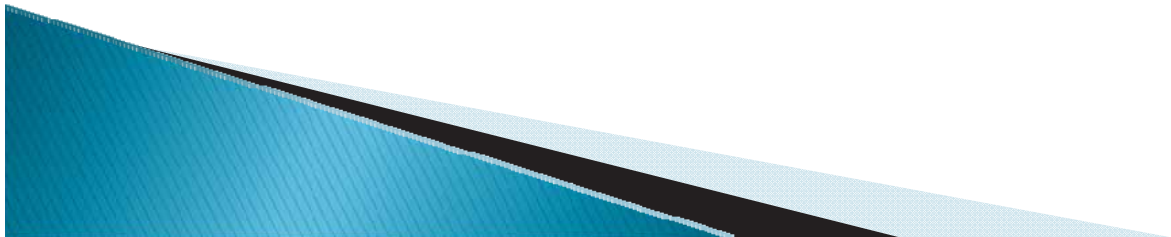
Inaccessible



TruePulse360 Rangefinder



TP 360 – Nomad – GPS





The TP 360 appeared be the ultimate device for my project

TruPulse® 360 for Stockpile Volumes

Traditional methods require your crew to hold a prism pole and occupy areas of a large pile of loose material. Some areas make this impossible, which causes lack of detail and poor results. This process can be time-consuming and dangerous.

Arranging for an aerial fly-over is not only expensive, but you'll usually wait days, even weeks for the results. Finally, there's a quick, safe and easy solution to measuring stockpile volumes! Take the TruPulse 360, in conjunction with LTI's MapSmart™ with volume software, and you'll be able to accurately measure the volume of aggregates, wood chips or anything else. A single operator can quickly gather and record data from a safe distance, with results possible in less than an hour with the TruPulse 360. Having the combination of a hand-held compass/laser and a compact data collector, it doesn't get any easier or more portable than this. With zero setup time, you can find a safe location and start collecting field data immediately.





Measurement Solutions:

- Distance (Horizontal, Vertical, Slope)
- Inclination (Degrees and Percent Slope)
- Height (Flexible three-shot routine)
- Azimuth (Compass bearing for single-shot positioning)
- Missing Line (Distance, Inclination and Azimuth between any two remote points)

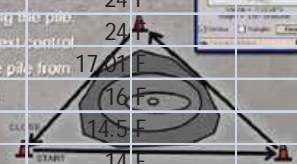
Basic Specifications:

- Distance Accuracy: ±1 ft (30 cm) typical, ±1 yd (1 m) max
- Inclination Accuracy: ±0.25 degrees
- Azimuth Accuracy: ±1 degree typical
- Data Communication: Serial, via wired RS232 (standard) or wireless Bluetooth® (optional)
- Max Range: ± 3,280ft (1,000 m) typical



Measure a stockpile with LTI's easy-to-use MapSmart™ Volumetrics software. Here's how you can measure more accurately:

- Temporarily marking control points the perimeter of the surface of the stockpile.
- Open a new MapSmart file to start a new measurement.
- Aim and shoot the laser at the first control point.
- After collecting your last data point, aim and shoot at the next control point and then occupy that location.
- Continue shooting the pile from each control point until the entire surface is measured.
- Once you have closed your traverse, material density and press CALC to view volume results.



5 D	-14.8 D	19 F*43
1 D	-14.8 D	19 F*45
6 D	-14.7 D	18.5 F*4B
2 D	-15.4 D	12.01 F*7B
9.8 D	-9.5 D	23 F*43
7 D	-7.7 D	23.5 F*4D
1.5 D	-2.3 D	26.5 F*49
4.1 D	-4.4 D	24.01 F*4F
6.8 D	-4.9 D	24 F*49
9.4 D	-4.8 D	24.5 F*4E
13.6 D	-4.5 D	17.01 F*7F
14.2 D	-3.8 D	16 F*76
14.9 D	-4.6 D	14.5 F*74
15.1 D	-5.7 D	14 F*7D
15.2 D	-5.9 D	15.01 F*70
17 D	-4.6 D	24.01 F*7E
18.4 D	-3.8 D	18.5 F*7C
349.9 D	-0.7 D	28.5 F*4A
351.6 D	-3.8 D	19.01 F*40
352.6 D	-3.9 D	18.5 F*42
351.4 D	-4.1 D	18.5 F*4C
349.1 D	-4.3 D	18.01 F*42
347.4 D	-5.2 D	16 F*49
9.9 D	-4 D	5.5 F*4E

Understand the Devices

Section 5 - Measurement Modes

When you power ON the TruPulse, the last used Measurement Mode is displayed. Press the **MEMO** button to display the previous or next Measurement Mode. For information on the measurements that the TruPulse can take, see page 37.

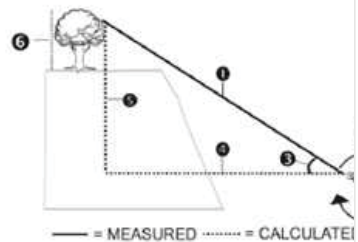


Fig.

Distance Measurements

The basic steps for taking any distance measurement are:

1. Look through the eyepiece and use the crosshair to aim at the target.
2. Press-and-hold the **MEMO** button. The LASER status indicator will remain active for a maximum of 10 seconds.
 - o If the target is not acquired in the 10-second period, the LASER status indicator will turn off.
3. Once the measurement is displayed, release the **MEMO** button. The LASER status indicator will turn off, indicating the measurement was downloaded. Press any button or the unit powers off.

Firmware Version: A=3.05, b=3.35 [Manual DRAFT E: Upd

During the Height Routine:

- Press the **MEMO** button to re-shoot the previous point.
- Press the **MEMO** button to exit the Height Routine.
- The laser is not active while measuring the ANG1 and ANG2. As long as you hold the **MEMO** button, the inclination reading is displayed. Your aiming point changes. The measured inclination is displayed when you release the **MEMO** button.
- When the height result is displayed, just press the **MEMO** button to start the next routine.

Missing Line Routine

The Missing Line Routine calculates distances and angles to describe the relationship between two points in three-dimensional space (connecting vector). This routine is ideal for span lengths, remote slope determinations, and changes in elevation from one location.

The simple routine prompts you to take two shots to targets: "Shot 1" and "Shot 2". The TruPulse uses the results to calculate five variables between the two points: slope distance, inclination, azimuth, horizontal distance, and vertical distance as shown in Figure #23.

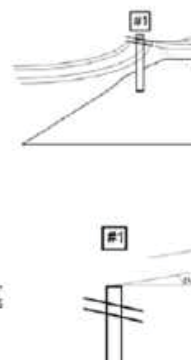


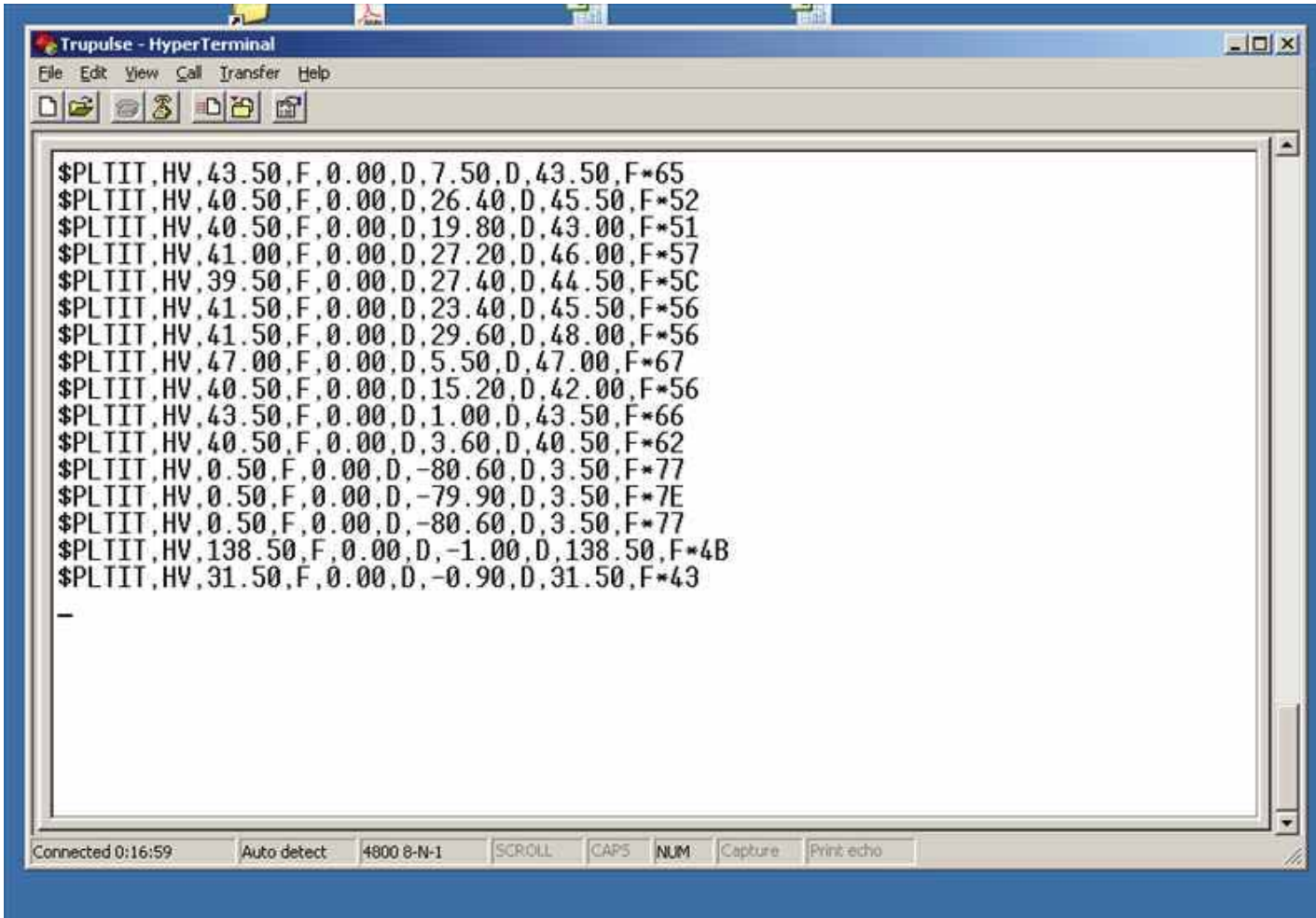
Fig.

- o HD: Horizontal Distance: Horizontal component of the missing line.
- o VD: Vertical Distance: Change in elevation between point #1 and point #2.
- o SD: Slope Distance: Length of the missing line.
- o INC: Inclination between point #1 and point #2.
- o AZ: Relative Azimuth: Direction from the point #1 to point #2.

Firmware Version: A=3.05, b=3.35 [Manual DRAFT E: Upd

	A	B	C	D	E	F	G	H	I	J	K	L
1	SPLTIT	HV	18.5 F	14.5 D	-14.8 D	19 F	**43					
2	SPLTIT	HV	18 F	13.1 D	-14.8 D	19 F	**45					
3	SPLTIT	HV	18 F	11.6 D	-14.7 D	18.5 F	**48					
4	SPLTIT	HV	12.01 F	3.2 D	-15.4 D	12.01 F	**78					
5	SPLTIT	HV	22.5 F	9.8 D	-9.5 D	23 F	**43					
6	SPLTIT	HV	23.5 F	7 D	-7.7 D	23.5 F	**40					
7	SPLTIT	HV	26.5 F	7.5 D	-2.3 D	26.5 F	**49					
8	SPLTIT	HV	24.01 F	4.1 D	-4.4 D	24.01 F	**4F					
9	SPLTIT	HV	24 F	6.8 D	-4.9 D	24 F	**49					
10	SPLTIT	HV	24 F	9.4 D	-4.8 D	24.5 F	**4E					
11	SPLTIT	HV	17.01 F	13.6 D	-4.5 D	17.01 F	**7F					
12	SPLTIT	HV	16 F	14.2 D	-3.8 D	16 F	**76					
13	SPLTIT	HV	14.5 F	14.9 D	-4.6 D	14.5 F	**74					
14	SPLTIT	HV	14 F	15.1 D	-5.7 D	14 F	**7D					
15	SPLTIT	HV	15.01 F	15.2 D	-5.9 D	15.01 F	**70					
16	SPLTIT	HV	24.01 F	17 D	-4.6 D	24.01 F	**7E					
17	SPLTIT	HV	18.5 F	18.4 D	-3.8 D	18.5 F	**7C					
18	SPLTIT	HV	28.5 F	349.9 D	-0.7 D	28.5 F	**4A					
19	SPLTIT	HV	19.01 F	351.6 D	-3.8 D	19.01 F	**40					
20	SPLTIT	HV	18.5 F	352.6 D	-3.9 D	18.5 F	**42					
21	SPLTIT	HV	18.5 F	351.4 D	-4.1 D	18.5 F	**4C					
22	SPLTIT	HV	18.01 F	349.1 D	-4.3 D	18.01 F	**42					
23	SPLTIT	HV	16 F	347.4 D	-5.2 D	16 F	**49					
24	SPLTIT	HV	5.5 F	9.9 D	-4 D	5.5 F	**4E					
25	SPLTIT	HV	5.5 F	9.1 D	-4.2 D	5.5 F	**44					
26	SPLTIT	HV	5 F	6.9 D	-5.4 D	5 F	**44					
27	SPLTIT	HV	5 F	4 D	-5.4 D	5 F	**4F					
28	SPLTIT	HV	5 F	2.2 D	-4.9 D	5 F	**47					
29	SPLTIT	HV	5 F	1.1 D	-4.9 D	5 F	**47					
30	SPLTIT	HV	23.01 F	5.1 D	-4.9 D	23.01 F	**43					
31	SPLTIT	HV	23.5 F	356.6 D	-2.6 D	23.5 F	**48					
32	SPLTIT	HV	23 F	352.5 D	-2.9 D	23 F	**40					

TP360 Data Collection



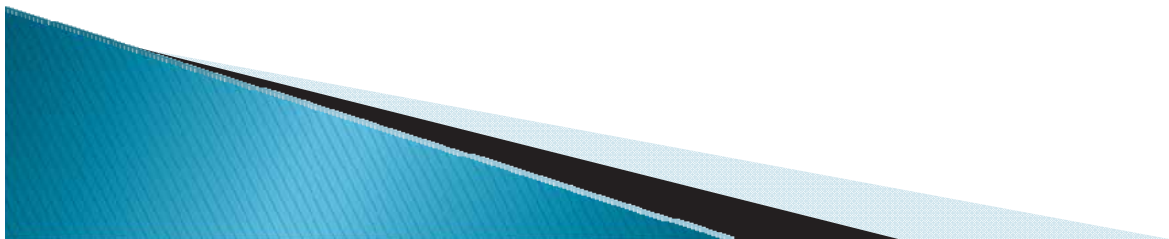
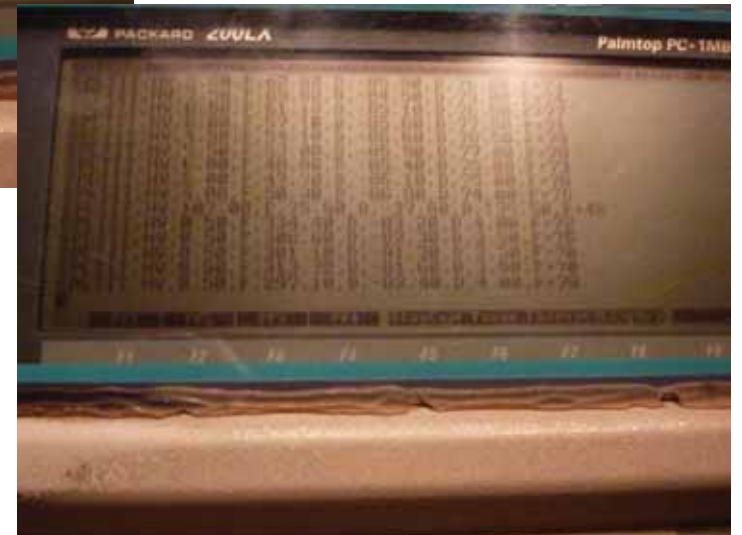
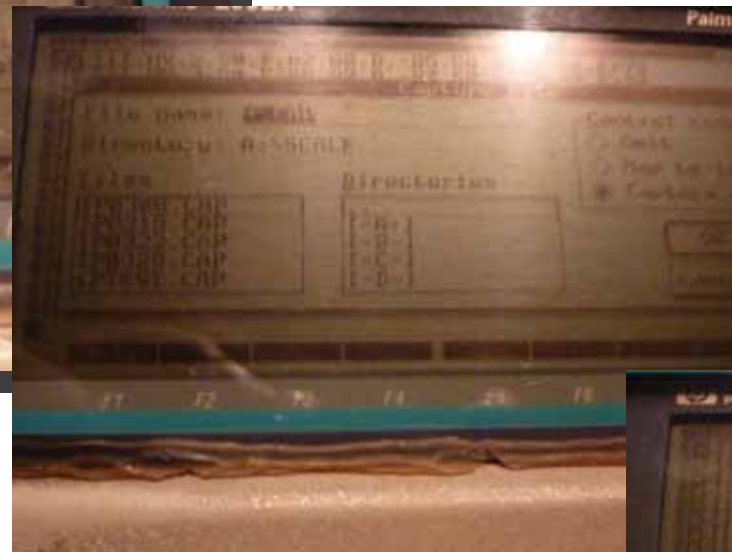
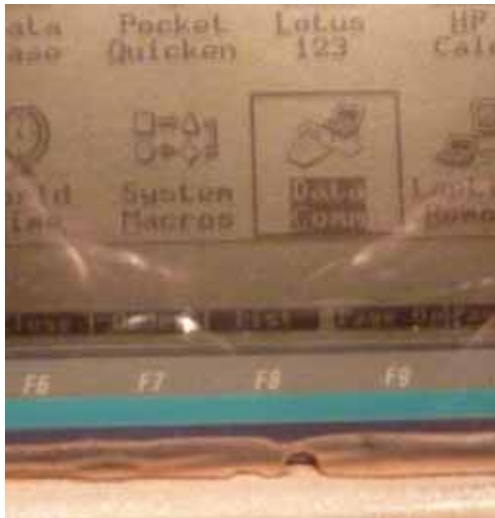
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$PLTIT,HV,40.50,F,0.00,D,19.80,D,43.00,F*51
$PLTIT,HV,41.00,F,0.00,D,27.20,D,46.00,F*57
$PLTIT,HV,39.50,F,0.00,D,27.40,D,44.50,F*5C
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$PLTIT,HV,138.50,F,0.00,D,-1.00,D,138.50,F*4B
$PLTIT,HV,31.50,F,0.00,D,-0.90,D,31.50,F*43
-
```

Connected 0:16:59 Auto detect 4800 8-N-1 SCROLL CAPS NUM Capture Print echo

Deck Measurement Tools



HP200 Data Comm



HP200 Data Collection

119.60,D,-81.10,D,4.00,F*7C

24.3 TRANSFILE WIN 200

186 File Disk Tree View HP Palmtop Options Help

186 [C-] C:\HP200* [C-] C:_DAT*

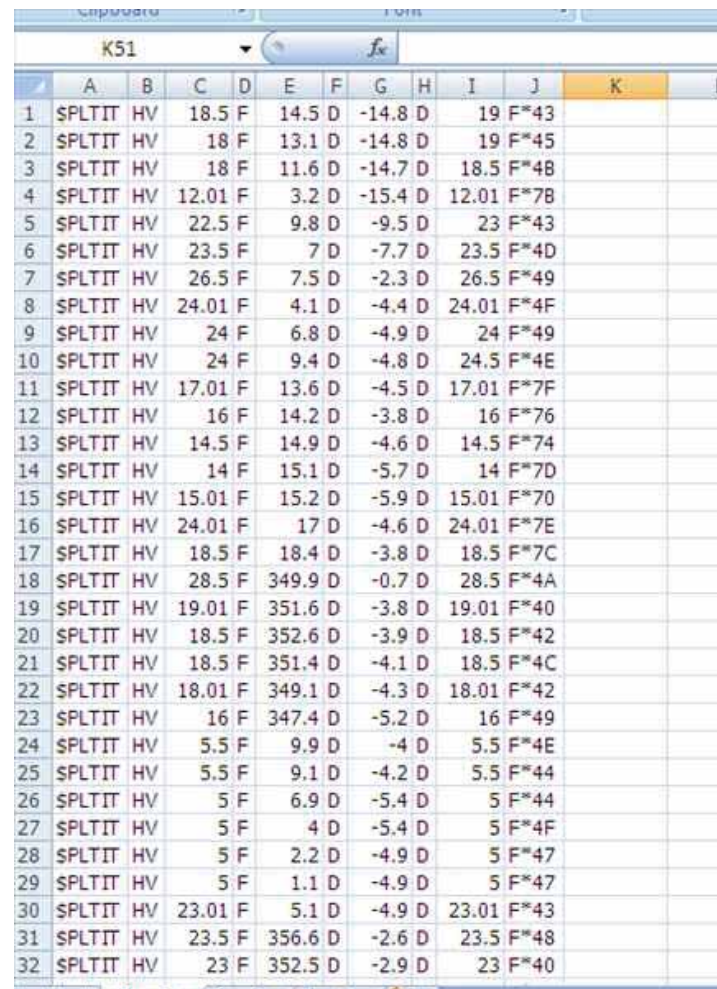
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0436 .TXT	9417	02/13/08	19:58
0437 .TXT	9198	02/13/08	19:57
0438 .TXT	9636	02/13/08	19:57
0439 .TXT	6351	02/13/08	19:57
0440 .TXT	1111	02/13/08	20:17
0441 .TXT	6194	02/13/08	20:50
0442 .TXT	1332	02/13/08	20:49
0452 .TXT	7962	03/11/08	09:12
0460 .TXT	6816	03/11/08	09:36
0461 .TXT	6636	03/11/08	09:13
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DOWJONES.DCF	628	06/01/93	12:56
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MCI .DCF	628	06/01/93	12:56
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PHONE .PDB	4096	04/18/94	12:03
NOTES .MDB	20560	02/28/94	10:40
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APPT .ADB	2155	10/20/09	08:37
APPTEK .ENV	170	10/20/09	08:30
FILER .ENV	165	11/05/07	13:02
TP200910.CAP	1465	10/20/09	09:05
TERM .ENV	82	10/20/09	09:13

135 file(s), 1392462 Bytes 15 file(s), 46640 Bytes

Press F1 for Help. NUM

TruPulse Datastring in an Excel Sheet

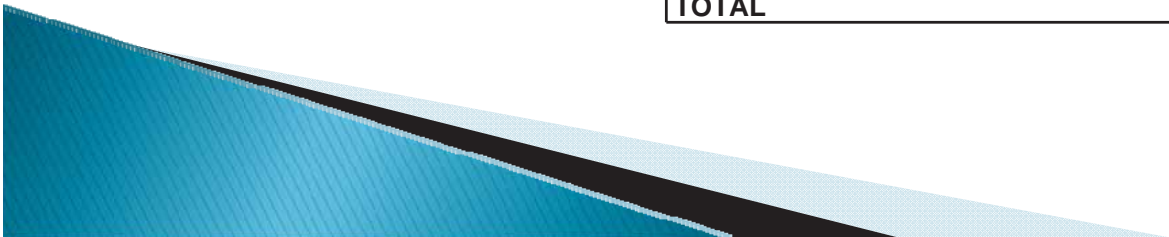


	A	B	C	D	E	F	G	H	I	J	K	L
1	SPLTIT	HV	18.5	F	14.5	D	-14.8	D	19	F*43		
2	SPLTIT	HV	18	F	13.1	D	-14.8	D	19	F*45		
3	SPLTIT	HV	18	F	11.6	D	-14.7	D	18.5	F*48		
4	SPLTIT	HV	12.01	F	3.2	D	-15.4	D	12.01	F*78		
5	SPLTIT	HV	22.5	F	9.8	D	-9.5	D	23	F*43		
6	SPLTIT	HV	23.5	F	7	D	-7.7	D	23.5	F*40		
7	SPLTIT	HV	26.5	F	7.5	D	-2.3	D	26.5	F*49		
8	SPLTIT	HV	24.01	F	4.1	D	-4.4	D	24.01	F*4F		
9	SPLTIT	HV	24	F	6.8	D	-4.9	D	24	F*49		
10	SPLTIT	HV	24	F	9.4	D	-4.8	D	24.5	F*4E		
11	SPLTIT	HV	17.01	F	13.6	D	-4.5	D	17.01	F*7F		
12	SPLTIT	HV	16	F	14.2	D	-3.8	D	16	F*76		
13	SPLTIT	HV	14.5	F	14.9	D	-4.6	D	14.5	F*74		
14	SPLTIT	HV	14	F	15.1	D	-5.7	D	14	F*70		
15	SPLTIT	HV	15.01	F	15.2	D	-5.9	D	15.01	F*70		
16	SPLTIT	HV	24.01	F	17	D	-4.6	D	24.01	F*7E		
17	SPLTIT	HV	18.5	F	18.4	D	-3.8	D	18.5	F*7C		
18	SPLTIT	HV	28.5	F	349.9	D	-0.7	D	28.5	F*4A		
19	SPLTIT	HV	19.01	F	351.6	D	-3.8	D	19.01	F*40		
20	SPLTIT	HV	18.5	F	352.6	D	-3.9	D	18.5	F*42		
21	SPLTIT	HV	18.5	F	351.4	D	-4.1	D	18.5	F*4C		
22	SPLTIT	HV	18.01	F	349.1	D	-4.3	D	18.01	F*42		
23	SPLTIT	HV	16	F	347.4	D	-5.2	D	16	F*49		
24	SPLTIT	HV	5.5	F	9.9	D	-4	D	5.5	F*4E		
25	SPLTIT	HV	5.5	F	9.1	D	-4.2	D	5.5	F*44		
26	SPLTIT	HV	5	F	6.9	D	-5.4	D	5	F*44		
27	SPLTIT	HV	5	F	4	D	-5.4	D	5	F*4F		
28	SPLTIT	HV	5	F	2.2	D	-4.9	D	5	F*47		
29	SPLTIT	HV	5	F	1.1	D	-4.9	D	5	F*47		
30	SPLTIT	HV	23.01	F	5.1	D	-4.9	D	23.01	F*43		
31	SPLTIT	HV	23.5	F	356.6	D	-2.6	D	23.5	F*48		
32	SPLTIT	HV	23	F	352.5	D	-2.9	D	23	F*40		

TP360 Worksheet

S5				
LGTH	DOWN	UP	HEIGHT	SqFt
-	3.5	(3.5)	-	
14.0	3.5	6.0	9.5	67
8.0	3.5	5.5	9.0	74
23.0	3.5	(3.5)	-	104
TOTAL				244

S7				
LGTH	DOWN	UP	HEIGHT	SqFt
-	5.5	(5.5)	-	
27.0	5.5	4.5	10.0	135
23.4	5.5	5.0	10.5	240
23.4	6.0	3.5	9.5	234
23.4	6.0	4.0	10.0	228
23.4	5.5	6.0	11.5	251
23.4	4.5	5.5	10.0	251
23.4	5.0	5.0	10.0	234
23.4	6.0	7.0	13.0	269
23.4	6.0	7.5	13.5	310
42.0	6.0	(6.0)	-	221
TOTAL				2,372

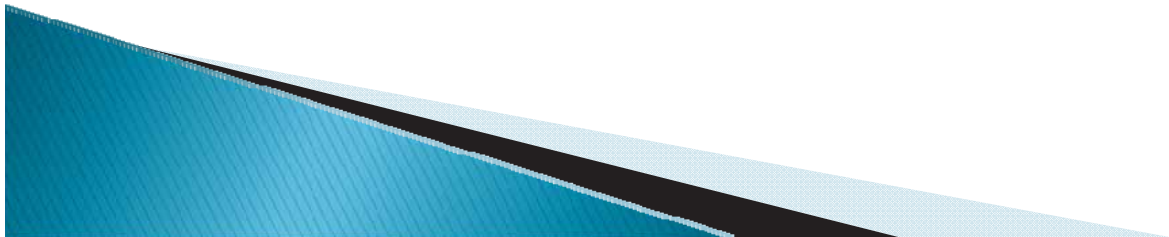


Voice Data Collection and HP200 on the Crane

C1S NEW				
LGTH	DOWN	UP	HEIGHT	SqFt
-	4.0	(4.0)	-	
17.0	4.0	9.0	13.0	110.5
18.0	4.0	9.5	13.5	238.5
18.0	4.5	7.0	11.5	225.0
18.0	5.0	8.5	13.5	225.0
18.0	5.0	12.0	17.0	274.5
18.0	4.5	12.5	17.0	306.0
18.0	4.5	10.5	15.0	288.0
24.0	4.5	(4.5)	-	180.0
149.0				
TOTAL				1,847.5

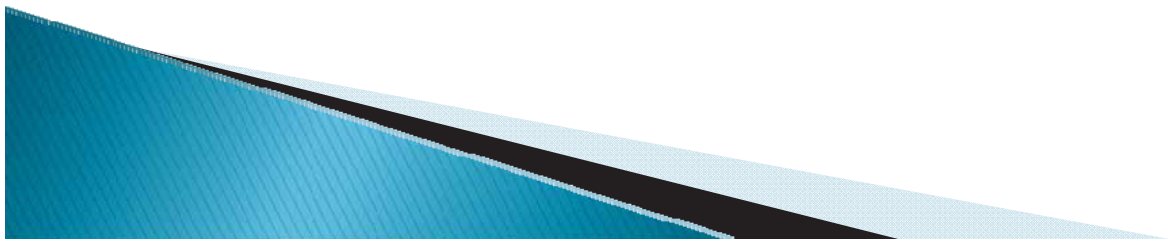
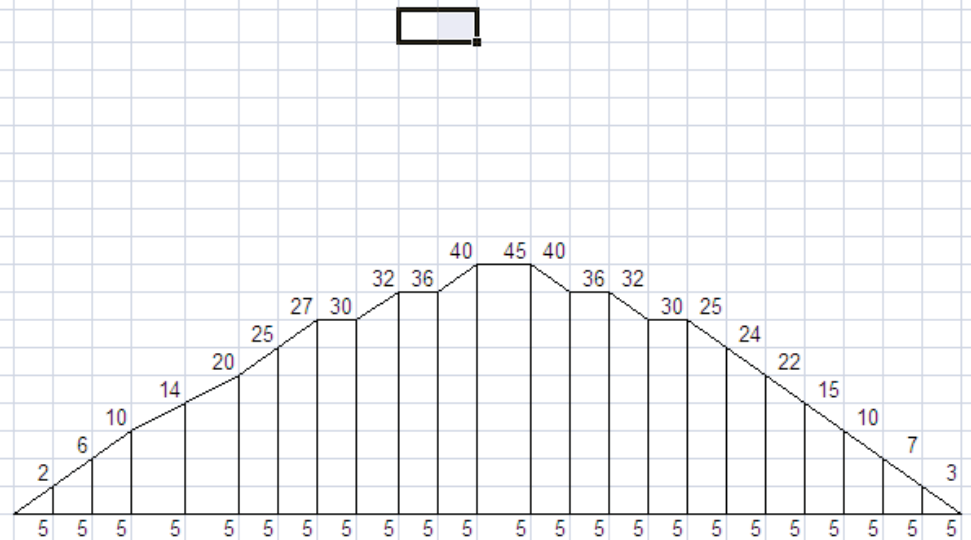
**UNDER
CONSTRUCTION
in 2009**

C1S NEW			
73.0	8.0	8.3	66.2
71.5	9.5	8.3	78.6
68.0	13.0	8.3	107.6
69.5	11.5	8.3	95.2
67.0	14.0	8.3	115.9
69.5	11.5	8.3	95.2
70.0	11.0	8.3	91.1
68.0	13.0	8.3	107.6
68.0	13.0	8.3	107.6
65.5	15.5	8.3	128.3
65.5	15.5	8.3	128.3
68.5	12.5	8.3	103.5
66.0	15.0	8.3	124.2
64.0	17.0	8.3	140.7
66.5	14.5	8.3	120.0
65.5	15.5	8.3	128.3
70.0	11.0	8.3	91.1
73.5	7.5	8.3	62.1
COUNT	18.0		
Lgth	149.0		
Int	8.3		
SqFt			1,891.5



More is Better

Clinometer Measurements				Height	Width	Area
Down -	Up+	Below Eye	Above Eye			
47	12	15	5.3	6.7	12.0	0
48	12		5.3	-	5.3	0
49	12		5.3	-	5.3	0
50	12		5.3	-	5.3	0
51	12		5.3	-	5.3	0
52	12		5.3	-	5.3	0
53	12		5.3	-	5.3	0
54	12		5.3	-	5.3	0
55	12		5.3	-	5.3	0
56	12		5.3	-	5.3	0
57	12		5.3	-	5.3	0
58	12		5.3	-	5.3	0
59	12		5.3	-	5.3	0
60	12		5.3	-	5.3	0
61	12		5.3	-	5.3	0
62	12		5.3	-	5.3	0
63	12		5.3	-	5.3	0
64	12		5.3	-	5.3	0
65	12		5.3	-	5.3	0
66	12		5.3	-	5.3	0
67	12		5.3	-	5.3	0
68	12		5.3	-	5.3	0
69						
70						0
71						



Crane Operator Interface

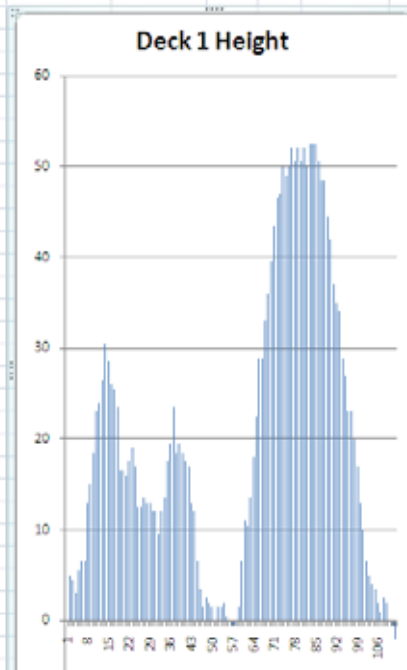


Mounted a TP200

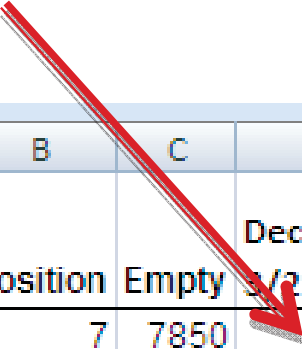


Crane Data

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	AB	AC	AD	AE	AF	AG
Deck	Position	Empty	Deck #1 3/28/2011	Deck 1 Height	Length	Length Running Total	Sqft	Sqft Running Total		Row Labels	Sum of Sqft		Row Labels	21-Feb	28-Feb	7-Mar	14-Mar	21-Mar	28-Mar	
C1N	7	7850	7201	6.49	6.3	37.8	40.9	195.2		C3N	8,341		C2S	10,671	10,659	10,077	4,391			
C1N	8	7850	6550	13	6.3	44.1	81.9	277.1		C3S	9,176		C3N	2,082		4,624	5,944	5,768	8,341	
C1N	9	7850	6350	15	6.3	50.4	94.5	371.6		C4N	7,869		C3S	11,362	10,882	10,485	10,723	9,183	9,176	
C1N	10	7850	6000	18.5	6.3	56.7	116.6	488.2		C4M	769		C4N	9,012	8,316	8,392	8,609	8,281	7,869	
C1N	11	7850	5550	23	6.3	63.0	144.9	633.1		C4S			C4M			296			769	
C1N	12	7850	5450	24	6.3	69.3	151.2	784.3		(blank)			C4S		2,054	2,463	3,988	3,988		
C1N	13	7850	5200	26.5	6.3	75.6	167.0	951.2		Grand Total	40,515		Grand Total	64,061	55,882	52,104	46,226	44,563	40,515	
C1N	14	7850	4800	30.5	6.3	81.9	192.2	1,143.4												
C1N	15	7850	5000	28.5	6.3	88.2	179.6	1,322.9												
C1N	16	7850	5250	26	6.3	94.5	163.8	1,486.7												
C1N	17	7850	5300	25.5	6.3	100.8	160.7	1,647.4												
C1N	18	7850	5500	23.5	6.3	107.1	148.1	1,795.4												
C1N	19	7850	6200	16.5	6.3	113.4	104.0	1,899.4												
C1N	20	7850	6200	16.5	6.3	119.7	104.0	2,003.3												
C1N	21	7850	6250	16	6.3	126.0	100.0	2,104.1												
C1N	22	7850	6100	17.5	6.3	132.3	110.3	2,214.4												
C1N	23	7850	5950	19	6.3	138.6	119.7	2,334.1												
C1N	24	7850	6150	17	6.3	144.9	107.1	2,441.2												
C1N	25	7850	6600	12.5	6.3	151.2	78.8	2,519.9												
C1N	26	7850	6600	12.5	6.3	157.5	78.8	2,598.7												
C1N	27	7850	6501	13.49	6.3	163.8	85.0	2,683.7												
C1N	28	7850	6550	13	6.3	170.1	81.9	2,765.6												
C1N	29	7850	6550	13	6.3	176.4	81.9	2,847.5												
C1N	30	7850	6650	12	6.3	182.7	75.6	2,923.1												
C1N	31	7850	6650	12	6.3	189.0	75.6	2,998.7												
C1N	32	7850	6901	9.49	6.3	195.3	59.8	3,058.5												
C1N	33	7850	6650	12	6.3	201.6	75.6	3,134.1												
C1N	34	7850	6500	13.5	6.3	207.9	85.1	3,219.1												
C1N	35	7850	6101	17.49	6.3	214.2	110.2	3,329.3												
C1N	36	7850	5900	19.5	6.3	220.5	122.9	3,452.1												
C1N	37	7850	5500	23.5	6.3	226.8	148.1	3,600.2												
C1N	38	7850	6000	18.5	6.3	233.1	116.6	3,716.7												
C1N	39	7850	5900	19.5	6.3	239.4	122.9	3,839.6												
C1N	40	7850	6000	18.5	6.3	245.7	116.6	3,956.1												
C1N	41	7850	6100	17.5	6.3	252.0	110.3	4,066.4												
C1N	42	7850	6150	17	6.3	258.3	107.1	4,173.5												
C1N	43	7850	6550	13	6.3	264.6	81.9	4,255.4												
C1N	44	7850	6650	12	6.3	270.9	75.6	4,331.0												
C1N	45	7850	7200	6.5	6.3	277.2	41.0	4,371.9												

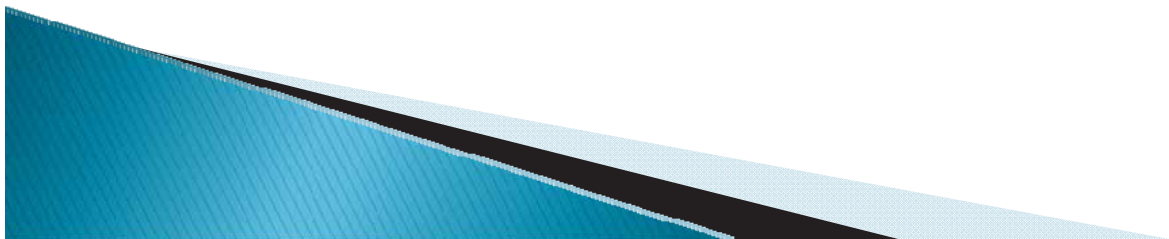


Crane Data

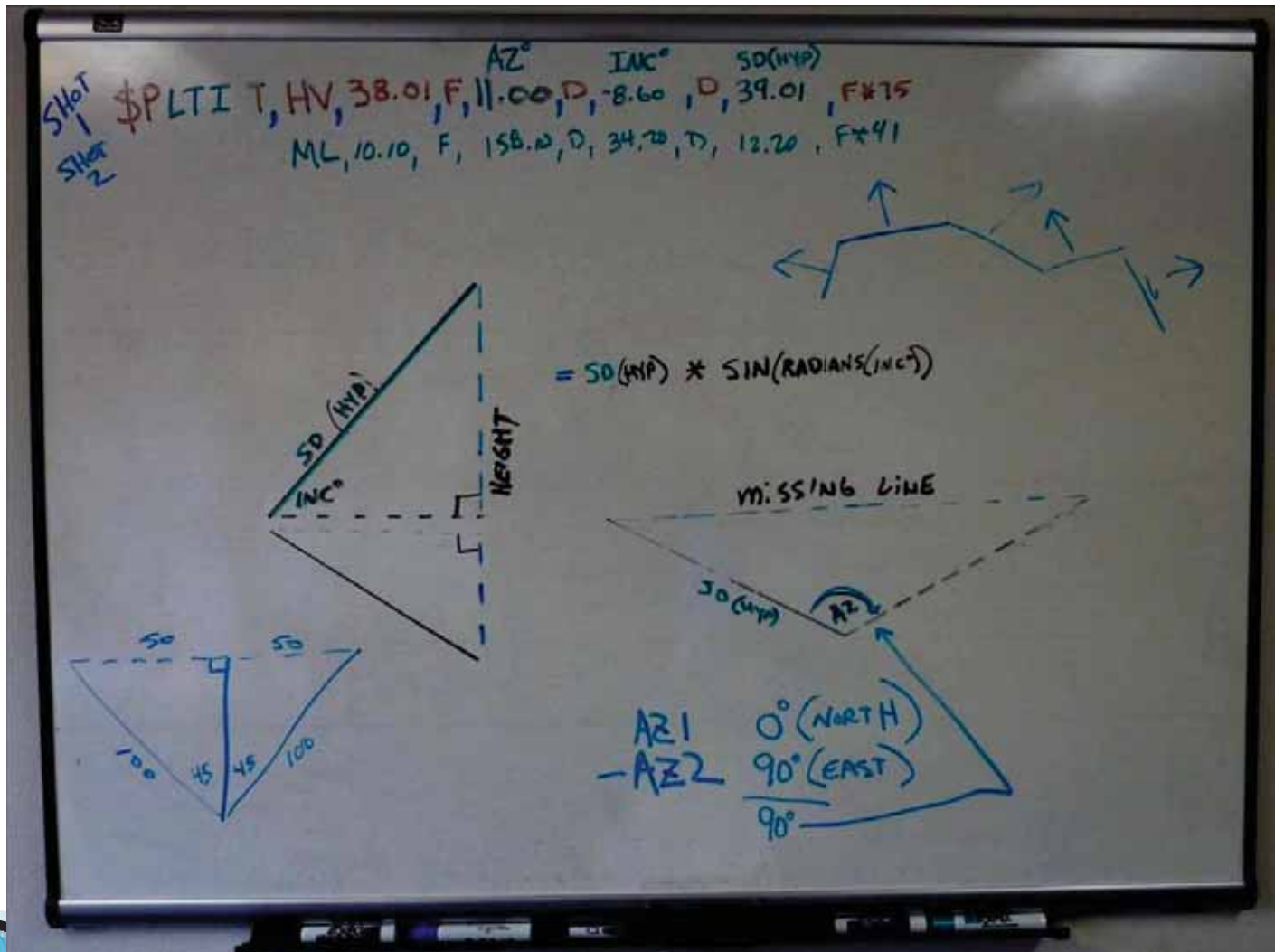


A	B	C	D	E	F	G	H	I	J
			Deck #1	Deck 1		Length		SqFt	
Deck	Position	Empty	3/28/2011	Height	Length	Total	SqFt	Total	
C1N	7	7850		7201	6.49	6.3	37.8	40.9	195.2
C1N	8	7850		6550	13	6.3	44.1	81.9	277.1
C1N	9	7850		6000	15	6.3	50.4	81.5	274.0

N	O	AB	AC	AD	AE	AF	AG
	Row Labels	21-Feb	28-Feb	7-Mar	14-Mar	21-Mar	28-Mar
	C2S	10,671	10,659	10,877	4,391		
	C3N	2,082		4,624	5,944	5,768	8,341
	C3S	44,000	40,000	40,455	40,500	0,400	0,470



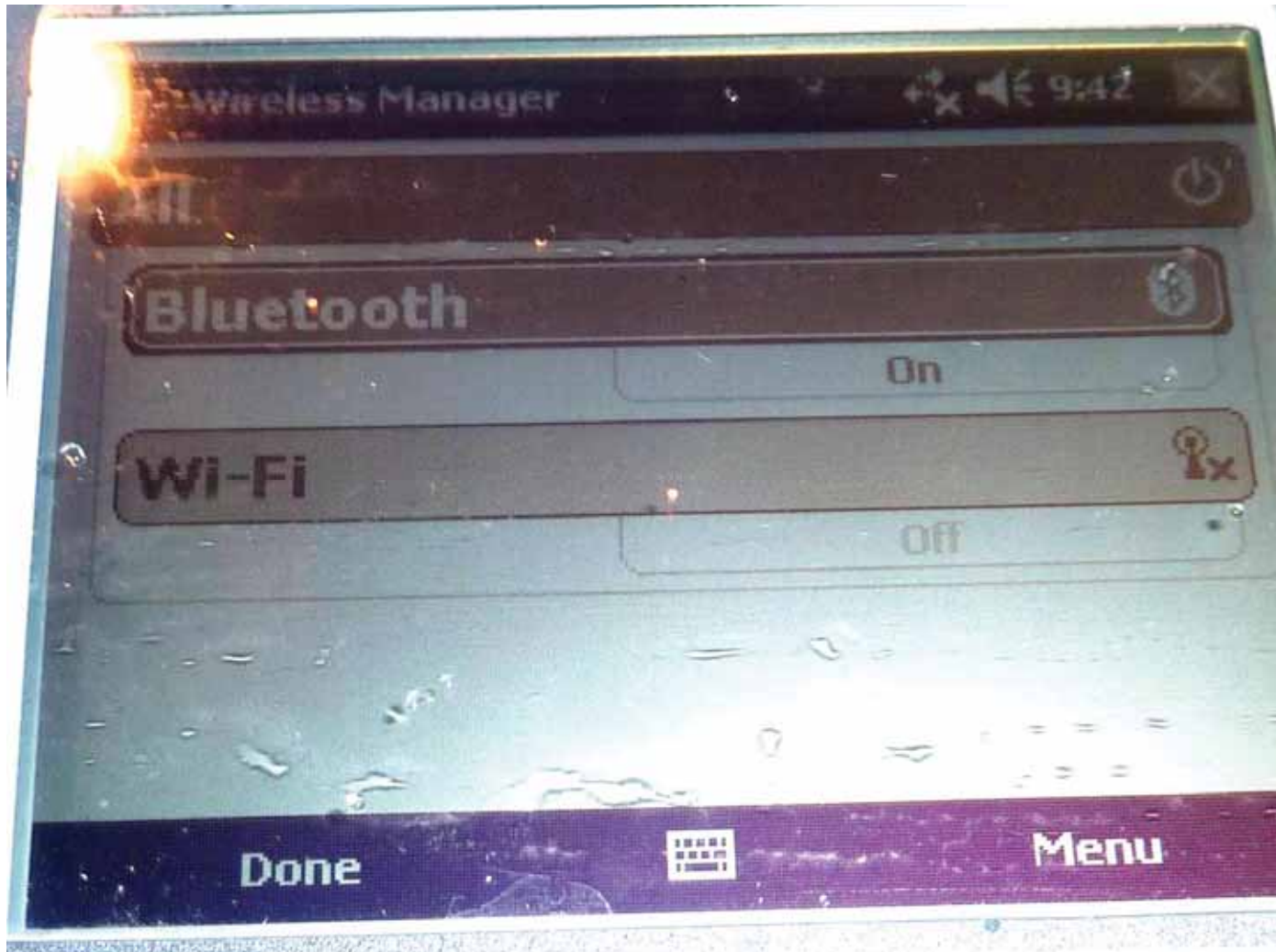
Understanding the Rangefinder Datastring



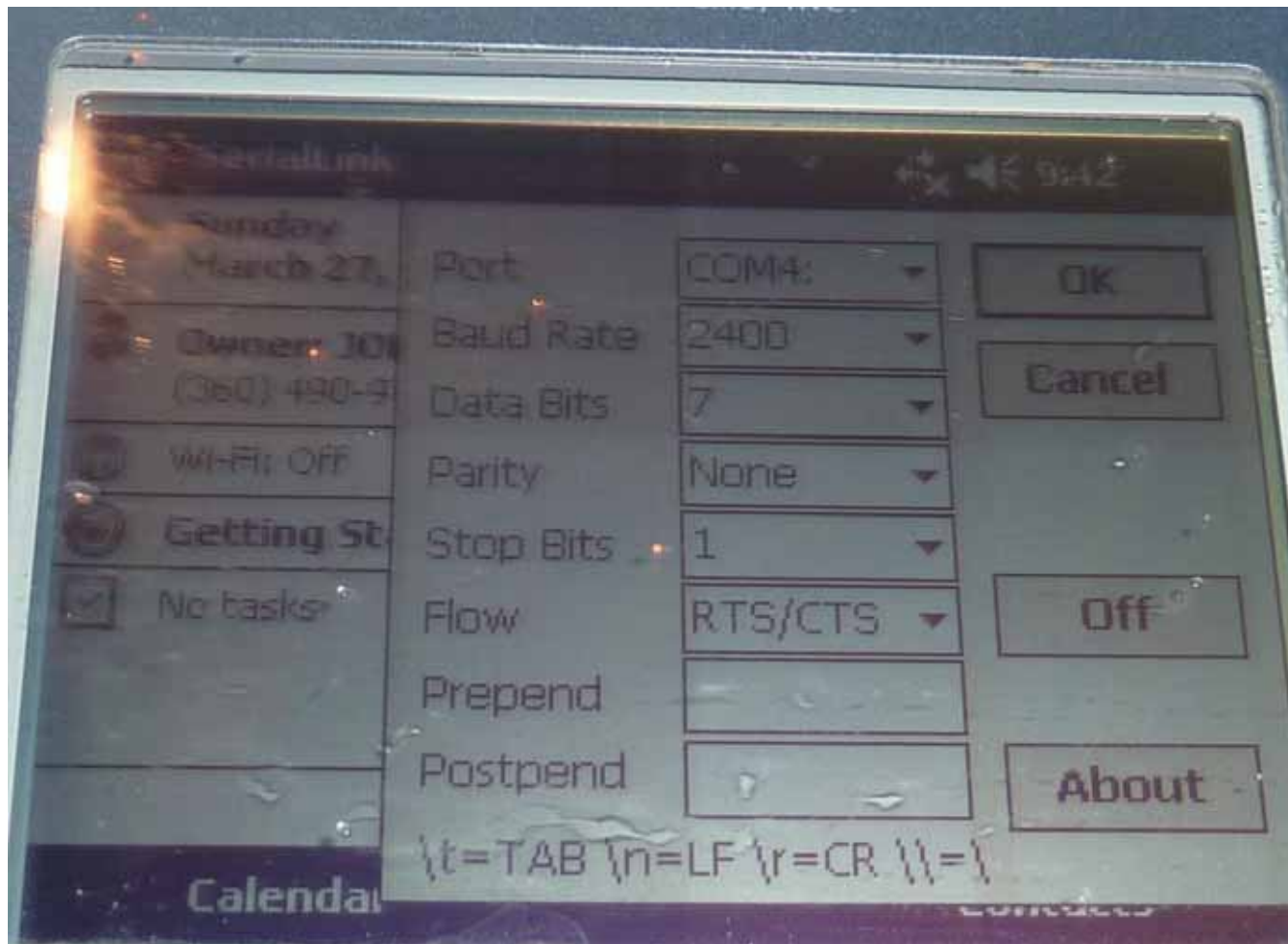
Allegro and TP360



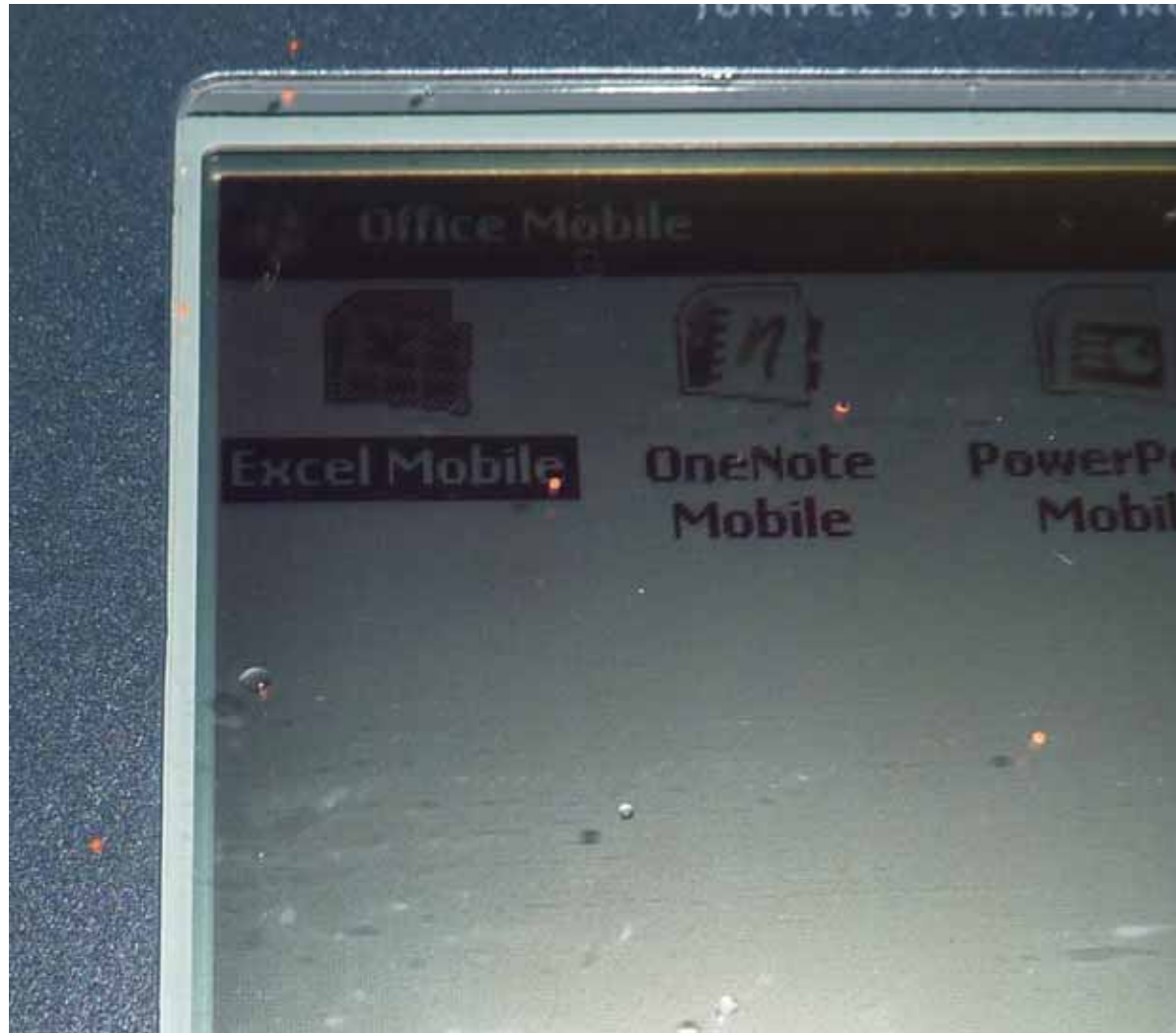
Allegro with Bluetooth



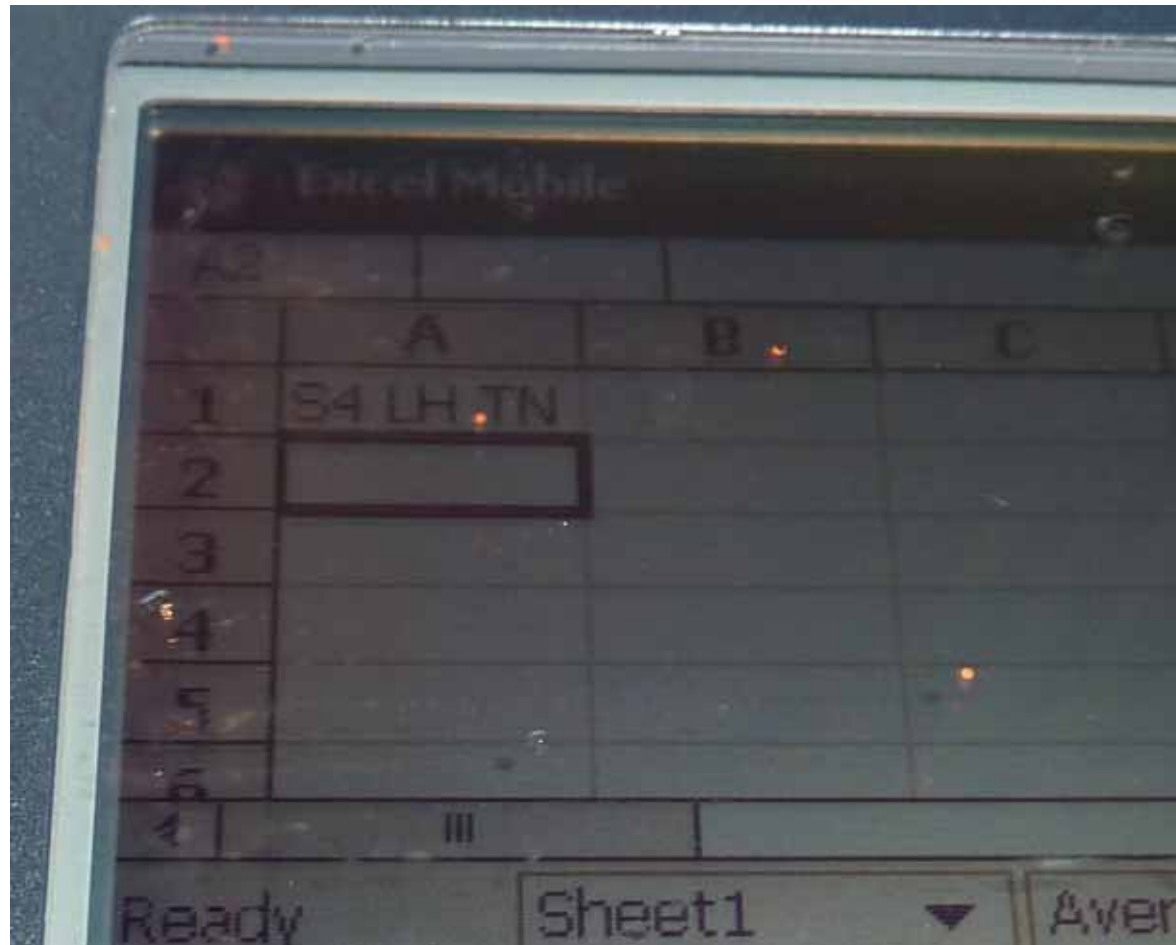
Key Logger to Accept Data



Excel Mobile



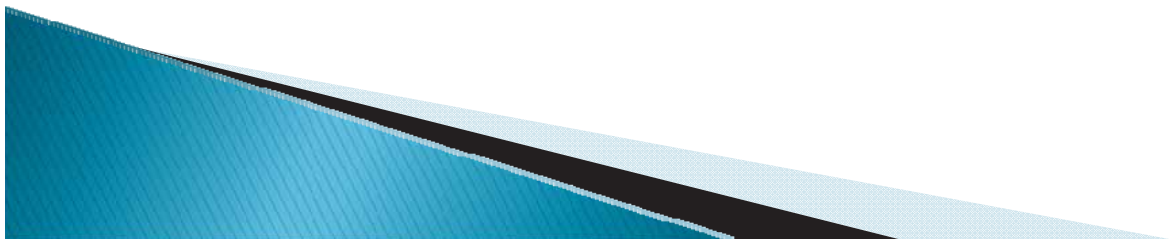
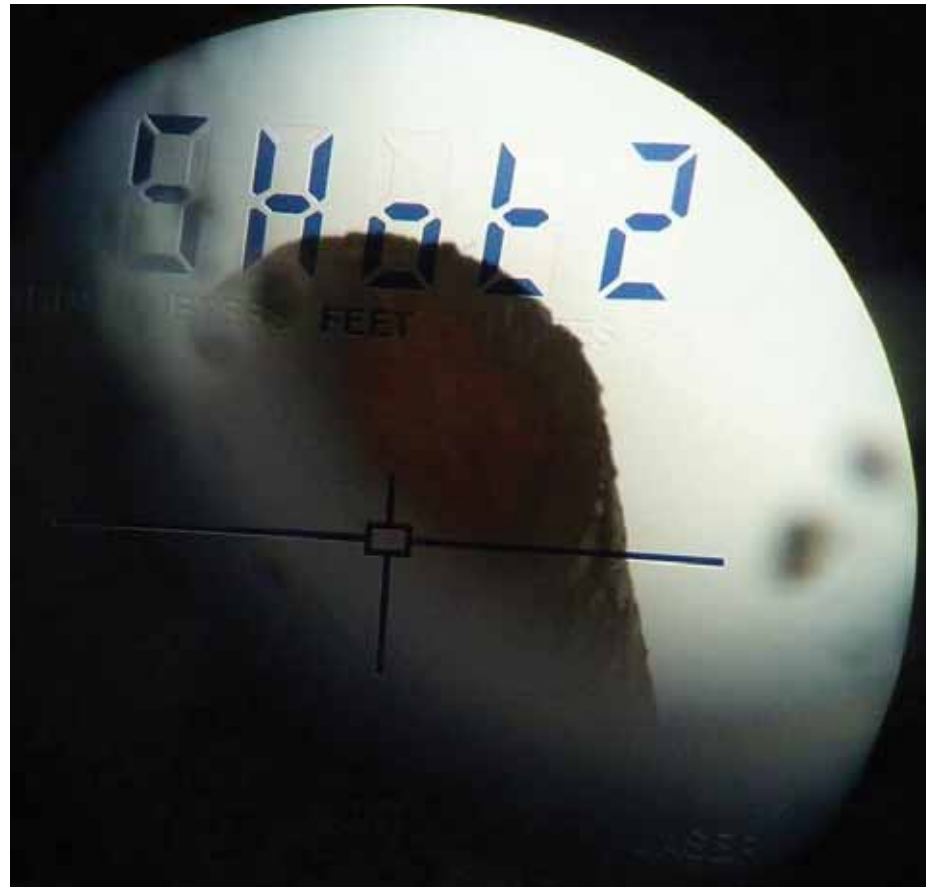
Setup Spreadsheet



Measure Triangle Lengths



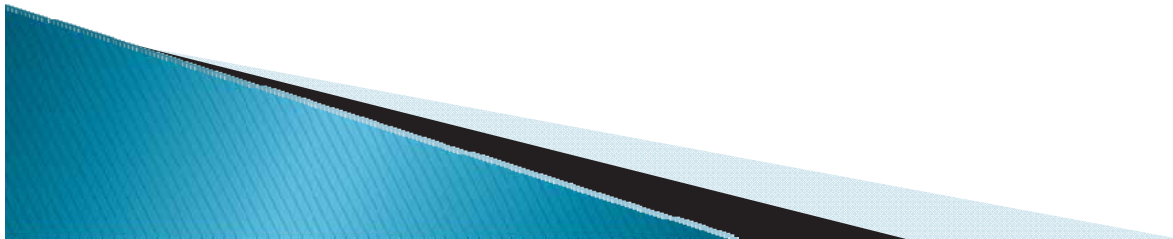
Fire the Laser



Measure Rectangle Lengths



Measure Rectangle Heights



Excel Data String

B2 fx =TRIM(RIGHT(SUBSTITUTE(TRIM(LEFT(SUBSTITUTE(","&A2&REPT(",",6),",",REPT(CHAR(32),LEN(A2)+6),COLUMN(B2))),LEN(A2)+6

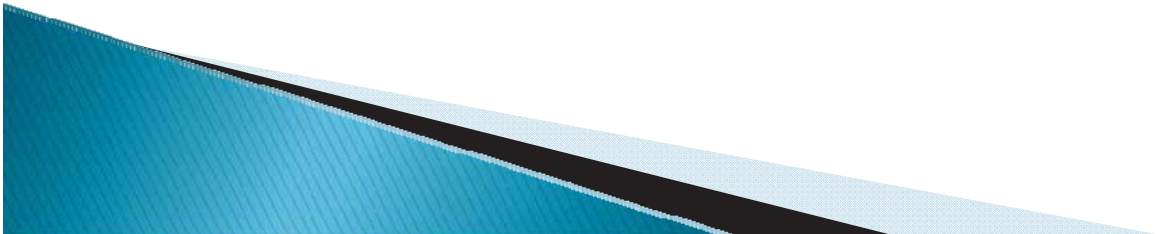
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
S4 LH TN					AZ		INC		HYP			S4 LH TN				
\$pltit,hv,25.00,f,244.50,d,17.30,d,26.00,f*56	\$pltit	hv	25.00	f	244.50	d	17.30	d	26.00	f*56		LGTH	DOWN	UP	HEIGHT	SqFt
\$pltit,hv,44.00,f,297.10,d,-5.80,d,44.00,f*4a	\$pltit	hv	44.00	f	297.10	d	-5.80	d	44.00	f*4a						
\$pltit,ml,34.80,f,298.40,d,-19.20,d,36.90,f*6b	\$pltit	ml	34.80	f	298.40	d	-19.20	d	36.90	f*6b		-	(5.4)	5.4	-	
R1	R1											34.80	(5.4)	7.8	13.2	229.8
\$pltit,hv,25.00,f,244.80,d,17.30,d,26.00,f*5b	\$pltit	hv	25.00	f	244.80	d	17.30	d	26.00	f*5b		39.4	(4.9)	4.6	9.6	449.1
\$pltit,hv,277.00,f,159.20,d,1.20,d,277.00,f*6b	\$pltit	hv	277.00	f	159.20	d	1.20	d	277.00	f*6b		39.4	(5.4)	5.5	10.9	403.0
\$pltit,ml,276.10,f,154.00,d,-0.40,d,276.10,f*51	\$pltit	ml	276.10	f	154.00	d	-0.40	d	276.10	f*51		39.4	(5.8)	4.2	10.0	411.6
TS	TS											39.4	(5.6)	3.3	8.9	372.6
\$pltit,hv,48.00,f,328.10,d,8.90,d,49.00,f*6f	\$pltit	hv	48.00	f	328.10	d	8.90	d	49.00	f*6f		39.4	(6.5)	4.1	10.6	383.4
\$pltit,hv,29.50,f,302.50,d,-2.40,d,29.50,f*48	\$pltit	hv	29.50	f	302.50	d	-2.40	d	29.50	f*48		39.4	(4.1)	6.9	11.0	424.4
\$pltit,ml,25.30,f,178.30,d,-19.10,d,26.80,f*69	\$pltit	ml	25.30	f	178.30	d	-19.10	d	26.80	f*69		39.4	(4.5)	6.7	11.2	437.2
H0	H0											25.30	(4.5)	4.5	-	141.7
\$pltit,hv,25.00,f,245.10,d,17.50,d,26.00,f*55	\$pltit	hv	25.00	f	245.10	d	17.50	d	26.00	f*55						
\$pltit,hv,28.00,f,242.10,d,-10.90,d,28.50,f*72	\$pltit	hv	28.00	f	242.10	d	-10.90	d	28.50	f*72		TOTAL				3,252.9
\$pltit,hv,26.00,f,250.20,d,10.10,d,26.50,f*57	\$pltit	hv	26.00	f	250.20	d	10.10	d	26.50	f*57						
\$pltit,hv,29.00,f,242.40,d,-9.60,d,29.50,f*40	\$pltit	hv	29.00	f	242.40	d	-9.60	d	29.50	f*40						
\$pltit,hv,34.50,f,254.40,d,9.00,d,35.00,f*6d	\$pltit	hv	34.50	f	254.40	d	9.00	d	35.00	f*6d						
\$pltit,hv,27.50,f,248.80,d,-11.10,d,28.00,f*77	\$pltit	hv	27.50	f	248.80	d	-11.10	d	28.00	f*77						
\$pltit,hv,30.00,f,249.60,d,8.00,d,30.00,f*66	\$pltit	hv	30.00	f	249.60	d	8.00	d	30.00	f*66						
\$pltit,hv,31.50,f,242.50,d,-10.50,d,32.00,f*79	\$pltit	hv	31.50	f	242.50	d	-10.50	d	32.00	f*79						
\$pltit,hv,34.00,f,249.50,d,5.60,d,34.00,f*6e	\$pltit	hv	34.00	f	249.50	d	5.60	d	34.00	f*6e						
\$pltit,hv,26.50,f,245.60,d,-11.90,d,27.00,f*72	\$pltit	hv	26.50	f	245.60	d	-11.90	d	27.00	f*72						
\$pltit,hv,42.50,f,194.80,d,5.50,d,42.50,f*63	\$pltit	hv	42.50	f	194.80	d	5.50	d	42.50	f*63						
\$pltit,hv,60.01,f,186.10,d,-6.10,d,61.01,f*42	\$pltit	hv	60.01	f	186.10	d	-6.10	d	61.01	f*42						
\$pltit,hv,127.50,f,169.70,d,3.10,d,127.50,f*6c	\$pltit	hv	127.50	f	169.70	d	3.10	d	127.50	f*6c						
\$pltit,hv,155.50,f,168.20,d,-1.50,d,155.50,f*43	\$pltit	hv	155.50	f	168.20	d	-1.50	d	155.50	f*43						
\$pltit,hv,175.50,f,166.30,d,2.20,d,175.50,f*65	\$pltit	hv	175.50	f	166.30	d	2.20	d	175.50	f*65						
\$pltit,hv,64.01,f,178.00,d,-4.00,d,64.01,f*40	\$pltit	hv	64.01	f	178.00	d	-4.00	d	64.01	f*40						

The Ultimate Test

▶ Compare Crane Data to Handheld Data

C1N	30	7850	3100	47	6.3	182.7	290.1	5,973.2
C1N	31	7850	3100	47.5	6.3	189.0	299.3	5,972.4
C1N	32	7850	3250	46	6.3	195.3	289.8	6,262.2
C1N	33	7850	3450	44	6.3	201.6	277.2	6,539.4
C1N	34	7850	3500	43.5	6.3	207.9	274.1	6,813.5
C1N	35	7850	3701	41.49	6.3	214.2	261.4	7,074.8
C1N	36	7850	3850	40	6.3	220.5	252.0	7,326.8
C1N	37	7850	4150	37	6.3	226.8	233.1	7,559.9
C1N	38	7850	4650	32	6.3	233.1	201.6	7,761.5
C1N	39	7850	5050	28	6.3	239.4	176.4	7,937.9
C1N	40	7850	5200	26.5	6.3	245.7	167.0	8,104.9
C1N	41	7850	5750	21	6.3	252.0	132.3	8,237.2
C1N	42	7850	6201	16.49	6.3	258.3	103.9	8,341.1
C1N	43	7850	6450	14	6.3	264.6	88.2	8,429.3
C1N	44	7850	6750	11	6.3	270.9	69.3	8,498.6
C1N	45	7850	6950	9	6.3	277.2	56.7	8,555.3
C1N	46	7850	7350	5	6.3	283.5	31.5	8,586.8
C1N	47	7850	7150	7	6.3	289.8	44.1	8,630.9
C1N	48	7850	7100	7.5	6.3	296.1	47.3	8,678.1
C1N	49	7850	7150	4	6.3			

C1N MH TN				
LGTH	DOWN	UP	HEIGHT	SqFt
-	(6.0)	6.0	-	
103.30	(6.0)	40.5	46.5	2,400.8
20.0	(6.0)	40.6	46.6	932.6
20.0	(5.7)	41.5	47.2	939.9
20.0	(5.4)	41.8	47.1	945.2
20.0	(5.5)	36.4	41.9	892.2
20.0	(5.1)	37.7	42.7	848.2
78.30	(5.1)	5.1	-	1,673.3
TOTAL				8,632.1

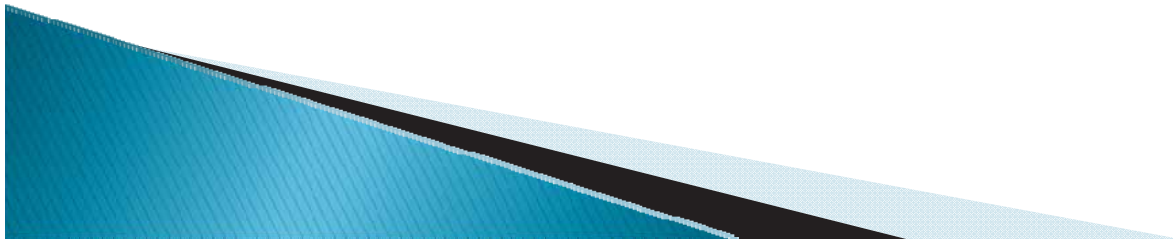


Now What ?

- ▶ 1. I'm able to capture the data into my handheld device for my use.
- ▶ 2. I'm able to hand the Laser for either voice or direct data collection to a Accountant that does not have any experience and get the same results.
- ▶ 3. I'm able to recognize that I'm the only one willing to do all of this each week.



Consistent Measurements

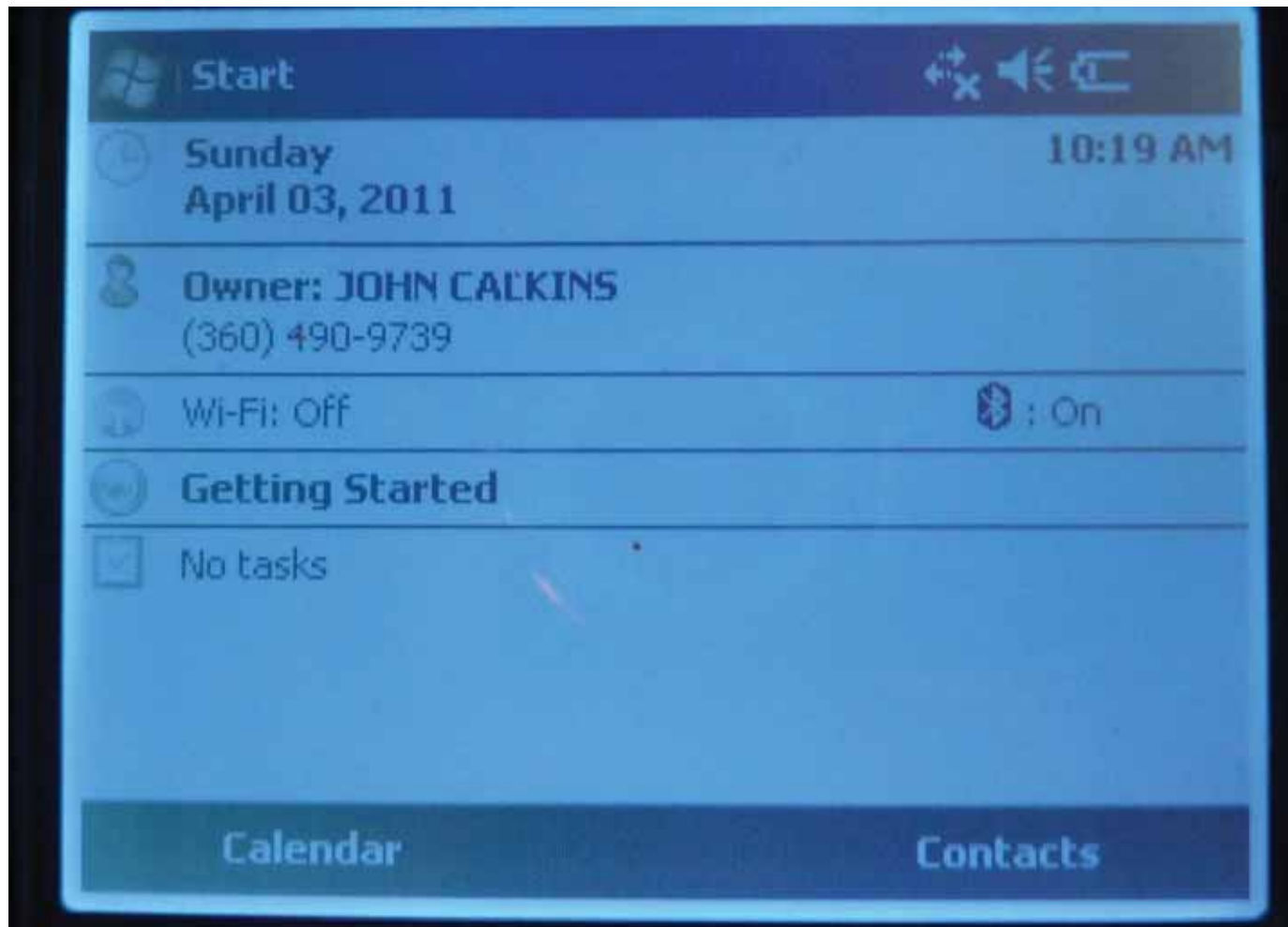


TruePulse to the Rescue

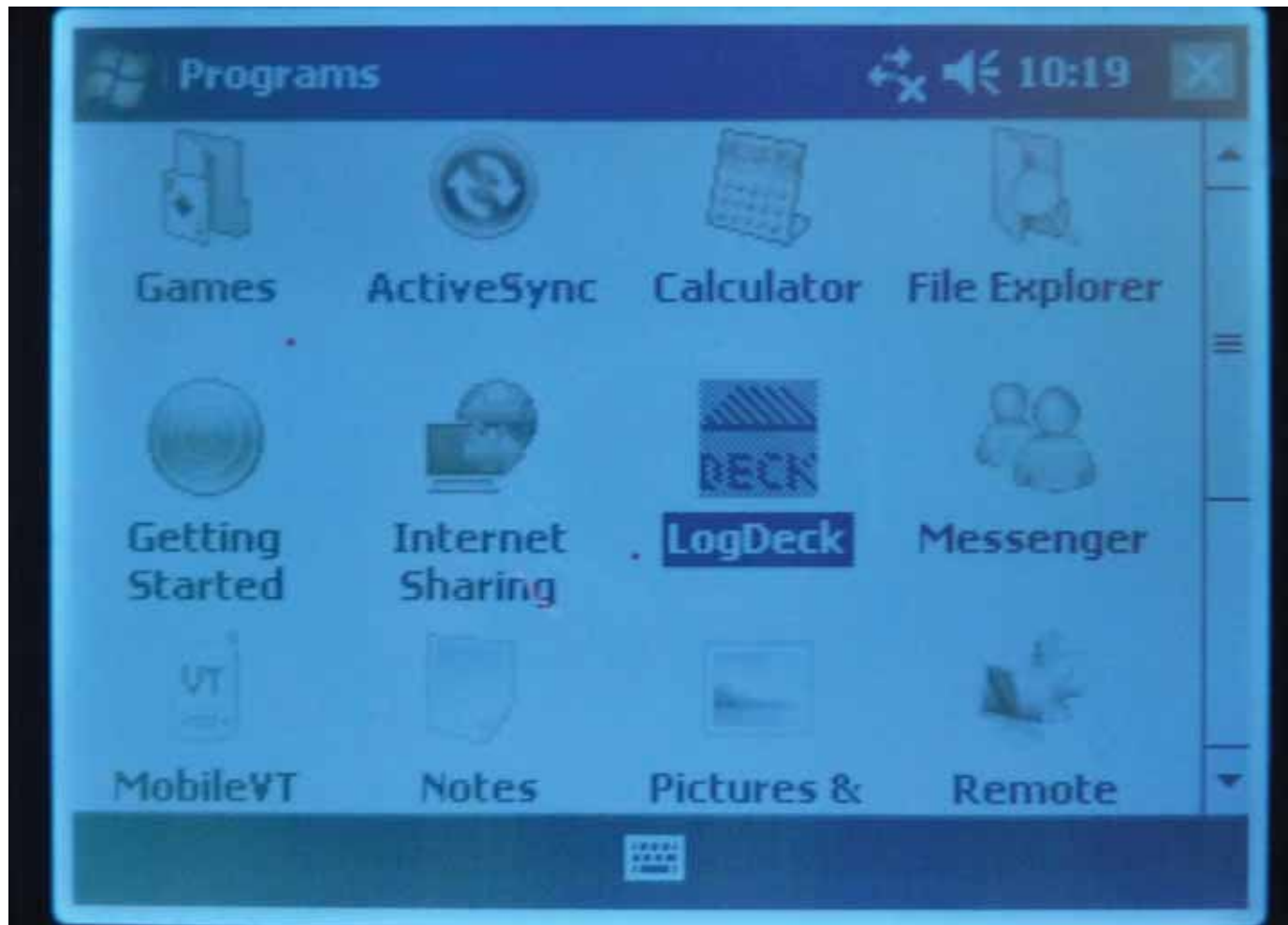
UNDER
CONSTRUCTION



Turn on Bluetooth or Tether with Serial Cable



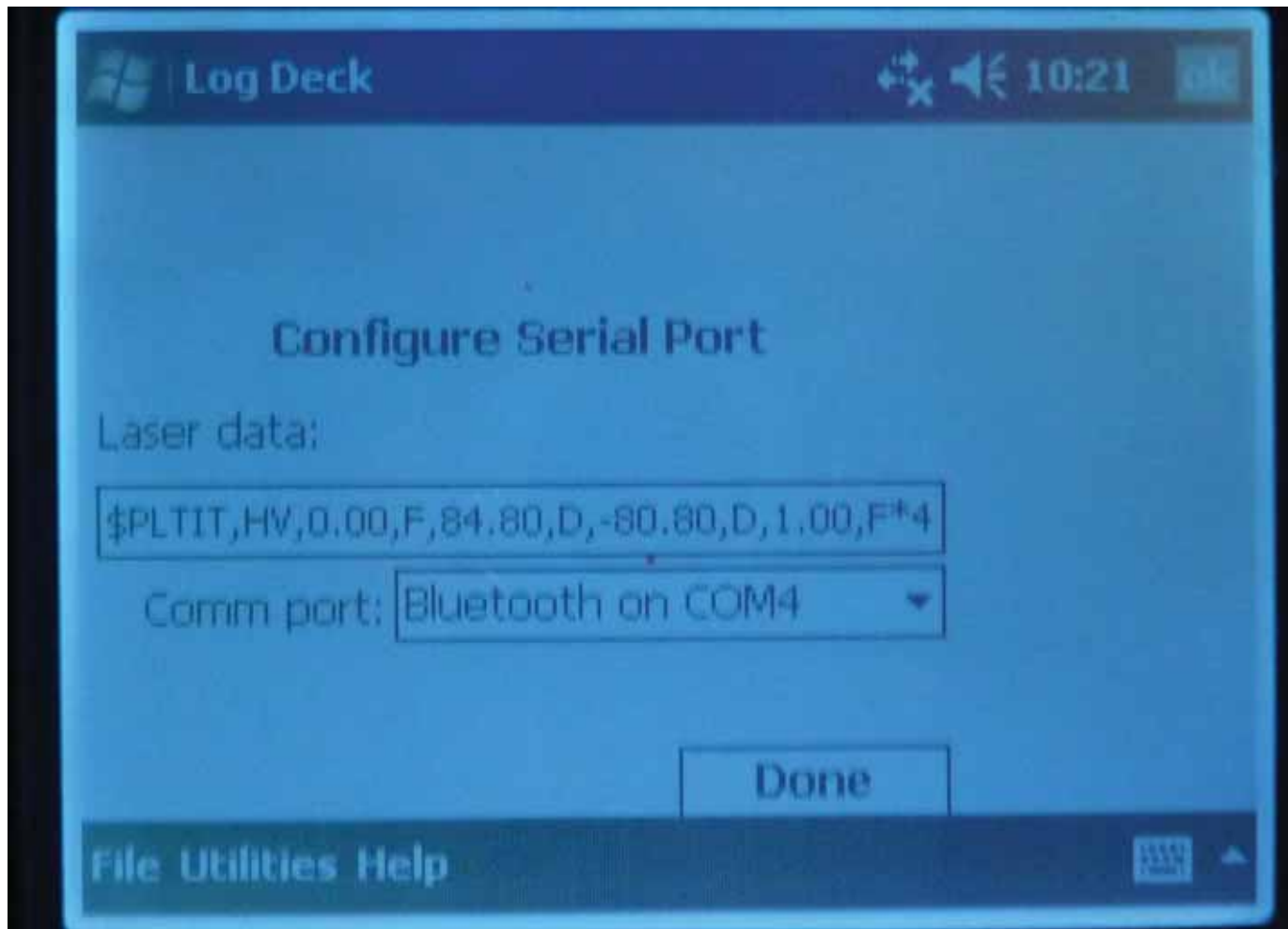
Start the TruePulse LogDeck Program



Select Utilities



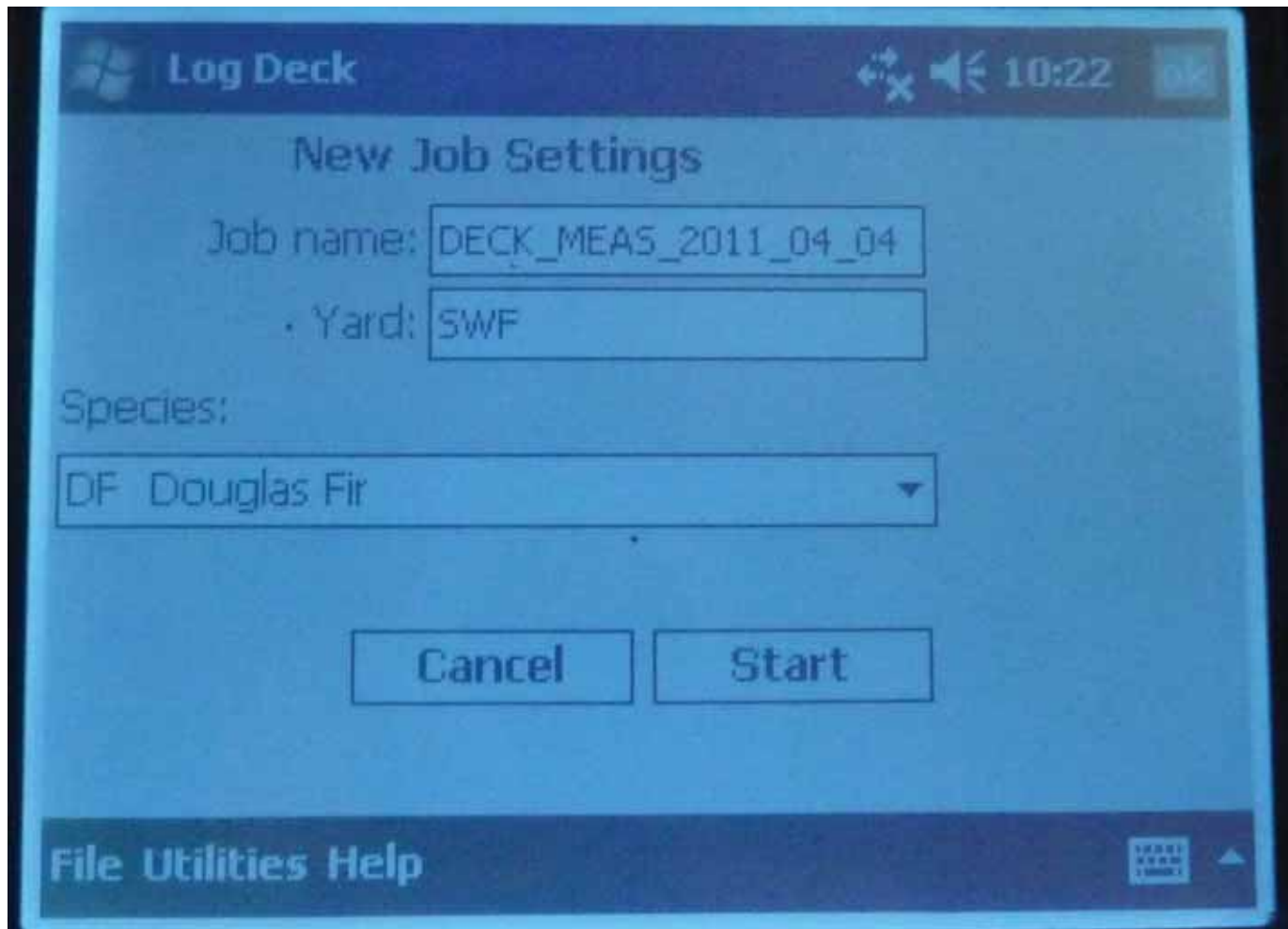
Select the Comm Port and Test Fire



Select New Job



Create a Job Name and Id



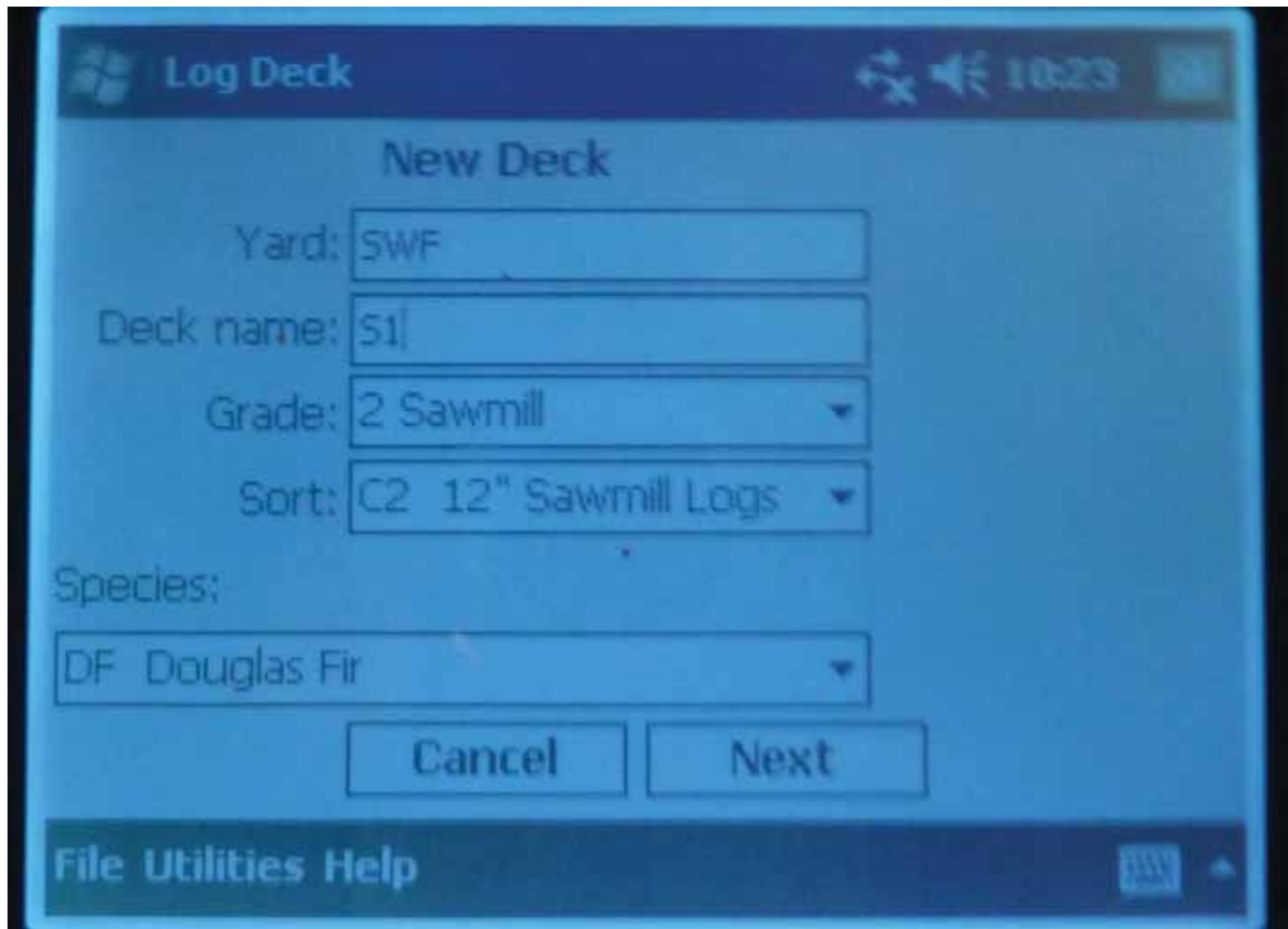
The image shows a screenshot of a software window titled "Log Deck". The window has a dark blue header bar with the title "Log Deck" on the left, a speaker icon and the time "10:22" in the center, and an "ok" button on the right. The main content area is titled "New Job Settings" and contains the following fields:

- Job name:** A text input field containing "DECK_MEAS_2011_04_04".
- Yard:** A text input field containing "SWF".
- Species:** A dropdown menu with "DF Douglas Fir" selected.

At the bottom of the main content area, there are two buttons: "Cancel" and "Start".

The bottom of the window features a dark blue footer bar with the text "File Utilities Help" on the left and a keyboard icon on the right.

The Grade Sort and Species are Customizable

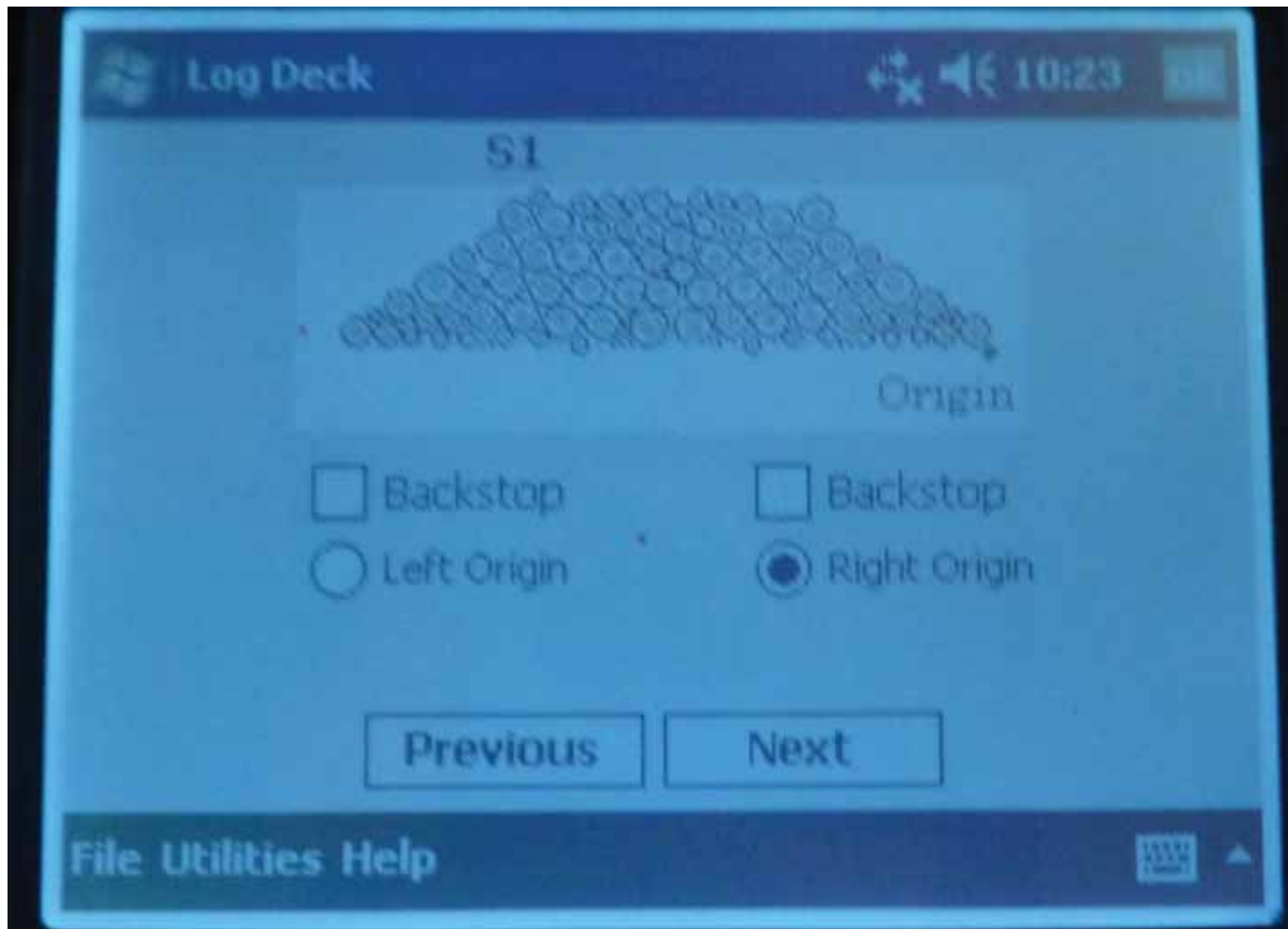


The screenshot shows a 'Log Deck' application window with a 'New Deck' dialog box. The dialog box contains the following fields and options:

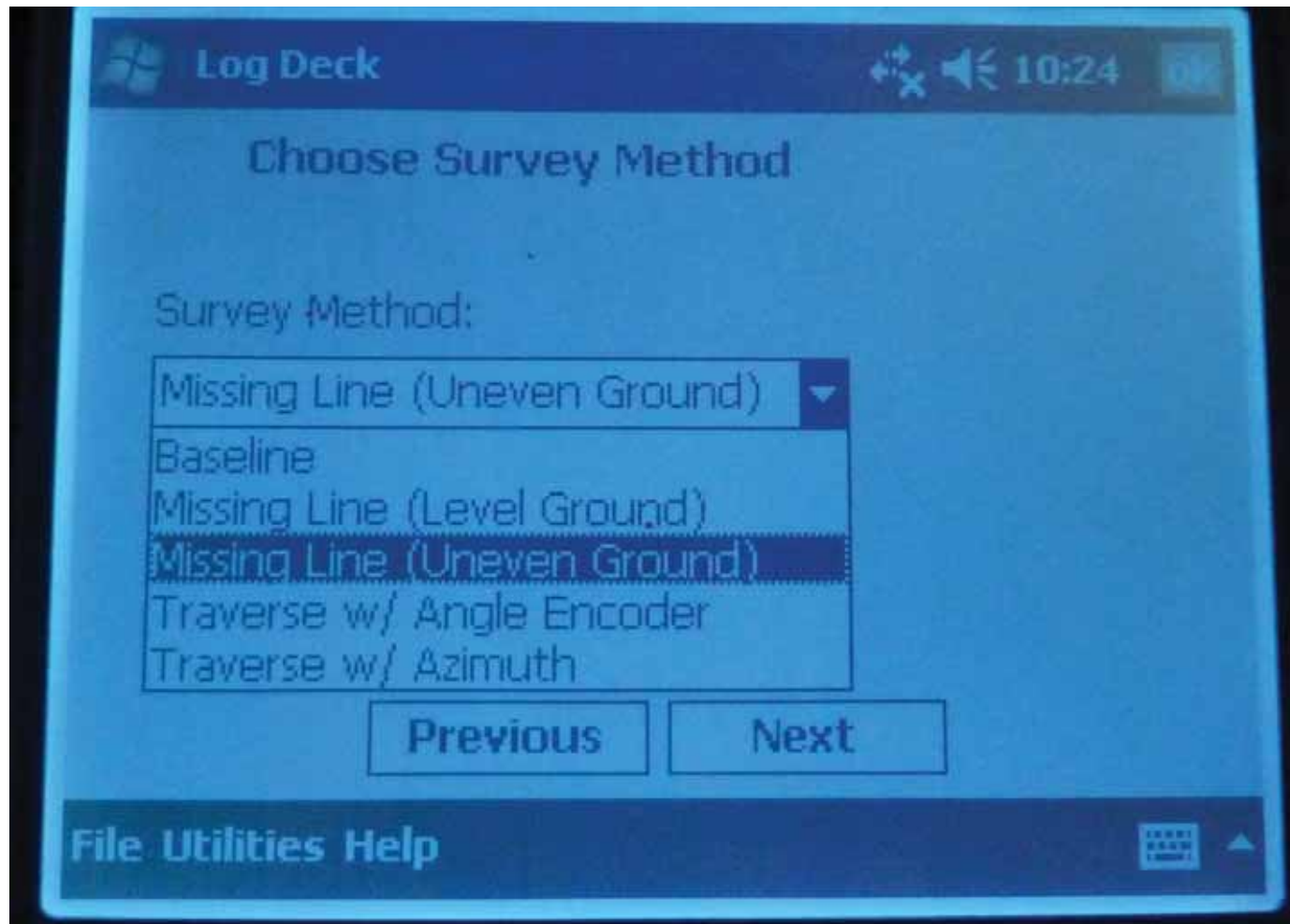
- Yard: SWF
- Deck name: S1
- Grade: 2 Sawmill
- Sort: C2 12" Sawmill Logs
- Species: DF Douglas Fir

At the bottom of the dialog box, there are two buttons: 'Cancel' and 'Next'. The application window title bar shows 'Log Deck' and the system tray shows '10:23'.

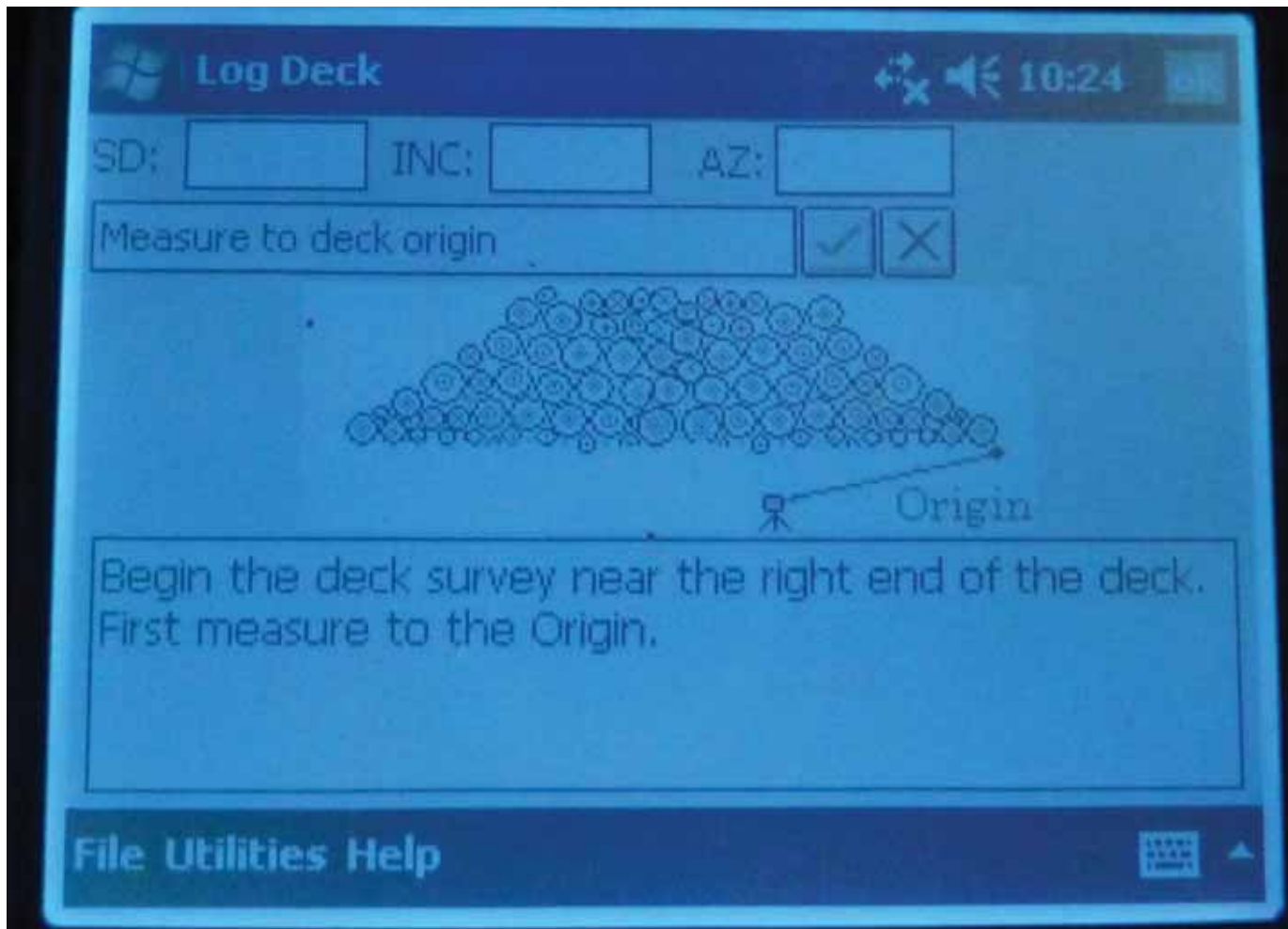
Select Orientation



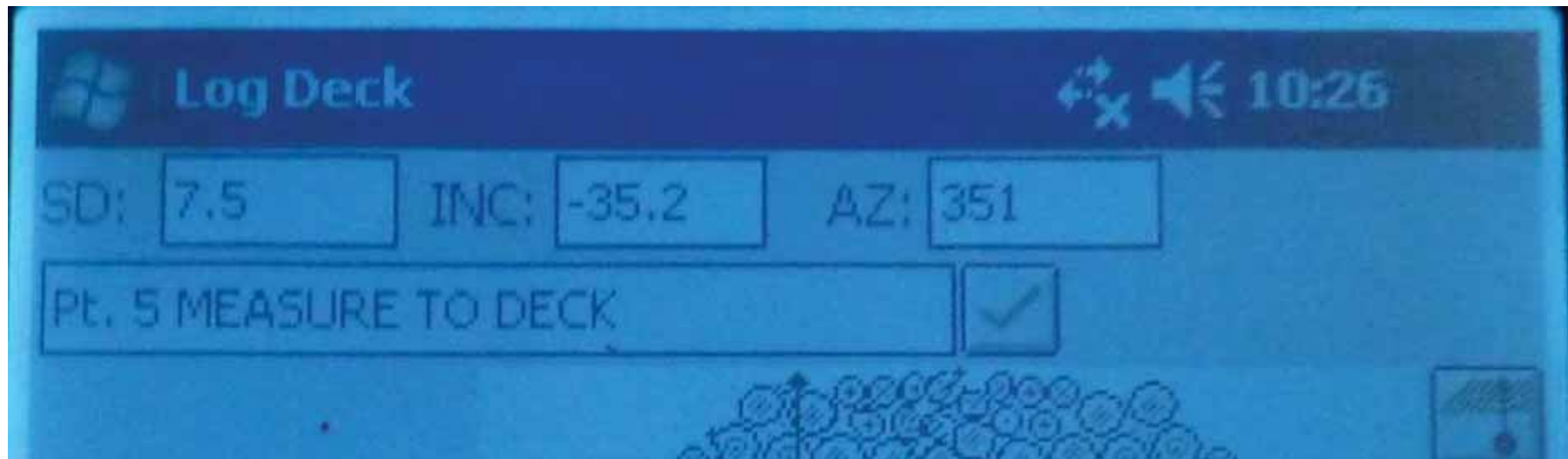
Select Measurement Method



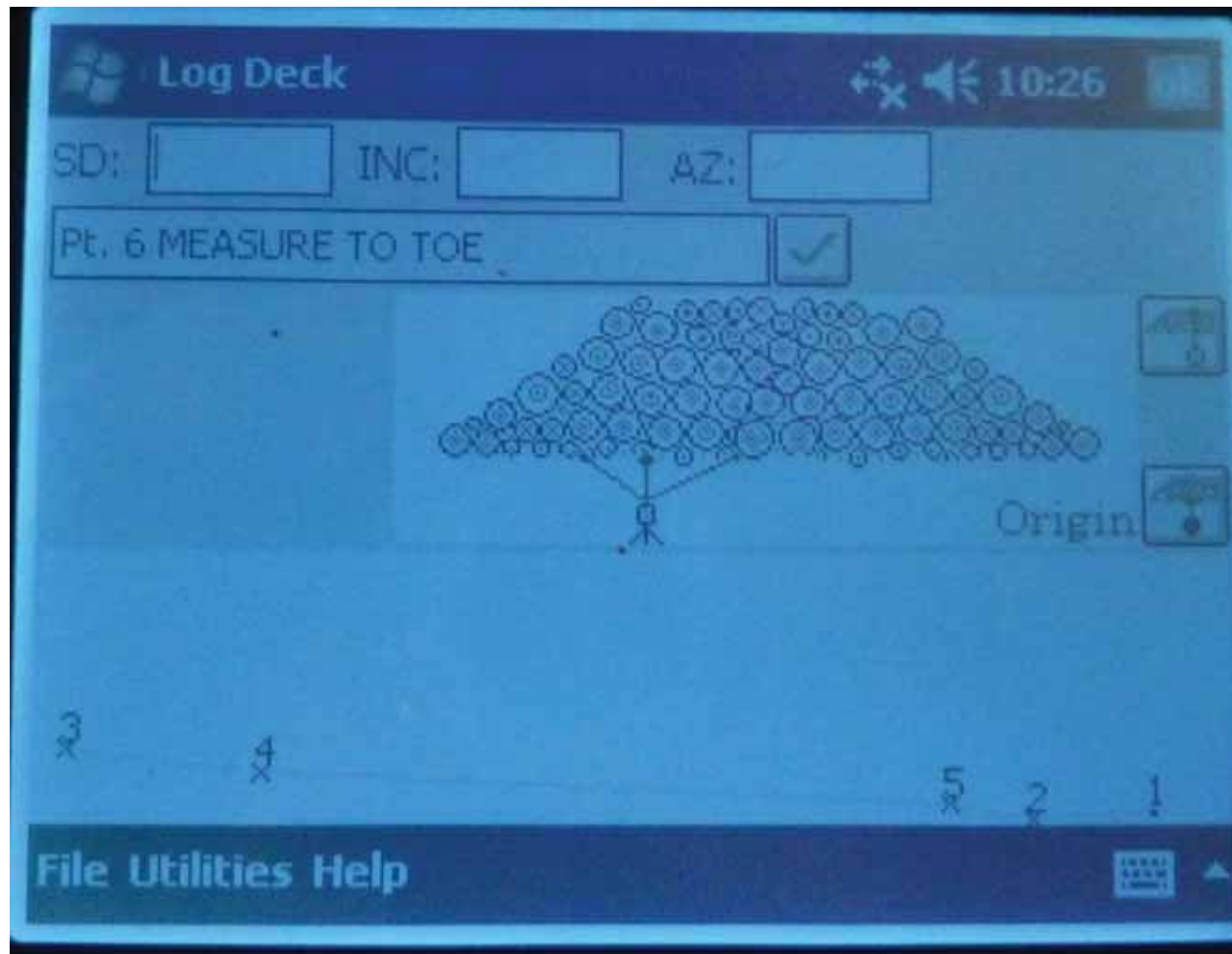
Fire the Laser



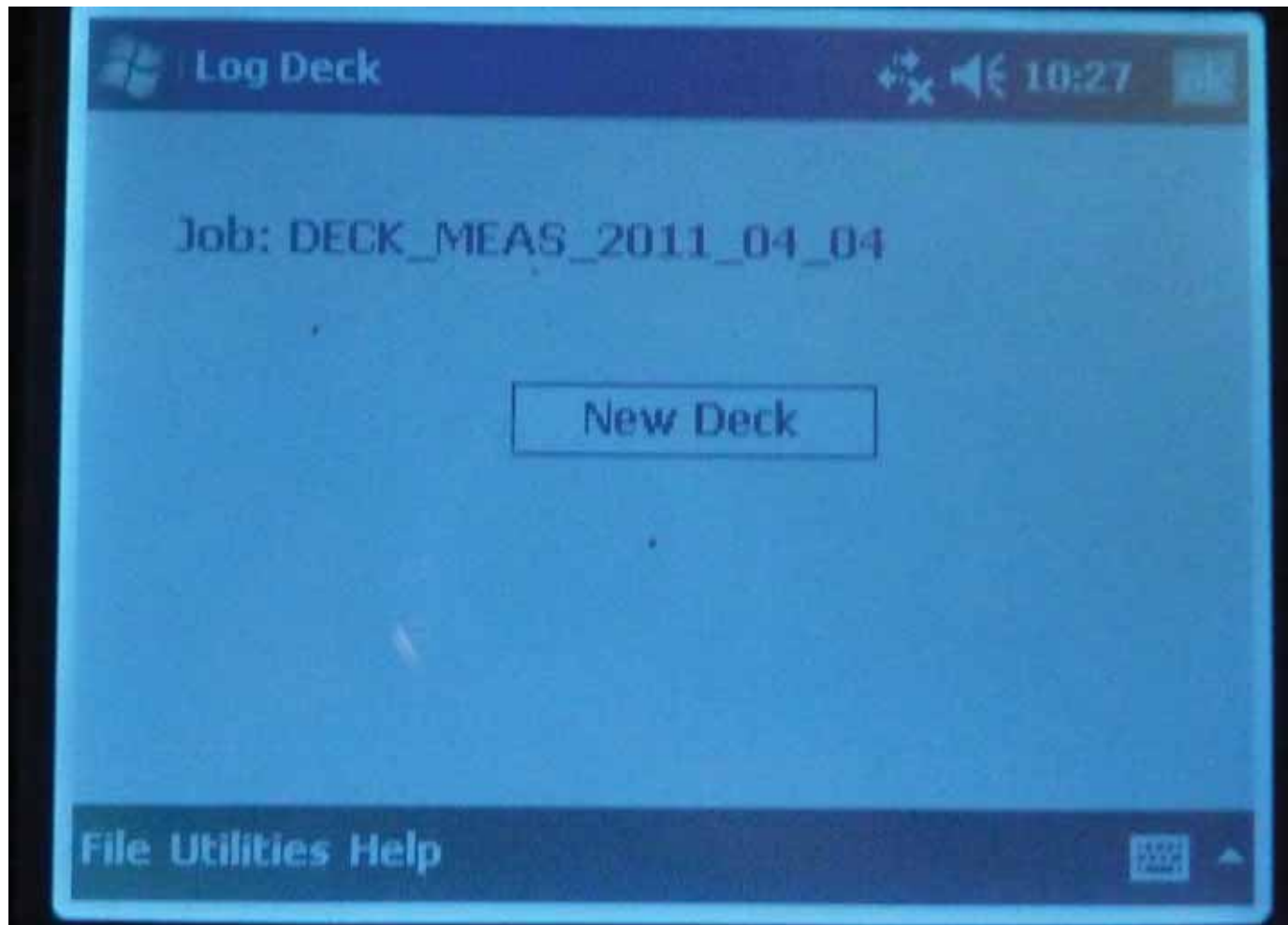
The Data String is accepted into the Program



The Program walks you through the Deck Measurement Process



You have control over the individual deck data



Last Minute Program Update

Log Deck 2:14 ok

Log Deck

Measurably Superior®

- New** Create new job
- Old** Open existing job
- Delete** Delete job
- Exit** Exit program

File Utilities Help

Log Deck 2:15 ok

Job: TestJob

Choose deck:

- BL_IH_test
- bl7
- BLnoBS
- BLwithBS
- ml1
- ml2
- ml3
- ml4
- ml5

- New Deck**
- Open**
- Calculate**
- Delete**
- Reports**
- Close**

File Utilities Help

Log Deck 2:16 ok

New Deck

Yard: South Yard

Deck name: Deck 1

Grade: 2 Sawmill

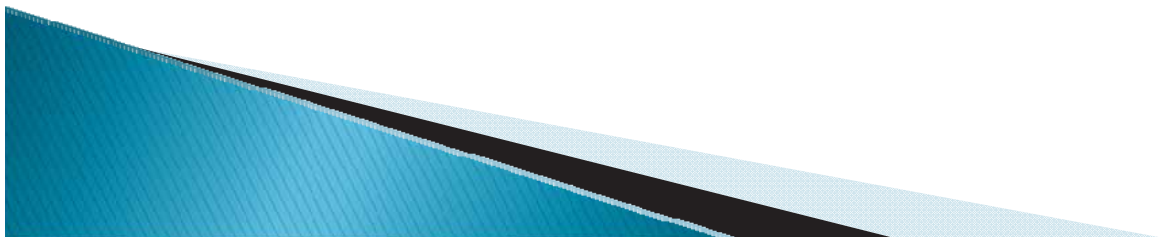
Sort: K3 8" Sawmill Logs

Species: HW Western Helmock

Cancel **Next**

123	1	2	3	4	5	6	7	8	9	0	-	=	←	
Tab	q	w	e	r	t	y	u	i	o	p	[]		
CAP	a	s	d	f	g	h	j	k	l	;	'			
Shift	z	x	c	v	b	n	m	,	.	/	←			
Ctl	á	ü	`	\							↓	↑	←	→


File Utilities Help



LMPU Pg 2

Log Deck 2:16 ok

Deck 1




Origin

Backstop Backstop
 Left Origin Right Origin

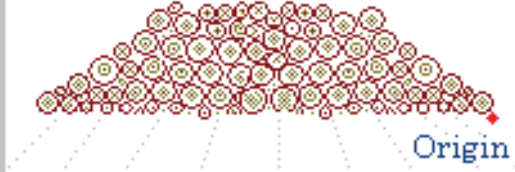
Previous Next

123	1	2	3	4	5	6	7	8	9	0	- =	←		
Tab	q	w	e	r	t	y	u	i	o	p	[]			
CAP	a	s	d	f	g	h	j	k	l	;	'			
Shift	z	x	c	v	b	n	m	,	.	/	↵			
Ctl	á	ü	`	\							↓	↑	←	→

File Utilities Help 

Log Deck 2:16 ok

Deck 1




Origin

Backstop Backstop
 Left Origin Right Origin

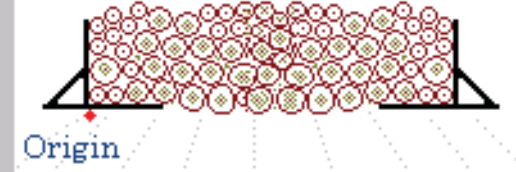
Previous Next

123	1	2	3	4	5	6	7	8	9	0	- =	←		
Tab	q	w	e	r	t	y	u	i	o	p	[]			
CAP	a	s	d	f	g	h	j	k	l	;	'			
Shift	z	x	c	v	b	n	m	,	.	/	↵			
Ctl	á	ü	`	\							↓	↑	←	→

File Utilities Help 

Log Deck 2:16 ok

Deck 1




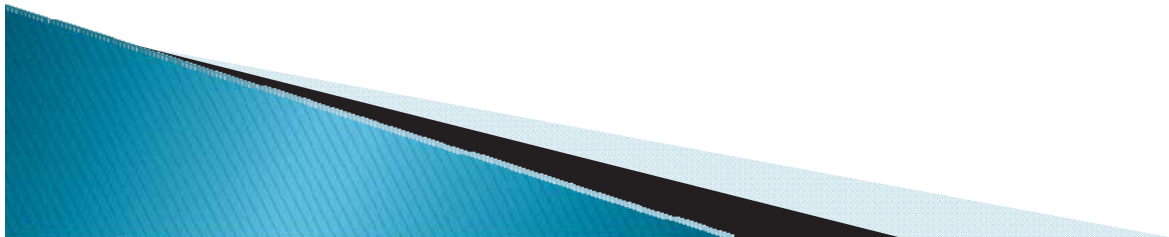
Origin

Backstop Backstop
 Left Origin Right Origin

Previous Next

123	1	2	3	4	5	6	7	8	9	0	- =	←		
Tab	q	w	e	r	t	y	u	i	o	p	[]			
CAP	a	s	d	f	g	h	j	k	l	;	'			
Shift	z	x	c	v	b	n	m	,	.	/	↵			
Ctl	á	ü	`	\							↓	↑	←	→

File Utilities Help 



LMPU Pg 3

Log Deck 2:16 ok

Choose Survey Method

Survey Method:
Baseline

Inst. Ht: 5.50
Origin Ht: 0.00

Previous Next

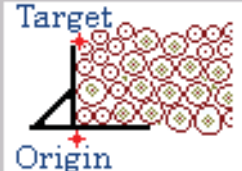
123	1	2	3	4	5	6	7	8	9	0	- =	←
Tab	q	w	e	r	t	y	u	i	o	p	[]	
CAP	a	s	d	f	g	h	j	k	l	;	'	
Shift	z	x	c	v	b	n	m	,	.	/	←	
Ctl	á	ü	`	\							↓	↑

File Utilities Help

Log Deck 2:17 ok

SD: INC:

Set Origin



Begin the deck survey at the left end of the deck. Measure from the Origin up to the top of the backstop.

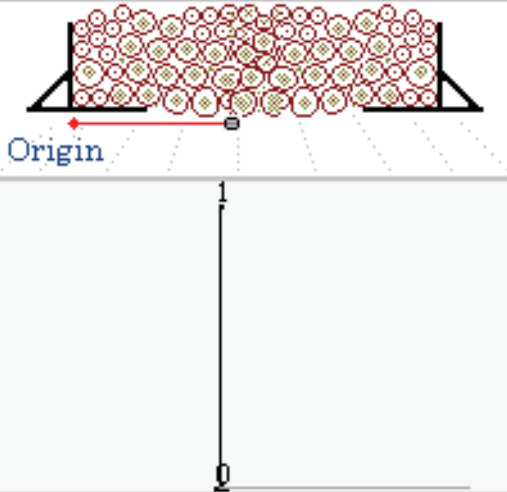
Previous Next

File Utilities Help

Log Deck 2:17 ok

SD: INC:

Pt. 2 MEASURE TO ORIGIN



Finish

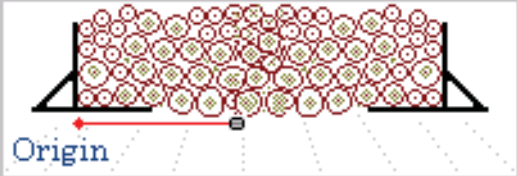
File Utilities Help

LMPU Pg 4


Log Deck 2:17 ok

SD: INC:

Pt. 3 MEASURE TO ORIGIN



Origin



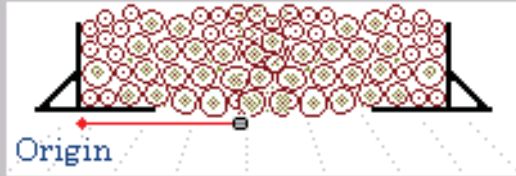
1 2

File Utilities Help


Log Deck 2:18 ok

SD: INC:

Pt. 4 MEASURE TO ORIGIN



Origin



1 2 3

File Utilities Help

Log Deck 2:18 ok

Calculations

Area: Ft²

Log length:

Conversion constant:

Volume = 8,739 Ft³
MBF Volume = 29,713 Ft³

123	1	2	3	4	5	6	7	8	9	0	- =	←	
Tab	q	w	e	r	t	y	u	i	o	p	[]		
CAP	a	s	d	f	g	h	j	k	l	;	'		
Shift	z	x	c	v	b	n	m	,	.	/	←		
Ctl	á	ü	`	\						↓	↑	←	→

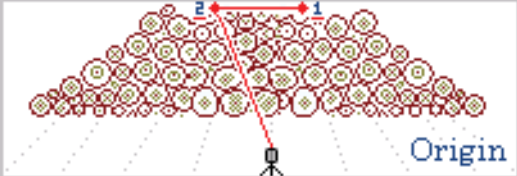
File Utilities Help

LMPU Pg 5

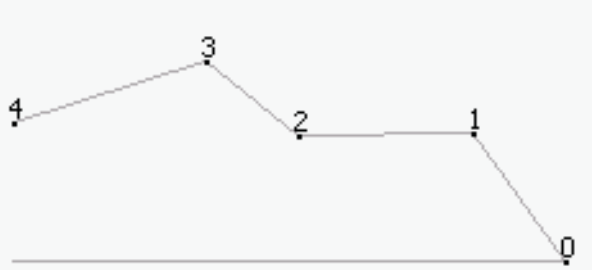
Log Deck 2:20 ok

SD: INC: AZ:

Deck Point: ✓ ✗



Origin



Finish

File Utilities Help

Log Deck 2:21 ok

TestJob Decks

Choose deck(s):

- BLwithBS
- BLnoBS
- BL_IH_test
- ml1
- ml2
- ml3
- ml4
- ml5

Check All

Clear All

Print

Save As...

Close

File Utilities Help

Log Deck 2:21 ok

Save Report

Report format: Spreadsheet

File name: TestJob

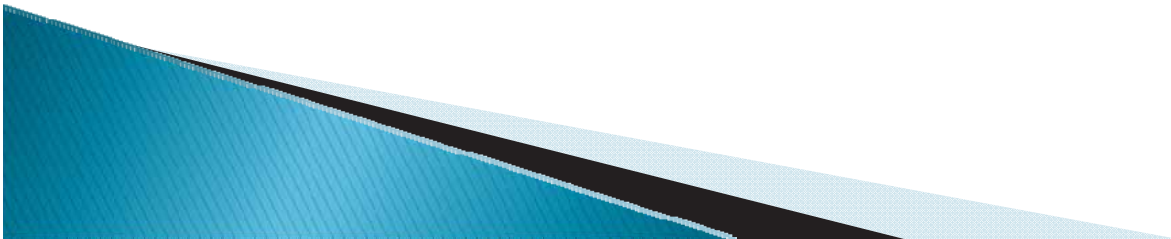
Save Close

123	1	2	3	4	5	6	7	8	9	0	-	=	←	
Tab	q	w	e	r	t	y	u	i	o	p	[]		
CAP	a	s	d	f	g	h	j	k	l	;	'			
Shift	z	x	c	v	b	n	m	,	.	/	←			
Ctl	á	ü	`	\							↓	↑	←	→

File Utilities Help

What Have I learned?

- ▶ 1. We can get very accurate Square Foot Log Deck Measurements with the New Technologies.
- ▶ 2. We have to develop the procedures that are repeatable and acceptable.
- ▶ 3. We need to be persistent and be able to explain what is needed for others to utilize what we have learned.



END

Calkins 4/7/2011