TMS
Thursday 3:30 PM April 12, 2012

Log Yard Inventory Measurements

2012

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Check Scaler/Quality Control
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: Log Deck Volumes/Log Deck Square Foot Surface Area.

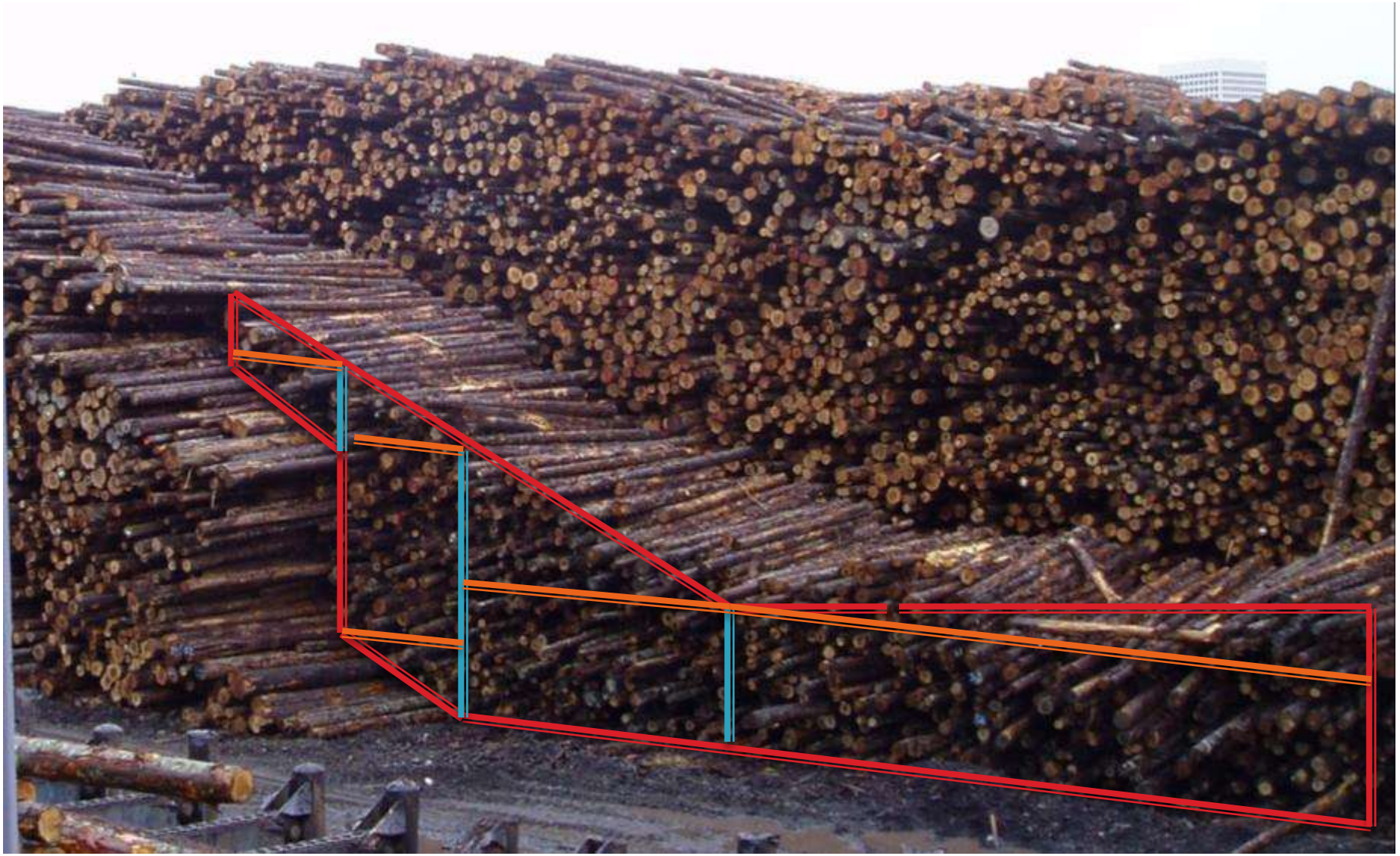
This is
The Square Foot Deck Factor Method

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

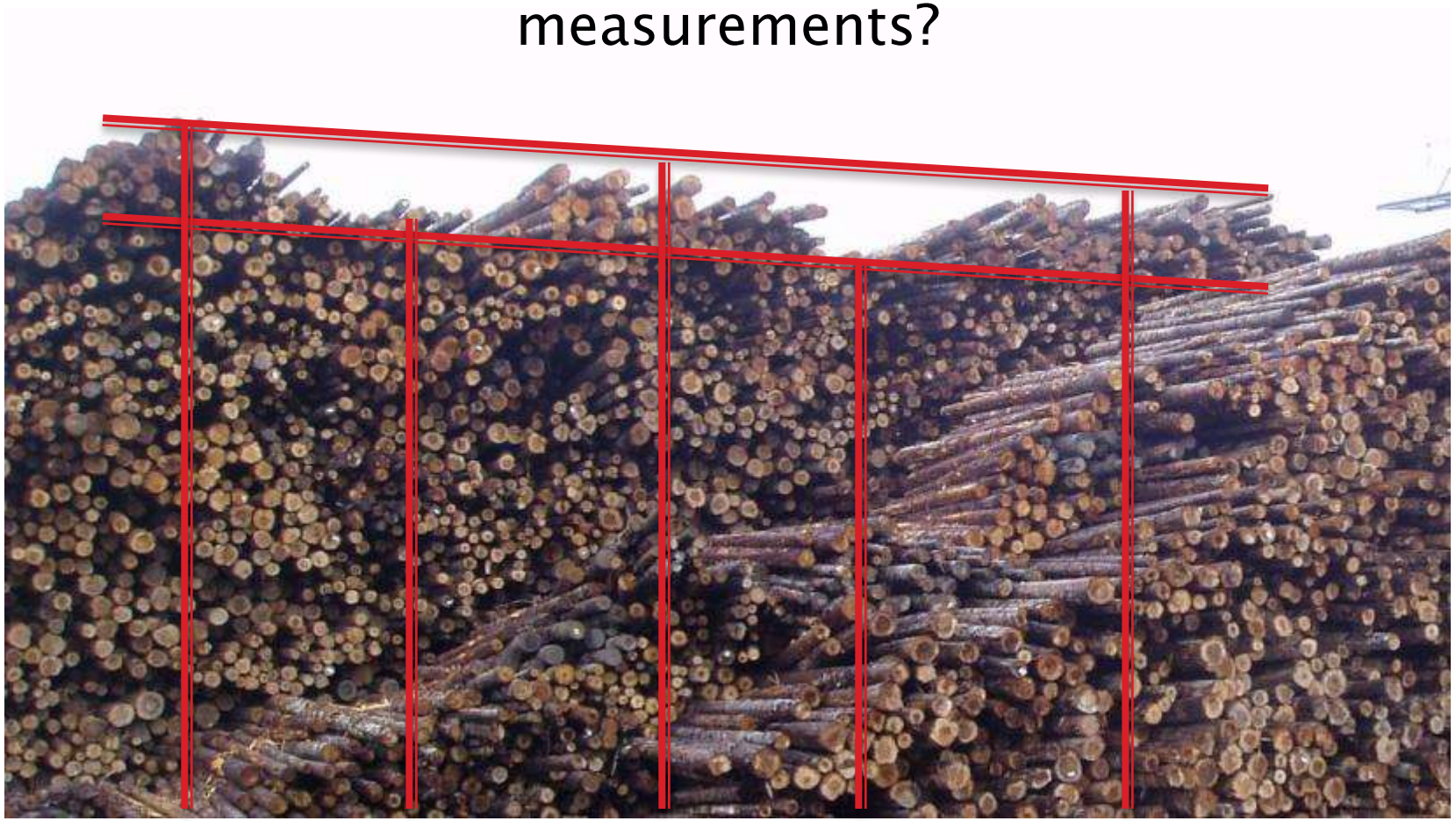
Learn Why Decks are Built the Way They Are. Spot the Geometric Shapes.



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

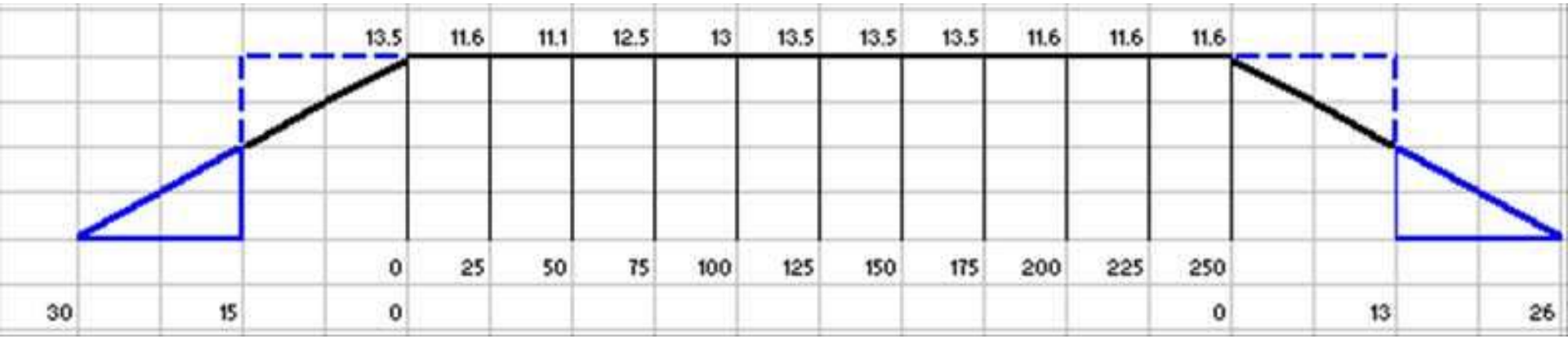
This method is the easiest to understand even under complex shapes.

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

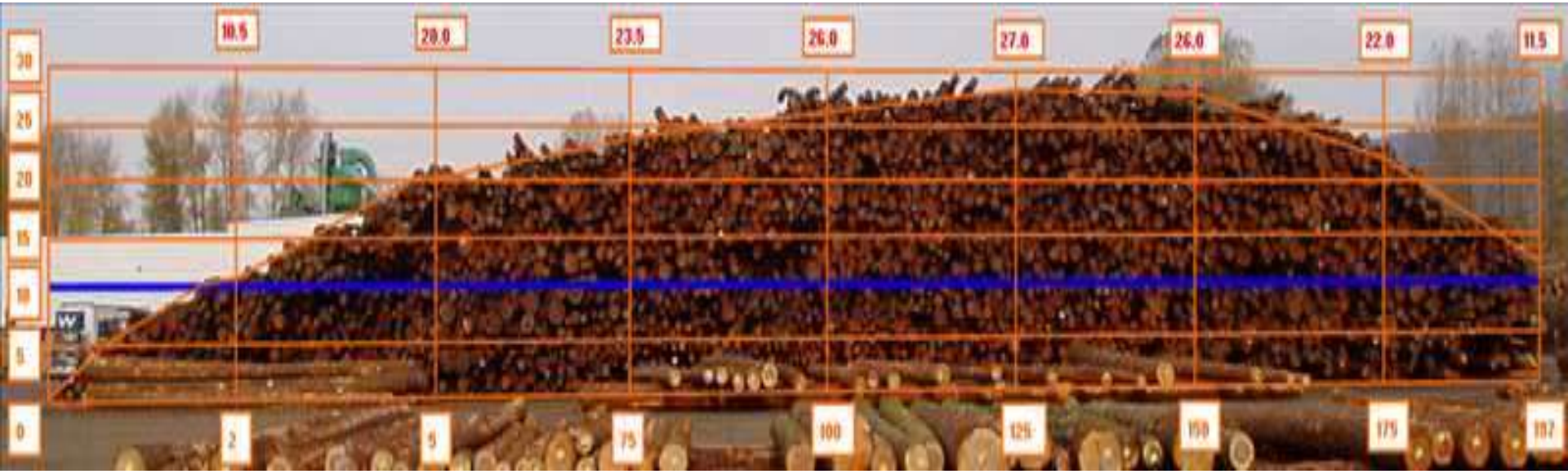


It Time To Use The New Technologies

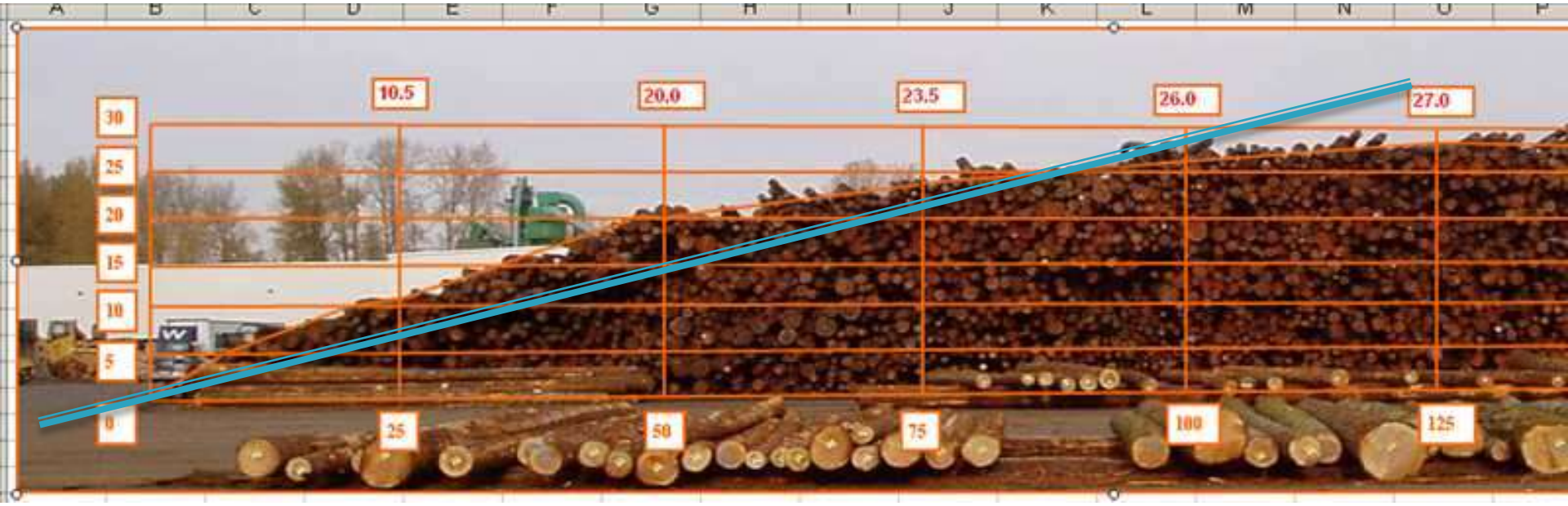
This is an accepted method used to visually fold the triangle ends up in the field then measure at regular intervals to average the top rectangle shape of the deck.



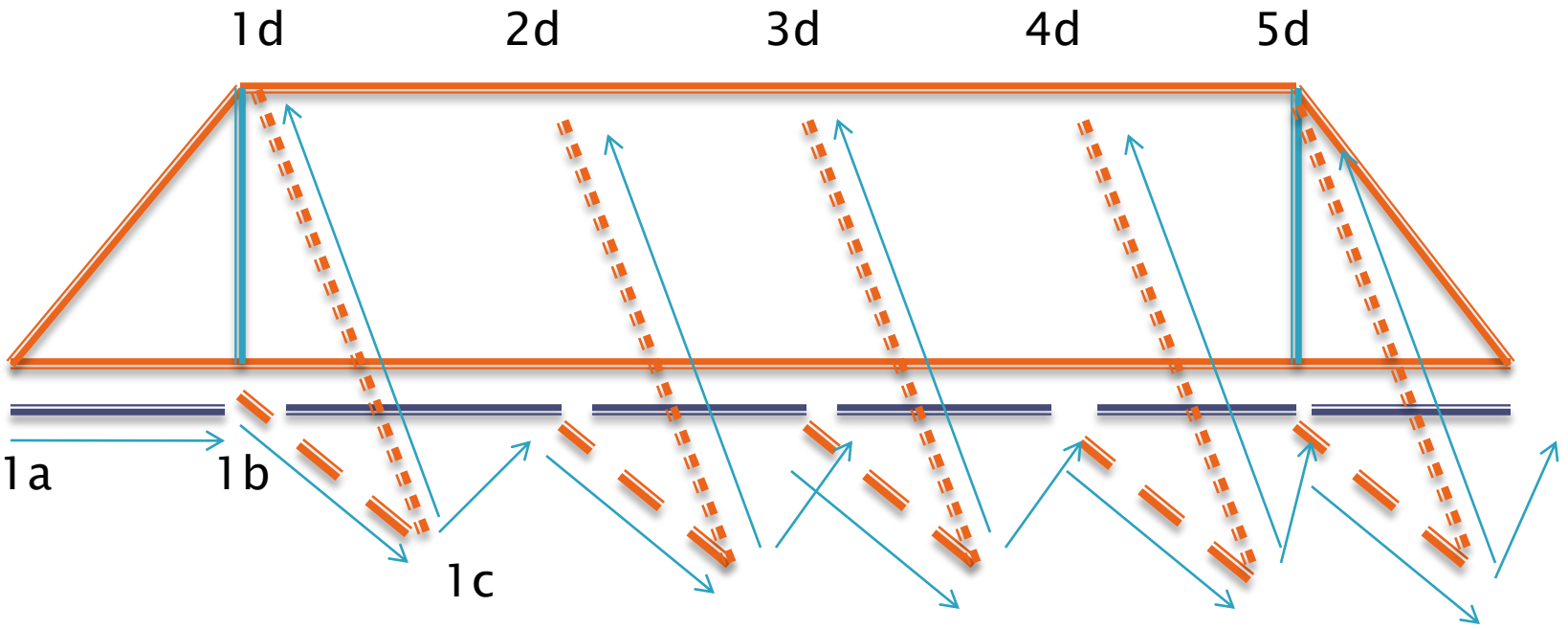
I used a camera and graphs to determine the size of decks by painting physical marks on the decks to line up with the graph.



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.



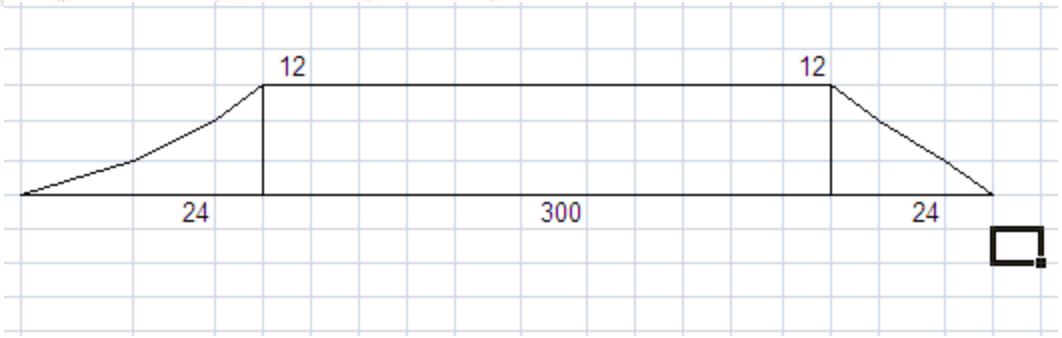
Clinometer Procedure



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		***Total Deck Square Feet:***		***5,529.1***



Need More Measurements

Row							
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

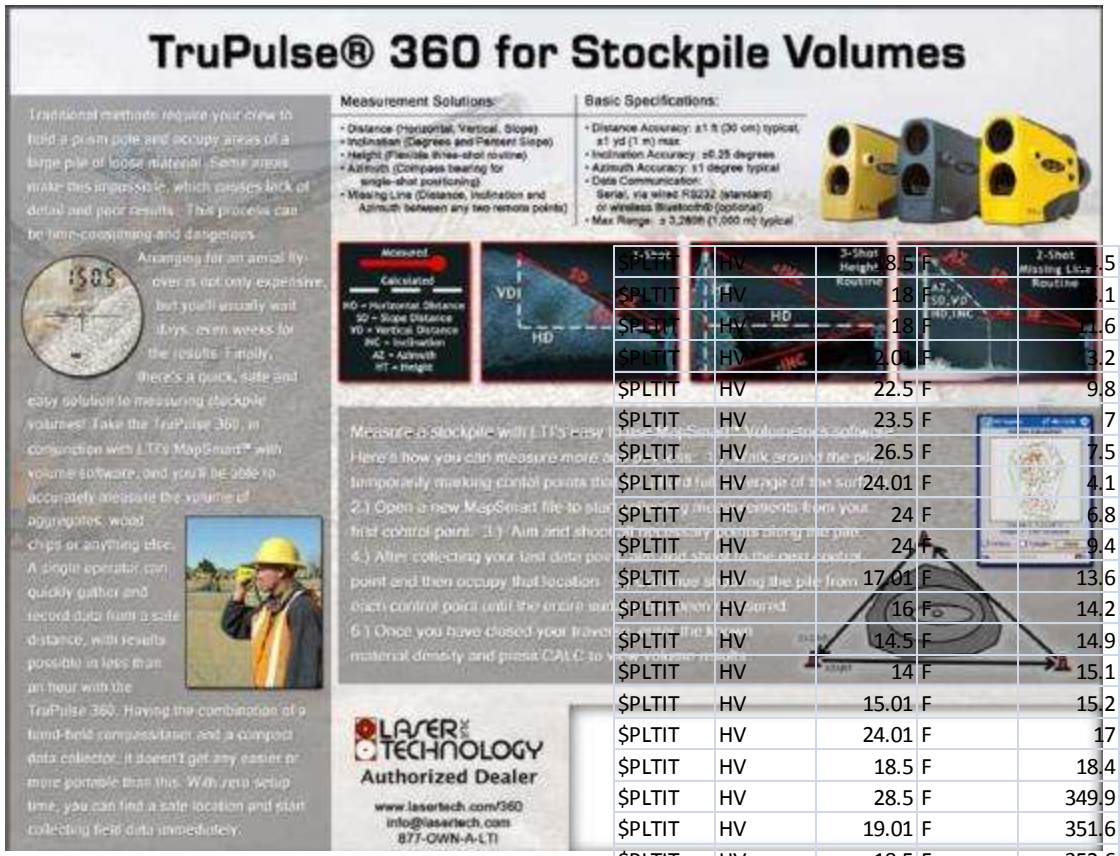
Constantly Changing

Inaccessible

TruePulse360 Rangefinder

TP 360 – Nomad – GPS

The TP360 appeared be the ultimate device for my project



$PLTIT	HV	18.5	F	[illegible]	D	-14.8	D	19	F*43
$PLTIT	HV	18	F	[illegible]	D	-14.8	D	19	F*45
$PLTIT	HV	18	F	[illegible]	D	-14.7	D	18.5	F*4B
$PLTIT	HV	2.01	F	[illegible]	D	-15.4	D	12.01	F*7B
$PLTIT	HV	22.5	F	9.8	D	-9.5	D	23	F*43
$PLTIT	HV	23.5	F	7	D	-7.7	D	23.5	F*4D
$PLTIT	HV	26.5	F	7.5	D	-2.3	D	26.5	F*49
$PLTIT	HV	24.01	F	4.1	D	-4.4	D	24.01	F*4F
$PLTIT	HV	24	F	6.8	D	-4.9	D	24	F*49
$PLTIT	HV	24	F	9.4	D	-4.8	D	24.5	F*4E
$PLTIT	HV	17.01	F	13.6	D	-4.5	D	17.01	F*7F
$PLTIT	HV	16	F	14.2	D	-3.8	D	16	F*76
$PLTIT	HV	14.5	F	14.9	D	-4.6	D	14.5	F*74
$PLTIT	HV	14	F	15.1	D	-5.7	D	14	F*7D
$PLTIT	HV	15.01	F	15.2	D	-5.9	D	15.01	F*70
$PLTIT	HV	24.01	F	17	D	-4.6	D	24.01	F*7E
$PLTIT	HV	18.5	F	18.4	D	-3.8	D	18.5	F*7C
$PLTIT	HV	28.5	F	349.9	D	-0.7	D	28.5	F*4A
$PLTIT	HV	19.01	F	351.6	D	-3.8	D	19.01	F*40
$PLTIT	HV	18.5	F	352.6	D	-3.9	D	18.5	F*42
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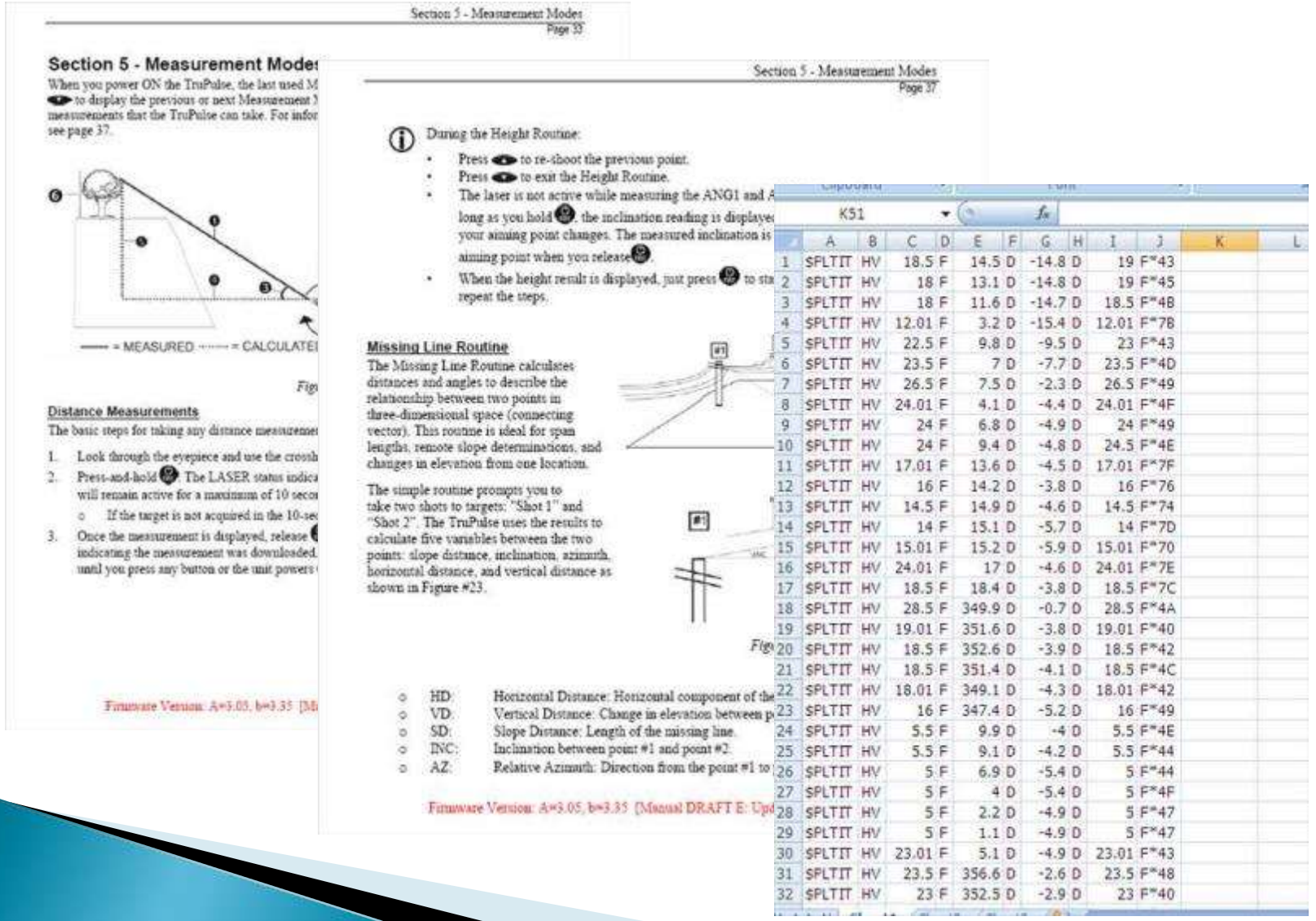
$PLTIT	HV	18.01	F	349.1	D	-4.3	D	18.01	F*42
$PLTIT	HV	16	F	347.4	D	-5.2	D	16	F*49
$PLTIT	HV	5.5	F	9.9	D	-4	D	5.5	F*4E

Understand the Devices



Section 5 - Measurement Modes
Page 33

Section 5 - Measurement Mode

When you power ON the TruPulse, the last used M
to display the previous or next Measurement
measurements that the TruPulse can take. For infor
see page 37.

= MEASURED ····· = CALCULATE

Fig

Distance Measurements

The basic steps for taking any distance measureme

1. Look through the eyepiece and use the crossh
2. Press-and-hold . The LASER status indica
will remain active for a maximum of 10 seco
   - If the target is not acquired in the 10-se
3. Once the measurement is displayed, release
indicating the measurement was downloaded.
until you press any button or the unit powers

Firmware Version: A=3.05, b=3.35 [M

Section 5 - Measurement Modes
Page 37

During the Height Routine:

- Press to re-shoot the previous point.
- Press to exit the Height Routine.
- The laser is not active while measuring the ANG1 and A
long as you hold , the inclination reading is displaye
your aiming point changes. The measured inclination is
aiming point when you release .
- When the height result is displayed, just press to sta
repeat the steps.

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

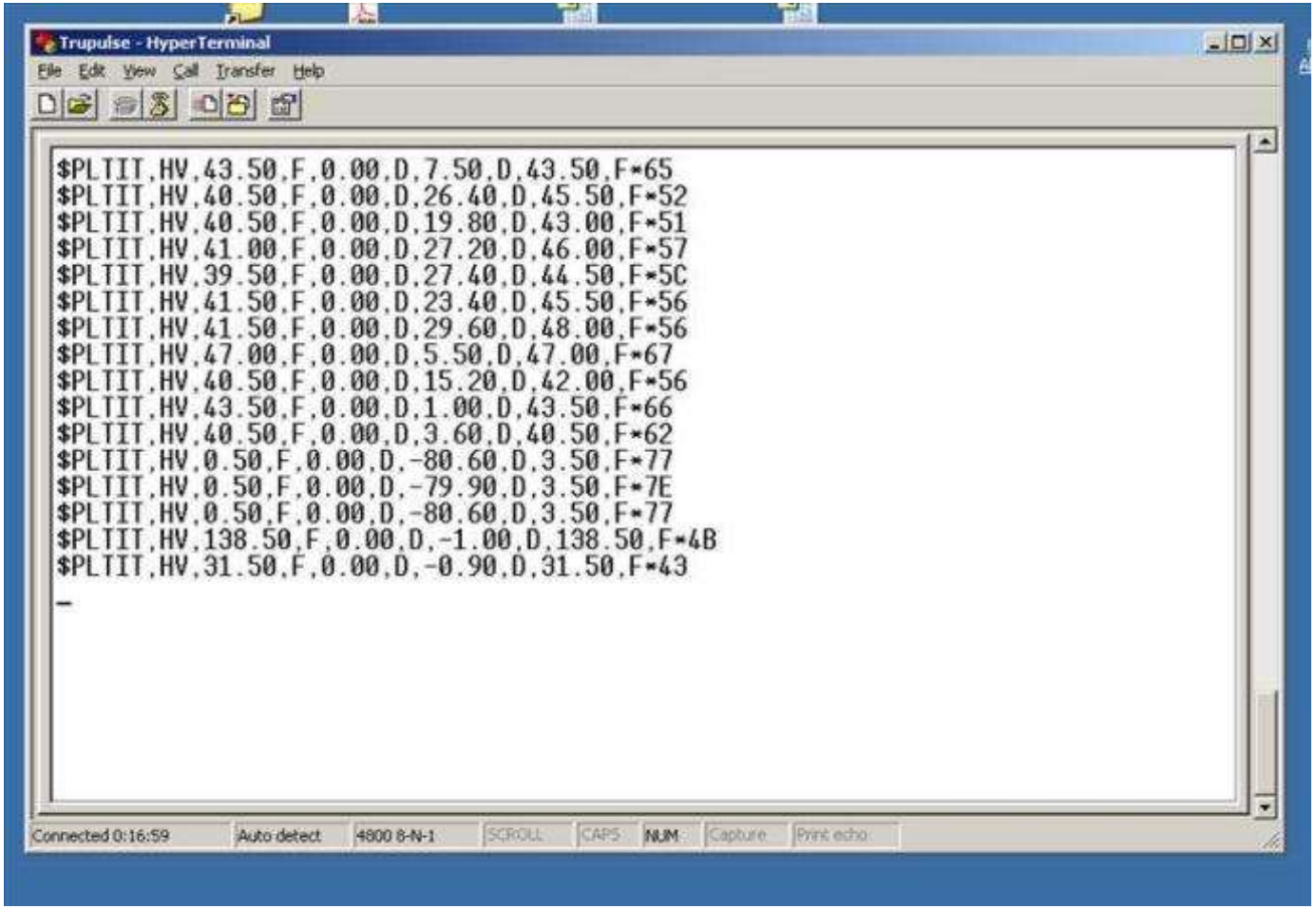
- HD: Horizontal Distance: Horizontal component of the
- VD: Vertical Distance: Change in elevation between p
- SD: Slope Distance: Length of the missing line.
- INC: Inclination between point #1 and point #2.
- AZ: Relative Azimuth: Direction from the point #1 to

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

K51

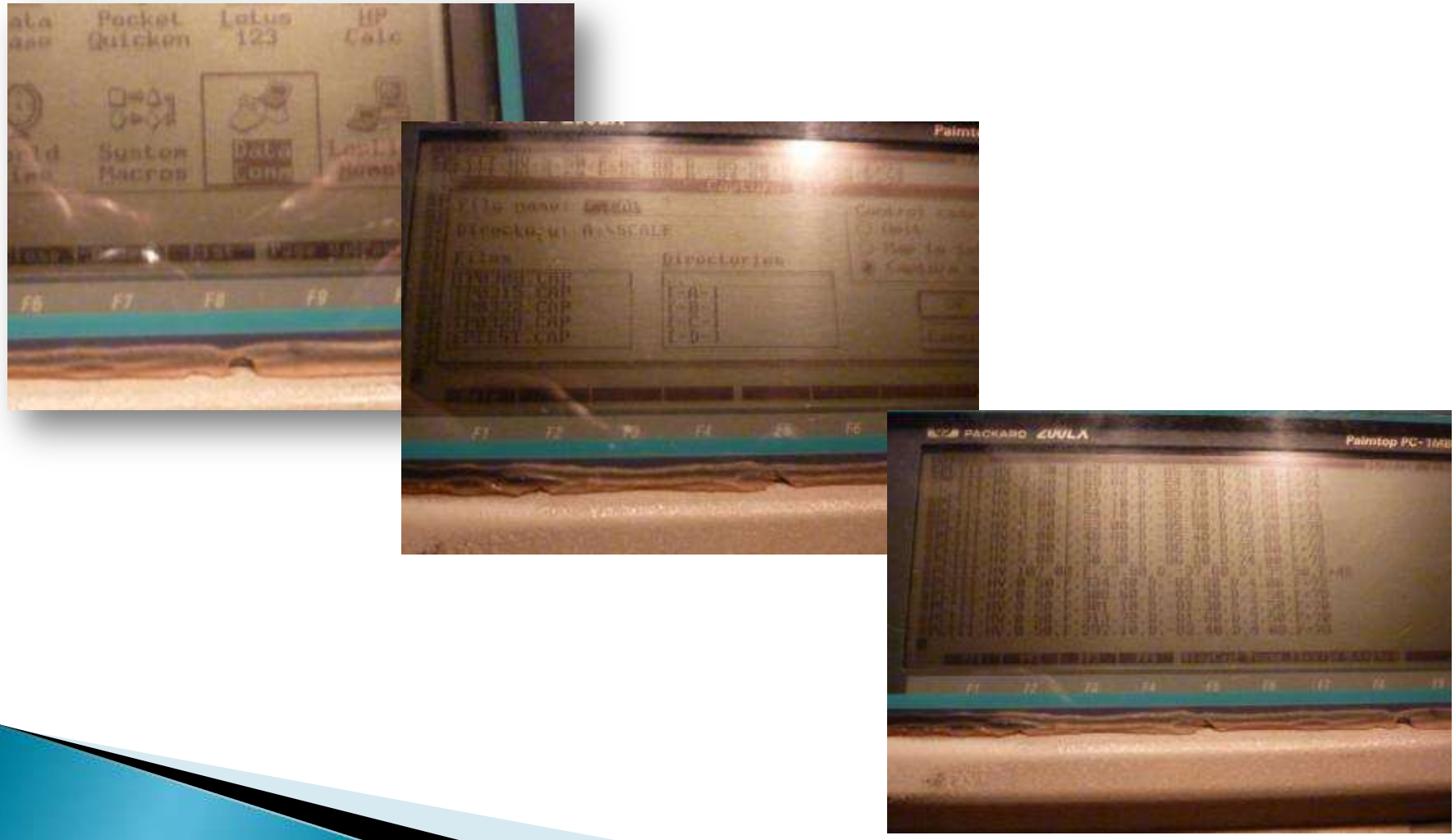
	A	B	C	D	E	F	G	H	I	J	K	L
1	$PLTIT	HV	18.5	F	14.5	D	-14.8	D	19	F*43		
2	$PLTIT	HV	18	F	13.1	D	-14.8	D	19	F*45		
3	$PLTIT	HV	18	F	11.6	D	-14.7	D	18.5	F*4B		
4	$PLTIT	HV	12.01	F	3.2	D	-15.4	D	12.01	F*7B		
5	$PLTIT	HV	22.5	F	9.8	D	-9.5	D	23	F*43		
6	$PLTIT	HV	23.5	F	7	D	-7.7	D	23.5	F*4D		
7	$PLTIT	HV	26.5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

TP360 Data Collection

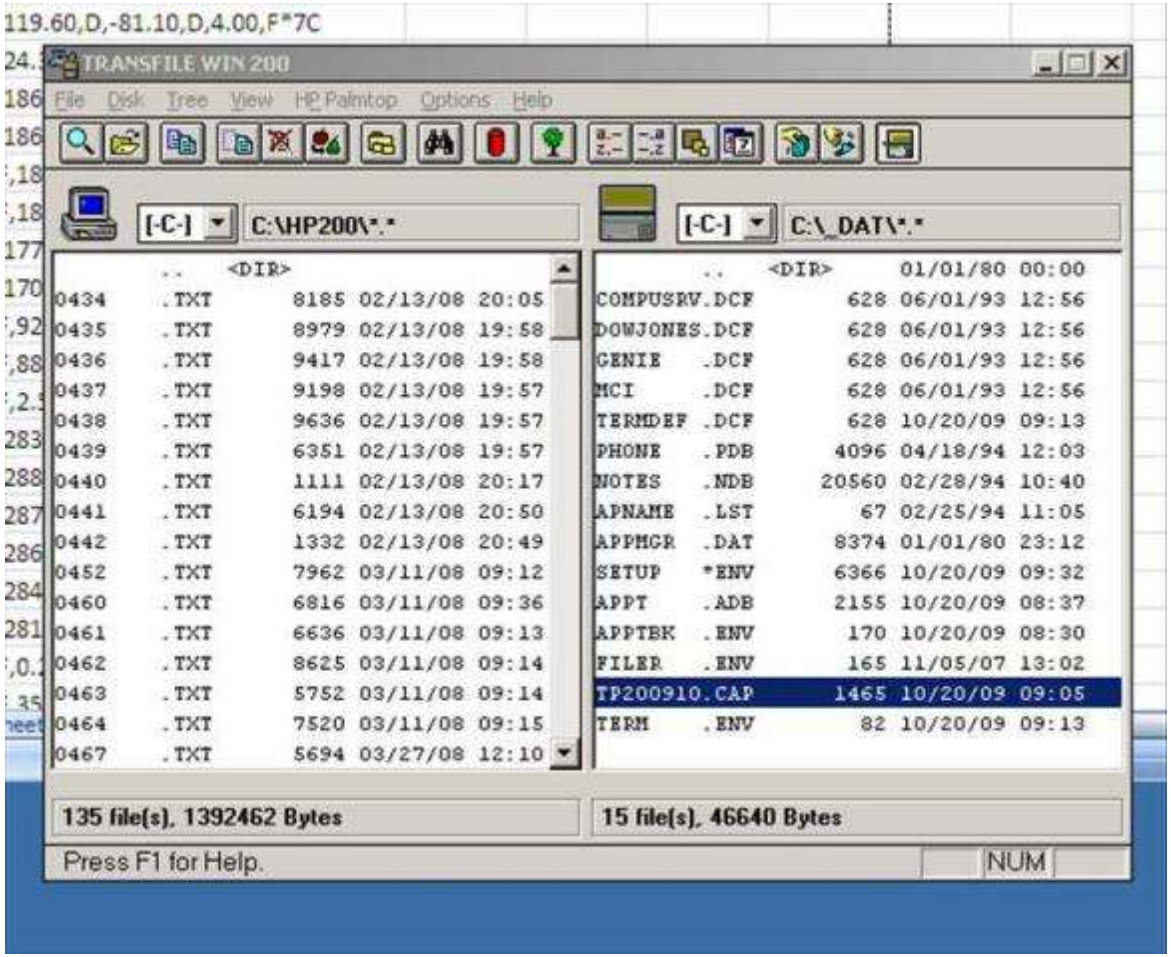


Deck Measurement Tools

HP200 DataComm



HP200 Data Collection



TruPulse Datastring in an Excel Sheet

K51

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

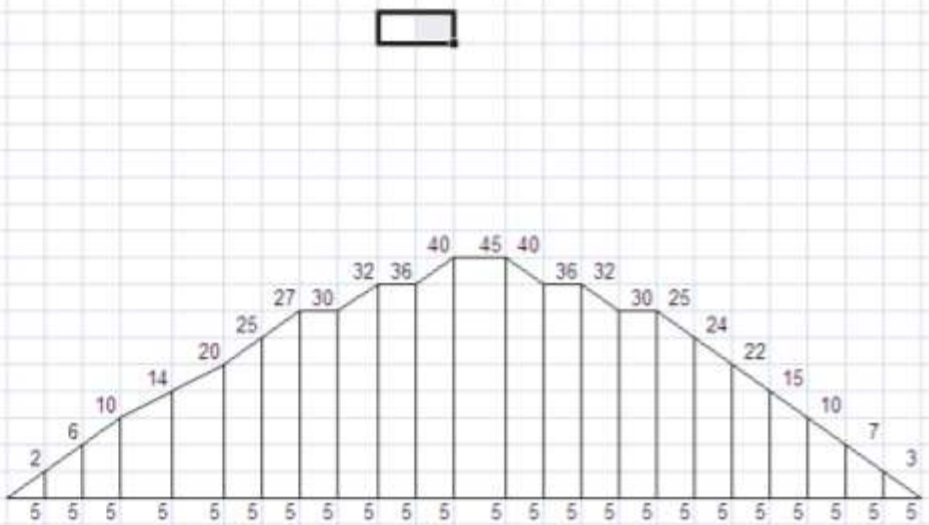
C1S NEW				
LGTH	**DOWN**	**UP**	**HEIGHT**	**SqFt**
-	***4.0***	***(4.0)***	-	
17.0	***4.0***	***9.0***	13.0	110.5
18.0	***4.0***	***9.5***	13.5	238.5
18.0	***4.5***	***7.0***	11.5	225.0
18.0	***5.0***	***8.5***	13.5	225.0
18.0	***5.0***	***12.0***	17.0	274.5
18.0	***4.5***	***12.5***	17.0	306.0
18.0	***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



Crane Operator Interface

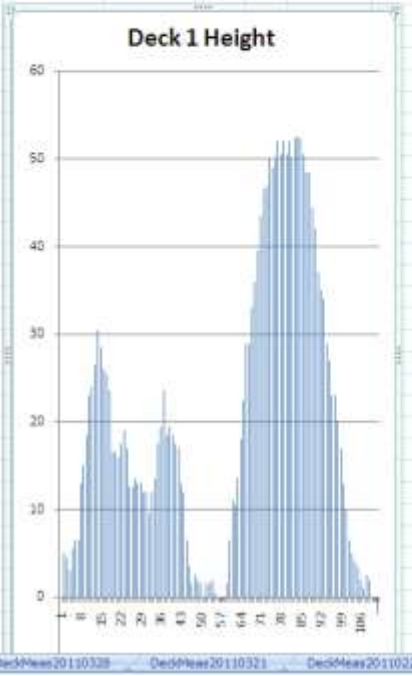
Mounted a TP200

Crane Data

Deck	Position	Empty	Deck #1 3/28/2011	Deck 1 Height	Length	Length Running Total	SqFt	SqFt Running 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	6350	15	6.3	50.4	94.5	371.6
C1N	10	7850	6000	18.5	6.3	56.7	116.6	488.2
C1N	11	7850	5550	23	6.3	63.0	144.9	633.1
C1N	12	7850	5450	24	6.3	69.3	151.2	784.3
C1N	13	7850	5200	26.5	6.3	75.6	167.0	951.2
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	100.8	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	12.6	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

Row Labels	Sum of SqFt
C3N	8,341
C3S	9,176
C4N	7,869
C4M	769
C4S	
(blank)	
Grand Total	40,515

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	11,362	10,682	10,455	10,723	9,163	9,176
C4N	9,012	8,316	8,392	8,609	8,281	7,869
C4M			296			769
C4S		2,054	2,463	3,988	3,988	
Grand Total	54,061	55,682	52,104	46,226	44,563	40,515



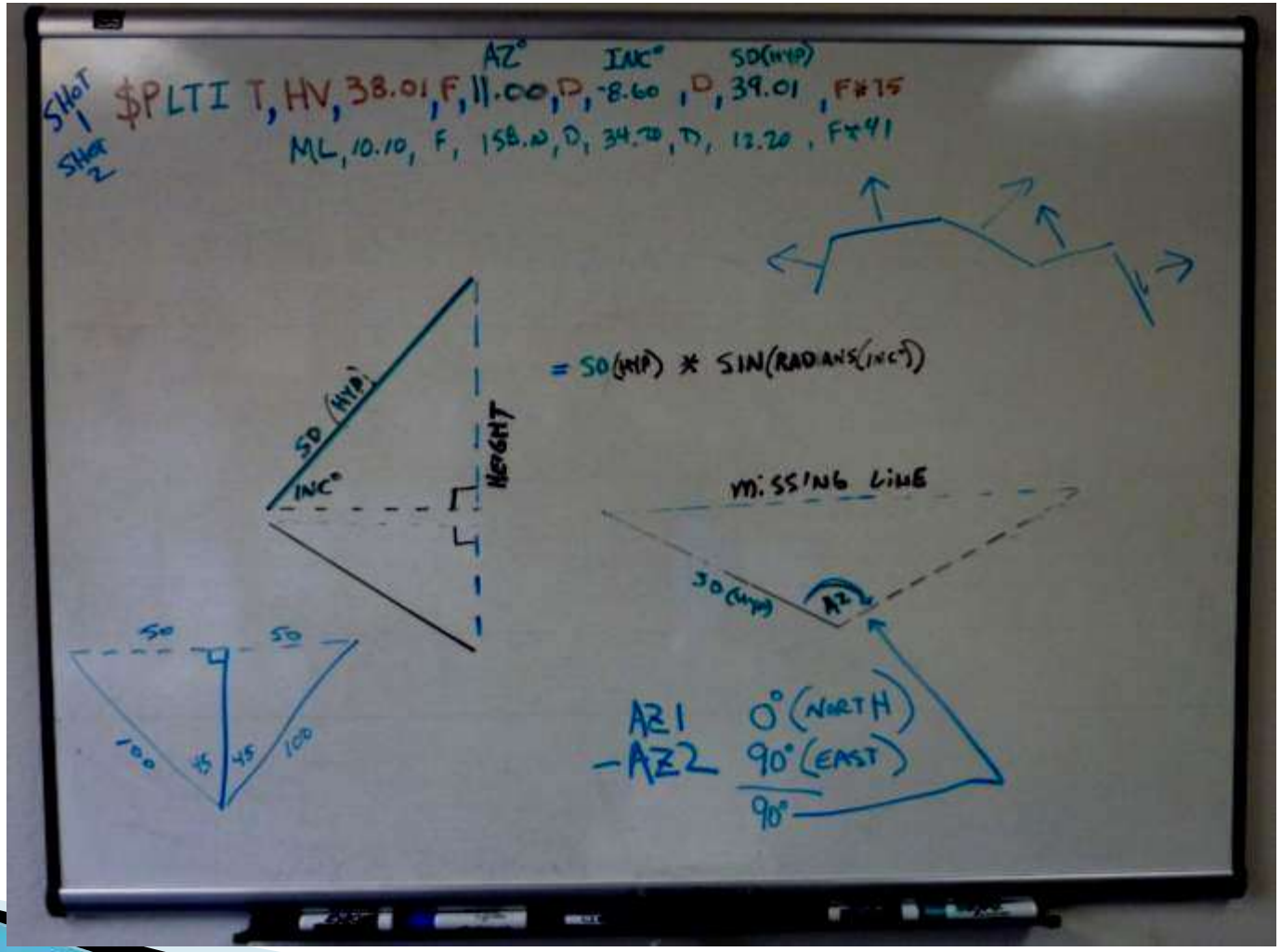
EstLogDeckInv20110328 | CbopCraneLaser2011-03-28 | CH2011-03-28-SAM | DeckMeas20110328 | DeckMeas20110321 | DeckMeas20110221 | DeckMeas20110307

Crane Data

A	B	C	D	E	F	G	H	I	J
Deck	Position	Empty	Deck #1 3/28/2011	Deck 1 Height	Length	Length Running Total	SqFt	SqFt Running 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	

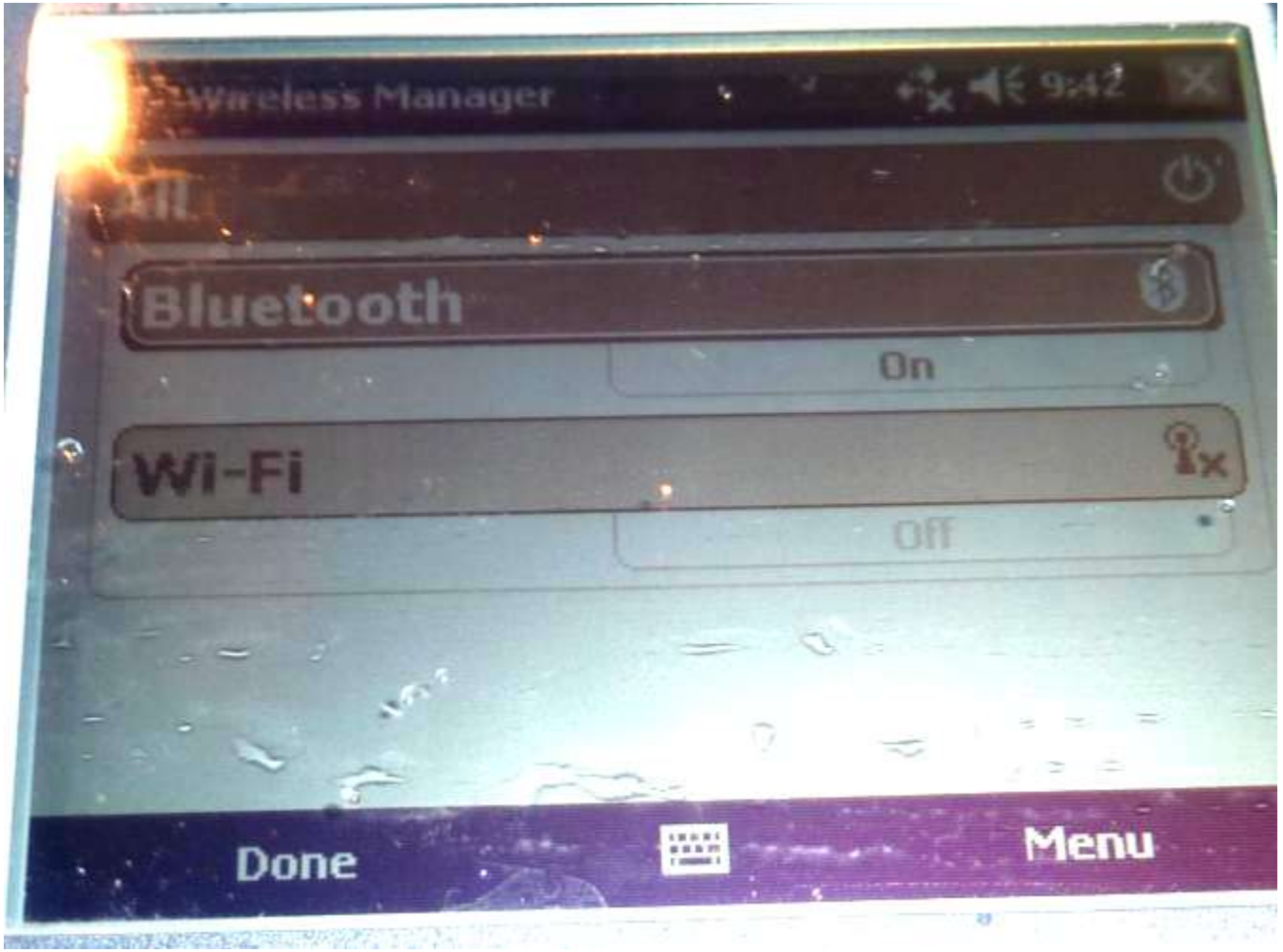
N	O	AB	AC	AD	AE	AF	AG
	Row Labels	21-Feb	28-Feb	7-Mar	14-Mar	21-Mar	28-Mar
	C2S	10,671	10,659	10,877	4,391		
	C3N	2,082		4,624	5,944	5,768	8,341

Understanding the Rangefinder Datastring

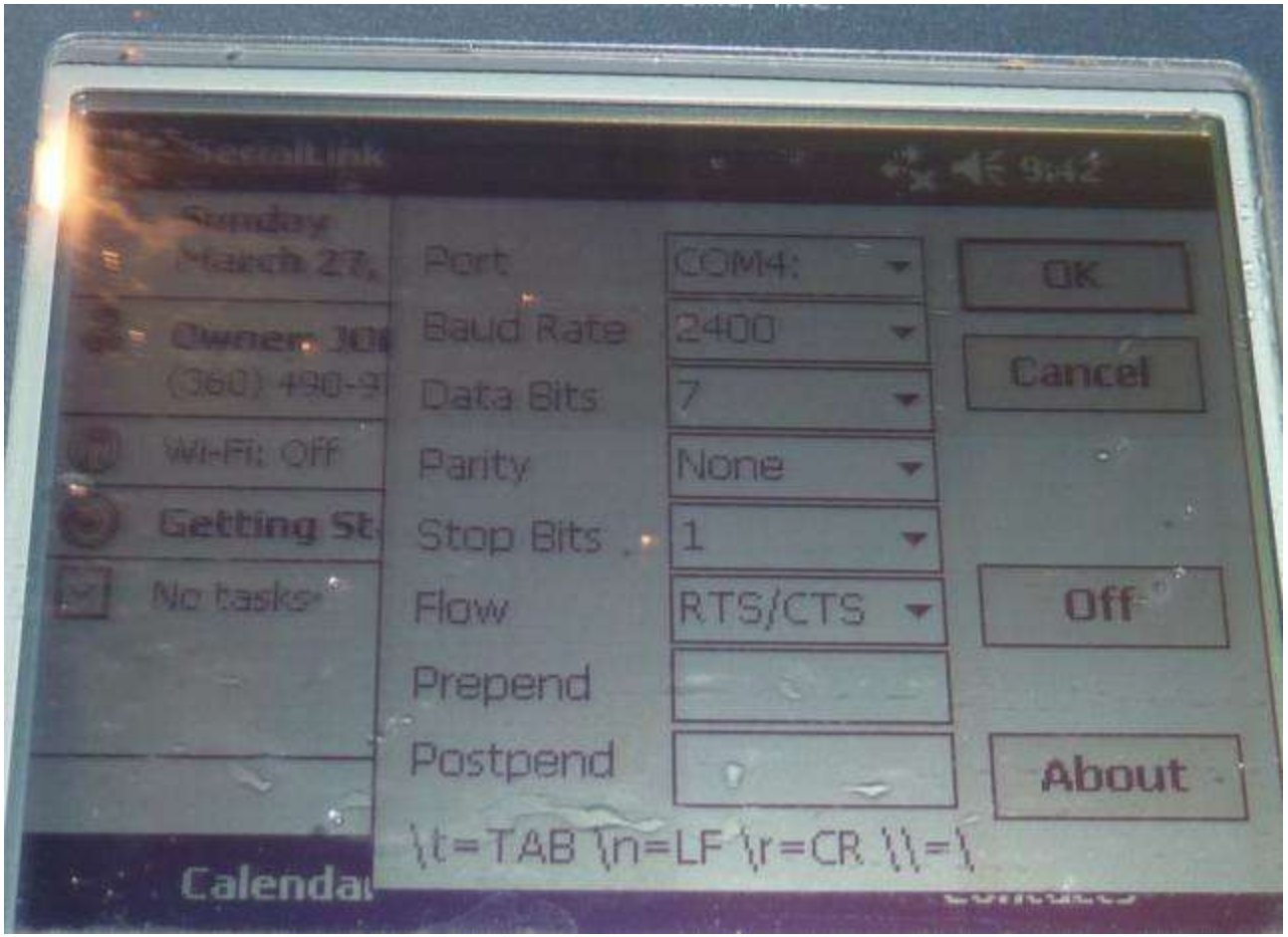


Allegro and TP360

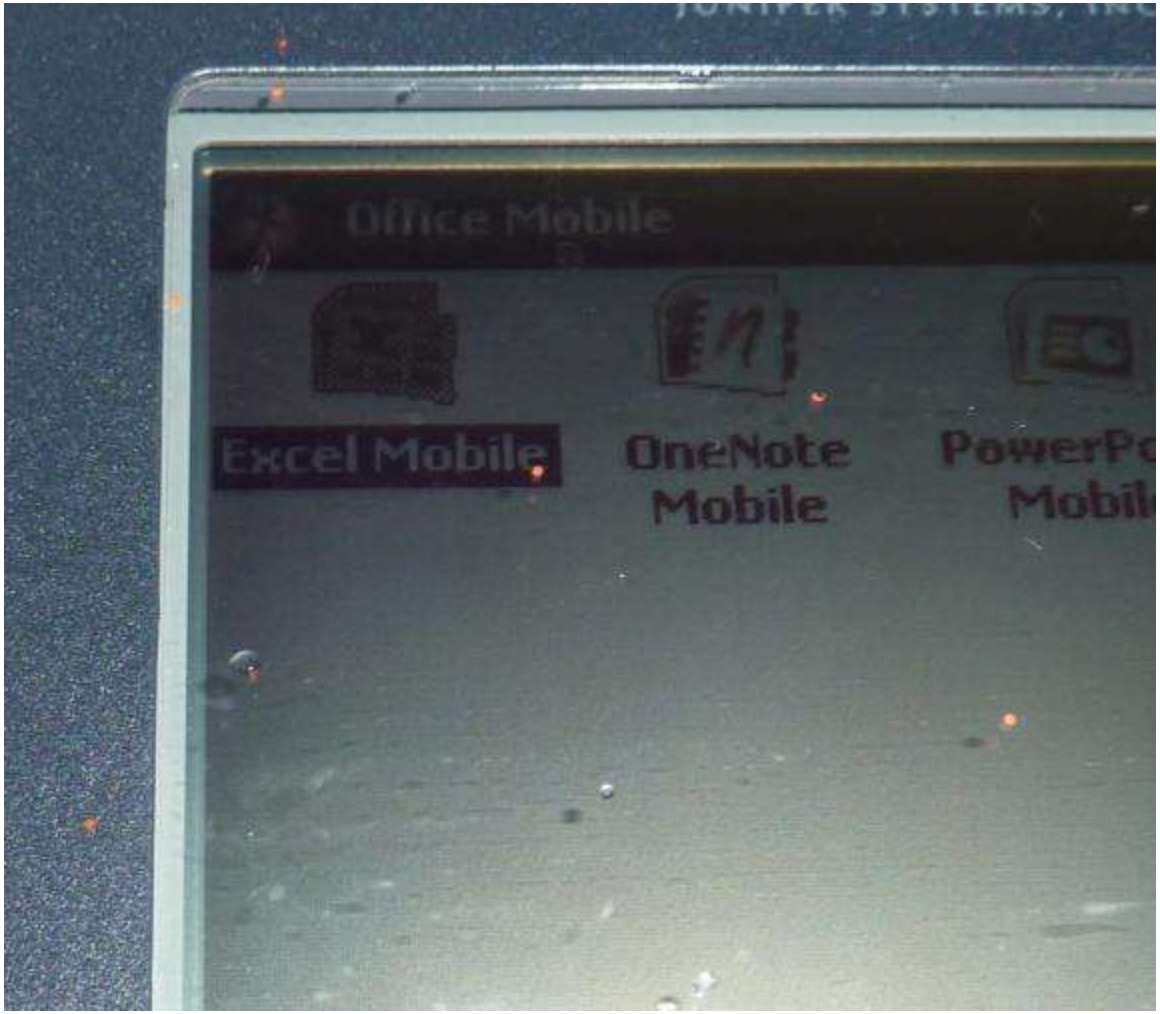
Allegro with Bluetooth



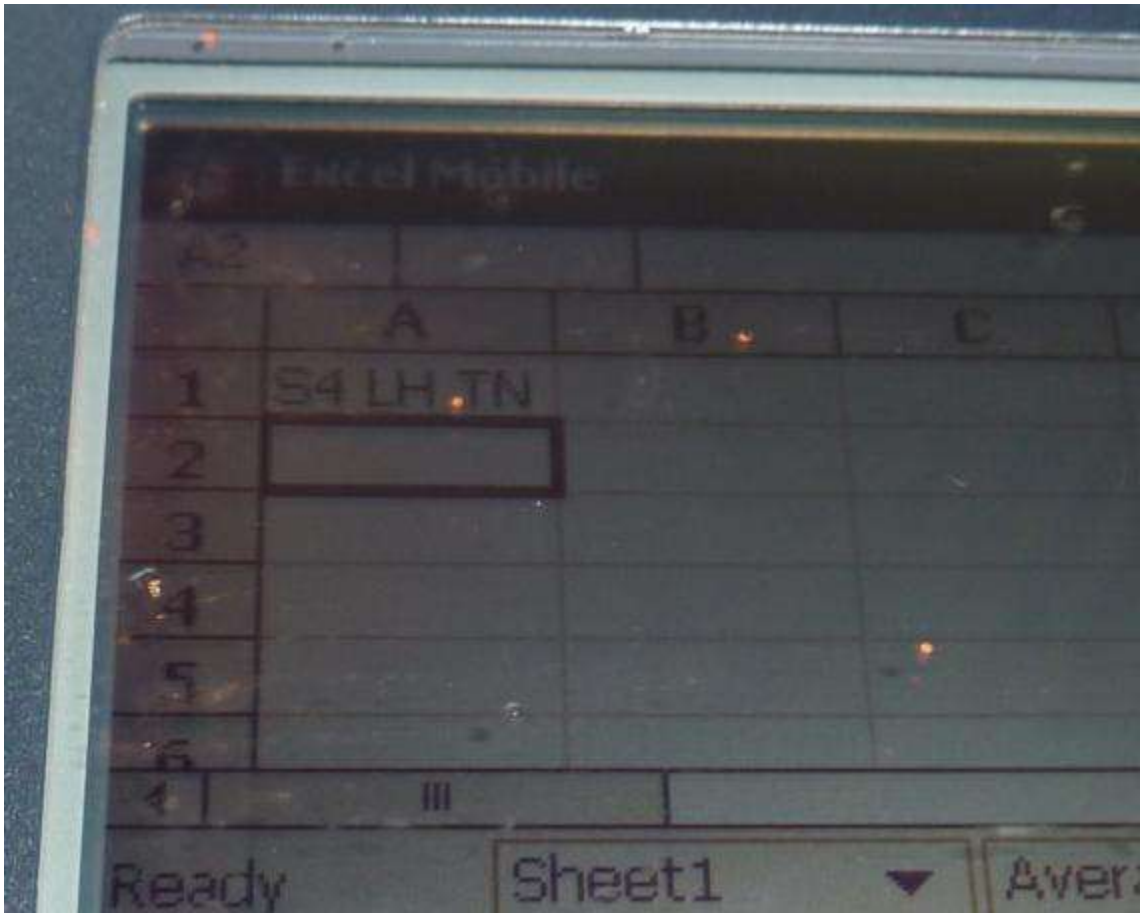
Key Logger to Accept Data



Excel Mobile

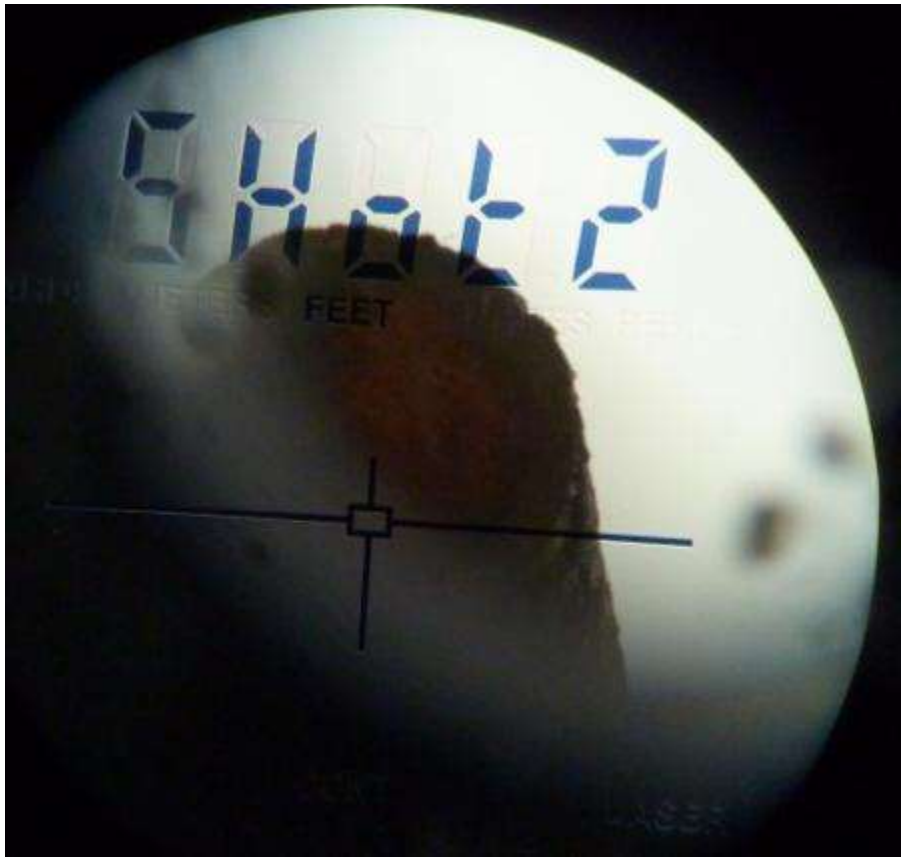


Setup Spreadsheet



Measure Triangle Lengths

Fire the Laser



Measure Rectangle Lengths

Measure Rectangle Heights

Excel Data String

B2 =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	$pltit	hv	27.50	f	248.80	d	-11.10	d	28.00	f*77						
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$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	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 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

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.

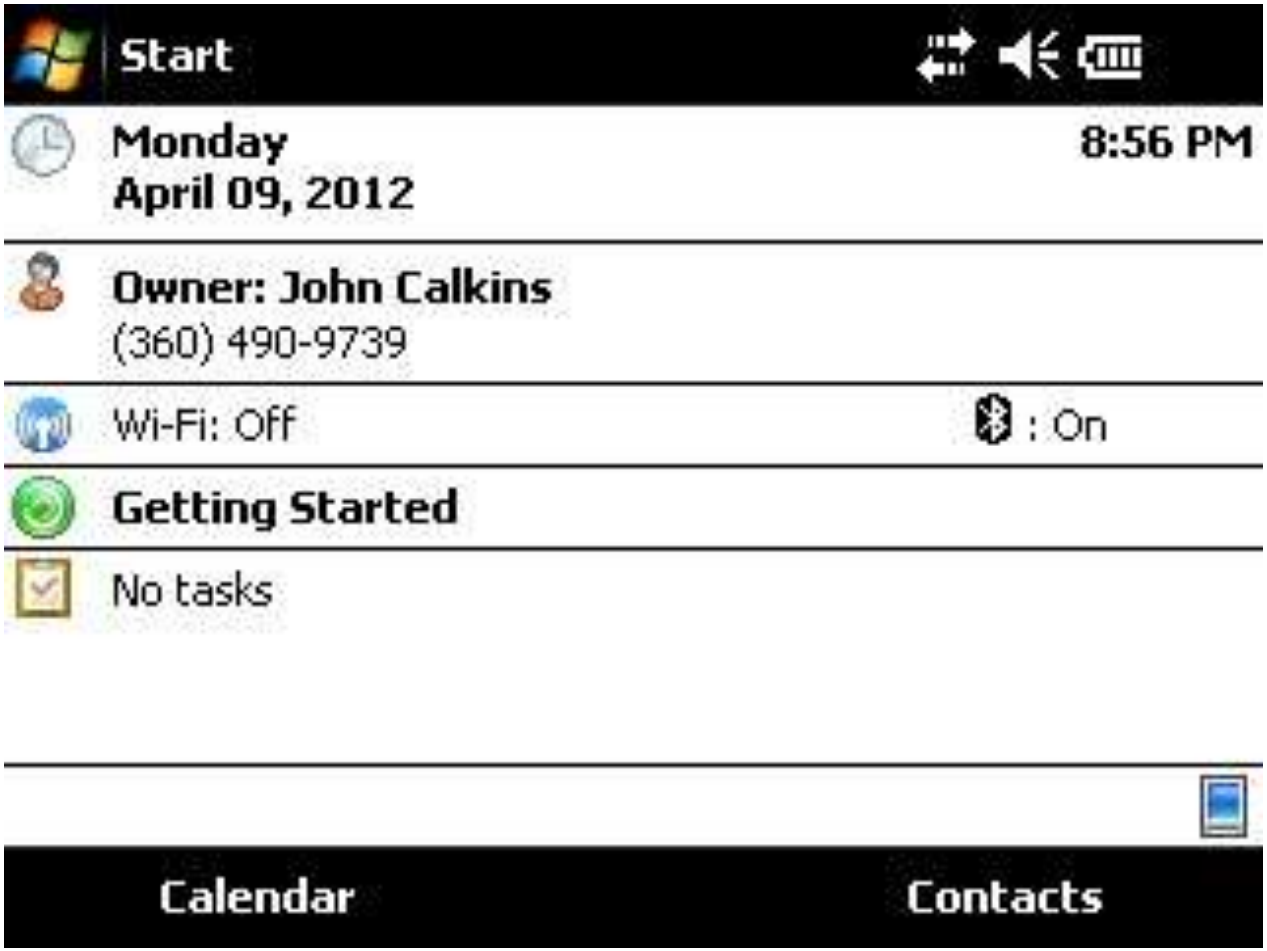
3. We need to be persistent and be able to explain what is needed for others to utilize what we have learned.

TruePulse to the Rescue

UNDER CONSTRUCTION 2011

Laser Tech's Log Deck Measurement Program Finished

Turn on Bluetooth or Tether with Serial Cable

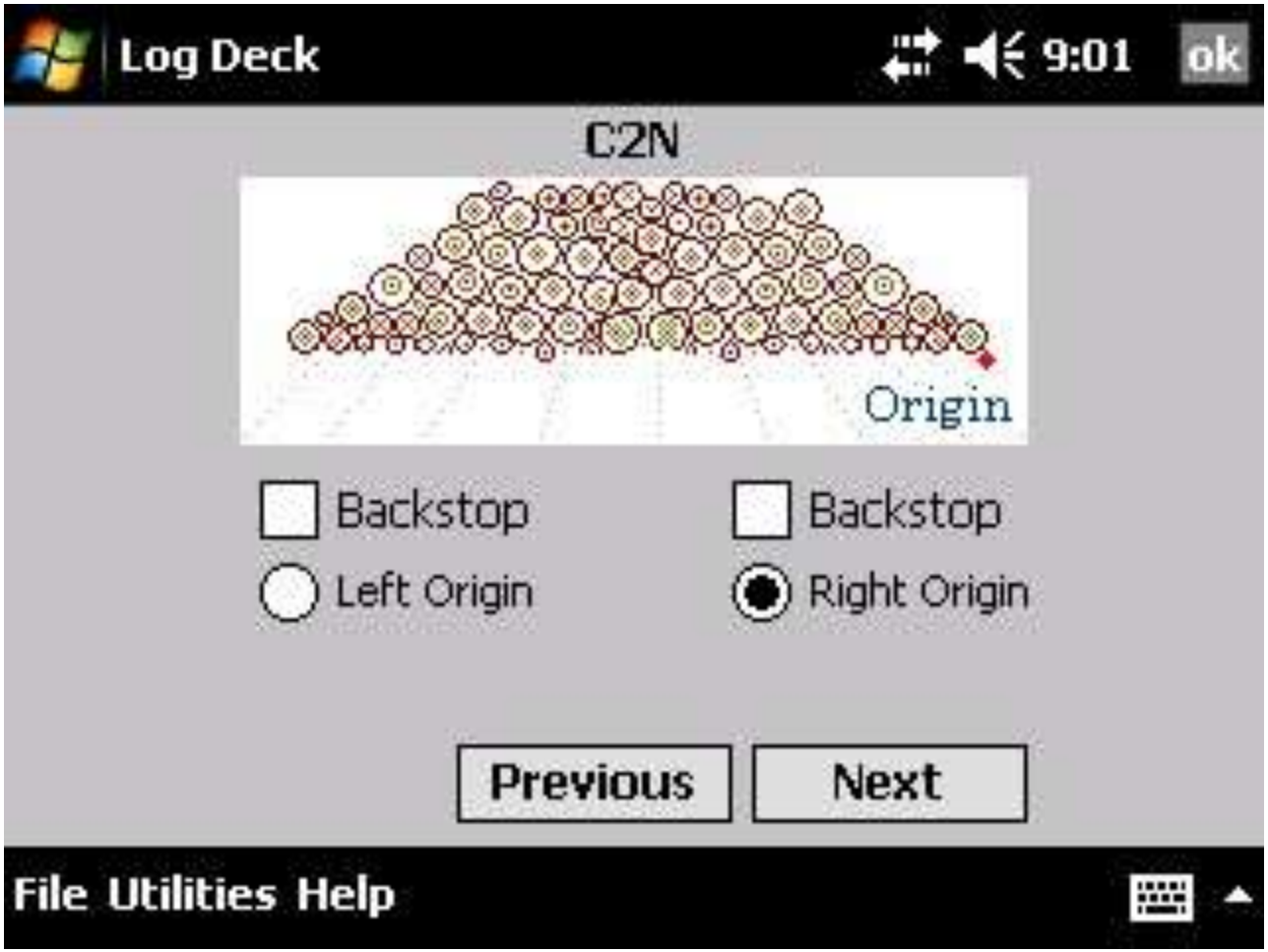


Start the Laser Tech LogDeck Program

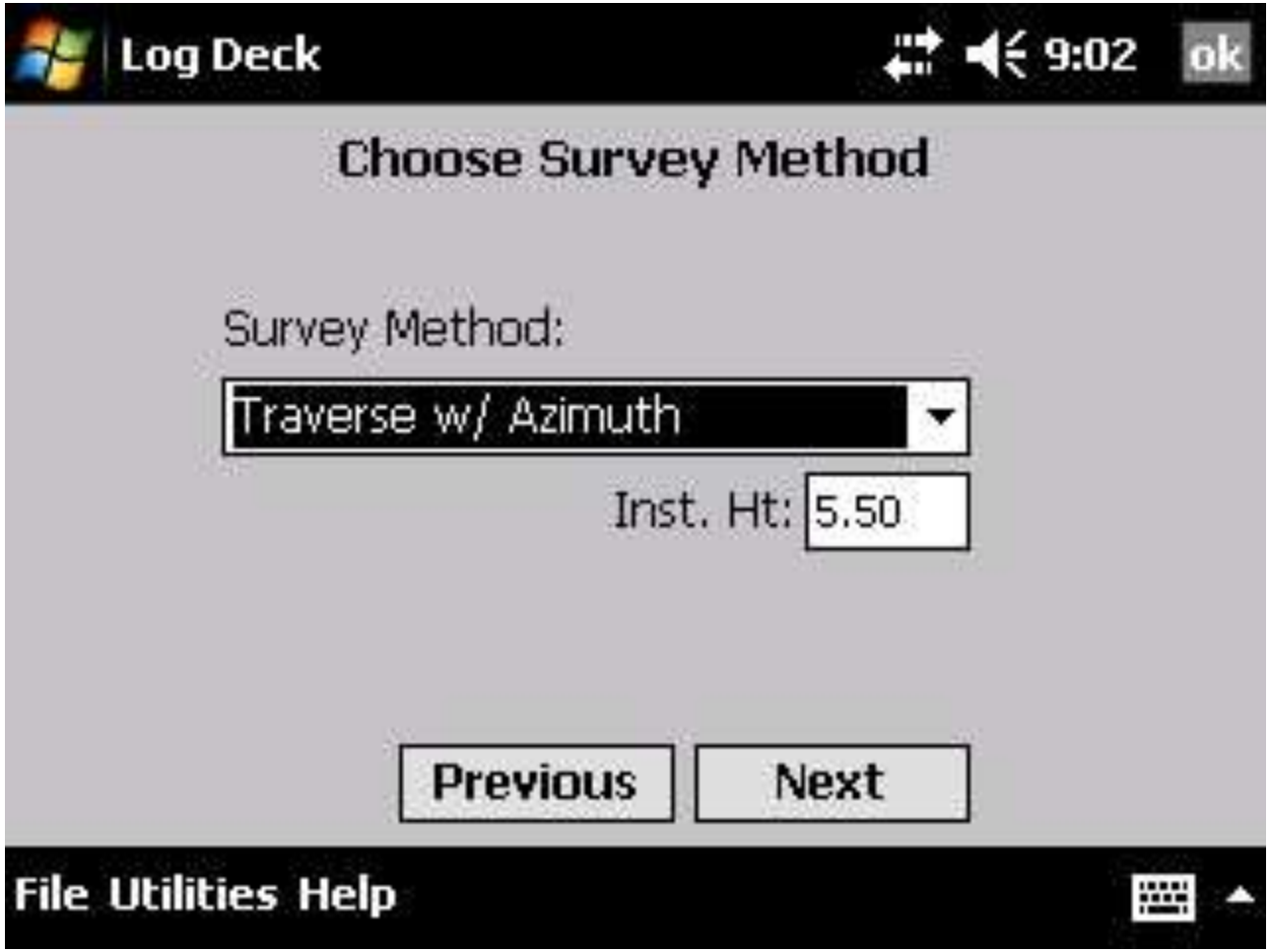
Create a Job Name

The Grade Sort and Species are Customizable

Select Orientation

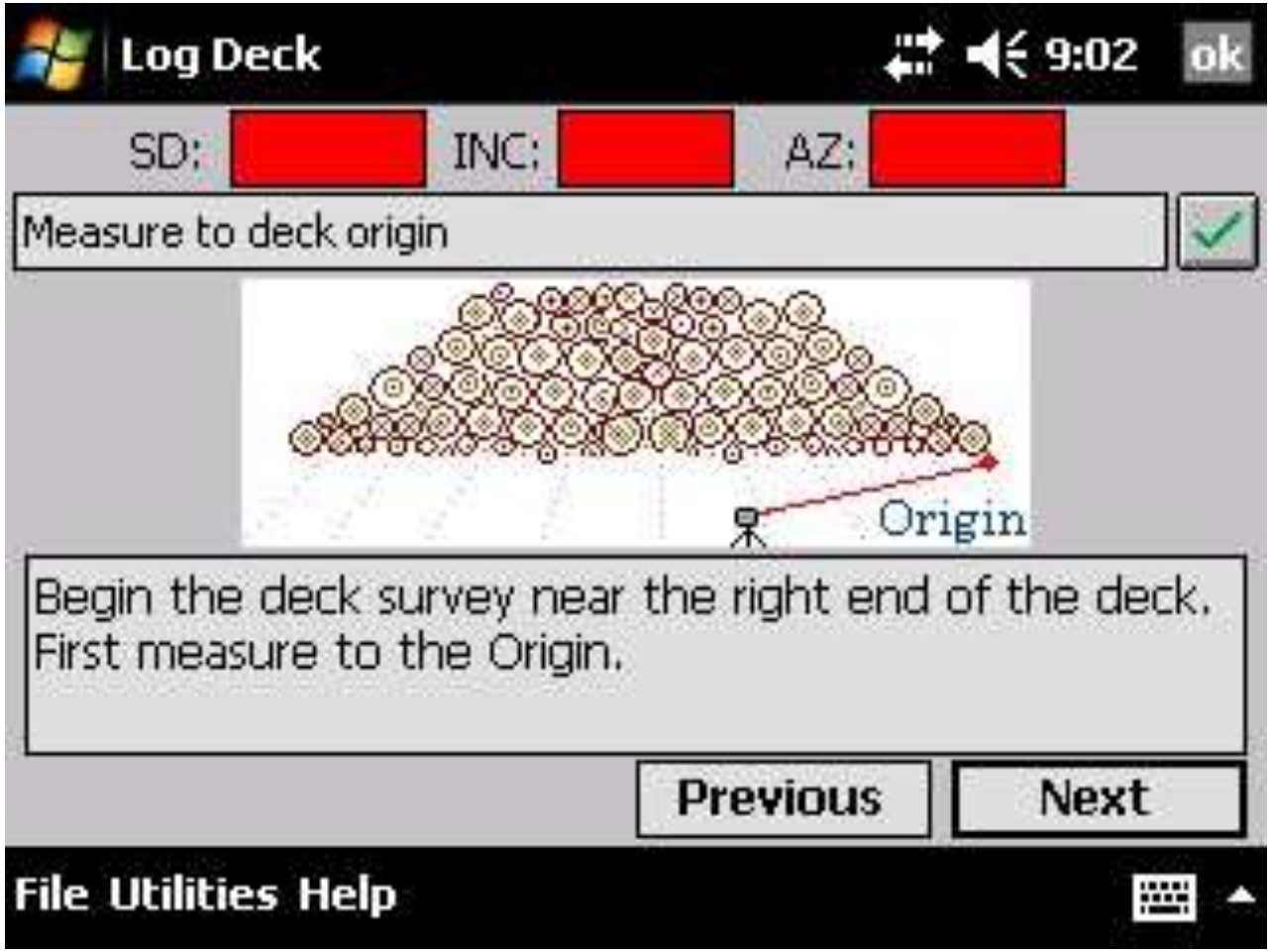


Select Survey Method



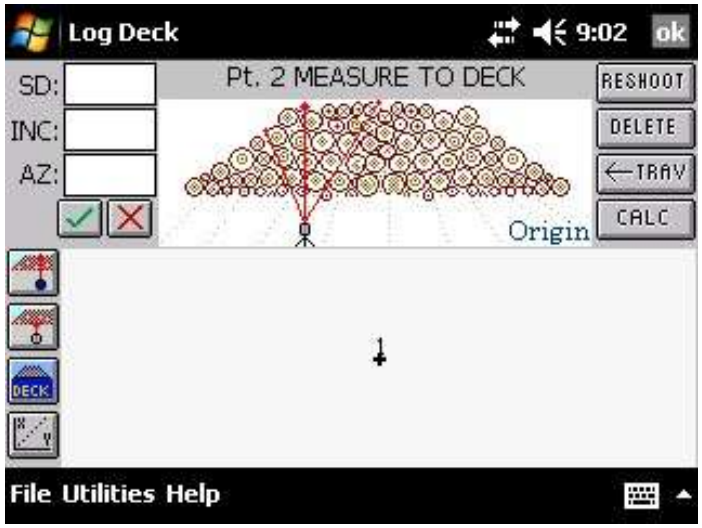
This is the selection for the TP360

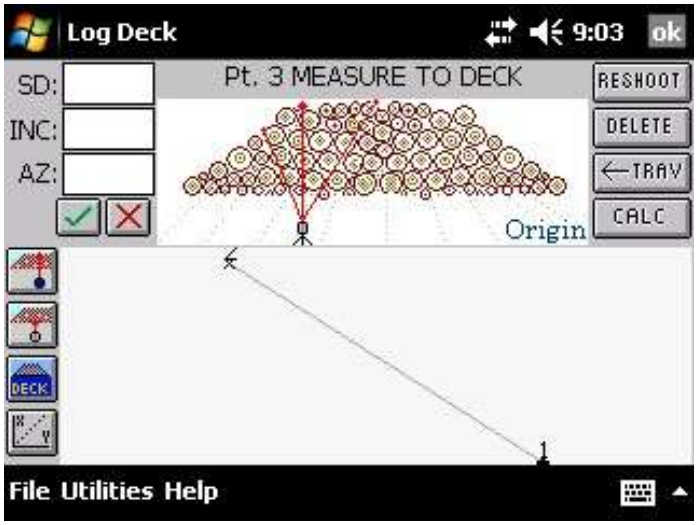
Fire the Laser at the Origin

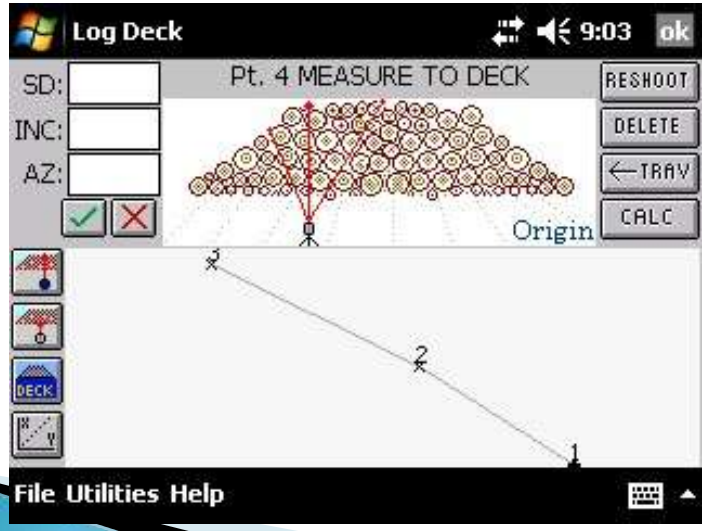


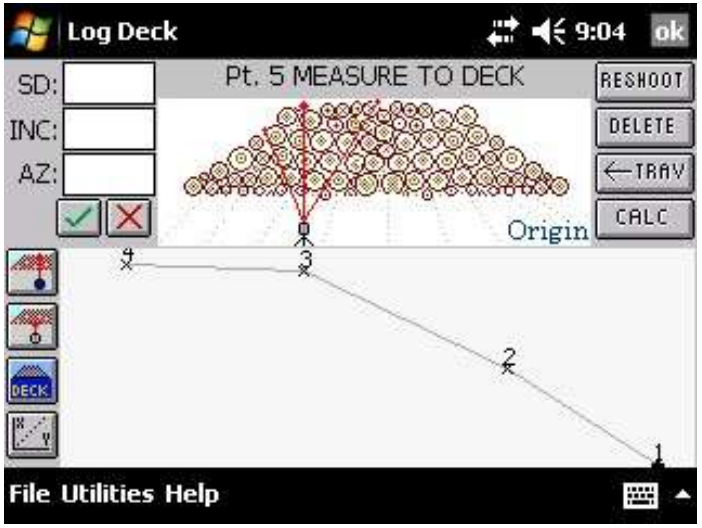
The Program tells you what to do

Continue with the Deck Top Shots

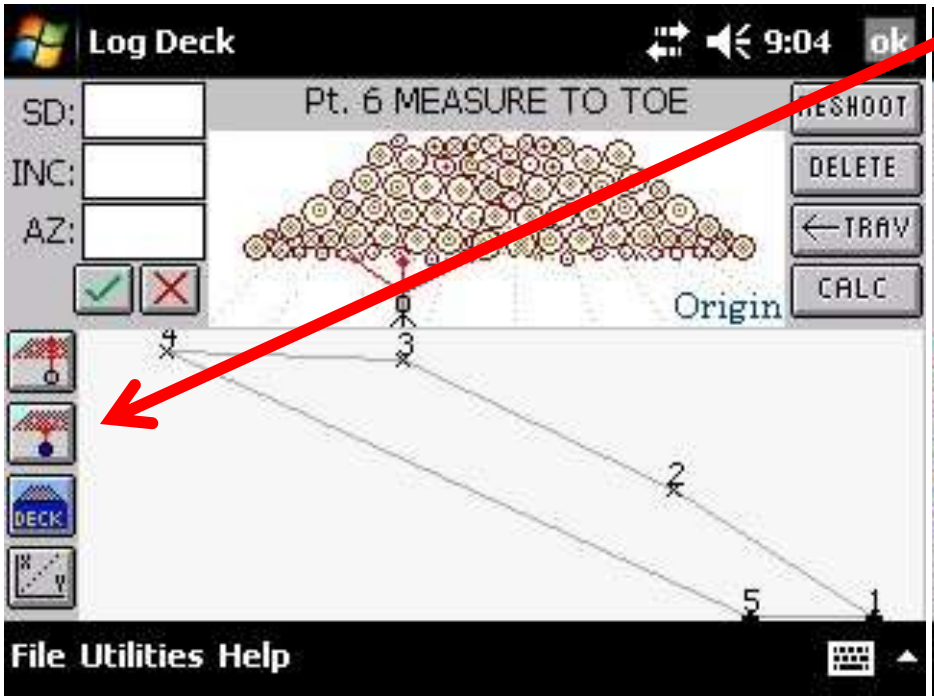


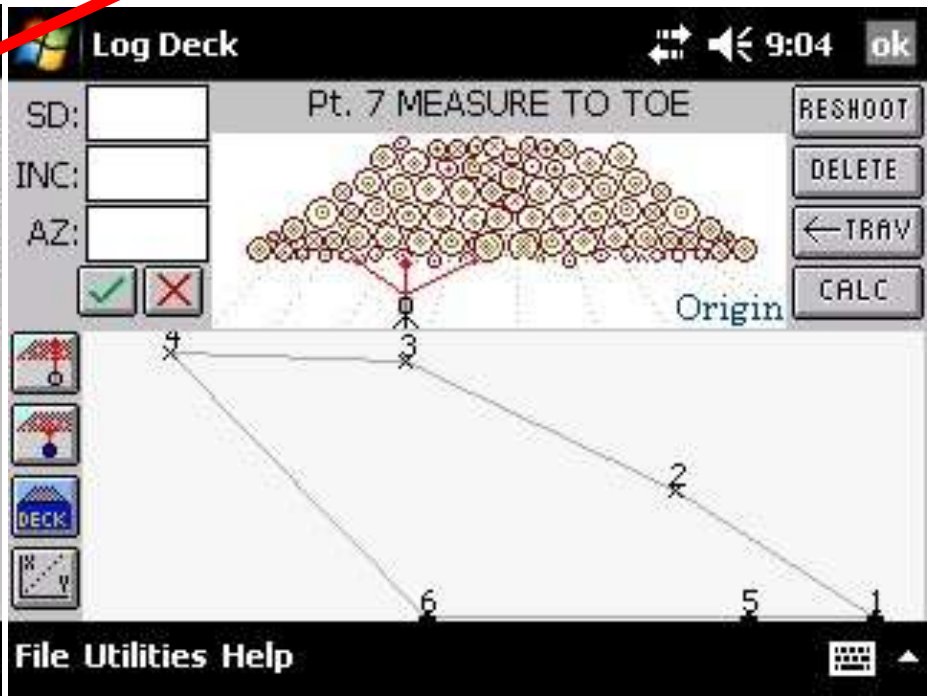






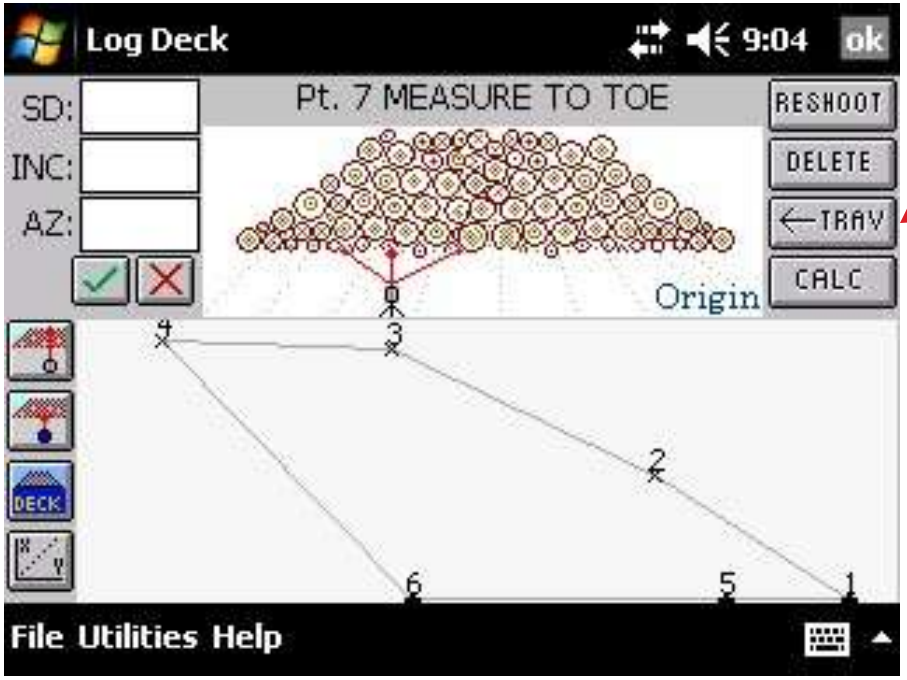
Select the Deck Toe Shots

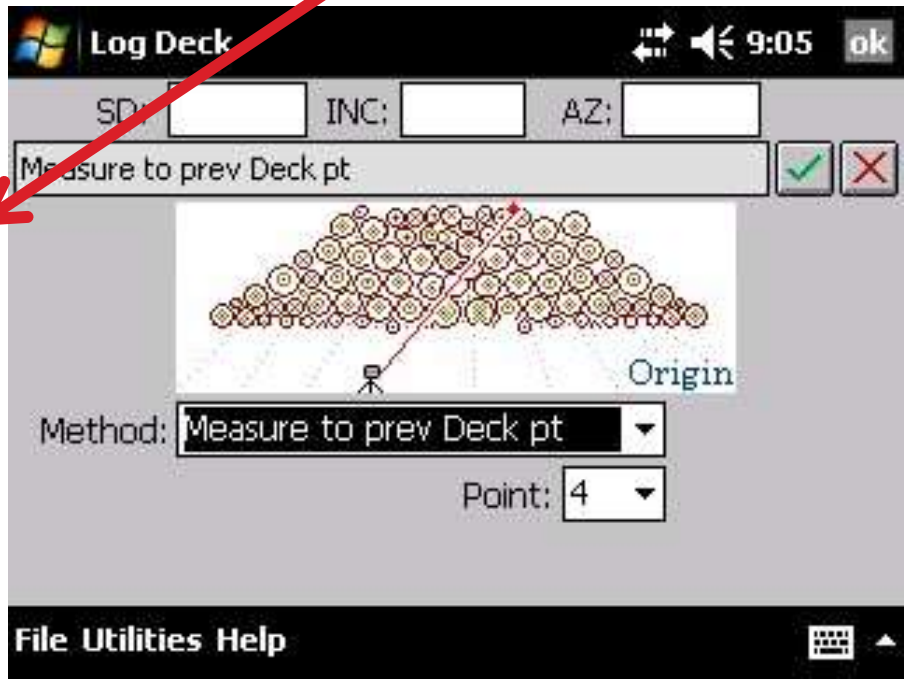




And fire away, the program tells you what do next

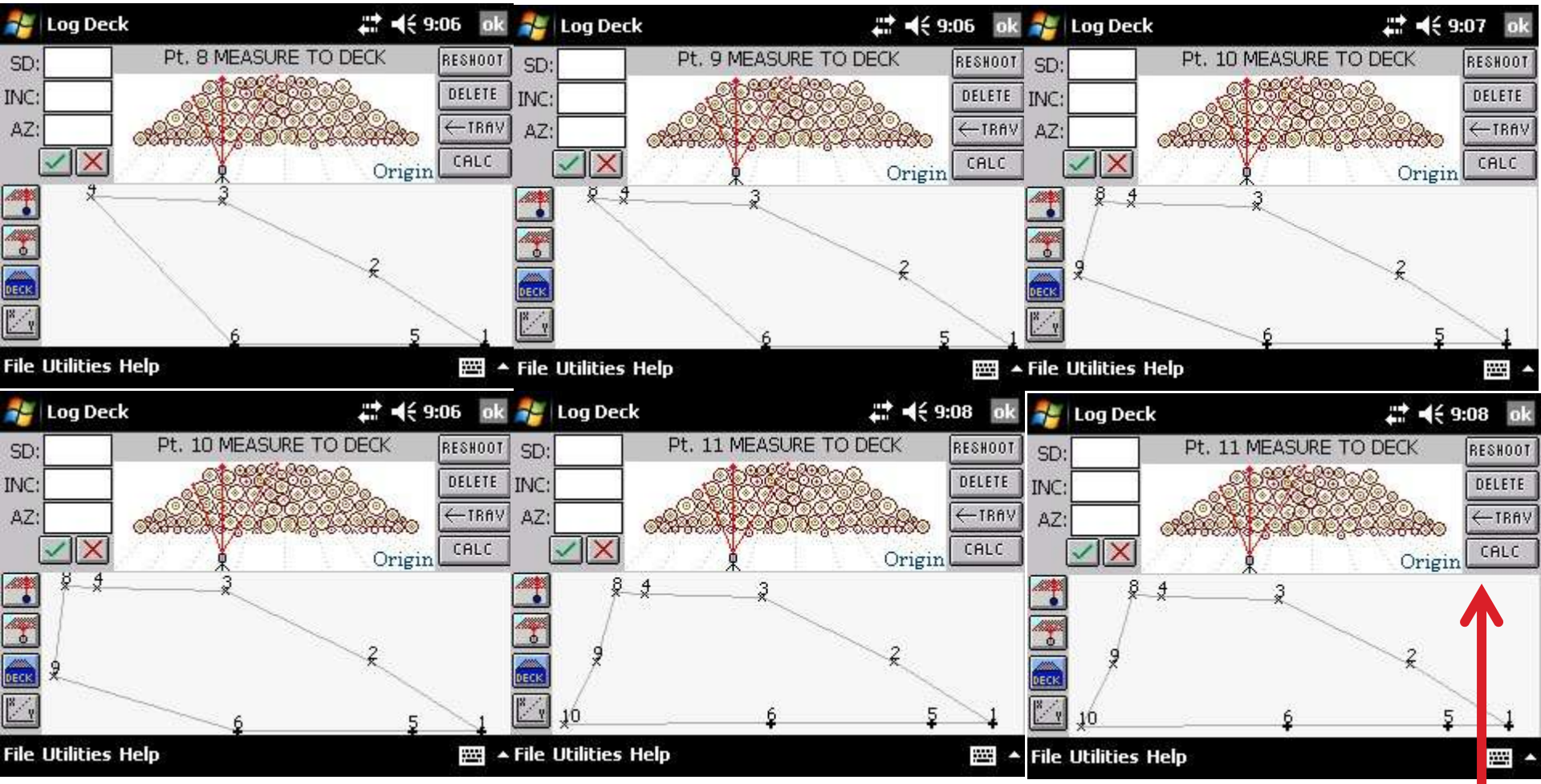
When you need to move, select the Traverse Function





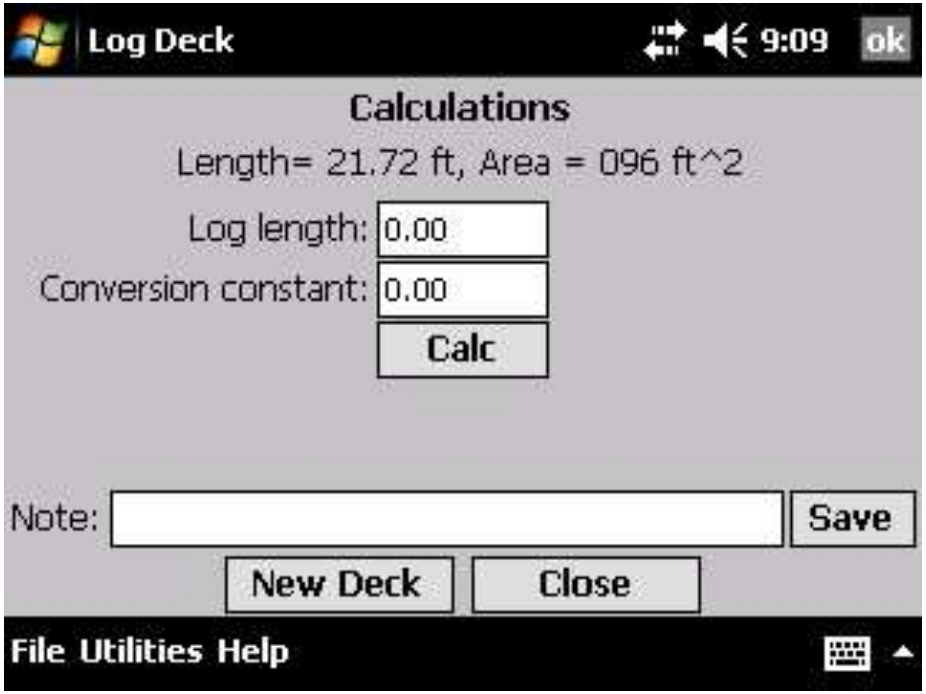
Move to the new location and start with the log you left off on

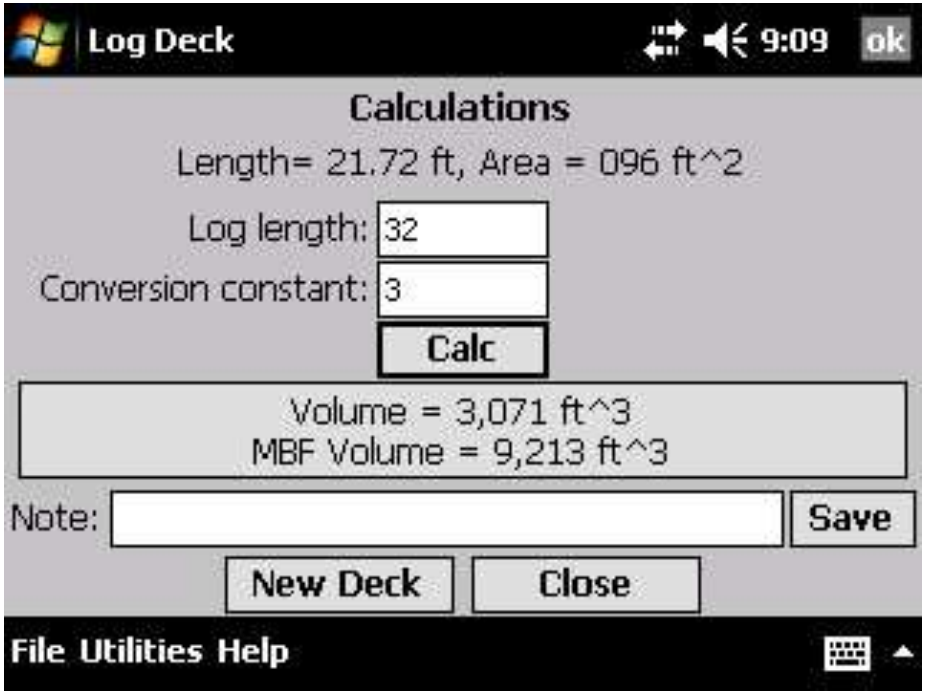
Continue to the end of the deck



Switching to the toe measurements, then click “CALC”

The Deck Length and SqFt Measurements are Displayed





Due your ***Due Diligence*** to establish factors you can use for a quick volume estimate.

Select Deck and Report Summary

Exported Reports

Job	Date	Length Units	Angle Units	Deck	Species	Grade	Sort	Survey Method	Backstops	Origin	Length	Area	Note
20121409	4/8/12 10:45 AM	Feet	Degrees	C4M	FIR	CTL SHORTS	MEDIUM FIR	Traverse w/ Azimuth	No Backstops	Origin at Right	147.52	1090.66	
20121409	4/8/12 10:45 AM	Feet	Degrees	C3S	FIR	MEDIUM FIR	MEDIUM FIR	Traverse w/ Azimuth	No Backstops	Origin at Right	360.9	10321.08	
20121409	4/8/12 10:45 AM	Feet	Degrees	CEW	FIR	MEDIUM FIR	MEDIUM FIR	Traverse w/ Azimuth	No Backstops	Origin at Right	105.68	766.88	
20121409	4/8/12 10:45 AM	Feet	Degrees	C2N	FIR	MEDIUM FIR	MEDIUM FIR	Traverse w/ Azimuth	No Backstops	Origin at Right	337.17	10846.86	
20121409	4/8/12 10:45 AM	Feet	Degrees	C2N2	FIR	MEDIUM FIR	MEDIUM FIR	Traverse w/ Azimuth	No Backstops	Origin at Right	326.37	10346.45	
20121409	4/8/12 10:45 AM	Feet	Degrees	C2N3	FIR	MEDIUM FIR	MEDIUM FIR	Traverse w/ Azimuth	No Backstops	Origin at Right	332.08	10384.28	
20121409	4/8/12 10:45 AM	Feet	Degrees	C1S	HEM	MEDIUM HEM	MEDIUM HEM	Traverse w/ Azimuth	No Backstops	Origin at Right	288.99	3433.31	

TP360b and Allegro Mx in Action

Shot 1

Shot 2

Shot 3

Shot 4

Shot 5

Shot 6

Shot 7

Shot 8

Shot 9

Shot 10

Shot 11

Shot 12

More TP360 Allegro Action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Calkins 4/12/2012