# FIELD-TO-FINISH TRAINING COURSE

# USER MANUAL TITLE SURVEY MODULE (eTSMTablet) Version 3.05.02





# eTSMTablet - USER GUIDE

This manual provides information on how to use the eTSMTablet Survey Software. Procedures and functionalities of the eTSMTablet Survey Software is included with the help of graphic layouts. A simple tutorial session to guide the user through the process will be provided.

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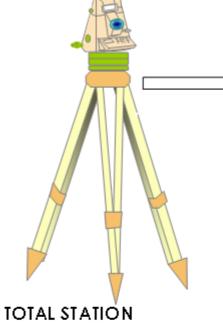
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Manual CPSTablet -TSM Field To Finish

#### 1. Introduction to Field-to-Finish System

#### **1.1. Hardware & Software Configuration**



Total Station : Cable/ Bluetooth wireless



# FIELD COMMUNICATOR + TELEGPS

Operating system windows CE/ XP Rugged PDA with Bluetooth wireless / cable Tablet PC with Bluetooth wireless/ cable

# Title Survey Module :

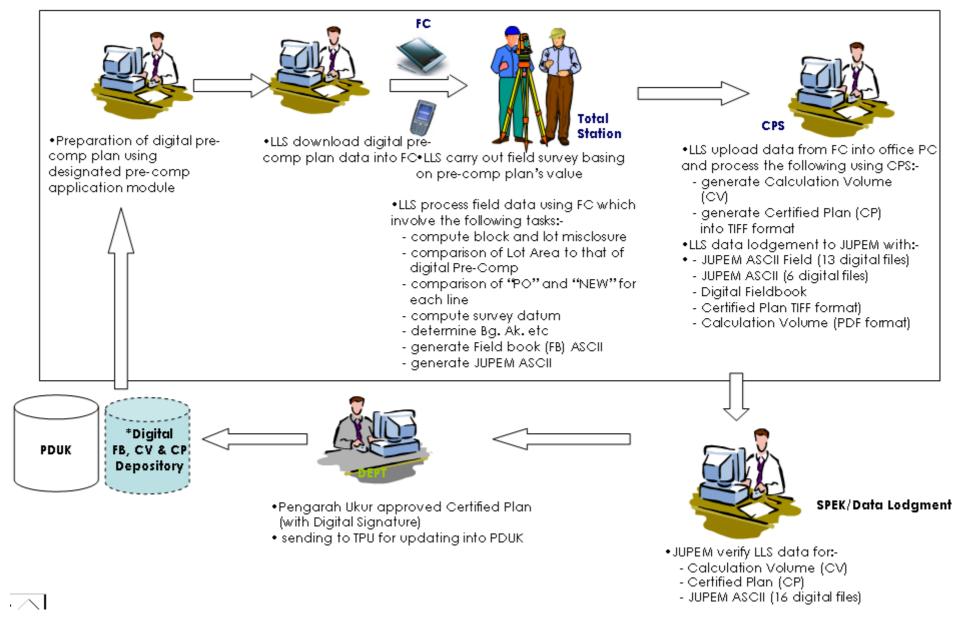
- 1. cadastral data capturing
- 2. solar observation
- 3. comparison of "PO" and "NEW"
- 4. Compute Base
- 5. Refixation
- 6. lot entry
- 7. area comparison (surveyed lot vs precomp lot)
- 8. display of lot and traverse layer
- 9. Least Square Adjustment
- -Attendance
- -Field diary
- -Conversion module
- 1. Digital Field book ASCII
- 2. Jupem ASCII 13 digital files
- 3. WGS84-CASSINI Module
- -Locality Plan Module
- -Base Map
- -GPS Locality Tracking
- -Digital Signature



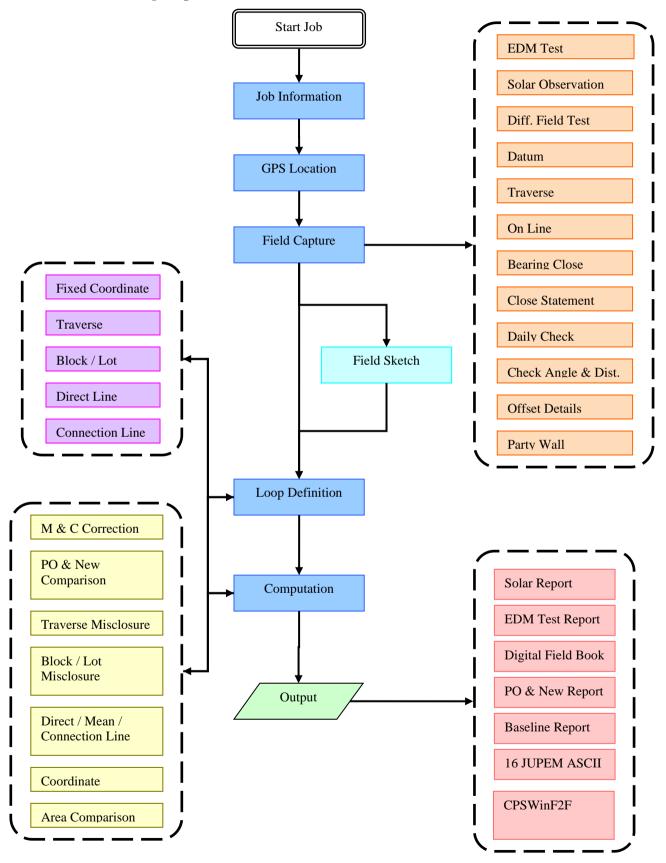
# LICENSED LAND SURVEYOR EXISTING OFFICE PC

-Conversion module 1. Field book ASCII 2. JUPEM ASCII 3. Conversion to PDF/TIFF format -Digital Signature

# 1.2. Top Level Diagram 1



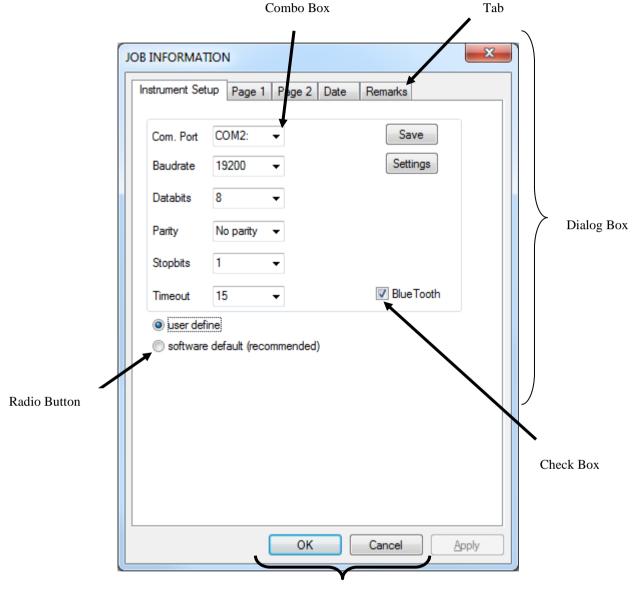
# **1.3. Processing Steps**



# 2. Getting Ready to Use eTSMTablet

Conventions Used in This Manual

**Note** Notes explain interesting or important points that can help you understand concepts and techniques. It also acted as a warning for user, which require user to pay careful attention.



Buttons

#### 2.1. Bluetooth and Cable Setting

Bluetooth and cable setting is depends on the hardware device. Different device (Tablet) will have different settings.

#### 2.1.1. Pairing a New Bluetooth Device

This setting is referring to Panasonic Tough Pad with Window 8 Professional. Before you start using a Bluetooth device, you need to pair up your Bluetooth devices. Pairing the devices allow you to avoid entering access information each time a connection is attempted. Paired devices share a unique link key, which they exchange each time they connect.

1) Make sure both the Tablet and Total Station ON for the Bluetooth. To start initiating your Bluetooth pairing, look for the **Bluetooth Setting**. Click on **New Connection**.



2) Select Custom Mode and click Next.

0	Please ensure your Bluetooth devices are on and set to discoverable. In order to certify Bluetooth, there are times when the security setting is modified temporarily. When setup ends, it returns to the original setting automatically. C Express Mode (Recommended)
	Custom Mode     This allows you to set the details for the connection.

3) Click **Refresh** button if you cannot find your Total Station in the list. Highlight the correct Device Name and then click **Next** to continue.

	Add New Connection Wizard	×
Select a device		
	Please choose the Bluetooth device you wish to use.	
	Device Name TrimbleC601608 HP430-01 SYNERCEL3-PC CPS08-PC Beng's MacBook Pro	
	Refrest	1
	< Back Next > Cancel He	'n

4) Highlight **Serial Port** and click **Next**.

Select a service.	Add New Connection Wizard	, ×
	Please choose the service to use.  Service selection  Service Cla Service Name  Serial Port SSA	
	< Back Next > Cancel He	lp

5) Uncheck the "Use Default COM port", then chose the available COM Port between 1~9 then click on Next button.

	Add New Connection Wizard	$\times$
Select a COM port		
	Set the COM port for use. (We recommend using the default COM port.) Assignment of COM Port Name COM1 ✓ Auto Connect	
	< Back Next > Cancel He	lp

6) Click Next to complete the COM Port setup.

	Add New Connection Wizard	×
COM port setting		
	Setup of COM1 complete. Setup application software and driver if needed.	
·	< Back Next > Cancel Help	
	< Back Next > Cancel Help	

7) Click Next.

	Add New Connection Wizard	×
Enter a name and s	elect an icon.	
	Set up the connection name and icon. Setting information	
	Connection Name: TrimbleC601608	tî.
LAP	Icon	5
	Change Icon	
	Create a shortcut on the desktop	
	< Back Next > Cancel Help	

#### 8) Done.

2	Add New Connection Wizard	Х
Completing the Add New	w Connection Wizard	
	Registration of connection information complete.	
	< Back Finish Cancel Help	

9) Then, in the Bluetooth Settings dialog will appear the Device (Total Station).

8 Bluetooth Settings -	8 Bluetooth Settings -
Bluetooth View Help	Bluetooth View Help
Bluetooth suur nour	Bluetoth ANNTHAN
TrimbleC601 608	TrimbleC601 608
New Connection	New Connection

#### 2.1.2. Cable Setting

If you are using ATEN Serial Cable to connect from your tablet pc to instrument, please make sure the driver is installed.

After connecting the cable, please check the Comport for ATEN cable follow <u>Part 2.5.2: Comport</u>. Then proceed to <u>Part 3.5: Fill in Job Info</u>.

All the setting will be same as the figure above but just in the page of Instrument Setup, uncheck the Bluetooth option.

#### 2.2. Getting Started with eTSMTablet

There is variety of methods to start our eTSMTablet software. Below are some of the methods

#### 2.2.1. Method 1

Double click the <eTSMTablet> icon in order to execute the program. An icon as shown in below is available in the window desktop.

#### 2.2.2. Method 2

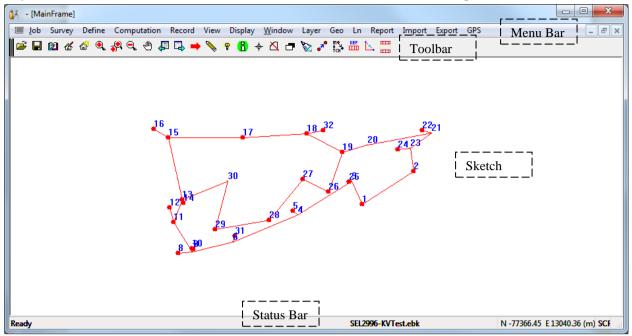
If the eTSMTablet is not visible on your desktop, you can also launch it by navigate to the **Start > All Program > eTSMTablet > eTSMTablet** similar as below.

#### 2.2.3. Method 3

You can also launch **eTSMTablet** by using your window explorer and navigate to the program file in the following directory (C:\CPSTablet\eTSMTablet.exe):-

# 2.3. Understanding eTSMTablet Interface

When you first start eTSMTablet, the initial screen contains the menu bar at the top, the status bar at the bottom.



# 2.4. Menu Bar

#### 2.4.1. Job Menu

 Contains the entire menu item regarding to new job, open job, job info and other utilities. Please refer to <u>Part 3:</u> <u>Working with Jobs</u>

ь	New Job	To create a new job file for database storage
New Job	Open Job	To open an existing job file for database storage
Open Job	<b>Open Recent</b>	To open last use recent file.
Open Recent	Save Job	To write/save current job into file.
Save Job Backup Job	Backup Job	To backup an existing job. The backup job will have the same job name but appended with "_1" at the end.
Job Info. SKL Details		I.e. If the job name is Job.ebk , the backup job name will be Job_1.ebk. User can input their own backup filename.
Open Book	Job Info.	To enter or edit the job information for the job
Test Conn Utilities	SKL Details	To view imported SKL job details. i.e <i>Negeri, Daerah, SKL No., PUNO.</i>
About	Open Book	To open existing book index for recording survey measurement. Book is default to "1" if they aren't any other book numbers.
E×it	Test Conn	To test the connection between Tablet PC and instrument.

<b>Utilities</b>	Submenu functions to perform extra/misc. configuration. Include utilities
Job Manager	such as Sun Almanac, EDM Test, Differential Field Test, Diary,
Sun 🕨 EDM Test	Communication settings, etc.
Diary	
Claim	
Check Roll	
Digital Signature	
Verify DS	
Re-enter DS License	
Digital Signature( XML )	
Workspace	
JUPEM Check	
About	View current version of eTSMTablet.
Exit	To close and exit from eTSMTablet program.

# 2.4.2. Survey Menu

- Contains the entire menu item regarding to field data capture. Please refer to **Part 5: Field Data Capture** 

Survey	Solar Obs.	To perform SOLAR OBSERVATION measurement
	Field Capture	Generic data capture interface. Used for all measured data recording
Solar Obs.		I.e. Datum, Traverse, Produce Line, Online, etc.
Field Centure	<b>Compilation Line</b>	To key in the Compile Line information.
Field Capture	Setting Out	To perform calculation and computation between two marks included
Compile Line	(Locate Mark)	with tools to locate marks and set out.
	Setting Out	To perform calculation and computation between two marks using
Setting Out	(Coordinate)	Coordinate method
Setting Out (Coord)		

# 2.4.3. Define Menu

 Contains the entire menu item regarding to define coordinate / traverse / block / lot and etc. Please refer to <u>Part 6: In</u> <u>Field Computation</u>

efine	<b>Coordinates</b>	To view and define fixed coordinates.
Constituentes	<b>Traverse</b>	To perform traverse definitions.
Coordinates	<b>Block</b>	To perform block definitions
Traverse	Direct Line	To perform direct line definitions
Block	Lot	To perform lot definitions.
	SKL Lot	To view defined imported SKL Lots
Direct Line	PU Lot Details	To view defined imported PU ASCII Lots
Lot	<b>Connection Line</b>	To perform connection line definitions
SKL Lot	Graphic Define	To graphically define Traverse and Lot by graphic picking.
PU Lot Details		
Connection Line	PO Lines	To view and edit existing PO Lines.
connection time	SKL Line	To view and edit existing SKL Lines.
Graphic Define	Match PO/New	To match (transpose) and view existing matches between PO and new stations.
PO Lines	Stn Remark	To enter station remarks i.e. "TLH", "TP Ke", etc.
	Edit Stn ID	Edit station ID overall
SKL Lines	Increment Stn ID	Increment station ID
Match PO / New		
Stn Remark		

Edit Stn ID

Increment Stn ID

# 2.4.4. Computation Menu

 Contains the entire menu item regarding to survey computation, M and C correction, etc. Please refer to <u>Part 6: In Field</u> <u>Computation</u>

Computation	C Corr.	To perform Closure Correction.
C Corr.	M Corr.	To perform Meridian Correction.
M Corr.	Manual Corr	Manually apply for Closure or Meridian Correction by user.
Manual Corr	Clear C Corr	To clear C Correction only.
	Clear M Corr	To clear M Correction only.
Clear C Corr	Clear Corr	To clear corrections accordingly starting from particular
Clear M Corr		record.
Clear Corr	Clear ALL Corr	To Clear ALL applied corrections.
	Clean ALL Corr	To clear ALL applied corrections and adjusted back bearing to
Clear ALL Corr	(back to RAW)	raw data.
Clear ALL Corr (back to RAW)	<u>Secant</u>	To perform computation of bearing and distance of a secant
Secant		line for a road reserve survey.
Line Compare Diff.	Line Compare Diff.	To calculate differences between PO and New line.
· ·	Base Refix.	To perform refixation computation.
Base Refix.	Resection	To perform resection computation.
Resection	ML By Brg Dist	To compute missing line by bearing distance.
Subdiv By Parallel Ln	ML By Coord.	To compute missing line by coordinates.
ML By Brg Dist	<b><u>Convert Coordinate</u></b>	Convert from Cassini Coordinate to WGS84 or vise-versa.
ML By Coord	Survey Comp.	To perform basic Survey Computation:
Convert Coordinate		(compute Traverse, compute Direct Line, compute Connection
Convert Coordinate		Line, compute Mean Line, compute Lot, compute Base,
Survey Comp.		compute SKL Lot, compute coordinates).
	Reset Coord.	Reset all non fixed station coordinates.
Reset Coord.	Del All Comp Line	Remove all computed lines i.e. direct line, missing line.
Del All Comp Line	Delete	Selection of delete functions:
Delete	Remove All PO Line	- Remove All PO Line
L	Remove All Missing Line	- Remove All Missing Line
	Remove SKL Line	- Remove SKL Line
	Remove Dead Stn	- Remove Dead Stations (un-link stations).
	Remove PU Lot	- Remove PU Lot
	Kentove PO LOL	

# 2.4.5. Record Menu

- Contains the entire menu item regarding to field capture record. Please refer to **<u>Part 5: Field Data Capture</u>** 

ecord	<b>Differential Field Test</b>	To view measured Differential Field Test records.
Differential Field Test	<b>Datum</b>	To view measured Datum records.
Datum	<b>Traverse</b>	To view measured Traverse records.
Traverse	Produce Line	Disable
	Prod Line (sp)	Disable
Produce Line	<b>Online</b>	To view measured Online records.
Prod Line (sp)	Deduced Line	Disable
On Line	Bearing Close	To view measured <i>Bearing Close</i> records.
Deduced Line	Close Statement	To view <i>Close Statement</i> records.
Bearing Close	Check Angle & Dist	To view measured <i>Check Angle and Distance</i> records.
Close Statement	Check Angle	To view measured <i>Check Angle</i> records.
Check Angle & Dist	Check Distance	To view measured <i>Check Distance</i> records.
Check Angle	Offset	To view measured Offset records.
Check Distance	TT Mark	To view TT Mark records.
Offset	Mean Line	To view Mean Line records.
TT Mark	Patty Wall	To view Patty Wall records.
Mean Line	View Field Capture	To view all measured records in sequence.
Patty Wall		<i>Next</i> and <i>previous</i> button is used to browse between pages
Fatty wai	View Field Book	To view real time auto generated field book.
View Field Capture		
View Field Book		

# 2.4.6. View Menu

- Contains the entire menu item regarding to view sketch, query line, etc. Please refer to Part 5: Field Data Capture

View	Sketch	To view field sketch of work measurement.
Sketch	Precomp	To open/view a precomp layer and perform in field basic precomp functions.
PreComp MapSheet	<u>Ouery</u>	To view and query existing lines with their bearing and distances.
Query	B/D by 2 Pt	Function to compute bearing and distance by 2 points using graphical pick.
B/D by 2 Pt Pick Object Info	Pick Object Info	Show object information for the line or point you click
Diff SKL Area	Diff SKL Area	To view graphically the comparison between SKL and new lots. Lots which area has 5% difference from SKL lots will be
GIS Platform		highlighted. (Note: Lot should be defined and SKL Lot must be computed first).
Open *.TAB	Field Diagram	To generate field diagram and print.
Open Multiple *.TAB	Delete Field Diagram	Delete field diagram layer.
	GIS Platform	To switch to GIS platform.
	Open *.TAB	To open *.TAB files and display (under GIS platform).
	<b>Open Multiple *.TAB</b>	To open multiple *.TAB files and display (Under GIS platform).

# 2.4.7. Display Menu

- Contains the entire menu item regarding to graphic display on screen. You can on/off the station id here.

Display	Show All	Show the whole sketch in its original size
Show All	Zoom By 2 Point	Zoom in to sketch according to 2 point extent picked by user.
Zoom By 2 Point Zoom In	Zoom In 🔍	Zoom in.
Zoom Out	Zoom Out	Zoom out
Set View Extent	Set View Extent	Set view extent for graphic preview
Pan	Pan 🖑	To pan and navigate around the sketch
Pan Left	Pan Left	Pan the screen to the left.
Pan Right	Pan Right	Pan the screen to the right.
Pan Up	Pan Up	Pan the screen up.
Pan Down	Pan Down	Pan the screen down.
Find Stn	Find Stn 🔶	Zoom in to a station specified by user
	Toolbar	Toggle SHOW/HIDE display toolbar.
✔ ToolBar	On/Off Lot No.	Toggle ON/OFF lot ID display on sketch
On/Off Lot No. Black/White bg	Black/White Bg.	Toggle BLACK/WHITE background for sketch.
On/Off StnID  View Last Stn	On/Off StnID	Toggle ON/OFF station ID display on sketch
	🗸 New Stn ID	
	🗸 Offset Stn ID	
	🗸 PO Stn ID	
	🗸 SKL Stn ID	
	View Last Stn	View last used 20 or 10 station
	Last 20 Measured Stn	
	✓ Last 10 Measured Stn	
	Show All	
	View Next Last	
	View Previous Last	

# 2.4.8. Window Menu

- Contains the entire menu item regarding to windows. There have option to cascade or tile the windows.

Window	Cascade	Rearranges all open windows so they overlap in a cascade
Cascade	Tile	Tiles all open windows
	Existing Windows	Selectable window names for user to activate. Current window name
Tile	_	will have a check beside it.
✓ 1 MainFrame		

# 2.4.9. Layer Menu

\_

Contains all the menu item regarding to layer for graphics.

ayer	Open Layer	Open layer for graphic.
Open Layer	Add Sheet	Add a plan sheet into the sketch.
	Save Sheet	Save the plan sheet.
Add Sheet	Edit Sheet	Select and edit scale/format of existing plan sheet on the sketch.
Save Sheet	Move	Move a selected plan sheet.
Edit Sheet	Delete Sheet	Delete a selected plan sheet.
Move	Delete All Sheet	Delete all plan sheets.
	Field Diagram	Transfer the plan sheet out which can later be view in Layer-
Delete Sheet	Transfer	>Plans.
Delete All Sheet	Field Diagram	Transfer the entire plan sheet.
Field Die e Tree efen	Transfer All	
Field Diag. Transfer	View Plan Rect	To select and view the transferred plans created by the user.
Field Diag. Transfer All	Export Layer (DXF)	Export current graphic layer out into *.DXF format.
View Plan Rect		
Export Layer (DXF)		

Note: user need to view the sketch in real coordinate only can enable Layer menu

#### 2.4.10. Geo Menu

- Contains the entire menu item regarding to pre comp layer.

Geo	Brg At Stn	To create a geometrical line with a given bearing at a known station
Brg At Stn	0	To create a geometrical line with a given bearing at a point or
Brg At Point	Brg At Point	intersect of geometrical line
Two Intsct.	*	To create a geometrical line between two geometrical points
Fix On Ln	Two Intersects	
Parallel Ln	Fix On Line	To create a geometrical line on a selected line.
Offset Intsct.		To create a geometrical line parallel to an existing geometrical line
Center,Radius	Parallel Line 🌋	To create a geometrical line parallel to an existing geometrical line
Del WorkLine		To create a geometrical line with a given distance from a geometrical
	Offset Intersects	point
Del ALL WorkLn	Center, Radius	To create a geometrical arc by defining its center with a given radius
Show	1	Deletes a geometry line
✔ Hide	Del WorkLine	
Precomp Text	Del ALL WorkLn	Deletes ALL geometry lines
•	Show	Shows geometrical line.
Generate Ext	Hide	Hides geometrical line
Read Geometry	Precomp Text	Toggle ON/OFF precomp text
Save Geometry	Generate Ext	To recalculate and regenerate the display extent of the precomp layer.
Dave decined y		
	<b>Read Geometry</b>	Imports a digital copy of a precomp file previously created.
	Save Geometry	Exports out a digital copy of a precomp file.

# 2.4.11. Line Menu

- Contains the entire menu item regarding to precomp layer.

Ln	Point By Coord	Create a point with a given Northing and Easting coordinates.
Point by Coord Point By Brg Dist	Point By Brg Dist	Create a point with a given Bearing & Distance from an existing point.
Geo Point	Geo Point 🧭	Create a point at the intersection of geometrical line or arcs.
Query Point Query Brg Dist 2 Pt	Query Point	To query a point for Northing and Easting coordinates.
Del Point	Query Brg Dist 2 Pt	To query the bearing and distance of a line by two point graphical pick.
2 Pt Line Query Line	Del Point	To delete a point
Del Line	2 Pt Line	Create two-point line by selecting two existing points
B/D KnwPt to GeoPt Offset By B/D	Query Line	To query bearing and distance of a line.
	Del Line 🐼	To delete a line
	B/D KnwPt toGeoPt	To query the bearing and distance by graphical pick. From a known point (station) to a geometry point.

# 2.4.12. Report Menu

 Contains the entire menu item regarding to computation report. Please refer to <u>Part 8: Reporting and Export JUPEM</u> <u>ASCII</u>

eport Field Book Solar	Fld Note	To organise and output survey measurement recorded into Field Note format similar to conventional field book style. (eTSMTablet is able to output field note into *.txt, *.doc and *.PDF format)
Traverse Lot Direct Line	Solar	To organise and output sun observation report. (eTSMTablet is able to output solar report into *.txt, *.doc and *.PDF format)
	Traverse	View Traverse computation report after survey computation.
Mean Line	Lot	View Lot computation report after survey computation
Connection Line	Direct Line	View Direct Line computation report after survey computation
Coordinates	Mean Line	View Mean Line computation report after survey computation
Base	Connection Line	View Connection Line computation report after survey computation
Print Observed Line	Coordinates	View coordinates computation report after survey computation
Print PO Line	Base	View Base computation report after survey computation
	Print Observed Line	To output summary report of surveyed line with timestamp.
Print GPS Points	Print PO Line	To output PO Lines report
View Field Book.doc	Print GPS Points	To output GPS Points report
View JK.doc	View Fld Note	To view generated field book in *.doc format.
View *.doc report	View JK	To view generated JK in *.doc format.
View *.pdf report	View *.doc report	Function to open a report in *.doc format.
View *.htm report	View *.PDF report	Function to open a report in *.PDF format.
nom mennepore	View *.htm report	Function to open a report in *.htm format.

# 2.4.13. Import Menu

- Contains the entire menu item regarding to POB and SKL ASCII. Please refer to Part 4: Field Data Preparation

Import	<b>Read POB File</b>	To read and import POB exchange files.
Pob File	SKL ASCII	To import downloaded SKL data.
PODIFILE	PU ASCII Return	To read and import PU ASCII for Ares Comparison
SKL ASCII		
PU ASCII Return		

# 2.4.14. Export Menu

Contains the entire menu item regarding to export file. Please refer to Part 8: Reporting and Export JUPEM ASCII

Evenant	Export DXF	To export observations into DXF format. File can be open
Export	Export DAT	1 1
DXF		using AutoCAD or other supported software.
DAI	Export MapInfo	To export Lot and Lot boundary information that to be read by
MapInfo		MapInfo software. There will be four files generated, lot.mid
Point Info		and lot.mif containing lot information, and lot_ln.mid with
Point Into		lot_ln.mif containing lot information.
JUPEM ASCII         Export Point Info         To organize and output station coordinates information filename point info		To organize and output station coordinates information to
		filename point info
	Export POB	To create and output a POB data exchange file of current
		survey measurement.
	Export TRPS	To export points and line information into SDR format.
		Generated file will have the extension *.sdr.
	Export to	To export whole job to be read under CPSWinF2F ver7.
	CPSWinF2F	Generated file will have the extension *.cps.
	Export JUPEM	To export JUPEM ASCII data exchange files.
	ASCII	

# 2.4.15. GPS Menu (for locate point only, not for CRM)

- Contains the entire menu item regarding to capturing GPS point.

Export GPS	<b>GPS Comport</b>	GPS Comport Selection.
GPS Comport	GPS Start	Activate GPS.
GPS Start	GPS Stop	Deactivate GPS.
GPS Stop	<b>GPS Basemap</b>	Open Basemap
GPS 500p		
Open Basemap		

# 2.5. GPS Setting (Lower Accuracy, Not for CRM)

In this part we will get the user familiar with the GPS capturing icons and examine how to do GPS point capturing method. In this part, we will working with jobs using **GPS** menu.

Note: User needs to open a new / existing job before proceed. To open/create job, refer to <u>Part 3: Working with</u> <u>Job</u>.

# 2.5.1. Background

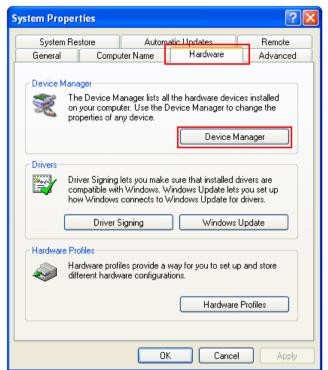
	GPS Dialog				
				Filter     All     Start GPS	Selection to filter irrevelant GPS data before displaying. (default: Fliter)
				Stop GPS Set Time	Sets and update current system with GPS local time.
			Show	In RSO	Toggle SHOW/HIDE GPS point display on field sketch.
	State	~			
	Latitude				
	Longitude				
Saves current	Date	Zoom To Curr Point	<	>	
GPS point and output GPS points	Time (local)	Save GPS Point	Kill All GPS	Delete	Removes all saved GPS points.
information into GPSPoint.txt file.	Remark				<b>F</b>
	[status]		ОК	Cancel	

#### 2.5.2. Check Com Port

1. To know what com port that the system assigns for your GPS card, just right click the My Computer icon and choose properties. Then the system properties dialog will appear.



2. Then select the **Hardware** page on the top of the dialog. You will see the screen will change, then click on the **Device Manager** button.



3. The list of the device component that is available in the system will appear. The GPS card Com Port number will appear in the **Port (COM & LPT)** component

🖩 Device Manager 🛛 🚺	. 🗆 🔀
File Action View Help	
IEEE 1394 Bus host controllers	~
🗉 🔊 Infrared devices	
🗉 🖢 Keyboards	
• Mice and other pointing devices	
🗄 🐌 Modems	
🗄 😼 Monitors	
🗉 🕮 Network adapters	
🗄 🖻 PCMCIA adapters	
🖶 🖉 Ports (COM & LPT)	=
Bluetooth Communications Port (COM6)	
Bluetooth Communications Port (COM7)	
🗉 📾 Processors	
🗄 🔯 Smart card readers	
💷 🗐 Sound, video and game controllers	
	*

### 2.5.3. GPS Capture

1. Navigate to **GPS** menu > **GPS Comport**, set the GPS card comport that user plug in. You can check the Com port by the method above (<u>Part 2.5.2</u>).

GPS Port Configuration		×
COM4:	ок	)

2. Navigate to **GPS** menu > **GPS Start**, the GPS dialog will appear similar as below. Click the **Start GPS** button and the GPS signal will be retrieve.

GPS Dialog			X
<		>	Filter  All  Start GPS  Stop GPS  Set Time  Clear  Show on Sketch In RSO
State	~		
Latitude	]		
Longitude	Zoom To		
Date	Curr Point	<	>
Time (local)	Save GPS Point	Kill All G	PS Delete
Remark	]		
[status]			OK Cancel

- 3. Select the state that user is currently in. Once the GPS signal is available, to save a GPS point, click the **Save GPS Point** button.
- 4. When all needed point is captured, stop the GPS by clicking the **Stop GPS** button and exit the dialog by clicking **OK** button

#### 2.5.4. Basemap

- 1. To open a basemap, navigate to GPS menu > Open Basemap. Then the screen below appears.
- 2. Click on the Select State button to select the state basemap. After select the basemap then click OK button



Layer Name	Path	ok
PENANG Negeri	C:\CPSTablet\Basemap\07\PENANG Nege	
PERAK_daerah	C:\CPSTablet\Basemap\08\PERAK daer(	Cancel
] 🖹 PERAK jalan	C:\CPSTablet\Basemap\08\PERAK jalaı	
PERAK negeri	C:\CPSTablet\Basemap\08\PERAK_nege	
PERLIS daerah	C:\CPSTablet\Basemap\09\PERLIS dae:	
] 🖹 PERLIS_jalan	C:\CPSTablet\Basemap\09\PERLIS_jal	
PERLIS negeri	C:\CPSTablet\Basemap\09\PERLIS nege	
🛛 🖹 SELANGOR_daerah	C:\CPSTablet\Basemap\10\SELANGOR_d	
🛛 📓 SELANGOR jalan	C:\CPSTablet\Basemap\10\SELANGOR_j	
🛛 📓 SELANGOR_negeri	C:\CPSTablet\Basemap\10\SELANGOR_ne	
K TERENGGANU daerah	C:\CPSTablet\Basemap\11\TERENGGANU	
🛯 🖹 TERENGGANU_jalan	C:\CPSTablet\Basemap\11\TERENGGANU	
TERENGGANU negeri	C:\CPSTablet\Basemap\11\TERENGGANU	
🛯 🖹 WPKL daerah	C:\CPSTablet\Basemap\14\WPKL daeral	
] 🖹 WPKL jalan	C:\CPSTablet\Basemap\14\WPKL jalan	
🛯 🖹 WPKL negeri	C:\CPSTablet\Basemap\14\WPKL neger:	
BSG-PHG-LBS-CH-A BD	C:\CPSTablet\Basemap\cameron\SG-PH	
] 📓 SG-PHG-LBS-CH-A	C:\CPSTablet\Basemap\cameron\SG-PH	
] 📓 SG-PHG-LBS-CH-A	C:\CPSTablet\Basemap\cameron\SG-PH	
] 🖹 SG-PHG-LBS-CH-A	C:\CPSTablet\Basemap\cameron\SG-PH	
] 📓 SG-PHG-LBS-CH-A	C:\CPSTablet\Basemap\cameron\SG-PH	Total:
📲 SG-PHG-LBS-CH-A jo	C:\CPSTablet\Basemap\cameron\SG-PH	58

3. To show it on screen, check the basemap on the list and also tick the **Show on sketch** check box.

Basemap	
Misc Layer Name SELANGOR_daerah SELANGOR_jalan SELANGOR_negeri	Select State Read MIF/MID Delete UP DOWN
	sketch In RSO Display Cancel

# 3. Working with Jobs

In this part, we will discuss the menu item from 2.4.1. So, in this part 3, we will working with jobs using Job menu.

#### 3.1. Start New Job

In this part, we will show you the steps to create a new job before you start doing your survey.

- 1. Before any survey observation will be done, you need to open a new job. Navigate to **Job** menu > **New Job**.
- 2. A Save As Dialog will appear if you click the New Job.

Save As					? 🔀
Save in:	🚞 CPSTablet		<b>~</b> G	🦻 📂 🛄 -	
My Recent Documents Desktop	SampleFile SampleJob1 SampleJob2 SampleJob3 Diary EDM EDM_ABS MyCert				
My Documents					
My Computer					
<b></b>	File name:	Training1_Leica		<u> </u>	Save
My Network	Save as type:	JobFiles (*.ebk)		<b>v</b>	Cancel

3. Please type in the job file name and indicate which directory you want to store the file in. Normally, job file will be save in C:\cpstablet\(job\_name).The type of job is saved in .ebk format. So next time if you want to open this job, just choose \*.ebk file.

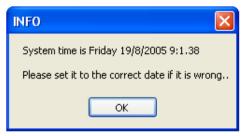
#### **3.2.** Open Existing Job

In this part, we will show you the steps to open an existing job before you start doing your survey.

- 1. Before any survey observation will be done, you need to open an existing job if the file is created. Navigate to **Job** menu > **Open Job**.
- 2. An **Open Dialog** will appear if you click the **Open Job**.

Open						? 🛛
Look in:	🗀 Training1_Leic	a	~	3 🦻	• 🖽 💙	
My Recent Documents	Training1_Leica	.ebk				
Desktop						
My Documents						
My Computer						
	File name:	Training1_Leica.ebk			~	Open
My Network	Files of type:	JobFiles (*.ebk)			~	Cancel

- 3. Please indicate the directory and file name where you save the job. Click the job name and click **Open** button.
- 4. **Info Dialog** below will be displayed. If the system time is incorrect, please set to the correct time.



5. User also can direct open recent file by clicking **Job** > **Open Recent**.

No.	Job Name	Path	
1	SEL2996-KVTest	C:\ClientJob\test\TestTopo\20Nov13	
2	SEL2996-KVTest	C:\ClientJob\test\TestTopo\20Nov13\FromPDA	
3	Test_17Feb14	C:\CPSTablet\Test_17Feb14	
4	TestSOBSeq	C:\ClientJob\test\SolarSeq	
5	MultiBuilding	C:\ClientJob\test\TestTopo\21Mar13	
6	J017_IslandLot	C:\ClientJob\JP\08Jan14	
7	J017	C:\ClientJob\JP\08Jan14	
8	Test-30Dec13	C:\CPSTablet\Test-30Dec13\Test-30Dec13	
9	11174 1 071an14	C:\Client1ob\111\071an14	_
٠ 📃		III	- F

# 3.3. Save Job

In this part, we will show you the steps to save a job.

- 1. Navigate to **Job** menu > **Save Job**.
- 2. A Save Dialog as below will appear indicate the job is saved.

		Save 🔀					
		Job Saved					
		ОК					
3.	You also can click <b>Save icon</b> from the	icon below.					
	🖻 🖬 🔯 🎸 🔍 👯 🔍		📎 👳	<mark>8</mark> +	- 🔼 c	<b>-</b> 🏷	•*

# 3.4. Backup Job

In this part, we will show you the steps to backup a job.

- 1. Navigate to **Job** menu > **Backup Job**.
- 2. A Save As Dialog will appear if you click the Backup Job.
- 3. The file name will automatically rename to **Job1\_1.ebk**. You also can rename it if you like. The backup file will be saved in **same** folder with your job.

Save As		? 🗙
Save in:	🔁 Training1_Leica 🔍 🔇 🎓 🔛 🗸	
My Recent Documents	Training1_Leica.ebk	
Desktop		
My Documents		
Wy Computer		
<b></b>	File name: Training1_Leica_1.ebk	Save
My Network	Save as type: JobFiles (*.ebk)	Cancel

#### 3.5. Fill in Job Info

In this part, we will show you the steps how to fill in the job information for the current job.

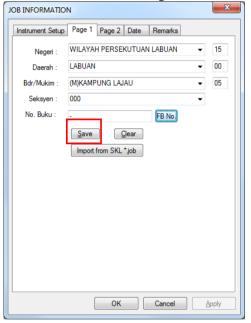
- 1. Before filling in the job information, please open a job. Navigate to **Job** menu > **Job Info**.
- 2. A Job Information Dialog will appear. There have 5 tab bars in this dialog which is Instrument Setup, Page 1, Page 2, Tarikh and Remark.
- 3. To fill in instrument setup, click Instrument Setup Tab.

	1. To set communication settings between TabletPC and
Instrument Setup Page 1 Page 2 Date Remarks	total station. A set of default values will already be assigned automatically according to instrument type selected by user previously on Job Info.
Baudrate 19200 -	selected by user previously on Job Into.
Databits 8 -	2. To change the instrument setting, click on the Settin
Parity No parity 👻	button, a Help: Instrument Setting dialog will pop
Stopbits 1 -	up. Chose for the correct instrument that you using,
Timeout 15 - Blue Tooth	the setting value will automatically retrieved. Then, click <b>Set</b> .
● user define ─ software default (recommended)	Help: Instrument Setting
	Select the instrument you for your settings
	Instrument Sokkia 💌 SET500 👻
	Baudrate 19200
	Databits 8
	Parity No parity
	Stopbits 1 Set Cancel
OK Cancel Apply	

	up Page 1	Page 2 Date	Remarks
Com. Port	COM2:	•	Save
Baudrate	19200	•	Settings
Databits	8	•	
Parity	No parity	•	
Stopbits	1	•	
Timeout	15	•	Blue Tooth
user def	ìne		
<u> </u>	ìne e default (reco	ommended)	
<u> </u>		ommended)	
● user def ○ software		ommended)	
-		ommended)	
-		ommended)	
-		ommended)	
<u> </u>		ommended)	

- 3. To enable **Bluetooth** connectivity, select **user define** radio button. Set the **Com Port** that was assigned by the Bluetooth manager (or Cable Comp Port) during installation of Bluetooth hardware/software.
- 4. Tick on Blue Tooth if using, then, Save and exit.

4. To fill in information for Negeri, Daerah, Mukim, please click **Page 1 Tab**.



please chi	CK Tage T Tab.
Key in the	e Job Information on Page1 according to the
job. After	all job information is entered in, just click the
	on. User can click <b>FB No</b> button <b>FB No</b> to edit eld book number (if have). Dialog below will
show out.	-
	Insert Fieldbook No.
	Current Fieldbook No New Fieldbook No. 12345 OK Cancel

5. To fill in details from job file, please navigate to Page 2 tak

	Page 1 P	age 2	Date	Rem	arks	
	PUWPL	— c			anta	
No.Lot : 2		<b>_</b>	2323_20	13		Save
NO LOC . 2	2884					Clear
Jenis Kerja Ukur :	JKURAN SE	MULA	•	7		
Diukur Oleh :	IOOR AZUF	RA				
Kad Pengenalan :	008080888	88				
Kelas Ukur : C	LASS 1		•			
Unit Ukuran : 🚺	Aeter -		•			
Alatan Ukur : S	Sokkia 👻	SET50	0 🔻			
TotalStn S/N: 8	13316					
GPSInst S/N:						
GPSAnt S/N:						
Measurement M	lode					
Online	0	ffline				
		ОК		Can	icel	Apply

)	Page 2 tab.
	On <b>Page 2</b> , key in according to the job. Then click <b>Save</b>
	button.

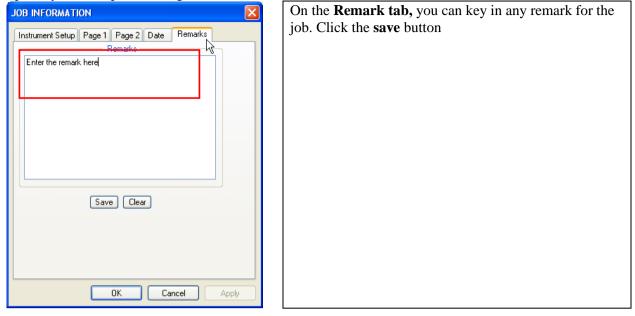
6. To fill in date, please navigate to **Date tab**.

JOB INFORMATION	×
Instrument Setup Page 1 Page 2 Date Remarks	
Survey Date	
Start Date	
9/ 4/2014	
End Date	
16/ 4/2014	
Save	
OK Cancel	Apply

On the **Date tab**, user needs to select the **starting** date of the job and the **ending** date of the job. Click the **Save** button.

Note: **End Date** will auto update to last date surveyed line date.

7. To put any remark, please navigate to **Remarks tab**.



#### **3.6. eTSMTablet Work Flow**

In this part, we will let you know the eTSMTablet - Processing Steps and work flow for eTSMTablet. You can make a as a quick note to do your job.

#### **3.6.1. eTSMTablet** – **Processing Steps**

You can refer <u>F2F Work Flow – Work Breakdown Diagram</u> on **pg. 1-4** to get a whole idea for whole the process while looking for this Processing Steps.

Item	Task	Menu
1	Prepare SKL ASCII/ POB (Part 4: Field Data Preparation)	Define > PO Line
2	Create new job (Part 3: Working with Jobs)	Job > New Job / Open Job / backup job Job > Utilities > EDM Test Job > Job Info.
3	Import POB/SKL ASCII (Part 4: Field Data Preparation)	Import > POB / SKL ASCII View > Sketch
4	<u>Field Data Capture</u> (Part 5: Field Data Capture)	GPS > GPS Start Survey > Solar Survey > Field capture Computation > Base Refix Record > View Field Book Record > View Field capture
5	Define Route (Part 6: In Field Computation)	Define > Coordinate/ Trav / D Line / Block / Lot Graphic Define
6	Survey Computation (Part 6: In Field Computation)	Computation > Survey Comp Computation > M Corr / C Corr
7	Survey Report (Part 8: Reporting and Export JUPEM ASCII)	Report > Field Note / Solar / Trav
8	JUPEM ASCII (16 files) Cpswin32 job file (Part 8: Reporting and Export JUPEM ASCII)	Export > JUPEM ASCII Export > cpswin32

# 4. Field Data Preparation

In this part, we will discuss the menu item from 2.4.13: Import menu and 2.4.3: Define menu. So, in this part 4, we will working with jobs using Read Pob File and Import SKL ASCII menu item in Import menu. This part also includes PO Lines menu item in Define menu.

# 4.1. PO Data

#### 4.1.1. Read PDUK Data / POB File

In this part, we will show you the steps to read / import PDUK Data / POB file.

- 1. Navigate to **Import** menu > **Read Pob File**.
- 2. An **Open Dialog** will pop up as below. Click the file with extension \*.pob from the folder you save your POB file. In this case, POB file is kojuta\_pob.pob. Then click **Open** button.

Open		? 🗙
Look in:	🔁 kojuta_pob 🕑 🕜 🎓 🖽 -	
My Recent Documents	📾 kojuta_pob.pob	
Desktop		
My Documents		
My Computer		
<b></b>	File name:	Open
My Network	Files of type:     POBFiles (*.pob)	Cancel

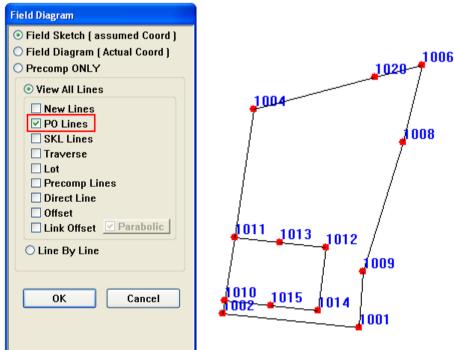
3. A dialog show 'POB file imported successfully' will show up as follow. Then click **OK** button.



4. To view the record for imported POB file, please navigate to **Define** menu > **PO Lines**. A **PO Lines Import Dialog** will be showed as follow.

PO Lines impo	rt					k				
AtStn	ToStn	Bearing	Distance	Plan No.	ApDate	Unit	Class	Туре	Dup	Total:
1005	1006	197.1850	63.964	131313	2000110	M	1	4	1	6
1004	1005	193.1940	37.344	131313	2000110	м	1	4	1	
1003	1004	75.1140	81.963	131313	2000110	м	1	4	1	
1002	1003	8.2820	97.076	131313	2000110	м	1	4	1	
1001	1002	276.0900	64.216	131313	2000110	м	1	4	1	
1006	1001	184.2620	26.518	131313	2000110	м	1	4	1	
										Import
<									>	Delete
Bearing 193.1940 - PO Brg/Dist AtStn: Brg: - Additional In	Distance 37.344 1004 193.1940 Boundary Life formation	131313 ToStr Dist	M 1005 37.344 Connectio		Type UPI 4		t Current I. Record ange StnID kdd New Modify			
App Date: UPI Negeri Daerah Mukim	05- Jan -07 SELANGOR	Plan No.	: 131313	Class: Seksyen Lot UPI No.	400	055555				Cancel

- 5. You also can enter the POB data from CP if you don't have POB file. Please proceed to Part 4.3: Enter PO Lines.
- 6. You also can check the imported POB file by sketch. Please navigate to View menu > Sketch. Field Diagram dialog will pop up as follow. Click the check box for PO Lines then press OK button. If u already fixes a coordinate for the PO Lines, check on the second check box on the top, Field Diagram (Actual Coord).



7. Graphic for POB file will be showed as above.

# 4.1.2. Enter PO Line Value

In this part, we will show you the steps to key in PO Line value.

- 1. Navigate to **Define** menu > **PO Lines**.
- 2. A **PO Lines Import** dialog will pop up as following.

AtStn 🛛 🔿	ToStn	Bearing	Distance	Plan No.	ApDate	Unit	Class	Туре	Dup	^	Total:
2002	2003	90.3620	16.766	90056	2001102	м	1	4	1		127
2003	1015	91.2700	21.356	90056	2001102	м	1	4	1		
2003	2004	137.3500	6.239	90056	2001102	м	1	4	1		
2004	2009	184.3350	56.390	90056	2001102	м	1	4	1		
2008	2002	20.2010	61.818	90060	20070104	м	1	4	1		
:009	1005	184.3340	28.388		20070104	м	1	4	1		
2009	2008	274.3350	38.088	90060	20070104	М	1	4	1		
3008	2008	20.1950	3.654	90060	2001102	М	1	4	1	~	Import
(									>		Delete
-PO Brg/Dist -											
AtStn:	2009	ToSt	2008			đ	nange StnID				
	2009 274.3350	ToSt	n:			a					
AtStn:		Dis	n:	tion Line							
AtStn:	274.3350 Boundary Lir	Dis	t: 38.088	tion Line			Add New				
AtStn: Brg:	274.3350 Boundary Lir	Dis	n: 38.088	tion Line	; 1		Add New				
AtStn: Brg: Additional In	274.3350 Boundary Lin formation	Dis	n: 38.088		si <b>1</b>		Add New				
AtStn: Brg: Additional In App Date:	274.3350 Boundary Lin formation	Dis	n: 38.088				Add New				
AtStn: Brg: Additional In App Date: UPI	274.3350 Boundary Lir formation 04-Jan -07	Dis	n: 38.088	Class	n 000		Add New				Cancel

- 3. Fill in the information here and click **Add New** button. If you want to delete the record, choose from the list then press **Del. Record** button.
- 4. If you have few records for the same line, you can set the current one with **Set Current** buttons.
- 5. If you wish to modify the bearing and distance for certain line, click the line you want to modify and click **Modify** button.
- 6. Precaution:
  - i. All the information like At Station, To Station, Bearing, Distance, Plan No, Class, Approval Date and UPI also must fill in, cannot be blank.
  - ii. Plan No: just need to key in the numeric number but not include the "PA".
  - iii. Class: follow the old CP's class.
  - iv. Approval Date: must be from the latest CP.
  - v. UPI: for the lot number, cannot be blank. If dun have lot number, just key in as "999"

# 4.1.3. Compile Line

Compilation lines are used for the "minimum survey" or "baki lot" that you did not survey but just compile from the old CP. It will just only need for the final bearing and distance.

1. Click to **Survey > Compile Line**. Will have a dialog pop up to warn you to finish all the observation data only precede to this compile line function.



If you already key in the PO lines and want convert it to be compile line, you may just tick on the View PO Line check box, then highlight the PO lines that want to be converted and click PO > Comp. then, click Yes for the Convert PO to Compile dialog. Click OK for the Success dialog.

С	ompilati	on Line						Þ	<
	AtStn 🛆	ToStn	Bearing	Distance	Туре	At Stn		To Stn	
	1001	1002	90.3620	16.766	PO	Brg		Dist	
	1002	1003	137.3500	6.239	PO	big		Disc	
	1003	1004	184.3350	56.390	PO	Plan No			
	1004	1005	274.3350	200.000	00		5	~	
1005 1006			220,1950	Convert PO to					
	1005	1001	20.2030			20/2007	× ×		
	1006	1007	221.2220	Are you sure to convert to Compile Line? ANGOR					
	1007	1008	94.3350	Yes		No	ALING	~	
	1008	1009	94.3350	103					
	1009	1004	4.3350	28.377	PO	Maisin		· ·	
	Seksyen					000			
						Lot	Lot UPI 100882000		
				LIPT					
	_					0.1	100002000		
View PO Line         Comp > PO         PO > Comp         Add         Del         OK									
				Succe Conv	ss ersion succ	essful			

OK

3. If you have not key in any PO line to be converted, you may also key in manually for the compilation line. Key in the **At Stn, To Stn, Brg** and **Dist**, and also the information for the compile line. After that click on **OK** button to add in the line.

C	ompilati	on Line						$\mathbf{X}$
	AtStn	ToStn	Bearing	Distance	Туре	At Sta	5001	To Stn 5002
						Brg	167.4520	Dist 34.561
						Plan No	55555	
						Class	1	~
						App Date	8/20/1999	×
						Neger	SELANGOR	*
						Daerał	PETALING	~
						Mukin	(P)KINRARA	~
						Seksyer	000	
						Lol	999	
						UPI	10088200099	9
	View PC	) Line	Comp	> PO PC	) > Comp		Add	Del OK

## 4.2. SKL (Precomp) Data

### 4.2.1. Import SKL ASCII

In this part, we will show you the steps to import SKL ASCII file.

- 1. Navigate to Import menu > Import SKL ASCII.
- 2. An **Open Dialog** will pop up as below. Click the file with extension \*.skl from the folder you save your SKL ASCII file. In this case, SKL ASCII file is test\_skl.skl. Then click **Open** button.

Open						? 🔀
Look in:	C SKL_ASCII		~	G 🦻	<del>ب</del> 🕫	
My Recent Documents	test_skl.skl					
Desktop						
My Documents						
My Computer						
<b></b>	File name:	test_skl.skl			*	Open
My Network	Files of type:	SKL (*.skl)			*	Cancel

3. You can check the imported SKL ASCII file by sketch. Please navigate to View menu > Sketch. Field Diagram dialog will pop up as follow. Click the Field Diagram (Actual Coordinate) radio button. Then click the check box for SKL Lines then press OK button.

ld Diagram
<ul> <li>Field Sketch [ assumed Coord ]</li> <li>Field Diagram [ Actual Coord ]</li> <li>Precomp ONLY</li> <li>View All Lines</li> <li>New Lines</li> </ul>
<ul> <li>PO Lines</li> <li>SKL Lines</li> <li>Traverse</li> <li>Lot</li> <li>Precomp Lines</li> <li>Direct Line</li> <li>Offset</li> <li>Link Offset</li> <li>Parabolic</li> <li>Line By Line</li> <li>OK Cancel</li> </ul>

4. Graphic for SKL ASCII file will be showed as above.

## 4.2.2. Enter SKL Line Value

In this part, we will show you the steps to key in SKL Line value.

- 1. Navigate to **Define** menu > **SKL Lines**.
- 2. A SKL Line Entry dialog will pop up as following.

SKL Line Entr	y			×	
AtStn	ToStn	Bearing	Distance	~	
SKL4	SKL1	276.0906	21.727		
SKL6	SKL4	276.0906	22.059		
SKL4	SKL3	8.2820	30.024		
SKL5	SKL6	187.5020	30.012		
SKL3	SKL4	188.2820	30.024		
SKL2	SKL3	96.0906	21.727		
SKL1	SKL2	8.2820	30.024		
SKL3	SKL5	96.0906	21.727	~	
At Stn (SKL)		To Stn (SKL) 1			
Bearing 276.0906 Distance 21.727					
Add Modify Delete Cancel					

- 3. Key in the information: At Stn (SKL), To Stn (SKL), Bearing and Distance. Then, click Add button to add in the record.
- 4. You can also **Modify** or **Delete** the SKL record.

# 5. Field Data Capture

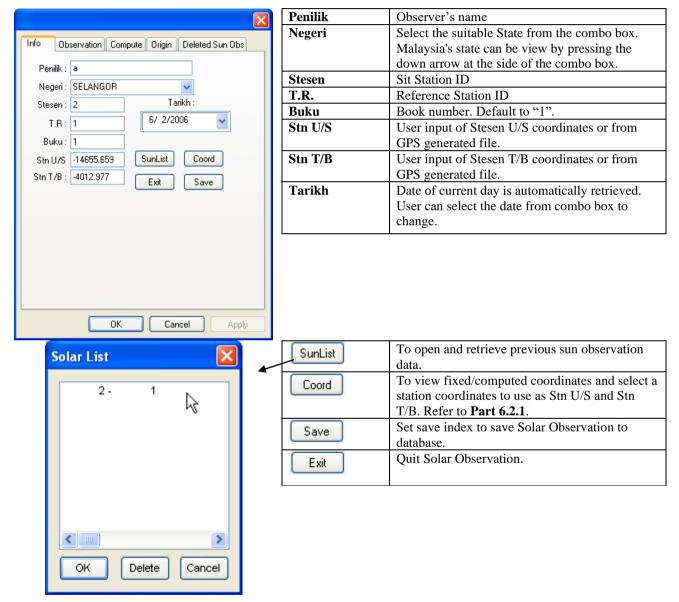
In this part, we will discuss the menu item from 2.4.2: Survey menu and 2.4.5: Record menu. So, in this part 5, we will work with jobs using all the menu items in Survey menu and Record menu.

### 5.1. Solar Observation

In this part, we will show you the steps to get familiar with the solar observation buttons and examine how to do solar observation.

Note: User needs to open a new / existing job before proceed. To open/create job, refer to **Part 3: Working with Job**.

#### a) Info Tab



### b) Observation Tab

Info Observation Compute Origin Deleted Sun Obs
Set       1       Mengufuk '' "       Gelm       Pugak Ki Ka         i       TR       269.2220       Ki Ka       • '' "         9.12       Ki       66.2718       0       0       60.1919         9.12       Ki       65.5020       0       0       60.1726         9.12       Ki       65.5020       0       0       299.4632         9.12       ka       246.2555       0       0       299.4828         9.12       ka       246.2555       0       0       29.4343         1       m       9.1200       Purata       66.0821       Biasan & 0.0124         Purata       7R       269.2220       Tikaian       29.4309         DELETE       Previous       Next       Save
OK Cancel Apply

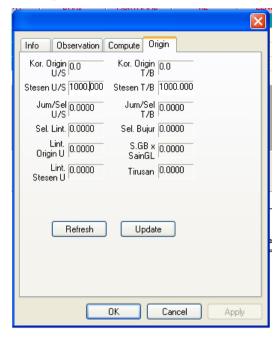
Set	Current set of solar observation.
TR	To set Reference Bearing (face left) in
	DDD.MMSS format (User editable).
ki 🔂	To measure Right Tangent To Sun (Face Left)
	horizontal and vertical angles in DDD.MMSS
	format. Observation time in HH.MMSS format.
ki 🔫	To measure Left Tangent To Sun (Face Left)
KI LM	horizontal and vertical angles in DDD.MMSS
	format. Observation time in HH.MMSS format.
ka 😝	To measure Left Tangent To Sun (Face Right)
	horizontal and vertical angles in DDD.MMSS
	format. Observation time in HH.MMSS format.
	To measure Right Tangent To Sun (Face Right)
ka 🔶	horizontal and vertical angles in DDD.MMSS
	format. Observation time in HH.MMSS format.
TB2	Measure Reference Bearing (face right)in
	DDD.MMSS format.
P. Ke Mth	Purata Mengufuk
P. Ke TR	Purata T.R
P. Tinjah	Purata Altitud
Bias	Bias dan bezalihat
Tikaian Laras	Altitud di laras
Gelm.	Gelembung
DELETE	Delete current solar observation form.
Previous	View previous Solar Observation form.
Next	Save and instantiate the next Solar Observation
	form.
Save	Save Solar Observation form.

# c) Compute Tab

Info Observ	ation Compute Origin Deleted Sun Obs
Set 1	
Dek.w tilik	22.0855 Purata TR 269.2220
Garis Lint. Stesen U	3.0230 TR 269.2249 sebenar
Tikaian	29.4309 Aras +/- 0.0000
Az Mthr dikira	66.0850 Tirusan -0.0031
Purata Ufuk	66.0821 Bg.Grid 269.2219
Sel=Az-Tilik	0.0029
Purata Bg. Ge	enid 269.2221 Next Previous
	Flevious
	OK Cancel Apply

Set	Current set of solar computation.
Dek.w Tilik	Sudutistiwa pada waktu Penilikan
G. Lintang	Garis Lintang Stesen U
Tinj. Laras	Altitud di laras
Az. Mh Kira	Azimut matahari yang dikira
Az. Mh Prt.	Purata mengufuk
Sel = Az - Tilik	Beza Azimut
TR	Tanda Rujuk Sebenar ( Purata TR + Az –
	Purata Ke Matahari )
Bg. Genid TR	Bearing grid TR
Purata Bg.	Purata Bearing grid ke Tanda Rujuk ( mean of
Genid	all set )
Next	View next Solar Computation form.
Previous	View previous Solar Computation form.

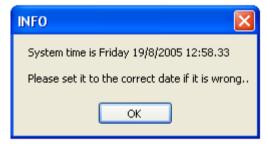
#### d) Origin Tab



Stesen U/S	User input of Stesen U/S.
Stesen T/B	User input of Stesen T/B.
Refresh	View/refresh origin output after solar sets and computation has been done.
Update	Accept user's input and store into database.

# **Survey Steps**

- 1. Go to **Surv** Menu > **Solar Obs**. Menu.
- 2. The application will prompt a message dialog asking that user need to check the system date and the system time will correct with the local date and time



3. The **Query Dialog** will prompt out asking user want to get coordinate value from 3<sup>rd</sup> party GPS software. Just click **No** button.



4. If you have existing sun observation and you wish to continue the observation, click **SunList** button. You will get **Solar List** dialog as following. Click the '2-1' then click **OK** button to open. You can delete existing solar list use **Delete** button.

s	olar List 🛛 🛛 🛛	
	2- 1	
	OK Delete Cancel	

5. If you don't have existing solar observation for the line, clicks **Cancel** button go back to observation. Key in all the information in the **Info Page**. If you wish to get the coordinate for station, click **Coord** button and you will get **Fixed Coordinate** dialog as you highlight the station that you want.

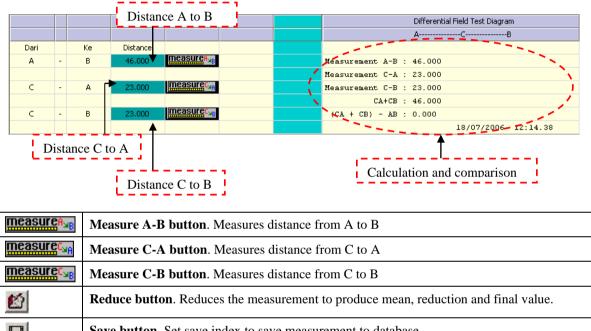
Station	Marker	Stone	· · · ·		Y (U/S) Seam	rcl
2	BKL		5179.351	3445.3	Sat	ve
				<b></b>	Fixed	
Stn /	Marker	Stone No.	X (T/B)	Y (U/S)		1
1	BKL		5243.205	3438.488	COMPUTED	
2	BKL		5179.351	3445.359	FIXED	
3	BKL		5193.633	3541.370	COMPUTED	
4	Pkt		5270.355	3553.777	COMPUTED	-
5	BKL		5272.863	3562.329	COMPUTED	
6	Pkt		5249.700	3467.263	COMPUTED	
7	BKB		5180.234	3451.298	COMPUTED	
8	BKB		5184.657	3481.030	COMPUTED	
9	BKB		5245.249	3464.925	COMPUTED	
10	BKB		5264.267	3525.992	COMPUTED	
11	BKB		5227.824	3476.379	COMPUTED	v
View GPS		Reset Al.	1 Refre	sh		

- 6. Click your station number and click **OK** button. You will return to **Info** page. Click **Save** button to save this page after filling in all information.
- 7. Go to **Observation page**, and you will see the page similar as below
- 8. Point theodolite to "To Station" and click the **TR** button (face left).
- 9. Then point theodolite to the sun and do observation for ki  $\Theta$ , ki  $\Theta$ , ka  $\Theta$ , ka  $\Theta$  by clicking each button for each type of observation
- 10. Point theodolite to "To Station" and click the TR2 button (face right).
- 11. Click the Save button.
- 12. Repeat the above steps from step 7 to step 11 for Set 2.
- 13. If you want to delete bad observation, click **DELETE** button.
- 14. Navigate to Compute page to see the computation.
- 15. Click the **Next** button or **Previous** button to see the set of computation.

- 16. Navigate to **Origin page** to see the origin.
- 17. After finishing solar observation, we can do our M correction for our traverse. To do computation for M correction, please proceed to next part, **Part 6: In-Field Computation** <u>6.2: M & C Correction</u>.
- You also will notice that there have sun list when you want to do datum. For further details, please proceed to <u>5.4</u>:
   <u>Datum</u>.
- 19. To print out the report, please precede to Part 8.1.2 Solar Report.

### 5.2. Differential Field Test

In this part, we will show you the steps to get familiar with the Differential Field Test buttons and examine how to do Differential Field Test. The numbering of the DFT, will automatically change to 9000 series when you save the data.



	Save button. Set save muck to save measurement to database
×	<b>Delete button</b> . Deletes the record (applicable during view record mode).

#### Survey Steps

1. Navigate to **Survey > Field Capture**. On the field capture window, select **Differential Field Test** by selecting the Differential field test radio button located at the right side of the window screen

#### 💿 Diff Field Test

2. Sight theodolite to station "A". Sight to station "B" and click the measure **A-B** button (face left).

						Differential Field Test Diagram
						АСВ
Dari		Ке	Distance			
A	-	в	46.000	<u>measure</u> A <sub>≥B</sub>		
		<b>_</b>				
С	-	A		<u>measure</u> C <sub>an</sub>		
С	-	В		measure <sup>c<sub>ub</sub></sup>		

3. Sight theodolite to station "C". Sight to station "A" and click the measure C-A button (face left).

						Differential Field Test Diagram
						АСВ
Dari		Ke	Distance			
A	-	В	46.000	measure <sub>A<sub>MB</sub></sub>		
					•	
С	-	Α	23.000	<u>measure</u> C <sub>MA</sub>		
					1	
С	-	В		<u>measure</u> c <sub>×B</sub>		

4. From the station "C", sight to station "B" and click the measure C-B button (face left).

						Differential Field Test Diagram
						АСВ
Dari		Ke	Distance			
А	-	В	46.000	<u>measurea<sub>aB</sub></u>		
С	-	А	23,000	<u>measure</u> C <sub>an</sub>		
		_			-	
С	-	В	23,000	<u>measure</u> c <sub>&gt;B</sub>		
					-	

5. After all the measurement required was measured, click on the **Reduce** button it reduce the measurement to produce mean, reduction and final value

						Differential Field Test Diagram
						АСВ
Dari		Ke	Distance			
A	-	В	46.000	<u>measure</u> A <sub>&gt;B</sub>		Measurement A-B : 46.000
						Measurement C-A : 23.000
C	-	A	23.000	measure <sup>c<sub>MA</sub></sup>		Measurement C-B : 23.000
						CA+CB : 46.000
С	-	В	23,000	measure <sup>c<sub>ub</sub></sup>		(CA + CB) - AB : 0.000
						18/07/2006 12:20.29

6. Finally click the Save button to save your Differential Field Test record. Once you saved the record, you will able to see that the record is booked into the field book. This DFT record will always place on the top of the field book.

				Differential Field Test Diagram
				АСВ
Dari	Ke	Distance		
A	- B	46.0000	measure <sup>A</sup> <sub>B</sub>	Measurement A-B : 46.000
				Measurement C-A : 23.000
С	- A	23.0000	measure	Measurement C-B : 23.000
				CA+CB : 46.000
C	- B	23.0000	<u>measure</u> C <sub>MB</sub>	(CA + CB) - AB : 0.000
				14/04/2005 11:35.51
	Show D	eleted Lines		
_ <b>_</b>		eleted Lines	A	B H 46.000 46.000 ( 46.000)
			A	
	Different		A C	( 46.000)
	Different	ial Field Test garisan A-B		(46.000) 14-04-2005 A H 23.000 23.000

**Note**: The measurement that you have measured will only be save once you click the save button. If not the measured bearing and distance of that particular record will not be save.

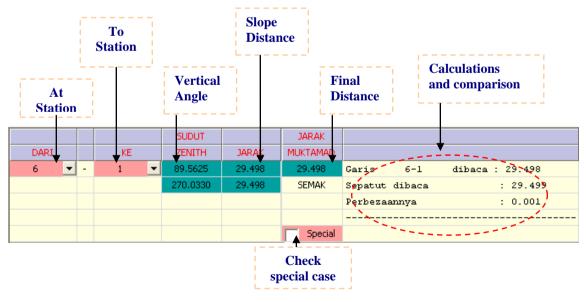
7. You can view your record using **Record** menu. Please click **Record** menu > **Differential Field Test**. **Field Capture Dialog** will be displayed as follow.

								Differential F	ield Test Diag	gram	
								A	-C	В	
Dari	Ke	Distance									
Α	- B	46.0000	measure <sup>A<sub>MB</sub></sup>			Measurement i					
						Measurement (					
С	- A	23.0000	<u>measure</u> C <sub>⊌A</sub>			Measurement (					
			maacurac				CB : 46				
С	- B	23.0000	measure <sub>SB</sub>			(CA + CB) -	AB : 0.0				
▶ <u>क</u>	Show Dele	ted Lines								15:16.51	
a surat	: 1				Bering		Sudut		Jaraj	-	
a surat 	Penyilang Kiri I	 Penyilang Kanan I		ari Mu	uktamad	Ke	Zenith		Jaraj Muktamat	- k	
a surat  sen ======	Penyilang Kiri 1	 Penyilang Kanan I		ari Mu	uktamad	Ke	Zenith 		Jaraj Muktanat	- k	
a surat  sen =======	Penyilang Kiri 1	Penyilang Kanan I	A	ari Mu	uktamad	Ke	Zenith  H	46.000 46.000) 46.000)	Jaral Muktamat 46.000	- k t =	

8. If you wish to delete the record, please click **Delete**  $\times$  button.

# 5.3. Semakan Harian

In this part, we will show you the steps to get familiar with the **Semakan Harian** buttons and examine how to do Semakan Harian.



	Measure button. Measures Face Left the first time and Face Right for the second time
Ľ	<b>Reduce button</b> . Reduces the measurement to produce mean, reduction and final value. Comparism between computed and true line distances will be shown.

	Save button. Set save index to save measurement to database.
×	<b>Delete button</b> . Deletes the record (applicable during view record mode ).
lasT str	Last 20 Station button. View the last 20 station number that being used.

#### Survey Steps

1. On the field capture window, select **Semakan Harian** observation by selecting the **Semakan Harian** radio button located at the right side of the window screen.

- 2. User select the "At station ID" and the "To station ID" from the provided combo box.
- 3. After all the information is enter in, sight to the "**forward station**" and click the **measure** button to measure the bearing distance for your face left. The bearing and distance value will be retrieved automatically.

			SUDUT		JARAK	
DARI		KE	ZENITH	1ARAK	MUKTAMAD	
6 🔻	-	1 💌	89.5625	29,498		
					SEMAK	
					Special	

4. Sight to the "**forward station**" and click the **measure** button again to measure the bearing distance for your face right. The bearing and distance value will be retrieved automatically.

					SUDUT		JARAK
DARI			KE		ZENITH	JARAK	MUKTAMAD
6	•	-	1	-	89.5625	29.498	
					270.0330	29,498	SEMAK
							Special

5. Click on the **reduce** button is to reduces the measurement to produce mean, reduction and final value. Comparison between computed and true line bearing and distance will be shown.

			SUDUT		JARAK	
DARI		KE	ZENITH	JARAK	MUKTAMAD	
6 💌	-	1 🔻	89.5625	29,498	29,498	Garis 6-1 dibaca : 29.498
			270.0330	29,498	SEMAK (	Sepatut dibaca : 29.499
					<b>`</b>	Rerbezaannya : 0.001
					Special	

6. Finally click the **save** button booked into the field book.

**Note**: The measurement that you have measured will only be save once you click the save button. If not the measured bearing and distance of that particular record will not be save.

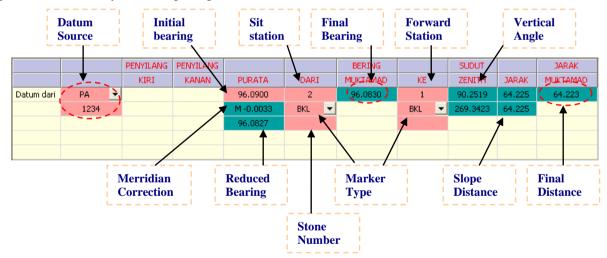
7. You can view your record using **Record** menu. Semakan Harian same with Check Distance, so please click **Record** menu > **Check Distance**. Field Capture Dialog will be displayed as follow.

			SUDUT		JARAK					
DARI		KE	ZENITH	JARAK	MUKTAMAD					
6 •		1	89.5625	29.498	29.498	Garis	6-1	dibaca : 29.498	;	
_	-		270.0330	29,498	SEMAK	Sepatut di	ibaca	: 29.49	9	
						Perbezaann		: 0.001		
					Special					
					Special					
	_									
	Sho	w Deleted	Lines							
			:	B°27'40						
			:	B°27'40						
		7 - 3	dibaca	B° 27' 40						
Sepat	ut	7 - 3	dibaca (	3°27'40 3°27'40						
Sepat Tikai	ut ian		dibaca a dibaca a ialah d	3°27'40 3°27'40 3°00'00 dlm		. 8,11,12,7	 ,			
Sepat	ut ian		dibaca (	3°27'40 3°27'40 3°00'00 dlm		a 8,11,12,7	 ,			
Sepat Tikai	ut ian	n	dibaca : dibaca : ialah : ialah + :	3*27'40 3*27'40 3*00'00 dlm 3*00'00.00	satu stn					
Sepat Tikai Pembe	cut ian etula	n	dibaca : dibaca : ialah : ialah + :	3°27'40 3°27'40 0°00'00 dlm 0°00'00.00	satu stn 	ak) 1		89°56'25 29	. 498	29.498
Sepat Tikai Pembe	cut ian etula	n	dibaca : dibaca : ialah : ialah + :	3*27'40 3*27'40 3*00'00 dlm 3*00'00.00	satu stn 	ak) 1		89°56'25 29	. 498	
Sepat Tikai Pembe	cut ian etula	n	dibaca : dibaca : ialah : ialah + :	3°27'40 3°27'40 0°00'00 dlm 0°00'00.00	satu stn 	ak) 1		89°56'25 29	. 498	
Sepat Tikai Pembe	cut ian etula	n	dibaca : dibaca : ialah : ialah + :	3°27'40 3°27'40 0°00'00 dlm 0°00'00.00	satu stn 	ak) 1		89°56'25 29	.498 .498)	29.498
Sepat Tikai Pembe	cut ian etula	n	dibaca : dibaca : ialah : ialah + :	3°27'40 3°27'40 0°00'00 dlm 0°00'00.00	satu stn 	ak) 1		89°56'25 29	.498 .498)	
Sepat Tikai Pembe	cut ian etula	n	dibaca : dibaca : ialah : ialah + :	3°27'40 3°27'40 0°00'00 dlm 0°00'00.00	satu stn 	ak) 1		89°56'25 29	.498 .498)	29.498

8. If you wish to delete the record, please click **X** button.

### 5.4. Datum

In this part, we will show you the steps to get familiar with the Datum buttons and examine how to do Datum.



	Measure button. Measures Face Left the first time and Face Right for the second time
2	<b>Reduce button</b> . Reduces the measurement to produce mean, reduction and final value.
	Save button. Set save index to save measurement to database
	<b>Measure All button</b> . Measures both face left and face right measurements transiting automatically. Applicable to motorized instruments with auto targeting system only.
	Sketch button. To view sketch.
PO	<b>PO Line button</b> . Get Datum From Exiting PO.
Ö.	Sun Bearings button. Get sun list from Part 5.1: Sun Observation.

A state

**Remark button**. Put the remark.

### **Survey Steps**

1. On the field capture window, select **Datum** observation by selecting the **Datum** radio button located at the right side of the window screen.

💽 Datum

2. Select the type of Datum, then key in the initial start bearing, "Sit Station ID, "To Station ID" and select or manually key in your marker type.

		PENYILANG	PENYILANG			BERING		SUDUT		JARAK
		KIRI	KANAN	PURATA	DARI	MUKTAMAD	KE	ZENITH	JARAK	MUKTAMAD
Datum dari	PA 💌			96.0900	2		1			
	1234				BKL 💌		BKL 💌			

**Note**: If the is any stone number for a particular station ID; you may enter in the particular stone number directly the red colour field under the marker type.

3. After all the information is keyed in, click the **measure** button to measure the bearing and the distance for your face left. The measurement value will be retrieved automatically. Then continue measure the bearing and the distance for your face right.

		PENYILANG	PENYILANG			BERING		SUDUT		JARAK
		KIRI	KANAN	PURATA	DARI	MUKTAMAD	KE	ZENITH	1ARAK	MUKTAMAD
Datum dari	PA 💌			96.0900	2		1	90.2519	64.225	
	1234				BKL 💌		BKL 💌	269.3423	64.225	

**Note**: For step 3 and step 4, once you click the **measure** button the screen below will appear indicating that measurement is in progress. If the screen below does not appear, you need to click the measure button again to start your measurement.

Measurement In Progress >>>

4. After all the measurement required was measured, click on the **reduce** button it to reduce the measurement to produce mean, reduction and final value

		PENYILANG	PENYILANG			BERING		SUDUT		JARAK
		KIRI	KANAN	PURATA	DARI	MUKTAMAD	KE	ZENITH	JARAK F	MUKTAMAD
Datum dari	PA 💌			96.0900	2	96.0900	1	90.2519	64.225	64.223
	1234				BKL 👻		BKL 💌	269.3423	64.225	
				96.0900						
					-					

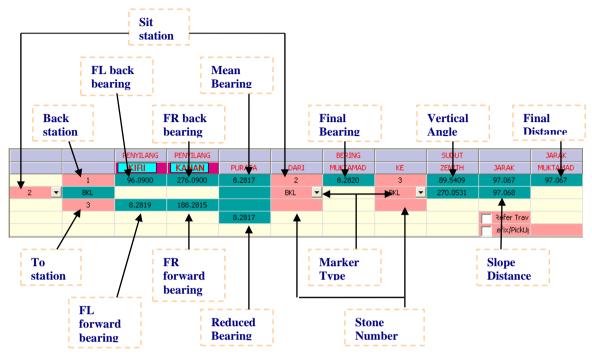
5. Finally click the **save** button is to save your datum record. Once you saved the record, you will able to see that the record is booked into the field book.

**Note**: The measurement that you have measured will only be save once you click the save button. If not the measured bearing and distance of that particular record will not be save

6. You can view your record using **Record** menu. Please click **Record** menu > **Datum**.

# 5.5. Traverse

In this part, we will show you the steps to get familiar with the **Semakan Harian** buttons and examine how to do Semakan Harian.



-	
	Measure button. Measures Face Left the first time and Face Right for the second time
	Reduce button. Reduces the measurement to produce mean, reduction and final value.
	Save button. Set save index to save measurement to database.
	<b>Measure All button</b> . Measures both face left and face right measurements transiting automatically. Applicapable to motorized instruments with auto targeting system only.
<u>മ</u>	Remeasure Horizontal bearing.
E	Remeasure Face Left (Horizontal Bearing, Vertical Angle, Slope Distance)
ER	Remeasure Face Right ( Horizontal Bearing, Vertical Angle, Slope Distance ).
	Sketch button. To view sketch.
ыŢ.	Enter height button. Enter height details.
Edit Stn	Edit Station ID button. Update/Edit station IDs.
	Remeasure Trav Dist. Remeasure Distance.
	Remark button. Put the remark for observation.
lasT stn	Last 20 Station button. View the last 20 station number that being used.
뺚	Station Remark button. Put the remark for station.

# Survey Steps

1. On the field capture window, select **Traverse** observation by selecting the **Traverse** radio button located at the right side of the window screen.



2. Select the "Sit station ID", the "Back station ID" from the provided combo box and the type in the "To station ID". Then select or manually key in your marker type.

		PENYILANG	PENYILANG			BERING		SUDUT		JARAK
		KIRI	KANAN	PURATA	DARI	MUKTAMAD	KE	ZENITH	JARAK	MUKTAMAD
	1 🔻			_	2		3	_		
2 🔻	BKL				BKL 💌		BKL 💌			
	3			L						
									Refer Trav	
									efix/PickUj	

**Note:** You may enter in the particular stone number directly the red colour field under the marker type if any.

3. After all the information is enter in, sight to the "**Back station**" and click the **kiri** button **Exercise** to set the back bearing for your face left. The bearing value will be retrieved automatically.

			PENYILANG	PENYILANG			BERING		SUDUT		JARAK
		_	KIRI	KANAN	PURATA	DARI	MUKTAMAD	KE	ZENITH	JARAK	MUKTAMAD
		1 🔹	96.0900			2		3			
2	-	BKL				BKL 💌		BKL 💌			
		3									
										Refer Trav	
										.efix/PickUj	

4. Then sight the theodolite to the "forward station" and click the **measure** button to measure the bearing and the distance for your face left. The measurement value will be retrieved automatically.

		PENYILANG	PENYILANG			BERING		SUDUT		JARAK
		KIRI	KANAN	PURATA	DARI	MUKTAMAD	KE	ZENITH	1ARAK	MUKTAMAD
	1 🔻	96.0900			2		3	89,5409	97.067	
2 🔻	BKL				BKL 💌		BKL 💌			-
	3	8.2819								
									Refer Trav	
									.efix/PickUj	

5. Then sight the theodolite to the "**Back station**" and click the **kanan** button **[KANAN]** to set the back bearing for your face right. The bearing value will be retrieved automatically.

		PENYILANG	PENYILANG			BERING		SUDUT		JARAK
		KIRI	KANAN	PURATA	DARI	MUKTAMAD	KE	ZENITH	JARAK	MUKTAMAD
	1 🔻	96.0900	276.0900		2		3	89.5409	97.067	
2	→ BKL	•			BKL 💌		BKL 💌			
	3	8.2819								
									Refer Trav	
									.efix/PickUj	

6. Then sight the theodolite to the "**forward station**" and click the **measure** button to measure the bearing and the distance for your face right. The measurement value will be retrieved automatically.

•		0						•		
		PENYILANG	PENYILANG			BERING		SUDUT		JARAK
		KIRI	KANAN	PURATA	DARI	MUKTAMAD	KE	ZENITH	JARAK	MUKTAMAD
	1 🔻	96.0900	276.0900		2		3	89.5409	97.067	
2 💌	BKL	r		1	BKL 💌		BKL 🔻	270.0531	97.068	
	3	8.2819	188.2815							
		L							Refer Trav	
									efix/PickUj	

**Note**: For step 4 and step 6, once you click the **measure** button the screen below will appear indicating that measurement is in progress. If the screen below does not appear, you need to click the measure button again to start your measurement.

Measurement In Progress >>>

7. After all the measurement required was measured, click on the **reduce** button it to reduces the measurement to produce mean, reduction and final value.

		PENYILANG	PENYILANG			BERING		SUDUT		JARAK
		KIRI	KANAN	PURATA	DARI	MUKTAMAD	KE	ZENITH	JARAK	MUKTAMAD
	1 🔻	96.0900	276.0900	8.2817	2	8.2820	3	89.5409	97.067	97.067
2 🔻	BKL				BKL 🗜		BKL 💌	270.0531	97.068	
	3	8.2819	188.2815							
				8.2817					🔲 Refer Trav	
									efix/PickUj	

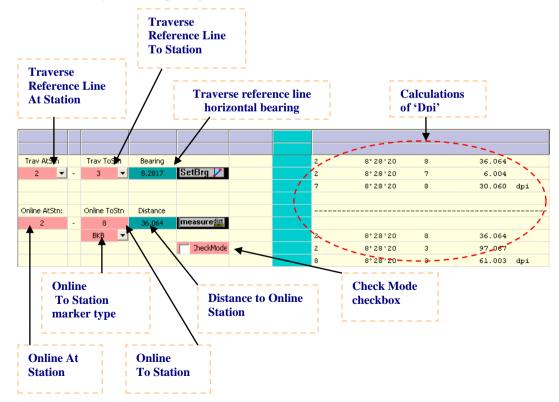
8. Finally click the **save** button it to save your traverse record. Once you saved the record, you will able to see that the record is booked into the field book.

**Note**: The measurement that you have measured will only be save once you click the save button. If not the measured bearing and distance of that particular record will not be save.

- 9. You can view your record using Record menu. Please click **Record** menu >**Traverse**. **Field Capture Dialog** will be displayed as follow.
- Before you do the close statement, you need to use bearing close function in <u>Part 5.8: Bearing Close</u> to do your close bearing before doing close statement in <u>Part 5.9: Close Statement</u>.

#### 5.6. Online

In this part, we will show you the steps to get familiar with the **Online** buttons and examine how to do Online.



V	Set bearing button. Sets traverse line reference bearing to the instrument and displayed.
dist	Measure Dist only button. Measure distance to online station.
	<b>Reduce button</b> . Reduces the measurement to produce mean, reduction and final value. 'Dpi' will be auto calculated and displayed.
	Save button. Set save index to save measurement to database.
	Sketch button. To view sketch.
,±±.,	POL Tape button.
lașT șin	Last 20 Station button. View the last 20 station number that being used.

### Survey Steps

1. On the field capture window, select **Online** observation by selecting the **Online** radio button located at the right side of the window screen.



2. Select the **"Traverse Reference Line At Station ID**", the **"Traverse Reference Line To Station ID**" from the provided combo box and the type in the **"Online To Station ID**". Then select or manually key in your marker type.

Trav AtStn		Trav ToStn	Bearing			
2 🔻	-	3 🔻		SetBrg 🦯		
	_					
Online AtStn:		Online ToStn	Distance			
2	-	8		measuredist		
		BKB 💌				
				TheckMode		

Note: If you are doing online checking, tick the checkbox for check mode

3. Sight the theodolite to "**Traverse Reference Line To Station**" and press **Set Bearing** button *I* to assigned bearing (retrieved from previous measurement) between occupied station and online/reference station.

Trav AtStn		Trav ToS	tn _	Bearing			
2 🔻	-	3	-	8.2817	SetBrg 📝		
Online AtStn:		Online To:	5tn	Distance			
2	-	8			measuredist		
		BKB	-				
					TheckMode		

Note: For online observation, you only need to set the bearing for face left.

4. Sight the theodolite to "**Online To Station**" and press **Measure** button it to measure the distance to online station.

Trav AtStn		Trav ToStn	Bearing			
2 🔻	-	3 🔻	8.2817	SetBrg 📝		
Online AtStn:		Online ToStn	Distance	1		
2	-	8	36.064	measuredist		
		вкв 💌				
				TheckMode		

Note: For online observation, you only need to measure the distance for face left.

5. For step 4, once you click the **measure** button the screen below will appear indicating that measurement is in progress. If the screen below does not appear, you need to click the measure button again to start your measurement.



6. After that, press **Reduce** button <sup>LD</sup> to produce mean, reduction and final value. 'Dpi' will be auto calculated and displayed.

Trav AtStn		Trav ToS	tn	Bearing			2	<del>9°28</del> 20	8	36.064
2 🔻	-	3	•	8.2817	SetBrg 🖊		2	8*28'20	7	6.004
						/	7	8°28'20	8	30.060 dpi
Online AtStn:		Online To:	5tn	Distance		{				
2	-	8		36,064	measuredist					/
		BKB	-				2	8°28'20	8	36.064
					TheckMode		2	8°28'20	з	97.067
							8	8-26-20	3	61.003 dpi

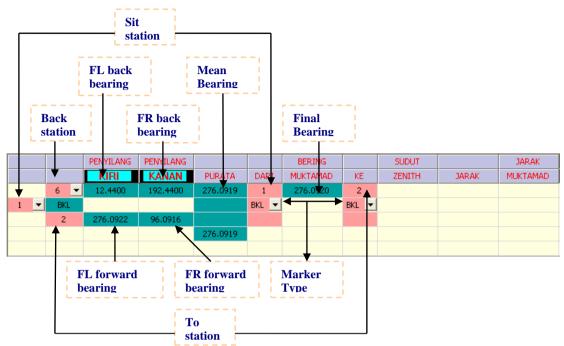
7. Finally click the **save** button is to save your online record. Once you saved the record, you will able to see that the record is booked into the field book.

**Note**: The measurement that you have measured will only be save once you click the save button. If not the measured bearing and distance of that particular record will not be save.

8. You can view your record using Record menu. Please click **Record** menu > **Online**. **Field Capture Dialog** will be displayed as follow.

# 5.7. Bearing Close

In this part, we will show you the steps to get familiar with the Bearing Close buttons and examine how to do Bearing Close.



HbrG	<b>Measure horizontal bearing button</b> . Measures Face Left the first time and Face Right for the second time
6	<b>Reduce button</b> . Reduces the measurement to produce mean, reduction and final value.
	Save button. Set save index to save measurement to database.
1	<b>Measure All button</b> . Measures both face left and face right measurements transiting automatically. Applicable to motorized instruments with auto targeting system only.
	Sketch button. To view sketch.
×	<b>Delete button</b> . Deletes the record (applicable during view record mode).
	Remark button. Put the remark.
lasT stri	Last 20 Station button. View the last 20 station number that being used.

### Survey Steps

1. On the field capture window, select **Bearing Close** observation by selecting the **Brg Close** radio button located at the right side of the window screen.

💿 Brg Close

2. Select the "Sit station ID", the "Back station ID" from the provided combo box and the type in the "To station ID". Then select or manually key in your marker type.

			PENYILANG	PENYILANG			BERING		SUDUT		JARAK
			KIRI	KANAN	PURATA	DARI	MUKTAMAD	KE	ZENITH	JARAK	MUKTAMAD
		6 🔻				1		2			
	1 🔻	BKL				BKL 💌		BKL 💌			
		2									
ľ											

**Note:** You may enter in the particular stone number directly the red color field under the marker type if any.

3. After all the information is enter in, sight the theodolite to the "**Back station**" and click the **kiri** button **EXERCI** to set the back bearing for your face left. The bearing value will be retrieved automatically.

			PENYILANG	PENYILANG			BERING		SUDUT		JARAK
			KIRI	KANAN	PURATA	DARI	MUKTAMAD	KE	ZENITH	JARAK	MUKTAMAD
		6 💌	12,4400			1		2			
1	-	BKL				BKL 💌		BKL 💌			
		2									

4. Then sight the theodolite to the "**To station**" and click the **measure** button to measure the bearing and the distance for your face left. The measurement value will be retrieved automatically

							•			
		PENYILANG	PENYILANG			BERING		SUDUT		JARAK
		KIRI	KANAN	PURATA	DARI	MUKTAMAD	KE	ZENITH	JARAK	MUKTAMAD
	6 💌	12.4400			1		2			
1 🔻	BKL				BKL 💌		BKL 💌			
	2	276.0922								

5. Then sight the theodolite to the "**Back station**" and click the **kanan** button **KANAN** to set the back bearing for your face right. The bearing value will be retrieved automatically.

			PENYILANG	PENYILANG			BERING		SUDUT		JARAK
			KIRI	KANAN	PURATA	DARI	MUKTAMAD	KE	ZENITH	JARAK	MUKTAMAD
		6 💌	12,4400	192,4400		1		2			
1	-	BKL	•			BKL 💌		BKL 💌			
		2	276.0922								

6. Then sight the theodolite to the "**To station**" and click the **measure** button to measure the bearing and the distance for your face right. The measurement value will be retrieve automatically.

			PENYILANG	PENYILANG			BERING		SUDUT		JARAK
			KIRI	KANAN	PURATA	DARI	MUKTAMAD	KE	ZENITH	JARAK	MUKTAMAD
		6 🔻	12.4400	192.4400		1		2			
1	-	BKL	_			BKL 💌		BKL 💌			
		2	276.0922	96.0916							

Note: For step 4 and step 6, once you click the **measure** button the screen below will appear indicating that measurement is in progress. If the screen below does not appear, you need to click the measure button again to start your measurement.

Measurement In Progress >>>

7. After all the measurement required was measured, click on the **reduce** button it to reduces the measurement to produce mean, reduction and final value.

		PENYILANG	PENYILANG			BERING		SUDUT		JARAK
		KIRI	KANAN	PLIRATA	DARI	MUKTAMAD	KE	ZENITH	JARAK	MUKTAMAD
	6 🔻	12.4400	192.4400	276.0919	1	276.0920	2			
1 🔻	BKL				BKL 💌		BKL 💌			
	2	276.0922	96.0916							
				276.0919						
			L		1					

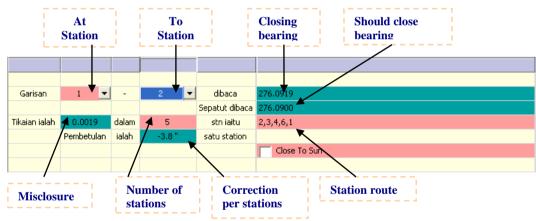
8. Finally click the **save** button is to save your bearing close record. Once you saved the record, you will able to see that the record is booked into the field book.

**Note**: The measurement that you have measured will only be save once you click the save button. If not the measured bearing and distance of that particular record will not be save.

- 9. You can view your record using Record menu. Please click **Record** menu >**Bearing Close**. Field Capture Dialog will be displayed as follow.
- 10. After you complete your bearing close, now you can proceed with close statement in Part 5.9: Close Statement.

### 5.8. Close Statement

In this part, we will show you the steps to get familiar with the Close Statement buttons and examine how to do Close Statement.



	<b>Reduce button</b> . Reduces the measurement to produce mean, reduction and final value. Close bearing and should close bearing will be automatically retrieved and displayed with the misclosure and correction per stations calculated. If no station route has been entering, user is provided a list of route to select from.
	Save button. Set save index to save measurement to database.
	Sketch button. To view sketch.
Pice stn	Provides a dialog with all available stations to pick and connect as station route.
PO	Provides a dialog with all available PO line bearings to select as "Should close bearing".
Q	Provides a dialog with all available Sun mean grid bearings to select as "Should close bearing".
×	<b>Delete button</b> . Deletes the record (applicable during view record mode ).
lasT stri	Last 20 Station button. View the last 20 station number that being used.

<b>N</b>	Graphic Pick Route button. Graphic pick the traverse route by user.					
	Remark button. Put the remark for observation.					

#### **Survey Steps**

1. On the field capture window, select **Close Statement** observation by selecting the **Close Statement** radio button located at the right side of the window screen.

O Close	Statement
CIOSE	Scacemenc

2. Select the "At station ID" and the "To station ID" from the provided combo box.

Garisan	1 🔻	-	2	•	dibaca	
_		а с			Sepatut dibaca	
Tikaian ialah		dalam			stn iaitu	
	Pembetulan	ialah			satu station	
						Close To Sun

3. The route and calculation of the correction will be produced.

Garisan	1 🔻	-	2 🔻	dibaca	276.0919
				Sepatut dibaca	276.0900
Tikaian ialah	0.0019	dalam	5	stn iaitu	2,3,4,6,1
	Pembetulan	ialah	-3.8 "	satu station	
					Close To Sun

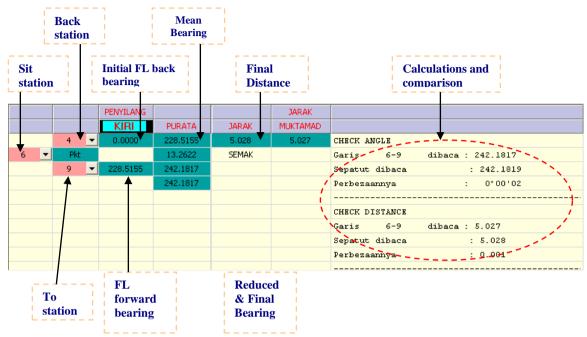
- User can also manually key in the station route. Double click the route you want to edit / change. Press Enter and click on the Reduce button after change.
- 5. Finally click the **save** button **b** to save you record. Once you saved the record, you will able to see that the record is booked into the field book.

**Note**: The measurement that you have measured will only be save once you click the save button. If not the measured bearing and distance of that particular record will not be save.

- 6. You can view your record using **Record** menu. Please click **Record** menu > **Close Statement**. **Field Capture Dialog** will be displayed as follow.
- 7. After doing the close statement, we need to continue with C correction and misclosure calculation for our job. So, please proceed to next part, **Part 6: In Field Computation**.

### 5.9. Check Angle & Distance

In this part, we will show you the steps to get familiar with the Check Angle & Distance buttons and examine how to do Check Angle & Distance. You can use this function after do refixation or any tasks that require check angle & distance.



	Measure button. Measures Face Left forward bearing and distance.						
	<b>Reduce button</b> . Reduces the measurement to produce mean, reduction and final value. Comparism between computed and true line bearing and distance will be shown.						
	Save button. Set save index to save measurement to database.						
×	<b>Delete button</b> . Deletes the record (applicable during view record mode ).						
lasT str	Last 20 Station button. View the last 20 station number that being used.						

### **Survey Steps**

1. On the field capture window, select **Check Angle & Distance** observation by selecting the **Check Ang & Dist** radio button located at the right side of the window screen.

📀 Check Ang & Dist

2. Select the "Sit station ID", the "Back station ID" and the "To station ID" from the provided combo box.

		PENYILANG			JARAK	
		KIRI	PURATA	JARAK	MUKTAMAD	
	4 🔻	0.0000				
6 🔻	Pkt			SEMAK		
	9 🔻					
L						

3. After all the information is enter in, sight the theodolite to the "**Back station**" and click the **kiri** button **Exercise** to set the back bearing for your face left. The bearing value will be retrieved automatically.

			PENYILANG			JARAK				
						KIRI	PURATA	JARAK	MUKTAMAD	
		4	-	0.0000						
6	-	Pkt				SEMAK				
		9	-							

Note: User can also key in the initial face left back bearing.

4. Then sight the theodolite to the "**forward station**" and click the **measure** button to measure the bearing and the distance for your face left. The measurement value will be retrieved automatically.

		PENYILANG			JARAK	
		KIRI	PURATA	JARAK	MUKTAMAD	
	4 🔻	0.0000		5.028		
6 🔻	Pkt			SEMAK		
	9 🔻	228,5155				
	L					

5. Click on the **reduce** button it to reduces the measurement to produce mean, reduction and final value. Comparison between computed and true line bearing and distance will be shown.

			PENYILANG			JARAK	
			KIRI	PURATA	J JARAK r	MUKTAMAD	
	4	-	0.0000	228,5155	5.028	5.027	CHECK ANCLE
6 🔻	Pkt			13.2622	SEMAK		Garis 6-9 dibaca : 242.1817
	9	-	228,5155	242,1817		· · · · ·	Sepatut dibaca : 242.1819
				242.1817		1	Perbezaannya : 0°00'02
			L		1	(	
							CHECK DISTANCE
							Garis 6-9 dibaca: 5.027
							Sepatut dibaca : 5.028
							Perbezannya : 0.001

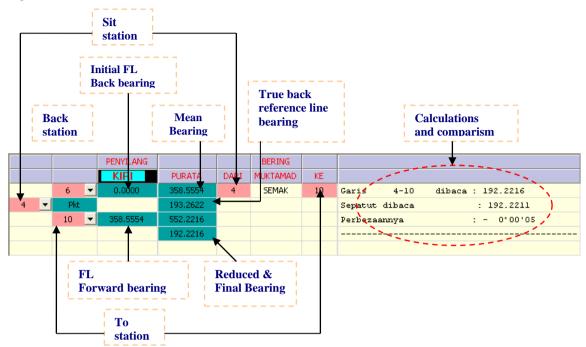
6. Finally click the **save** button booked into the field book.

**Note**: The measurement that you have measured will only be save once you click the save button. If not the measured bearing and distance of that particular record will not be save.

7. You can view your record using **Record** menu. Please click **Record** menu > **Check Angle & Dist. Field Capture Dialog** will be displayed as follow.

## 5.10. Check Angle

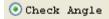
In this part, we will show you the steps to get familiar with the Check Angle buttons and examine how to do Check Angle.



<b>1</b>	Measure button. Measures Face Left forward bearing.						
	<b>Reduce button</b> . Reduces the measurement to produce mean, reduction and final value. Comparison between computed and true line bearing will be shown.						
	Save button. Set save index to save measurement to database.						
×	<b>Delete button</b> . Deletes the record (applicable during view record mode).						
lasT sfn	Last 20 Station button. View the last 20 station number that being used						

### Survey Steps

1. On the field capture window, select Check Angle observation by selecting the **Check Angle** radio button located at the right side of the window screen.



2. Select the "Sit station ID", the "Back station ID" and the "To station ID" from the provided combo box.

		PENYILANG			BERING		
		KIRI	PURATA	DARI	MUKTAMAD	KE	
	6 💌	0.0000		4	SEMAK	10	
4 🔻	Pkt						
	10 💌						

3. After all the information is enter in, sight the theodolite to the "**Back station**" and click the **kiri** button **Exercise** to set the back bearing for your face left. The bearing value will be retrieved automatically.

				PENYILANG			BERING		
				KIRI	PURATA	DARI	MUKTAMAD	KE	
		6	-	0.0000		4	SEMAK	10	
4	-	Pkt							
		10	-						

Note: User can also key in the initial face left back bearing.

4. Then sight the theodolite to the "**To station**" and click the **measure** button to measure the bearing and the distance for your face left. The measurement value will be retrieved automatically.

			PENYILANG			BERING		
			KIRI	PURATA	DARI	MUKTAMAD	KE	
	6	-	0.0000		4	SEMAK	10	
4 🔻	Pkt	-						
	10	J	358,5554					

5. Click on the **reduce** button it to reduces the measurement to produce mean, reduction and final value. Comparison between computed and true line bearing and distance will be shown.

			PENYILANG			BERING			
			KIRI	PURATA	DARI	MUKTAMAD	KE		
	6	-	0.0000	358.5554	4	SEMAK	10	Gar15 4-10	dibaca : 192.2216
4 🔻	Pkt			193.2622			- (	Sepatut dibaca	: 192.2211
	10	-	358.5554	552.2216				Perbezaannya	: - 0°00'05
				192.2216					
			L						

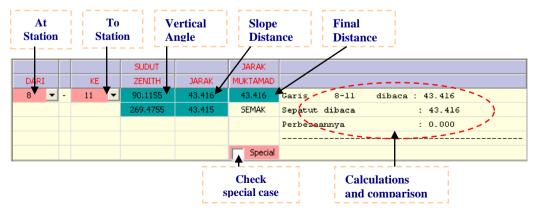
6. Finally click the **save** button **b** to save you record. Once you saved the record, you will able to see that the record is booked into the field book.

**Note**: The measurement that you have measured will only be save once you click the save button. If not the measured bearing and distance of that particular record will not be save.

7. You can view your record using **Record** menu. Please click **Record** menu > **Check Angle**. **Field Capture Dialog** will be displayed as follow.

### 5.11. Check Distance

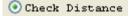
In this part, we will show you the steps to get familiar with the Check Distance buttons and examine how to do Check Distance.



	Measure button. Measures Face Left the first time and Face Right for the second time
Ľ	Reduce button. Reduces the measurement to produce mean, reduction and final value. Comparison between computed and true line distances will be shown.
	Save button. Set save index to save measurement to database.
×	Delete button. Deletes the record (applicable during view record mode).
lasT stri	Last 20 Station button. View the last 20 station number that being used

#### Survey Steps

1. On the field capture window, select Check Distance observation by selecting the Check Distance radio button located at the right side of the window screen.



2. Select the "At station ID" and the "To station ID" from the provided combo box.

				SUDUT		JARAK	
DARI		KE		ZENITH	JARAK	MUKTAMAD	
8 🔻 -	-	11	-				
						SEMAK	
						Special	

- 3. After all the information is enter in, sight the theodolite to the "forward station" and click the measure button 🕮 to measure the bearing distance for your face left. The bearing and distance value will be retrieved automatically.

				SUDUT		JARAK
DARI		KE 📕		ZENITH	1AR AK	MUKTAMAD
8 🔻	-	11	•	90.1155	43.416	
			-			SEMAK
						Special

4. Sight the theodolite to the "To station" and click the measure button is to measure the bearing distance for your face right. The bearing and distance value will be retrieved automatically.

					SUDUT		JARAK
DARI 8 🔻			KE		ZENITH	JARAK	MUKTAMAD
8	•	-	11	-	90.1155	43.416	
					269.4755	43,415	SEMAK
							Special

5. Click on the **reduce** button it to reduces the measurement to produce mean, reduction and final value. Comparison between computed and true line bearing and distance will be shown.

			SUDUT		JARAK	
DARI		KE	ZENITH	JARAK	MUKTAMAD	
8 🔻	-	11 💌	90.1155	43.416	43.416	Cario 8-11 dibaca : 43.416
			269,4755	43,415	SEMAK 🌈	Sepatut dibaca : 43.416
					\ \	Berbezaannya : 0.000
					Special	

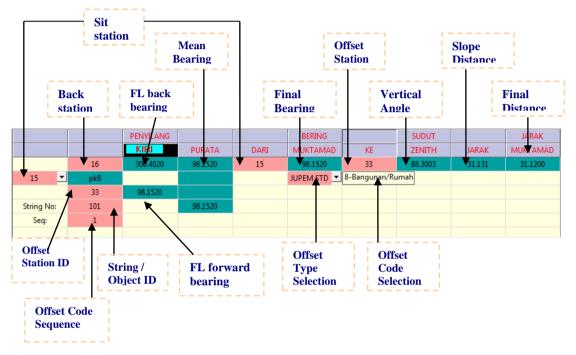
6. Finally click the **save** button **b** to save you record. Once you saved the record, you will able to see that the record is booked into the field book.

**Note**: The measurement that you have measured will only be save once you click the save button. If not the measured bearing and distance of that particular record will not be save.

7. You can view your record using **Record** menu. Please click **Record** menu > **Check Distance**. Field Capture Dialog will be displayed as follow.

#### 5.12. Offset Measurement

In this part, we will show you the steps to get familiar with the Offset Measurement buttons and examine how to do Offset Measurement.



V	Set bearing button. Sets back reference line bearing to the instrument and displayed.
	Measure button. Measures Face Left.
6	Reduce button. Reduces the measurement to produce mean, reduction and final value
	Save button. Set save index to save measurement to database.
	Sketch button. To view sketch.
lasT stn	Last 20 Station button. View the last 20 station number that being used

### Survey Steps

1. On the field capture window, select **Offset** observation by selecting the **Offset radio button** located at the right side of the window screen.

Offset (Details)

2. Select the "Sit station ID" and the "Back station ID" from the provided combo box and key in the "Offset station ID", following by the Object ID and Sequence (Seq by automatically). Then select the offset type and the offset code.

		PENYILANG			BERING		SUDUT		JARAK
		KIRI	PURATA	DARI	MUKTAMAD	KE	ZENITH	JARAK	MUKTAMAD
	16			15		22			
15 💌	pkB				JUPEM STD	8-Bangunan/Ru	umah		
	33			L L					
String No:	101								
Seq:	1								

3. After all the information is enter in, sight the theodolite to the "**Back station**" and click the **kiri** button **Exercise** to set the back bearing for your **face left**. The bearing value will be retrieved automatically.

		PENYILANG	-		BERING		SUDUT		JARAK
		KIRI	PURATA	DARI	MUKTAMAD	KE	ZENITH	JARAK	MUKTAMAD
	16	300.4020		15		33			
15 💌	pkB				JUPEM STD	8-Bangunan/Ru	ımah		
	33								
String No:	101								
Seq:	1								

Note: User only needs to set back bearing for face left.

4. Sight the theodolite to the "Offset station" and click the measure button to measure the bearing and distance for face left. The bearing and distance value will be retrieved automatically.

		PENYILANG			BERING		SUDUT		JARAK
		KIRI	PURATA	DARI	MUKTAMAD	KE	ZENITH	JARAK	MUKTAMAD
	16	300.4020		15		33	88.3003	31.131	
15 💌	pkB				JUPEM STD	8-Bangunan/Ru	ımah		
	33	98.1520							
String No:	101								
Seq:	1								

5. Click on the **reduce** button it to reduces the measurement to produce mean, reduction and final value.

		PENYILANG			BERING		SUDUT		JARAK
		KIRI	PURATA	DARI	MUKTAMAD	KE	ZENITH	JARAK	MUKTAMAD
	16	300.4020	98.1520	15	98.1520	33	88.3003	31.131	31.1200
15 💌	pkB				JUPEM STD 💌	8-Bangunan/Ru	ımah		
	33	98.1520							
String No:	101		98.1520						
Seq:	1								

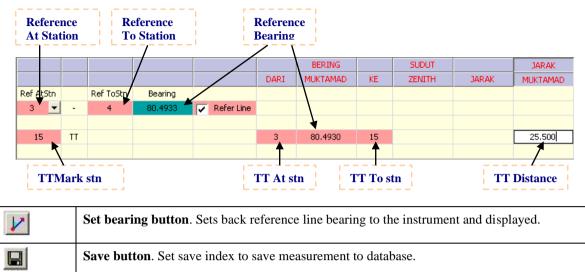
6. Finally click the **save** button booked into the field book.

**Note**: The measurement that you have measured will only be save once you click the save button. If not the measured bearing and distance of that particular record will not be save.

7. You can view your record using **Record** menu. Please click **Record** menu > **Offset**. **Field Capture Dialog** will be displayed.

# 5.13. TT Mark

In this part, we will show you the steps to get familiar with the TT Mark Measurement buttons and examine how to do TT Mark Measurement.



#### **Survey Steps**

1. On the field capture window, select **TT Mark** observation by selecting the **TT Mark** radio button located at the right side of the window screen.

```
💿 TT Mark
```

2. Tick or un-tick the **Refer line** checkbox to specify if the is any reference line bearing. If there is a reference line, enter in the **At Stn**, **To Stn**, **TT At stn**, **TT To stn** (**TTMark stn**). Else just enter in the TT Mark

						BERING		SUDUT		JARAK
					DARI	MUKTAMAD	KE	ZENITH	JARAK	MUKTAMAD
Ref AtStn		Ref ToStn	Bearing		_					
3 🔻	-	4		Refer Line						
					_			_		
15	TT				3		15			
				L						

3. Click the set bearing button if there is a reference bearing, else enter in the TT Mark bearing then click set bearing button

						BERING		SUDUT		JARAK
					DARI	MUKTAMAD	KE	ZENITH	JARAK	MUKTAMAD
Ref AtStn		Ref ToStn	Bearing							
3 🔻	-	4	80,4933	🔽 Refer Line						
		L								
15	TT				3	80,4930	15			

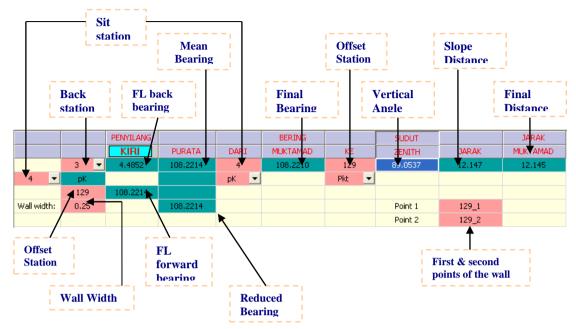
4. Enter in the distance in the final distance edit box. Then Click the save button

						BERING		SUDUT		JARAK
					DARI	MUKTAMAD	KE	ZENITH	JARAK	MUKTAMAD
Ref AtStn		Ref ToStn	Bearing							
3 💌	-	4	80,4933	🔽 Refer Line						
15	TT				3	80.4930	15			25.500
									•	

**Note**: The measurement that you have measured will only be save once you click the save button. If not the measured bearing and distance of that particular record will not be save.

# 5.14. Patty Wall

In this part, we will show you the steps to get familiar with the Patty Wall buttons and examine how to do Patty Wall.



1	Set bearing button. Sets back reference line bearing to the instrument and displayed.
	Measure button. Measures Face Left.
Ľ	Reduce button. Reduces the measurement to produce mean, reduction and final value
	Save button. Set save index to save measurement to database.
×	Delete button. Deletes the record (applicable during view record mode).
lasT Stri	Last 20 Station button. View the last 20 station number that being used

## **Survey Steps**

1. On the field capture window, selecting the **Patty Wall button** located at the right side of the window screen.

📀 Patty Wall

2. Select the "Sit station ID" and the "Back station ID" from the provided combo box and key in the "Offset station ID". Select offset station type as Pkt and key in the wall width that you measure manually.

			PENYILANG			BERING		SUDUT		JARAK
			KIRI	PURATA	DARI	MUKTAMAD	KE	ZENITH	JARAK	MUKTAMAD
		3 🔻			4		129			
	4 🔻	рК			рК 💌		Pkt 💌			
		129								
١	Wall width:	0.25						Point 1	129_1	
								Point 2	129_2	

3. After all the information is enter in, sight the theodolite to the **"Back station"** and click the **kiri** button **[KIRI]** to set the back bearing for your **face left**. The bearing value will be retrieved automatically.

		PENYILANG			BERING		SUDUT		JARAK
		KIRI	PURATA	DARI	MUKTAMAD	KE	ZENITH	JARAK	MUKTAMAD
	3 🔻	4.4852		4		129			
4 🔻	рK			рК 💌		Pkt 💌			
	129								
Wall width:	0.25						Point 1	129_1	
							Point 2	129_2	

Note: User only needs to set back bearing for face left.

- 4. Sight the theodolite to the "Offset station" and click the measure button is to measure the bearing and distance for face left. The bearing and distance value will be retrieved automatically.
- 5. Then, click on the **reduce** button it to reduces the measurement to produce mean, reduction and final value.

		PENYILANG			BERING		SUDUT		JARAK
		KIRI	PURATA	DARI	MUKTAMAD	KE	ZENITH	JARAK	MUKTAMAD
	3 💌	4.4852	108.2214	4	108.2210	129	91.1343	12.148	12.145
4 🔻	рK			рК 💌		Pkt 💌			
	129	108.2214							
Wall width:	0.25		108.2214				Point 1	129_1	
							Point 2	129_2	

6. Finally click the **save** button **b** to save you record. Once you saved the record, you will able to see that the record is booked into the field book.

**Note**: The measurement that you have measured will only be save once you click the save button. If not the measured bearing and distance of that particular record will not be save.

## 5.15. View Field Book

In this part, we will show you the steps to view the field book after do any field data capture.

- 1. Navigate to **Record** menu > **View Field Book**.
- 2. A Field Book dialog will be displayed as below. You can view the field data for the job you have done here.

Field Boo									
() 🕨 📓									
🖌 Show De	eleted Lines	Line	-		Search				
muka surs	at: 1				Ť				^
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		Penyilang			Bering		Sudut	Jarak	
Stesen =======	Kiri ======				Muktamad		Zenith Jarak	Muktamat	
	Differenti	al Field Test		A		в	H 74.134 (74.134)		
							2	23-02-2006	
с	pkt atas g	arisan A-B		c		A	H 43.147 ( 43.147)	43.147	
	Lihat ruan			с		в	H 30.989 (30.989)	30.989	
		-		C A		A B		43.147 74.136 Jum	
Datum Dar	ri Andaian			1		2	90°17'15 74.136 269°42'19 ( 74.136)		
			250°43'43					3-02-2006	
2 1 pK 3	251°00'00 217°01'50	71°00'00 M -	217°01'53 • 0°16'17	1	216°45'40	3 BKL	89°43'11 15.809 270°16'03 (15.810)		
			216°45'36						
1 2 pK	71°00'00	251°00'00 M -		2			90°33'28 7.709 269°25'57 ( 7.711)		
4	162°16'19		162°00'05						
16									

- 3. User can tick the checkbox for **Show Deleted Line** to show or hide the deleted line.
- 4. User also can search the record for certain measurement by click the **Search button** by entering the station number.

# 6. In Field Computation

In this part, we will discuss the menu item from 2.4.3: Define menu and 2.4.4: Computation menu. So, in this part 6, we will do in filed computation using the menu items in Define menu and Computation menu.

### 6.1. Define Menu

In this part, we will show you the steps how to do definination for coordinate, traverse, block and lot after completing survey capture in **Part 5: Field Data Capture**.

# 6.1.1. Define Coordinate

Stat	ion 🛡	Marker		Stone	▼ x	(T/B)	¥y (U/S	)	Searc	5	
			•					_	Save		Set Point
							Fixed				as Fix Point
tn ,	Marker	Stone No.	X (T/B)	Y (U/S)		AdjX (T/B)	AdjY (U/S)	Diff (T/B)	Diff (U/S)	-	as I IX I OIIIt
1	BKL		13417.235	-77561.180	COMPUTED	0.000	0.000	0.000	0.000	E	
2	BKL		13487.706	-77515.387	COMPUTED	0.000	0.000	0.000	0.000		
3	Pkt Pkt		13402.337 13327.403	-77528.825	COMPUTED	0.000	0.000	0.000	0.000	-	
4	PKt		13321.023	-77569.910	IXED	0.000	0.000	0.000	0.000	-	
6	Pkt		13238.286	-77613.281	COMPUTED	0.000	0.000	0.000	0.000	-	
7	Pkt		13181.859	-77626.213	COMPUTED	0.000	0.000	0.000	0.000	-	
8	pkL		13162.974	-77628.041	COMPUTED	0.000	0.000	0.000	0.000	-	
9	pkL		13183.660	-77622.904	COMPUTED	0.000	0.000	0.000	0.000	-	
10	pkL		13182.308	-77622.104	COMPUTED	0.000	0.000	0.000	0.000	-	
11	pkB		13156.340	-77585.219	COMPUTED	0.000	0.000	0.000	0.000	-	
12	, pkL		13150.603	-77565.309	COMPUTED	0.000	0.000	0.000	0.000		
13	, pkB		13168.536	-77554.965	COMPUTED	0.000	0.000	0.000	0.000	-	
14	, pkL		13169.876	-77559.122	COMPUTED	0.000	0.000	0.000	0.000		
15	pkB		13148.893	-77469.101	COMPUTED	0.000	0.000	0.000	0.000		
16	pkL		13129.299	-77457.501	IXED	0.000	0.000	0.000	0.000	-	
<u>v</u>	iew GPS	Multi Cha	nge Rese	t All	efresh	Import Clear		OK CANCEL			

#### 1. Click **Define** menu > **Coordinates**.

2. Select the station ID that you want to set as fix point. You can also select the GPS point as a fix point. Then remember to tick the **Fixed** check box.

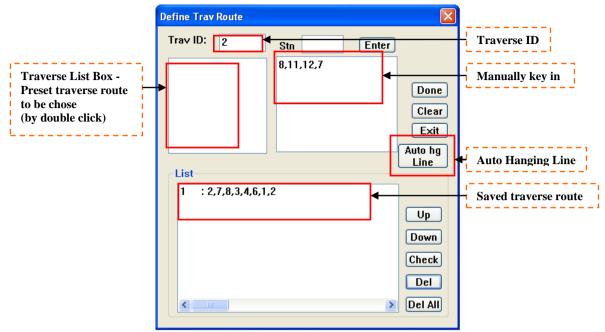
Stat	ion	Marker		Stone		(T/B)	Y (U/S	5)	Search
5		PL -			13321.	023	-77569.910	>	Save
tn	A Marker	Stone No.	X (T/B)	Y (U/S)		AdjX (T/B)	AdjY (U/S)	Diff (T/B)	Diff (U/S)
1	BKL		0.000	0.000	FRESH	0.000	0.000	0.000	0.000
2	BKL		0.000	0.000	FRESH	0.000	0.000	0.000	0.000
3	Pkt		0.000	0.000	FRESH	0.000	0.000	0.000	0.000
4	Pkt		0.000	0.000	FRESH	0.000	0.000	0.000	0.000
5	PL		13321.023	-77569.910	FIXED	0.000	0.000	0.000	0.000
6	Pkt		0.000	0.000	FRESH	0.000	0.000	0.000	0.000
7	Pkt		0.000	0.000	FRESH	0.000	0.000	0.000	0.000
8	pkL		0.000	0.000	FRESH	0.000	0.000	0.000	0.000
9	pkL		0.000	0.000	FRESH	0.000	0.000	0.000	0.000
10	pkL		0.000	0.000	FRESH	0.000	0.000	0.000	0.000
11	pkB		0.000	0.000	FRESH	0.000	0.000	0.000	0.000
12	pkL		0.000	0.000	FRESH	0.000	0.000	0.000	0.000
13	pkB		0.000	0.000	FRESH	0.000	0.000	0.000	0.000
14	pkL		0.000	0.000	FRESH	0.000	0.000	0.000	0.000
15	pkB		0.000	0.000	FRESH	0.000	0.000	0.000	0.000
16	pkL		13129.299	-77457.501	FIXED	0.000	0.000	0.000	0.000
<b>V</b>	lew GPS	Multi Chang	Reset	All Re:	fresh	Impo	rt *.pts	OK	

3. If you have GPS Points, please click View GPS and the dialog below will show up.

Station	Ma	rker	Stone	Х (	T/B)	Y (U/S)	
CRM1		-		26854.26	1 -49	983.888	Search
						Fixed	Save
n	🛆 Х (Т/В)	Y (U/S)		AdjX (T/B)	AdjY (U/S	) Diff (T/B)	Diff (U/S)
CRM1	26854.20	51 -49983.	888 GPS				
CRM2	26763.5	-50087.	077 GPS				
CRM3	26875.9	73 -50073.	093 GPS				
CRM4	26763.4	-50087.	137 GPS				
CRM5	26875.98	-50073.	117 GPS				

4. Click the **Save** button to save the fixed coordinate.

# 6.1.2. Define Traverse



#### 6.1.2.1. Manual Way

- 1. Click **Define** Menu > **Traverse**.
- 2. Key in the **Trav ID** or use the default ID, key in **Stn** edit box and click **Enter** button. Then, select the **traverse route** that is in the list box, you can select by double clicking the route.
- 3. If traverse route you want does not appear in list box, you can manually key in the traverse route in the **Stn** edit box and click **Enter** button for each station ID.

efine Trav Route		×
Trav ID: 2	Stn 7 Enter	
12	8,11,12,7	
2 3 8		Done
0		Clear
		Exit
		Auto hg
List		
1 : 2,7,8,3,4,6,	1,2	
		Up
		Down
		Check
		Del
<	>	Del All
List 1 : 2,7,8,3,4,6,		Exit Auto hg Line Up Down Check Del

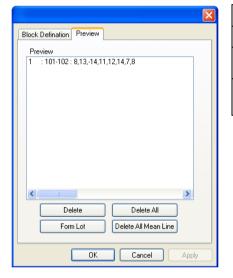
Note: Make sure there is a unique Trav ID in the Trav ID field

- 4. Click on **Done** button to accept the Traverse definition.
- 5. Click **Auto hg Line** to auto retrieve the hanging line.
- 6. Can use the **Up** and **Down** button to change the sequence of the traverse list if needed.
- 7. Click on the **Exit** button when finish.

#### 6.1.3. Define Block

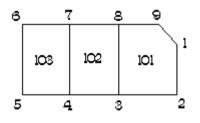
				×
Block Defination	Preview			_
Block No. 1		🗹 Contro 🗌 Mean	l Lot Line Only	
		Edit Del	Ins	
			~	
Stations		Edit Del	Ins	
			~	
	Done	Clear		
	OK	Cancel	Apply	

Block No.	Block ID. Integer value is input.	
Lot	Lot number located in the block.	
	Integer value is input. Comma is used to	
	separate each lot ID.	
Stations	Displays the current block route definition. "-	
	"symbol is used to denote each common	
	boundary or turning line in the block.	
🗹 Control Lot	To determine definition is a control lot.	
	(default: checked)	
📃 Mean Line Only	To use already computed mean line as part of	
	definition. (Default: unchecked).	
Done	Accepts and save current block route	
	definition.	
Clear	Clear current block route definition.	



Delete	Delete selected block definition
Delete All	Delete ALL block definitions.
Form Lot	To form and create lot definitions using defined block definitions.
Delete All Mean Line	Delete ALL created mean line.

#### 6.1.3.1. Manual Way



- 1. Click **Define** menu > **Block**.
- 2. A **Block Definition** dialog box will be displayed. Make sure the **Control Lot** is check.
- 3. Key in the **Block No.** or using default id and type in the **Lot** ids to form the block. Press button to key in the lot id. Key in the station ids in the **Stations** list box and press button.

4. Negative sign (e.g. -8) means it is a mean line for two lots. Enter the entire station id that will form the block (lots). To complete the block, need to key in again the same id (number) as the first station. Click the **Done** button when you finished define the first block.

Block Defination Preview
Block No. 1 Control Lot Lot
Edit Del Ins
Stations
1.28.37,4.5,6,7,8,9
Done Clear
OK Cancel Apply

5. You can view the **Preview** page to see the defined block. Click the **Form Lot** button to automatically form the lot.

×
Block Defination Preview
Preview
1 : 101-103 : 1,2,-8,3,-7,4,5,6,7,8,9,1
Delete Delete All
Form Lot Delete All Mean Line
OK Cancel Apply

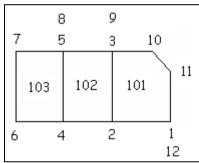
6. You can view the defined lot in next part, **<u>Part 6.1.4 Define Lot</u>**.

# 6.1.3.2. Graphically Way

- 1. Click on the **Define Block** icon.
- 2. Key in the **Lot number**. Then pick the point on the graphic.

Define Block	X
Block No. 1 101-103	<ul> <li></li> <li></li></ul>
Stations Picked	
	Back
	Form
Block Route	
	~
HighLight Selected Station	n
Save Auto	Cancel

- 3. To pick the point, should follow the sequence. Need to include the mean line just like manual define block.
- 4. The below figure shows the sequence to pick the station of a block. The alphabet is mean to the sequence but not station number.



5. After pick all the points of the block, click **Form** button to form the lots according to the Block Route.

1 8 9 2	Define Block 🛛 🔀
3	Block No. 1
	HighLight Selected Station Save Auto Cancel

6. Finally click **Save** button to save the block and lots definition.

### 6.1.3.3. Auto Define (with SKL ASCII)

If you have and being import the SKL ASCII (generated from CPSWinF2F), you may use the auto define block button to define it.

- 1. Click on the **Define Block** icon.
- 2. Key in the **Block Number** and the correct **Lot number**.
- 3. Click on Auto button, the lots will auto form up. Check whether correctly form up; If yes, click on Save button.

### 6.1.4. Define Lot

	Define Lot	3
	Lot No.1	Lot ID
Manually key in the lot here	Done Clear	
	Exit	
Defined Lot	Rename	Rename the lot number after get the real lot number.
	Del Del All	

### 6.1.4.1. Manual Way

- 1. Click **Define** Menu > Lot.
- 2. Enter all the station ID that will form the lot. Separate each station ID with a comma. Select **Done** button to accept the Lot definition. The lot will be showed in **List** box.

Define Lot	
Lot No.2	
13,11,12	Done Clear
	Exit
List	
1 : 8,13,17,7,8	Rename
	Del Del All

Note: Make sure there is a unique Lot No. in the Lot No. field

# 6.1.4.2. Graphically Way

- 1. Navigate the mouse to **View** menu > **Sketch**. Then a **Field Diagram dialog** as below will appear.
- 2. To show the sketch, user need to choose either the sketch is using assumed coordinate or actual coordinate or precomp. Then user also can choose the type of line to appear on the sketch by ticking the types of line require. Finally click **OK** button.

Field Diagram
O Field Sketch ( assumed Coord )
⊙ Field Diagram ( Actual Coord )
O Precomp ONLY
New Lines
PO Lines
SKL Lines
Traverse
Lot
Precomp Lines
Direct Line
Link Offset Parabolic
O Line By Line
OK Cancel

3. Once the sketch appears, user can start to define the lot. Click the **Graphical Define** button or click **Define** menu > **Graphic Define**. The **Define Lot** dialog box below appears.

Define Lot		
Enter conected stn	ID:	Trav OLot Cls
	Save View Back Clear	🗸 Auto Zoom

**Note:** when you are defining lot, please make sure that you have selected the **Lot** radio button before proceed.

4. Enter in the Lot **ID** at the ID combo box and select the station ID for the starting point of the traverse. Then continue to pick the station of the traverse route until it form a loop.

Define Lot		×	5
Enter conected stn 12 13 7	D: 13,11,12,14 Save View Back Clear	Trav  Lot  Cls	
			-

5. Then click the **save** button Save to save.

# 6.1.5. Define Direct Line

	Direct Line Defination			
Auto Search for Direct line route		Manual Define Route : 1 Stn :	Done Clear	Route ID
	Next Search		•	Route Edit Box (can manually key in)
Saved direct line route	List ▶		Auto Del Del All	Auto Retrieve Direct lines
		>	Exit	

### 6.1.5.1. Manual Way

- 1. Click **Computation > Define** Menu > **Direct Line**.
- 2. Enter the **From** and **To** station in the **Auto Search** column. Then click **Search** button. The Route Edit Box will show out the direct line route. Click **Done** to save it.
- 3. You can just manually key in all the station with comma for the route.
- 4. Or you also can click on the Auto button to retrieve all the direct lines (but must already define blok / lot).

Direct Line Defination		
Auto Search         From Stn         To Stn         Next       Search         List	Manual Define Route : 6 Stn : •	Done Clear
1A       : 4,10,4,6         2A       : 13,6,13,12         3A       : 14,6,4,11         4A       : 8,1,2,9         5A       : 9,2,10		Auto Del Del All Exit

# 6.1.5.2. Graphically Way

- 1. Click on the define Direct Line icon, use the mouse to click on the graphic to create the direct line, e.g. Station 8 and Station 9.
- 2. Then, click **Search** button to search for the route and then click **Save** button to save the direct line in **Graphic Define Direct Line** dialog.

Graphic Define Direct Line			
Station       Route ID       1       From     8	Search Save		1
Route	Clear		41
List	Auto Del Del All Exit	<b>73</b> <b>5</b>	12 4 B

# 6.1.6. Define Connection Line

	Define Connection Line		
	Auto Search       From Stn 6       Next       To Stn 7		Auto Search for Direct line route
Route ID	Manual Pefine Route : 1 Stn :	Done Clear	
Connection line tvpe	<ul> <li>O Conn Ln</li> <li>O Island Lot</li> <li>O Bdy Ln</li> </ul>	Exit	Route Edit Box (can manually key in)
	List		
Saved direct line route	*	Del Del All	

### 6.1.6.1. Manual Way

- 1. Click **Computation > Define** Menu > **Connection Line**.
- 2. Enter the **From** and **To** station in the **Auto Search** column. Then click **Search** button. The Route Edit Box will show out the direct line route.
- 3. Chose for the connection line type. **Conn Ln** will be shown as "dash line" which is the connection line between lot and lot. **Bdy Ln** will be the solid line.
- 4. Click **Done** to save it.
- 5. You can just manually key in all the station with comma for the route.

Define Connection	Line	X
Auto Search From Stn To Stn Manual Define Route : 2	Next Search Stn :	Done
⊙ Conn Ln ○ Island Lot ○ Bdy Ln		Exit
List 1 : 6,5,7		Del Del All

### 6.1.6.2. Graphically Way

.....

- 1. Click on the define connection Line icon, use the mouse to click on the graphic to create the connection line, e.g. Station 6 to Station 7.
- 2. Then, click **Search** button to search for the route, chose for the connection line type and then click **Save** button to save the connection line in **Graphic Define Connection Line** dialog.

Graphic Define Connection Line 🛛 🔀	
Station Route ID 1	$\frac{1}{1}$ $\frac{8}{10}$ $\frac{9}{10}$
From 6 To 7 Save	
Route	
6,5,7 Clear	
List	
Auto	<b>₩</b> <sup>2</sup> ↓2
Del	
Del All	
Exit	/ <u>*</u>
Exit	$I = / \chi$
Conn Ln	
O Bdy Ln	¥ /
	$\langle \cdot \rangle$
	$\sim$

# 6.1.7. Match PO/New or SKL/New

### 6.1.7.1. Manual Way

This step can be ignored if you done for the Base Refix in **Refixation** function (when you click on the **Adjust & Refix** button, it will automatically match for you).

- 1. Click **Define** Menu > **Match PO/New**.
- 2. Select the **PO Stn** ID and the **New Stn** ID from the list which is a common point. Click **match** button to save it.

Match PO and New Stn 🛛 🔀					
PO Stn	New Stn	SKL Stn			
1001 1002 1004 1006 1008 1009 1010 1011 1011 1012 1013	10 10 11 12 13 14 2 3 4 5	SKL1 SKL2 SKL3 SKL4 SKL5 SKL6			
PO and New	- 1	Match			
PO and SKL	-	Match			
Existing Matches:					
		Delete			

3. Or you can key in the **New Stn** ID in the edit box and match wit the **SKL Stn** ID from the list which is a common point. Click **match** button to save it.

Match PO and New Stn					
PO Stn	New Stn	SKL Stn			
1007 1002 1004 1006 1008 1009 1010 1011 1012	13 14 2 3 4 5 6 7 8	SKL1 SKL2 SKL3 SKL4 SKL5 SKL6			
1013 PO and New 1011	- 8	Match			
PO and SKL 8 Existing Matches:	SKL2	Match			
1001 - 1 SKL2 - 8		Delete OK			

## 6.1.7.2. Graphically Way

- 1. Before match the PO and New by graphically, you must on for the PO and New graphic in Actual Coordinate (Graphic > Sketch).
- 2. Click on the Match PO & New icon, and then select the station that you wish to match. After that, click Match in the Match PO and New Stn dialog.

Match PO and New	/ Stn		
PO Stn	New Stn	SKL Stn	2002 2013
2003	9		11
PO and New2003	9	Match	
PO and SKL	-	Match	12
Existing Matches:			
2002 - 8 2008 - 6 2009 - 4		Delete	4 2989

### 6.1.8. Stn Remark

- 1. Click **Define** Menu > **Stn Remark**.
- 2. Enter the At Stn ID and To Stn ID and click Search button

OPTION 🛛				
At Stn 2 To Stn 1 Search				
OPTION				
O None O TP Ke				
O TLH O TP Daripada				
O Custom				
Save Cancel				

3. Select option you want and enter in the comments to the specific given edit box. Finally click the **save** button to save.

OPTION				
At Stn 3	]			
To Stn 4	Search			
OPTION	-			
O None O T	ГРКе			
OTLH O1	○ TLH ○ TP Daripada			
Oustom				
xxxxxx				
Save Cancel				

# 6.1.9. Edit Station ID

- 1. Click **Define** Menu > **Edit Stn ID**.
- 2. User can edit the station ID by choosing the station number from combo box then key in the New Station ID. Then click **OK**.

Edit Stn ID	
Existing Stn ID	14 💌
New Stn ID	24
OK	Cancel

# 6.2. M & C Correction

In this part, we will show you the steps how to apply the M & C correction after completing survey without do the calculation for the correction. All the calculation will be done automatically and the field book will be automatically adjusted. You need to do Close Statement first before do C correction and do Sun Observation first before do M correction.

### 6.2.1. C Correction

- 1. Navigate to **Computation** menu > **C** Corr.
- 2. Select the close statement list that you want to apply the C Correction by just double clicks (highlight) the selected close statement. Then click **Apply** button. So, the C Correction is done.

C Corr		
At Stn.	1 To Stn. 2	
Station Lis	st	
2,3,4,6,1		
Tikaian:	0.0019	Apply
Close Stat	ement List :	
1 -	2 2,3,4,6,1	
7 -	3 8,11,12,7	

3. You can view the applied C correction at field book. If you want to view the field book, please refer to **Part 5.16: View Field Book**. In the field book. You will notice that C correction already apply in your field book.

### 6.2.2. M Correction

- 1. Navigate to **Computation** menu > **M Corr**.
- 2. Select the sun list that you did for Sun Observation. Apply the C Correction by just double the Solar List.
- 3. Change the **At Stn** and **To Stn** if you want to apply the M Correction from different start line. For example, Solar Observation done in line 3-4 but you want to apply the M Correction from the beginning of the survey, then you need to change the **At Stn** and **To Stn** to 2 and 1.
- 4. Then click **Apply** button. So, the M Correction is done.

M Corr	×
At Stn 2 To Stn. 1 Correction -0.0033 Apply To ALL Lines Solar List:	2
At To Solar Datum Corr 2 - 1 96.0827 96.0900 -0.0033	
Partly Apply	

5. You can view the applied M correction at field book. If you want to view the field book, please refer to **Part 5.16: View Field Book**. In the field book. You will notice that M correction already apply in your field book.

# 6.2.3. Clear Correction

### 6.2.3.1. Clear Correction

- 1. Navigate to Correction menu > Clear Corr. A Clear Corr dialog will be displayed as below.
- 2. Just click the records where you want to start clearing the correction. Then click **Clear** button or click on **M Clear** button if just only the M Correction want to be clear.

С	lear Corr				×
					_
	6	-	9	TRAV	^
	6	-	9	Check Obs	
	4	-	10	TRAV	
	4	-	10	Check Obs	
	8	-	11	TRAV	
	11	-	12	TRAV	
	12	-	7	TRAV	
	7	-	з	BG_CLS	=
	7	-	з	CLS	-
	8	-	13		
	7	-	14		~
	<	]		>	
	Clear o	orr s	tartin	g from reco	rd
	8 -	13			
M Clear Clear Cancel					

### 6.2.3.2. Clear All Correction

- 1. Navigate to **Computation** menu > **Clear All Corr**.
- 2. A Warning message saying that all C correction and M correction will pop up. Click **Yes** button if you confirm want to remove all, else click **No** button.

WARNING
This will remove all applied Merridean and Closure correction!! Are you sure you want to remove them?
Yes No

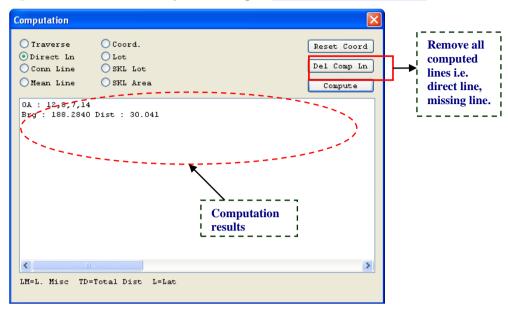
### 6.2.3.3. Clear All Correction (back to RAW)

- 1. Navigate to Computation menu > Clear All Corr (back to RAW).
- 2. A Warning message saying that all observation to RAW data. Click Yes button if you confirm, else click No button.

WARNING
This will reinstate all observation to RAW data!! Are you sure you want to proceed?
Yes No

# 6.3. Survey Computation

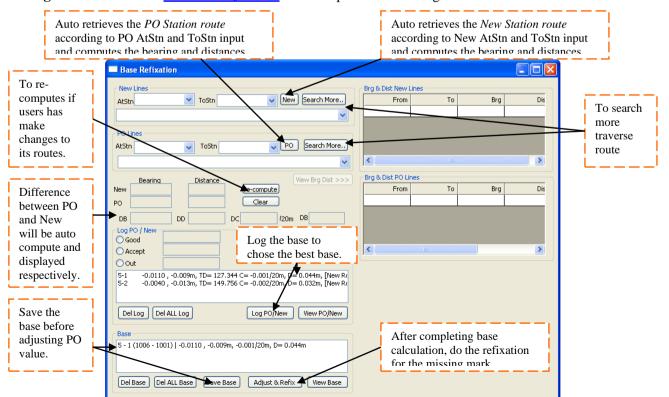
In this part, we will show you the steps how to do **survey computation** after completing survey capture and defining coordinate, traverse, lot and block without do the calculation for the correction. In this part, we will use the **Survey Comp** menu item which already discuss in part <u>2.4.4 Computation menu</u>.



- 1. Go to **Computation** menu > **Survey Comp**. to do all you computation.
- 2. Follow the sequence (Traverse  $\rightarrow$  Direct Ln  $\rightarrow$  Coord.  $\rightarrow$  Mean Ln  $\rightarrow$  Lot  $\rightarrow$  Conn Line  $\rightarrow$  SKL Lot  $\rightarrow$  SKL Area) and select the radio button for the type of survey you want to compute. And click on **Compute** button.

### 6.4. Base Computation and Refixation

In this part, we will show you the steps how to do **base computation.** After calculate the good base, we will do refixation for the missing point. We will using the **Base Refix.** menu item in <u>2.4.4 Computation menu</u> and **Setting Out** menu item in <u>2.2.2 Survey menu</u>.. This steps is needed for generate JUPEM \*.bln file.



Setting Out	V	<b>Set bearing button</b> . Sets back reference line bearing to the instrument and displayed.
At 6 To 1009 Search 6,1,1009 Use Adjusted PO re-compute Search More Back Stp. 1 Find Bck Bg	L	<b>Open bearing button</b> . Measures the horizontal bearing and compared its value with the computed bearing Automatically opens to computed bearing value if
Back Stn 1 Pind Bck Bg Back Brg 192.4345 Set Brg		motorized instruments are being used.
Bearing     Distance       Computed     242.1730     5.028       Reading		<b>Measure button</b> . Measures the bearing and distance. Differences between measured and computed value will calculated and displayed.
Status: (6-1009) 242.1730 , 5.028m [Route: 6,1,1009] (4-1008) 192 2130 - 28 444m [Route: 4 5 1008]	<b></b>	<b>Stop button</b> . To stop measuring during tracking mode measurement.
(4-1008) 192.2130 , 28.444m [Route: 4,5,1008]         (8-SKL5) 96.0910 , 43.454m [Route: 8,SKL3,SKL5]         Del All Log         Print Log         Move Up         Move Down         Coord.	Trav	Jumps to traverse field capture function to perform proper observation after locating the mark.
	PO PO	Matches (transpose) a station to PO station. Used during locating of PO marks.
	Back Brg	Numeric value in DDD.MMSS format. Back Bearing is automatically retrieved and assigned to this field when user selects the Find Bck Bg button.
		User point to the back station as target and press Set Brg to set the back bearing
	Search More	To search more traverse route
	Computed	Displays the value of the computed bearing and distance between sit station and point to locate.
	Reading	Displays the measured bearing and distance.
	Difference	Calculate and display the bearing and distance differences between computed and measured value
	Status:	Shows information and warning messages. I.e. "Mark Found", "Horiz Brg Out of Position", "Distance Out", etc.
	LOG	Log the Compute bearing & distance with the route.

# 6.4.1. Base Refixation

- 1. Navigate to **Computation** menu > **Base Refix**.
- 2. Then click the **AtStn** combo box and **ToStn** combo box to choose from which station you want to calculate the base. Then click the **New** button

New Lines		
AtStn 5	🔽 ToStn 1	New Search More
5,4,6,1		~

3. If after click on **New** button, you want to change the route, can click on **Search More** button. You can choose the other route for the same line. Then click **Select** and **OK** button.

Search More Route					
AtStn 5 💌	ToStn	1	~	Search	
5,1020,1006,1008,4,3,7 5,1020,1006,1008,4,3,8 5,1020,1006,1008,4,3,6 5,4,1008,1009,6,1	),2,1				
5,4,3,2,1         5,4,3,2,1001,1009,6,1         5,4,3,2,1010,1002,1001,1009,6,1         5,4,3,7,12,11,13,8,2,1         5,4,3,7,12,11,13,8,2,1         5,4,3,7,12,11,13,8,2,1         5,4,3,7,12,11,13,8,2,1         5,4,3,7,12,11,13,8,2,1					
Select			Total	50	
Max. Stn per	50			ОК	
Max. Search Results:	50			Cancel	
Search Timeout (secs) :	60				
Filters:					

4. Repeat steps 2 and 3 for PO value. Click the PO button or Search More button to get the result.

PUL	nes						
AtStn	1006	*	ToStn	1001	*	PO	Search More
100	1006,1008,1009,1001						

5. After select the PO and New route, the difference between New and PO will be calculated and shown.

	Bearing		Distance	View Brg Dist >>>
New	13.2840		127.344	re-compute
PO	13.2910		127.353	Clear
DB	-0.0030	DD	-0.009	DC -0.001 /20m DB 0.021

6. Select the status (Good, Accept or Out) and click on **Log PO/New** button to log the route with the status. The logged route will be showed here.

Log PO / New -			
💿 Good			
O Accept			
Out			
5-1 Good -0.0	030, -0.009m, TD=	127.344 C= -0.001/20m, E	)= 0.021m
5-2 Accept -0.0	010, -0.012m, TD=	149.757 C= -0.002/20m, I	D= 0.014m
Del Log De	ALL Log	Log PO/New	View PO/New

7. After comparing and satisfied with the best base, you can double click the route and click **Save Base** button. The saved route will be shown in the **Base** list box.

Base	
5 - 1 (1006 - 1001)   -0.0110 , -0.009m, -0.001/20m, D= 0.044	łm
Del Base Del ALL Base Save Base Adjust & Refix	View Base

8. After save the route, we can continue with base refixation or setting out for missing mark. Highlight the related base and click **Adjust & Refix** button.

Base
5 - 1 (1006 - 1001)   -0.0110 , -0.009m, -0.001/20m, D= 0.044m
Del Base Del ALL Base Save Base Adjust & Refix View Base

9. Click Yes if you wan to adjust the PO Lines for refixation; No if you do not want o adjust the PO Lines.

$\sim$
5?

10. Click **OK** for the **INFO** dialog.



11. A **Question** dialog will be shown to confirm whether want to Auto Compute the bearing and distance for refixation. Click **Yes** if wish to.

Question	$\times$
Auto Comp Brg/l	Dist for refix stn?
Yes	No

12. Continue with setting out.

### 6.4.2. Setting Out

- 1. You can either continue from part above or click **Survey** > **Setting Out**.
- 2. Before start to do setting out, we need to match the **PO/New** (if not yet). Please click **Match PO** button. Dialog **Match PO and New Station** will pop up. Match the PO and New or refer to <u>Part 6.1.5. Match PO/New or SKL/New</u>.
- 3. After select **At** and **To** station, click on **Search** button and it'll auto retrieve the route and compute its bearing and distance for the direct line. Or click on **Search More** button to get different route.

At 8	V To	SKL5	*	Search
8,SKL3,SKL5				
Use Adjust	ted PO 🗹	re-compute	Searc	h More

4. Back station will also be automatically retrieved. If you wish to use a different back station, select from the combo box.

Back Stn	3	*	Find Bck Bg	
Back Brg	8.2813		Set Brg	

- 5. After select the back station, target (instrument) to your back station as you select and select **Set Brg** button to set your orientation.
- 6. Turn your instrument to the computed bearing.

	Bearing	Distance	
Computed	96.0910	43.454	
Reading			
Difference			LOG

7. Setting your target at an approximate distance as computed, click on icon. This will measure the bearing and distance. The difference between computed and measured line will be also be shown as follow.

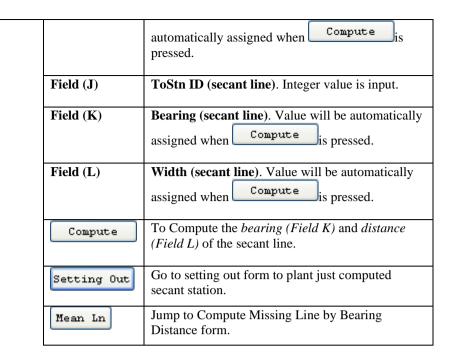
	Bearing	Distance	
Computed	96.0910	43.454	
Reading	96.0910	43.453	
Difference	0.0000	0.001	LOG

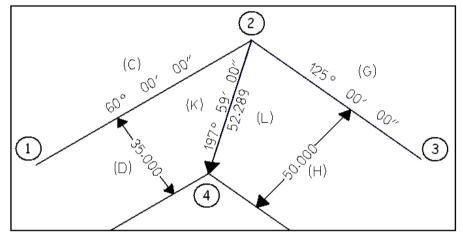
- 8. Repeat measurement until you get a difference of zero value or in between tolerance. By then, you should be able to have located your mark or plant it.
- This setting out function only use to locate the missing mark. After plant the missing mark, we need to book as traverse use method in <u>Part 5.5: Traverse</u>. For the short cut to Field Capture, you can press Trav the button (go to traverse form).
- After finishing booking for traverse, please proceed to Check Angle & Distance (Part 5.10: Check Angle & Distance) or Check Angle Only (Part 5.11: Check Angle) or Check Distance Only (Part 5.12: Check Distance).
- 11. You also can do computation after completing the job. Please refer to **Part 6: In Field Computation**.

### 6.5. Secant

In this part, we will show you the steps to get familiar with the Secant buttons and examine how to do Secant.

Secant 🛛	Field (A)	AtStn ID (side1). Integer value is input.
At To	Field (B)	ToStn ID (side1). Integer value is input.
(A)     (B)     Find Bearing       Bearing     Width       (C)     (D)       At     To       (E)     (F)   Find Bearing	Field (C)	Bearing (side1). Numeric value in DDD.MMSS format is input. If the line has already been defined in previous measurement, user can press Find Bearing to fetch the bearing.
Bearing Width (G) (H)	Field (D)	Width (side1). Numeric value is input.
At To Compute	Field (E)	AtStn ID (side2). Integer value is input.
(I) (J) Compute Bearing Width	Field (F)	ToStn ID (side2). Integer value is input.
(K) (L) Setting Out Clear Mean Ln Trav	Field (G)	Bearing (side2). Numeric value in DDD.MMSS format is input. If the line has already been defined in previous measurement, user can press Find Bearing to fetch the bearing.
	Field (H)	Width (side2). Numeric value is input.
	Field (I)	AtStn ID (secant line). Value will be





1. For understanding purpose, please refer to the sketch above.

#### 2. Navigate to **Computation** menu > **Secant**.

- a. Enter station ID for At and To station (1 and 2). Key-in Bearing as C (60.0000) and the Width (35.000). If line 1 2 is an existing data, user can use the Find Bearing button to auto retrieve back the bearing.
- b. Enter station ID for At and To station for another side (2 and 3). Key-in **Bearing** as G (135.0000) and the Width (50.000). If line 2 3 is an existing data, user can use the Find Bearing button to auto retrieve back the bearing.
- c. After key in the secant line **At** and **To** station ID (2 and 4), click on the **Compute** button to get the bearing and distance.

3. In conclusion it should look like the diagram shown below.

Secant	
At	То
1	2 Find Bearing
	Bearing Width
	240.0000 35.000
At	То
2	3 Find Bearing
	Bearing Width
	125.0000 50.000
At	To
2	4 Compute
	Bearing Width
	197.5900 52.289
Setting	Out Clear Mean Ln Trav

4. Then you can click Setting Out button to locate the new mark. Please refer to 6.4.2: Setting Out.

### 6.6. Missing Line by Bearing and Distance

- 1. Navigate to **Computation** menu > **ML by Brg Dist**.
- 2. User can use **Auto** search the route or manually define the route to compute the bearing and distance. Enter the At stn and To stn of the line that you want to compute and click **Search** button. After search and get the route, click on **Compute** button to get the bearing and distance of the missing line.

Missing Line ( BrG/Dist) 🛛 🛛 🔀
Auto 9 - 11 Search
9,6,1,2,8,11
At To Bearing Distance
· · · · · · · · · · · · · · · · · · ·
Query Line Add
9 - 6: 62.1800 5.028 6 - 1:192.4350 29.499 1 - 2:276.0900 64.223 2 - 8: 8.2810 36.064
8 - 11: 96.0930 43.416
11 - 9:123.1930 20.854
Compute Set Out Clear Cancel

Note: User can manually define the route that you want to use in the route edit box

# 6.7. Missing Line by Coordinate

- 1. Navigate to **Computation** menu > **ML by Coord**.
- 2. To compute the missing line using coordinate method, first enter in the **At** Stn and **To** Stn then click **Search** button to get the coordinates (only if after compute the coordinates) or can manually key in the coordinates.

Missing lin	e (Coord)	X
Station	Northing	Easting
9	3464.915	5245.253
Station	Northing	Easting
11	3476.372	5227.830
Search		
	Bearing	Distance
Result	303.1941	20.852
Clear	Compute	Save

3. Finally click the **Compute** button to compute the bearing and distance.

# 6.8. Convert Coordinate (Cassini $\leftarrow \rightarrow$ WGS84)

- 1. Navigate to **Computation** menu > **Convert Coordinate**.
- 2. To convert the coordinate from Cassini to WGS84, key in the coordinate Cassini (X, Y) and choose the state, then press **Compute** button.

Coord Conversi	ion 🛛 🔀				
Cassini To WG584     WG584 To Cassini					
SELANGOR	SELANGOR				
Cassini X Cassini Y					
5123.321 3456.654					
Latitude	Longitude				
3.2053	101.7487				
Compute	Clear Cancel				

3. To convert the coordinate from WGS84to Cassini, key in the coordinate latitude and longitude and choose the state then press **Compute** button.

Coord Conve	rsion	X			
Cassini To WGS84					
• WG584 To Cassini					
SELANGOR		~			
Latitude Longitude					
3.3333	3.3333 101.7777				
Cassini X	Ca	assini Y			
8346.5935 17612.3958					
Compute	Clear	Cancel			

# 7. View Menu

### 7.1. Query and Delete Records

In this part, we will show you the steps how to do delete the record for wrong measurements. We will use the Query menu item in 2.4.6 View menu.

### 7.1.1. Delete by Query Line

- 1. To **delete** a saved record, navigate to **View Menu > Query**.
- 2. Key in the At station ID and To station ID and click on the Query button.
- 3. If the query line exists, you will see that the bearing and distance of that particular line will appear. If not the query line those not exist. To delete the line, click the **DEL** button.

Query Line	View Lines				
-					
	At :		Query		
	To:	6	DEL		
	Bearing :	193.2610	Details		
	Distance :	88.946	7		
	Adj.Bearing :		4		
			_		
	Adj.Distance :				
			OK	Cancel	Apply

### 7.1.2. Delete by View Lines

- 1. To **delete** a saved record, navigate to **View Menu > Query**.
- 2. Then click the **View Lines** tab locate at the top left corner of the dialog to change to the other page.
- 3. Select the Line type of the top, highlight the line that you want to delete, and click on the DEL button.

/iew Lines							
Query Line View	v Lines						
New line	Vi Vi	ew Details	DEL	Indelete Re	mark		
From	To	Brg	Dist	AdjBrg	AdjDist	Туре	^
2	3	8.2810	97.067			Measured	
2	1	96.0900	64.223			Measured	
2	7	8.2810	6.004			OnLine	
2	8	8.2810	36.064			OnLine	
3	4	80.4930	77.718			Measured	
4	6	193.2610	88.946			Measured	
4	10	192.2200	28.444			Measured	
4	5	16.2110	8.913			Measured	
6	1	192.4350	29.499			Measured	=
6	9	242.1800	5.028			Measured	
7	14	96.0640	21.723			OnLine	
7	8	8.2810	30.060			OnLine	
7	3	8.2810	91.063			OnLine	
8	13	96.0930	21.727			OnLine	
8	11	96.0930	43.416			Measured	
8	3	8.2810	61.003			OnLine	
11	12	187.4640	30.011			Measured	
12	7	276.0640	43.782			Measured	
13	11	96.0930	21.689			OnLine	-
						1	1
				OK	Canc	el App	oly

4. An Information or warning dialog will ask to confirm to remove the line. Click **Yes** to delete and **No** to cancel.

DELETE Confir	mation 🛛 🕅
Remove line 4-6	5?
Yes	No

### 7.1.3. Undelete Record

1. To undelete a deleted line, first choose the line type of **Deleted Line**, then choose which line you want to delete, then click **Undelete** button. Click **Yes** for the **WARNING** dialog.

Vi	liew Lines 🗙								
ſ	Query Line	View	Lines						
	Deleted I	.ine	<b>~</b>	Viev	v Details	DEL	elete Remark	<	
		From		То	Brg	Dist	AdjBrg	AdjDist	Тур
	2		7	_	8.2810	6.004			DELETED
	2		8		8.2810	36.064			DELETED
	<				ARNING Are you sure yo Yes	u want to UNDEI	ETE line 2-7 ?		>
	OK Cancel Apply								

### 7.2. Query Bearing Distance by 2 Points

In this part, we will show you the steps how to query bearing distance by 2 points. We will use the **B/D by 2 Pt** menu item in 2.2.6 View menu.

- Navigate your mouse to View menu > B/D by 2 Pt or click Brg Dist by graphical picked 2 point at toolbar.
  - 🖆 🖬 🛍 🎸 🔍 🤽 🥄 🖱 🚚 📮 📏 🖗 🕄 🕂 🔼 🗗 🏷 🎜 💺 🧱
- 2. A View Brg Distance by 2 point dialog will show up asking user to select first point. Click Yes to select the first station but No to cancel.

View Brg Distance by 2 point
Select 1st Point. Start ?
Yes No

3. Info for selected point is showed as follow and click Yes button to select second point. No to pick again.

INFO	Γ
ID = 16 X = 13129.299 Y = -77457.501 Select 2nd Point ?	
<u>Y</u> es <u>N</u> o	

INFO
ID = 32 X = 13363.307 Y = -77458.556 [YES] Compute the Brg Dist [NO] To Pick again
Yes No

- 4. The info for second point is showed out. Click **Yes** button if you want to compute the bearing distance from first point to second point. Click **No** button if you want to pick again the second point.
- 5. The calculated bearing distance will be shown.

Brg Dist By 2 Point	
At : 16	
To : 32	INFO
Bearing 90.1530	
Distance 234.010	Create Direct Line?
OK Set Out Cancel	
Create DIRECT LN	Yes No
DIRECT LN PO LINE	

- 6. If you want to create a direct line between these two points, just click **Create** button. It will ask you whether want to create a direct line.
- 7. A message box will inform you that new direct line is created.

In monin you that new ander me is created.
CPSTablet X
Created Direct Line 16 - 32 with 90.1530 bearing and 234.010 distance
ОК

# 7.3. Pick Object Info

In this part, we will show you the steps how to query object info. We will use the **Pick Object Info** menu item in **2.4.6 View menu**.

- 2. Just click on the line or point that you want to know about it info. The **Object Information** dialog will pop up as following. If you click on 💽 button, it will zoom to selected point or line.

Object Infor	mations		🔲 Object Info	ormations	
[Layer]: Name			[Layer]: Name		
[STATION]: "4"		Ð	[STATION]: "4"		Ð
[STATION]: "5"		Đ.	[STATION]: "5"		Ð
[LINE]: "3-4"		<b>E</b>	[LINE]: "3-4"		Ð
LINE]: "4-10"		8 8 8	[LINE]: "4-10"		Ð
- [LINE]: "4-6"		Ð.	[LINE]: "4-6"		Ð
	Value			Value	^
STATION ID	4		AT STN	4	^
5TATION ID COORD.X	4 5270.371		AT STN TO STN	4	
STATION ID COORD.X COORD.Y	4 5270.371 3553.760		AT STN TO STN Bearing	4 6 193º26'10	
STATION ID COORD.X COORD.Y	4 5270.371		AT STN TO STN Bearing Distance	4 6 193°26'10 88.946 m	
STATION ID COORD.X COORD.Y	4 5270.371 3553.760		AT STN TO STN Bearing Distance X1	4 6 193°26'10 88.946 m 5270.371	
Name STATION ID COORD.X COORD.Y TYPE	4 5270.371 3553.760		AT STN TO STN Bearing Distance	4 6 193°26'10 88.946 m	

# 8. Reporting and Export JUPEM ASCII

In this part, we will discuss the menu item from 2.4.12: Report menu and 2.4.14: Export menu. So, in this part 8, we will do reporting and export JUPEM ASCII file using the menu items in Report menu and Export menu.

### 8.1. Reporting

In this part, we will show you the steps how to do **reporting** after completing survey capture in <u>Part 5: Field</u> <u>Data Capture</u>. This reporting shows all the details of calculation such as JK for traverse. We will use the **Report** menu item in <u>2.4.12 Report menu</u>.

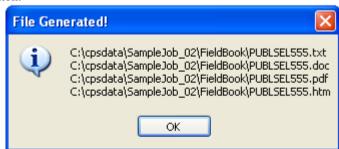
### 8.1.1. Field Note (Field Book)

To organize and output survey measurement recorded into Field Note format similar to conventional field book style. (eTSMTablet is able to output field note into \*.txt, \*.doc, \*.PDF and html format)

- 1. Navigate to **Report** menu > **Fld Note**.
- 2. A **Field Note Format** dialog will be displayed as below. Check the format you wish to generate. You have an option to include the deleted lines and exclude Vertical Angle.

Field Note Format
Generate Field Book Report
Document Format
✓ Text File (txt)
Microsoft Word (doc)
Acrobat Reader (pdf)
HTML (html)
Option
Include Delete Lines
Exclude VA ( sub. with "H" )
OK Cancel

3. A dialog will pop up showing the file is generated to which folder. Files are generated in the **FieldBook** folder in your job file. Just click **OK** button.



4. You can view the generated field book by clicking **Report** menu > **View Fld Note.doc**, then open the particular file.

# 8.1.2. Solar Report

To organize and output sun observation report (eTSMTablet is able to output solar report into \*.txt , \*.doc and \*.PDF format )

- 1. Navigate to **Report** menu > **Solar**.
- 2. Repeat the steps to generate Field Book report as above.

### 8.1.3. Jilid Kiraan (JK)

To create and output the JK (Jilid Kiraan) file of current job. (File generated for JK file is mainsht.txt/doc/pdf ).

- 1. Navigate to **Report** menu > **JK**.
- 2. Repeat the steps to generate Field Book report as above.

### 8.1.4. Survey Computation Report

To organize and output survey measurement recorded into Field Note format similar to conventional field book style.( eTSMTablet is able to output field note into \*.txt, \*.doc and \*.PDF format )

- 1. Navigate to Report menu > Traverse / Lot / Direct Line / Mean Line / Connection Line / Coordinate / Base
- 2. The report is showed up as below.
  - a.  $Traverse xxx_Trav$

S PUBLSEL555_Tra	w.txt - CpsWin	32 Word Editor					×	
File Conversion Edit Format Help								
STN	BERING	JARAK (M)	BUKU KERJA LUAR	KODINET U(+)/S(-)	CASSINI T(+)/B(-)	RUJUKAN JK	^	
Traverse 1 2 7 8 3 4 6 1	8*28'10 8*28'10 8*28'10 80*49'30 193*26'10 192*43'50	6.004 30.060 61.003 77.718 88.946 29.499		3445.359 3451.298 3481.030 3541.369 3553.762 3467.251 3438.478	5179.351 5180.235 5184.663 5193.648 5270.372 5249.705 5243.204		III	
2	276°09'00 JUMLAH RUS 1 : 75804	64.223 357.453	TIKAIAN	-0.004	-0.002		~	
For Help, press F1						NUM	//	

b. Lot - rLot

😰 rLot.txt - CpsWin32 Word Editor	
File Conversion Edit Format Help	
L1 : 8,13,14,7,8 A=652.3m² LM:1:91381 TD:103.552m - PASSED	
L2 : 13,11,12,14,13 A=656.4m <sup>2</sup> LM:1:120903 TD:103.801m - PASSED	
For Help, press F1	NUM //

c. Direct Line – rDirectLine

S rDirectLine.txt - CpsWin32 Word Editor	
File Conversion Edit Format Help	
l : 9,6,9,11 Brg : 303.1930 Dist : 20.852	
For Help, press F1	NUM //

d. Mean Line – rMeanLine

S PUBLSEL555_MeanLn.txt - CpsWin32 Word Editor			
File Conversion Edit Format Help			
GARISAN 13 - 14	188 28 50	30.042 Ki	~
For Help, press F1			

e. Coordinate

🞯 rCoord.txt - CpsWin32 Word Editor	
File Conversion Edit Format Help	
Station: 1012 Northing : 5227.863 Easting : 3476.337 COMPUTED	^
Station: SKL2 Northing : 5184.659 Easting : 3480.993 FIXED	
Station: 11 Northing : 5227.829 Easting : 3476.372 COMPUTED	
Station: 3 Northing : 5193.648 Easting : 3541.369 COMPUTED	
Station: 1001 Northing : 5243.197 Easting : 3438.479 COMPUTED	
Station: SKL3 Northing : 5206.261 Easting : 3478.665 FIXED	
Station: 12 Northing : 5243.204 Easting : 3438.479 COMPUTED	~
For Help, press F1	NUM //

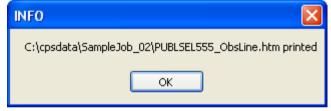
# 8.1.5. Print Observed Line

To output summary report of surveyed line with timestamp.

- 1. Navigate to **Report** menu > **Print Observed Line**.
- 2. A **Save As** dialog will displayed, type in the filename or use default file name and click **Save** button. File will be save in \*.html format.

Save As						? 🗙
Save in:	🚞 SampleJob_02	2	*	6	) 🖻 [	
My Recent Documents Desktop My Documents My Documents	CPS FieldBook JK JUPEM_ASCII PDUK Report Solar					
	File name:	PUBLSEL555_ObsLine.htm			*	Save
My Network	Save as type:	htm file (*.htm)			~	Cancel

3. A message box will pop up. File is saved in folder job.



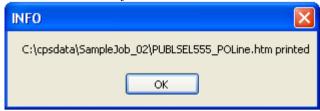
4. Click **OK** and the \*html file will be shown.

ø	🗿 Measured Line - Microsoft Internet Explorer 📃 🔲 🗙					
F	ile Edit	View Favorite	s Tools Hel	P		-
(	🔇 Back 🔹 🕥 👻 📓 🏠 🔎 Search 👷 Favorites 🂙					
Ac	ldress 🙋 (	:\cpsdata\Samp	leJob_02\PUBLS	EL555_ObsLir	🖌 🄁 Go 🛛 L	inks »
		I	Jeasured L	ine		~
	LINE	BEARING	DIST.(M)	TIME	DATE	
	2 - 1	96°09'00	64.223	08:25.41	27/06/2006	
	2 - 3	8°28'10	97.067	08:45.42	27/06/2006	
	8 - 11	96°09'30	43.416	10:25.14	28/06/2006	
	6 - 1	192°43'50	29.499	09:27.53	27/06/2006	
	3 - 4	80°49'30	77.718	08:56.24	27/06/2006	
	4 - 5	16°21'10	8.913	09:18.10	27/06/2006	
	4 - 10	192°22'00	28.444	09:16.13	28/06/2006	
	4 - 6	193°26'10	88.946	09:18.10	27/06/2006	
	12 - 7	276°06'40	43.782	10:40.44	28/06/2006	
	11 - 12	187°46'40	30.011	10:31.53	28/06/2006	
	6 - 9	242°18'00	5.028	08:51.03	28/06/2006	
Ľ	×					
E	🙆 Done 😔 😸 My Computer 🛒					

# 8.1.6. Print PO Lines

To output PO Lines report

- 1. Navigate to **Report** menu > **Print PO Lines**.
- 2. A **Save As** dialog will displayed, type in the filename or use default file name and click **Save** button. File will be save in \*.html format.
- 3. A message box will pop up. File is saved in folder job.



4. Click **OK** and the \*html file will be shown.

### 8.1.7. Print GPS Points

To output GPS Points those have been observed.

- 1. Navigate to **Report** menu > **Print GPS Points**.
- 2. A **Save As** dialog will displayed, type in the filename or use default file name and click **Save** button. File will be save in \*.html format.
- 3. A message box will pop up. File is saved in folder job.

INFO 🔀
C:\cpsdata\SampleJob_02\GPSPoints.htm printed
ОК

4. Click **OK** and the \*html file will be shown.

# 8.1.8. View \*.doc, \*.PDF, \*.htm Report

To view all the report in different format such as doc file, PDF file and html file.

- 1. Navigate to **Report** menu > **View \*.doc/ \*.PDF/ \*.htm Report**.
- 2. An **Open dialog** with selected extension (\*.doc/ \*.PDF/ \*.htm) will be displayed. Just click which type of file you wish to open and click **Open** button.

## 8.2. Export JUPEM ASCII

In this part, we will show you the steps how to export JUPEM ASCII file after This JUPEM ASCII file need to pass up for JUPEM checking. We will use the **Export** menu item in Part <u>2.4.14</u>: Export menu.

1. Navigate to **Export** Menu > **JUPEM ASCII**. A list of menu items will be showed up as follow.

Dialog	
Export Files Export POB Export TRPS Export to CPSWinF2F Export Jupem ASCII	
Export Jupem Ascii Files	
▼ *.acs ▼ *.bcs ▼ *.bln ▼ *.coo ▼ *.cor	
	Select those needs to be
▼ *sob	export for JUPEM ASCII
♥ *.job ♥ All	
Edm File EDM File Delete Browse	Search for the related EDM file (s).
No. Path	
EDM file List	
OK	

2. Click **OK** for the information dialog that shows the files is exported.

SU	JCCESS 🛛 🔀
	C:\cpsdata\SampleJob_02\JUPEM_ASCII\PUBLSEL555.fbk generated C:\cpsdata\SampleJob_02\JUPEM_ASCII\PUBLSEL555.cor generated C:\cpsdata\SampleJob_02\JUPEM_ASCII\PUBLSEL555.sob generated C:\cpsdata\SampleJob_02\JUPEM_ASCII\PUBLSEL555.bcs generated C:\cpsdata\SampleJob_02\JUPEM_ASCII\PUBLSEL555.acs generated C:\cpsdata\SampleJob_02\JUPEM_ASCII\PUBLSEL555.ncp generated C:\cpsdata\SampleJob_02\JUPEM_ASCII\PUBLSEL555.tps generated C:\cpsdata\SampleJob_02\JUPEM_ASCII\PUBLSEL555.coo generated C:\cpsdata\SampleJob_02\JUPEM_ASCII\PUBLSEL555.coo generated C:\cpsdata\SampleJob_02\JUPEM_ASCII\PUBLSEL555.coo generated C:\cpsdata\SampleJob_02\JUPEM_ASCII\PUBLSEL555.fah generated C:\cpsdata\SampleJob_02\JUPEM_ASCII\PUBLSEL555.bln generated C:\cpsdata\SampleJob_02\JUPEM_ASCII\PUBLSEL555.po generated C:\cpsdata\SampleJob_02\JUPEM_ASCII\PUBLSEL555.po generated C:\cpsdata\SampleJob_02\JUPEM_ASCII\PUBLSEL555.edm generated C:\cpsdata\SampleJob_02\JUPEM_ASCII\PUBLSEL555.tpo generated
	ОК

### 8.2.1. Troubleshot – PO Line Info not Complete

1. If a Warning dialog like below pop up, means that the information for your PO lines is not completed.



2. **POLine Information** dialog will be shown. Highlight one or more lines that you wish to edit, select or key in the correct information for the **App Date**, **Plan No**, **Class** and **UPI**.

3. When complete all the information, click on **Modify** button. Then, click **OK** to close the dialog.

P	OLine Infor	mation							X
<	At 2008 2009	2002 2008	Plan INO. 90056	Арџаје 20070104 20070104	1 1 1	10 10	>		
	POLine At Stn Additional In	2009 formation	To Stn	2008					Modify Ok
	App Date.	04-Jan -07 🔹 🔪	Plan No.:	90060		Class:	1	<u> </u>	Cancel
(	UPI Negeri	SELANGOR		~	Se	ksyen	000		)
	Daerah Mukim	PETALING		*	U	Lot PI No.	65226	226	

4. Continue to export the ASCII files.

# 8.3. Export CPSWinF2F

When Export CPSWinF2F, need to enclose the particular EDM file.

1. Navigate to **Export > JUPEM ASCII**. Then, click **OK**.

Dialog
Export Files  Export POB Export to CPSWinF2F Export Jupem ASCII
Export Jupem Ascii Files
*.acs *.bcs *.bln *.coo *.cor
*.edm*.fah*.fbk*.ncp*.po
sob *.tpo *.tps *.lot *.bdy
*.job All
Edm File
EDM File Delete Browse
No. Path
OK Cancel

2. For the EDM file, due to EDM test is not done for every beginning job, so please search for your related EDM test file from whatever folder you saved.

	Browse EDM File	×
	No. Path	
Warning		
Open an EDM file to combine with CPS file !		
ОК	OK Browse Delete	Cancel
Info	×	
File Exported! C:\ClientJob\test\TestTopo\20Nov13\	\CPSF2F\SEL2996-KVTest.cps	
	ОК	
Info	x	
File Exported! C:\ClientJob\test\TestTopo\20Nov13\/	,CPSF2F\SEL2996-KVTest.sun	
	ОК	

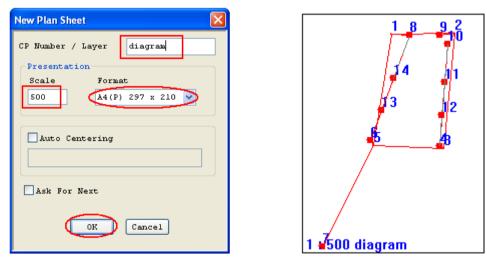
# 8.4. Export Graphic / Field Diagram

User can export the graphic or field diagram into DXF format to be editing or plot in AutoCAD or other relevant software.

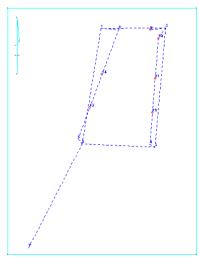
1. Navigate to **View > Sketch** to on New Lines in Field Diagram with Actual Coordinate.

Field Diagram		
<ul> <li>Field Sketch ( assumed Coord )</li> <li>Field Diagram ( Actual Coord )</li> <li>Precomp ONLY</li> </ul>		
• View All Lines		
<ul> <li>New Lines</li> <li>PO Lines</li> <li>SKL Lines</li> <li>Traverse</li> <li>Lot</li> <li>Precomp Lines</li> <li>Direct Line</li> <li>Offset</li> <li>Link Offset Parabolic</li> </ul>		
O Line By Line		
OK Cancel		

2. Then, go to **Layer > Add Sheet**, key in the layer name, set the scale and chose the format. Then, click **OK** to place the sheet.



3. After that, go to **Layer > Field Diag. Transfer All** to transfer the entire sheet into a plan layer.



- 4. Navigate to **Text > Auto Label** to label all the station ID and bearing distance.
- 5. Use the icon below to edit the text.

📱 ab 🗞 📲 🔋 🕀 % 號 5차 🌵 😫 🗳 🥸 🗞 💈 🖝 💉 🖉 🛃 🗛

6. Last, you may go to **Layers > Export Layer (DXF)**. Chose for the setting and click OK to export.

DXF Layer Setting	$\mathbf{X}$
Ocurrent Layer O All Layers	Generate Text & Graphic Into O Same Layer
diagram Save as C: \CPSTABLET\SAMPLEJOB2\DXF\DIAGRAM.D Browse	DXF Version         Version 12       Version 14       MapInfo         DXF Meter Square Output Format         Roman Simplex ( AutoCad LT )         AutoLisp Supports         Standard (m2)         Standard (m <sup>2</sup> )         Standard (m <sup>2</sup> )
ОК	Cancel
Info C:\CPSTABLET\SAMPLE	JOB2\DXF\DIAGRAM.DXF

OK

# 9. Utilities and Display Menu

In this part, we will discuss the menu item from 2.4.1: Job menu. So, in this part 8, we will use the menu items in **Utilities** menu.

### 9.1. EDM Test

In this part, we will show you the steps how to do **EDM test** for instrument. We'll show you how to create absolute file for your own state. We will use the **Utilities** menu item in Part <u>2.4.1</u>: Job menu.

	EDM Test	
	EDM Grid	
	Information Test Base Dist Observation	_
	Step 1: Create/Open your EDM file Step 2: Fill in your EDM information	
	Negeri: SELANGOR V 10	
	Code: JUBL 🔽 1	
	JUBLID: 123-V Company registered	
Date of when EDM test is performed.	Surveyor IC: 800808108080	
Current day is automatically	Jarikh Ujian: 1/ 5/2007 💌	
retrieved. User can select the date from	Tempat Ujian: 5hah Alam Sec6	
the combo box to	Suhu: 29	
edit.	No. BKL: 1 Instrument name and	
Location of EDM	Model EDM: LEICA V TP5700 V selects its instrument	
test base.	No. Siri EDM: 12345	
Temperature during observation.	provided. All supported instruments are shown	

_			st Base Dist Observatio	n i i i i i i i i i i i i i i i i i i i
	Step 3: Dari	Load or Ke	Enter Absolute Distance of yo	Predefined *.abs
1	1	2	5.014	
2	1	3	9,995	Load *.abs
3	1	4	49.000	Load saved *.abs file
4	1	5	87.000	Save *.abs
5	1	6	125.008	Save the *.abs file af
6	1	7	163.002	create (key in the val
7	1	8	201.008	the Jarak Seperti Asa
8	1	9	251.004	column)
9	1	10	300.005	
.0	2	3	4.981	
.1	2	4	43.986	
.2	2	5	81.986	
3	2	6	119.994	
4	2	7	157.988	
5	2	8	195.994	
.6	2	9	245.990	
.7	2	10	294.991	
8	3	4	39.005	

		ĺ	Line mea	e to sure	Measured distance	Auto c differe	alculated nce	
	ED	M Test						
	ED	)M Grid						
	-							
		Information		Test	: Base Dist Observ	ation		_
		Ste	ep 4: 5	itart Enterir	ng all your EDM measure	ment	Ţ	
			Dari	i Xe	Jarak Mendatar(A)	Jarak Seperti Asa <b>(6</b> ) 🍯	Perbezaan Asas (A-B)	
		1	1	_2	5.012	5.014 🔪	0.002	
		2	1	3	9.995	9.995	0.000	
		3	1	4	49.004	49.000	0.004	
		4	1	5	86.999	87.000	-0.001	
		5	1	6	125.010	125.008	0.002	
		6	1	7	163.002	163.002	0.000	
Measure currently		7	1	8	201.005	201.008	-0.003	
selected line. If line		8	1	9	250.998	251.004	-0.006	
has already been measured, user will be		9	1	10	300.012	300.005	0.007	
prompt if to re-		10	2	3	4.988	4.981	0.007	
measure.		11	2	4	43.988	43.986	0.002	
When line measured is		12	2	5	81.980	81.986	-0.006	
out of tolerance when	V I	13	2	6	119.999	119.994	0.005	
compared with the		14	2	7	157.992	157.988	0.004	
absolute distance,	N	15	2	8	195.998	195.994	0.004	
results will be		16	2	9	245.999	245.990	0.009	▼ Total difference after
highlighted red.		17	1 2	10	204 007	204-001	0.004	
Delete current selected measured line.		Meas Dele					Total Diff: 0.032 Mean Diff: 0.002	compared to respective absolute distance.
	L						near Diff.	Mean difference of total observation.

EDM	EDM Grid							
	New *.edm Open *.edm							
Create *.abs								
Sa	Save							
Ge	Generate Report							
Wo	Workspace							
Exi	it							

New	To create a new EDM test form.
Open	To open an existing EDM test form
Create *.ABS	Create *.abs (absolute distance) file
Save	Save current EDM test results.
Generate Report	To organise and output EDM test print out. Output will be in HTML format.
Workspace	To set extra/misc. configuration
Exit	Quit EDM Test.

Grid	
Fo	nt
Au	itosize Cells
Fit	Cells to Grid

Font	Change font attributes displayed on test form.
Autosize Cells	Auto resize cells to fit characters.
Fit Cells to Grid	Stick test form view to grid display panel.
Hide Vert Angle	Toggle hide/show vertical angle column.
Hide Slope Distance	Toggle hide/show slope distance column.
Hide Timestamp	Toggle hide/show timestamp column for each observation.

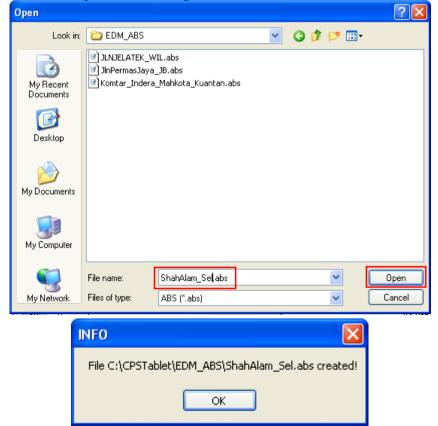
- 🗸 Hide Vert Angle
- ✔ Hide Slope Distance
- ✔ Hide Timestamp

## 9.1.1. Create \*.abs

- 1. Navigate to **Job** menu > **Utilities** > **EDM Test**.
- 2. After create **EDM file** and keyed in the **information**, go to the **Test Base Dist** to create the \*.abs file for the Base Station. If already created the \*.abs for the same location already, can just load the \*.abs file.
- 3. Key in the base line value according to the pillar. Click **Save \*.ABS** when finish.

<mark>/ Tes</mark> 1 Gri								
n Gri								
Info	rmation	Te	st Base Dist	Observa	ation	1	1	
	Sten 31	Load or	Enter Absolute	Distance o	Evo	ur F	FDM test hase	
					_	u		
	Dari	Ке	👘 Jarak Sepe	rti Asal(B)	^		Predefined *.abs	
1	1	2		5.014				
2	1	3		9.995			Load *.abs	
3	1	4		49.000		ł	Gave *.abs	
4	1	5		87.000			pave labs	
5	1	6		125.008				
6	1	7		163.002				
7	1	8		201.008				
8	1	9		251.004				
9	1	10		300.005				
10	2	3		4.981				
11	2	4		43.986				
12	2	5		81.986				
13	2	6		119.994				
14	2	7		157.988				
15	2	8		195.994				
16	2	9		245.990				
17	2	10		294.991				
18	3	4		39.005				
19	3	5		77.005				
20	3	10		290.010				

4. Key in the file name and click Open. An Info dialog will e shown to inform \*.abs file is created, click OK.



# 9.1.2. Survey Steps

- 1. Navigate to **Job** menu > **Utilities** > **EDM Test**.
- 2. After create **EDM file** and keyed in the **information**.



- 3. Go to the **Test Base Dist** to create the \*.abs file for the Base Station. If already created the \*.abs for the same location already, can just skip steps 4 and 5, then load the related \*.abs file.
- 4. Key in the base line value according to the pillar. Click Save \*.ABS when finish.

Test Base Dist d or Enter Absolute	ti Asal(B)	your E	EDM test base Predefined *.abs
d or Enter Absolute Jarak Seper	Distance of ti Asal(B)	your E	
d or Enter Absolute Jarak Seper	Distance of ti Asal(B)	your E	
e Jarak Seper	ti Asal(B)		
e Jarak Seper	ti Asal(B)		
	5.014		Predefined *.abs
	5.014		
	9.995		Load *.abs
	49.000		Gave *.abs
	87.000		paveaus
	125.008		
	163.002		
	201.008		
	251.004		
)	300.005		
	4.981		
	43.986		
	81.986		
	119.994		
	157.988		
	195.994		
	245.990		
)	294.991		
	39.005		
	77.005		
)	290.010	-	
		9,995       49,000       49,000       87,000       125,008       125,008       125,008       125,008       125,008       125,008       125,008       125,008       125,008       125,008       125,008       125,008       130,005       119,994       157,988       195,994       195,994       294,991       39,005       39,005       77,005	9,995       49,000       87,000       125,008       125,008       201,008       201,008       300,005       4,981       119,994       119,994       195,994       245,990       245,990       39,005       100,005

5. Key in the file name and click Open. An Info dialog will e shown to inform \*.abs file is created, click OK.

Open						? 🔀
Look in:	🗀 EDM_ABS		*	G 🦻	•111 🥙	
My Recent Documents	) JLNJELATEK_W ) JInPermasJaya ) Komtar_Indera					
Desktop						
My Documents						
My Computer						
	File name:	ShahAlam_Se <b>l</b> abs			~	Open
My Network	Files of type:	ABS (*.abs)			*	Cancel

INFO 🛛 🔀
File C:\CPSTablet\EDM_ABS\ShahAlam_Sel.abs created!
ок

6. To measure the data, navigate to **Observation** tab bar. Highlight the row that you going to measure and click on the **Measure** button.

Ste	ep 4: Sta	rt Enterin	ng all your EDM measure	ement	
	Dari	Ке	Jarak Mendatar(A)	Jarak Seperti Asal(B)	Perbezaan Asas (A-B)
1	1	2		5.014	
2	1	3		9,995	
3	1	4		49.000	
4	1	5		87.000	
5	1	6		125.008	
6	1	7		163.002	
7	1	8		201.008	
8	1	9		251.004	
9	1	10		300.005	
10	2	3		4.981	
11	2	4		43.986	
12	2	5		81.986	
13	2	6		119.994	
14	2	7		157.988	
15	2	8		195.994	
16	2	9		245.990	
17	2	10		204-001	

7. After measure, will get the horizontal distance. The differences will be calculated automatically. Repeat the step for other lines.

	Dari	Ке	Jarak Mendatar(A)	Jarak Seperti Asal(B)	Perbezaan Asas (A-B)	^
1	1	2	5.012	5.014	-0.002	
2	1	3	9.995	9,995	0.000	
3	1	4	49.004	49.000	0.004	
4	1	5	86.999	87.000	-0.001	

8. The Total Different and Mean Different will always show at the bottom right of the EDM Test dialog.

Total Diff:	0.032
Mean Diff:	0.002

9. If wrongly measured the line and want to delete it, can click on **Delete** button after you highlight the line that you wish to delete. Click **Yes** for the **WARNING** dialog.

WARNING
Are you sure you want to delete line 3-4 with distance value 37.000 ?
Yes No

10. After completing your EDM test, go to EDM menu > Save. Click OK to save the data.

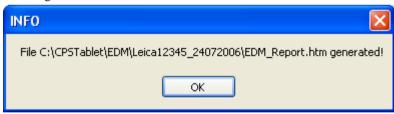


#### 9.1.3. Generate EDM Report

1. Navigate to **EDM** > **Generate Report**. Key in the file name or use the default file name and click **Save** to save it in the same folder of your EDM files.

Save As						? 🗙
Save in:	🚞 Leica12345_2	4072006	~	3 🕫 🖻	• 📰 -	
My Recent Documents	C Leica12345_240	72006				
Desktop						
My Documents						
My Computer						
	File name:	EDM_Report.htm		•	-	Save
My Network	Save as type:	htm file (*.htm)		•	/	Cancel

2. Click **OK** for the INFO dialog.



3. Go to the same directory to open the file if you want to view it.

#### 9.2. Diary

In this part, we will show you the steps how to write **Diary** for your survey job. In this diary, you can write down which activity is done for certain day. We will use the **Diary** menu item in Part 2.4.1: **Job** menu.

#### 9.2.1. Add Record

- 1. To use the Field Diary function, navigate your mouse to **Job** menu > **Utilities > Diary.**
- 2. First at all, you must import a selected job file that you want to add a diary in by clicking the **Read Job** Bead Job button

Daily Monthly	
Date: 25- Jul -06 💌 GO List	Remark
Activity 🔽	
Add	
	Delete Read Job

3. Then you can add in a new record in the database by enter in all the information to the given field and click the **Add** button

Dail	ly Monthly	1											
D	ate: 25-Jul	-06 💌	GO	List			Rema	rk					
Ad	otivity			~								~	
		~			Add							~	
						_						Delete	Read Job
	Rentised	Surveyed	Lots	SetUp	BKBB	ВКВ	BKU	Labour	Job Name	Locality	Туре	Start End	Ir
0	.000	0.000	0	0	0	0	0	0	PUBLSEL555		Class 1	00:00 00:00	
													>
											ОК	Cancel	Apply

**Note:** Only selected information can be entering in, others will be automatically calculated by the application such as number of lots, distance's surveyed and etc.

## 9.2.2. Delete Record

1. To delete a particular record, just highlight the selected record and click the **Delete** button.

																×
Daily	Monthly	1														
Date	25- Jul	-06 💌	GO	List	]		Rema	rk								
Activi	ty Rentis	ing		*									^			
	Tuntut	an (KM) 🛛 🔽			Ado								~			
													Delete		Read Job	] [
	Rentised	Surveyed	Lots	SetUp	BKBB	BKB	BKU	Labour	Job Name	Locality		Туре	Start	End		Ir
0.00	0	0.000	101	0	0	0	0	2	PUBLSEL555	] Gombak	Class 1		00:00 0	0:00	101010	
<															Į.	>
												ОК	Cano	el	Appl	y

2. Then a Confirmation dialog appears. To delete click Yes button, else click No button

C	onfirmation
	Are you sure you want to remove field book PUBLSEL555 from Diary Entry 25-07-2006
	Yes No

## 9.2.3. Search Record

1. To search a particular record, just select the particular date and Click the Go button.

Daily	N	/lonth	ıly																
Da	ite: [	25- Ji	ul -06		~	6	רב	List			Rema	rk							
Act	ivity	<		Ju	ly, 2(	)06		>	~							^	J		
		<u>Sun</u> 25	Mon 26	7ue 27	<u>Wed</u> 28	7hu 29	<b>Fri</b> 30	Sat 1	Add	ł						~			
		2	3	4	5	6	7	8								Dele	te i	Read Job	וו
		9	10	11	12	13	14	15											-
		16	17	18	19	20	21	22											_
	Re	23	24	25	26	27	28	29	ip BKBB	BKB	BKU	Labour	Job Name	Locality	Туре	Start	End		Ir
0.0	000	30	31	1	2	3	4	5	0	0	0	2	PUBLSEL555	Gombak	Class 1	00:00	00:00	101010	
			Tod	lay:	7/25	/200	16												

Or you can select the particular date from a list containing all the existing diary date of the job by clicking the List
 List button. Then the list will appear, just highlight the selected date and click OK button.

Existing Dates	×
20060724	
20060725	
OK Cancel	

3. Or you can search all the record in a particular month by selecting the **Monthly** Page located at the left top corner of the diary dialog. Then select the month and the year of the diary and click **Go** button.

aily Monthly Month: JULY V 2006 V GD Report															
Date	Rentised	Surveyed	Lots	SetUp	BKBB.	ВКВ	BKU	Labour	Job Name	Locality		Туре	Start	End	
24	0.000	0.000	1001	0	0	0	0	0	KOJUTA/P		Class 1		00:00	00:00	R
25	0.000	0.000	101	0	0	0	0	2	PUBLSEL555	Gombak	Class 1		00:00	00:00	R
Total	0.000	0.000	1102	0	0	0	0	2							
<															3
OK Cancel Apply															

## 9.3. Claim

In this part, we will show you the steps how to **claim**. In this claim, you can claim for 'bus, dobi, elaun harian' and others. We will use the **Claim** menu item in Part <u>2.4.1</u>: **Job** menu.

#### 9.3.1. Add Record

- 1. To use the Check Roll function, you just need to navigate your mouse to Job menu > Utilities > Claim.
- 2. Then you can add in some records in the database by enter in all the information to the given field then click the **Add** button

Date: 7/2	25/2006		
File Info:	PUBL SEL / 555 2006	Objective:	Add
Member IC:	800808108181		Remove
Arrve:	7/24/2006 Cepart: 7/25/2006		Modify
Claim(RM)	100	Remarks:	
Туре:	ELAUN KERJA LU4 💌 🗌 Full Claim		

#### 9.3.2. Delete Record

1. To delete a particular record, just highlight the selected claim record and click the **Remove** button. **WARNING** dialog appears. To delete click **Yes** button, else click **No** button

Claim								×
Date: 7/25/2	2006	~						
File Info: P	UBL	SEL / 555	2006	Objective:				Add
Member IC: 8	0080810818	33						Remove
Arrive: 7	7/24/2006	Depart: 7	/25/2006 🛟				<u>~</u>	Modify
Claim(RM) 80	0.00			Remarks:			~	
Туре: М	IILEAGE	Full Clain	ı				~	
Job No.		Kad Pengenalan	Arrive	Depart	Claim(RM)	Туре		
PUBLSEL/5552006		800808108181	10:13:45	10:13:45	100.00	ELAUN KERJA LU		
PUBLSEL/5552006		800808108183	10:13:45	10:13:45	80.00	MILEAGE		
		WARNING						
		Are you sure	you want to remo	ove Claim record of	IC No. 80080810	8183?		

#### 9.3.3. Modify Record

1. To modify a particular record, just select / highlight the particular record to be update and **enter in the new information**. Then click the **Modify** button. Then **Question** dialog appears. To modify click the **Yes** button, else click **No** button

Claim							×
Date: 7/25/2006	~						
File Info: PUBL	SEL / 555	2006	Objective:	stay for a night			Add
Member IC: 8008081081	.83						Remove
Arrive: 7/24/2006	Depart: 7	1/25/2006					Modify
Claim(RM) 80.00			Remarks:	Hotel Sri Petaling		~	
Type: HOTEL	Full Clain	n					
					1		
Job No.	Kad Pengenalan	Arrive	Depart	Claim(RM)	Туре		
PUBLSEL/5552006	800808108181	10:13:45	10:13:45	100.00	ELAUN KERJA LU		
PUBLSEL/5552006	800808108183	10:13:45	10:13:45	80.00	MILEAGE		
	Question			$\mathbf{X}$			
	Modify Cla	aim record for 8008	08108183 on date	20060725 ?			
		Yes	No				

# 9.4. Check Roll

In this part, we will show you the steps how to do **Check Roll** for your survey team. In this check roll, you can tick the attendance for your survey teams. We will use the **Check Roll** menu item in Part <u>2.4.1</u>: **Job** menu.

#### 9.4.1. Add Record

- 1. To use the Check Roll function, you just need to navigate your mouse to Job menu > Utilities > Check Roll
- 2. Then you can add in some record in the database by enter in all the information to the given field can click the **Add** button

Kad Pengenalan:	800809108191
Name:	Loong Yik Ben Remove
Taraf:	Surveyor Modify
Remark:	Print
ngenalan Taraf	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17
181 Surveyor	
	Name: Taraf: Remark: engenalan Taraf

3. To add in the attendance accordingly, just click on the checkbox of the particular date to the selected surveyor.

Nama	Kad Pengenalan	Taraf	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
Loong Yik Ben	800808108181	Surveyor	$\checkmark$	•			$\overline{}$	$\checkmark$			Γ												

**Note:** To select the month, just click on the calendar located at the left top corner of the check roll dialog.

#### 9.4.2. Delete Record

1. To delete a particular record, just highlight the selected surveyor record and click the **Remove** button. Then a **WARNING** dialog appears. To delete click **Yes** button, else click **No** button.

Check Roll		
July, 2006	Kad Pengenalan:	800808108181
Sun Mon Tue Wed Thu 1 25 26 27 28 29 3	FriSat 30 1 Name:	Loong Yik Ben Remove
2 3 4 5 6	7 8 Taraf:	Surveyor Modify
16 17 <u>18</u> 19 20 :	21 22 Remark:	
	28 29 4 5	Print
Nama	Kad Pengenalan Ta	araf 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
Loong Yik Ben	800808108181 Surveyor	
	WARNING	
	Are you sure you want to	o remove Check Roll record of IC No. 800808108181 ?
		Yes No
<		
<		Yes No

## 9.4.3. Modify Record

1. To modify a particular record, just select the particular record to be update and enter in the new information. Then click the **Modify** button. Then a **Question** dialog appears. To modify click the **Yes** button, else click **No** button

Check Roll		×
🗶 July, 2006 💽 Ki	ad Pengenalan:	800808108181
Sun Mon Tue Wed Thu Fri Sat	Name:	Yeo Yenn Lin Remove
25 26 27 28 29 30 1 2 3 4 5 6 7 8	Taraf:	Surveyor Modify
9 10 11 12 13 14 15 16 17 18 19 20 21 22	Remark:	
23 24 <mark>25</mark> 26 27 28 29 30 31 1 2 3 4 5		Print
Nama Kad Pengenalan	Taraf	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17
Loong Yik Ben 800808108181	Surveyor	
	Question Modify C	n Robert Roll record for 800808108181 ? Yes No
< ]		

#### 9.5. Workspace

In this part, we will show you the steps how to do setting at **Workspace**. In this workspace, you can do setting for instrument setup and tolerance. We will use the **Workspace** menu item in Part <u>2.4.1</u>: Job menu.

- 1. Navigate your mouse to **Job** menu > **Utilities** > **Workspace**.
- 2. Then you can view **Instrument Setup** page and **Workspace** page as following.
- 3. **Instrument Setup** page in Workspace same as **Instrument Setup** page in Job info. It is used to do setting for instrument comport.

Baudrate	19200	~		Save
Databits	8	*		
Parity	No parity	*		
Stopbits	1	*		
Timeout	15	*	[	BlueTooth
💿 user del	ïne			
🔵 software	e default (rec	commended)		

- 4. **Workspace** page is to set tolerance for measurement. Auto backup job is default to every 10 minutes. The three option of measurement setting also available.
  - a. Show H. Dist on Meas → View distance in horizontal distance.
  - b. Meas Dist on Set Back brg / BrgCls → To measure distance for checking. It will give you warning if you sight to wrong back station measured by distance.

c. Calculate Hz Dist By Mean S. Dist → Calculate final distance by the mean of 2 slope distance measurement.

👗 🕹 🕹 🕹	
Instrument Setup Workspace Computation Option	
Field Capture         Face Left & Right Tolerance         Horizontal Brg       0.0010         Vertical Brg       0.0100         Horizontal Dist.       0.004         Calculate Hz Dist By Mean S. Dist	Show Horizontal Distance on Measurement in field book Measure Distance on Set Back Bearing / Bearing Close Calculate Horizontal
✓ Auto backup job every 10 ✓ mins	Distance by Mean Slope Distance
Save	
OK Cancel Apply	

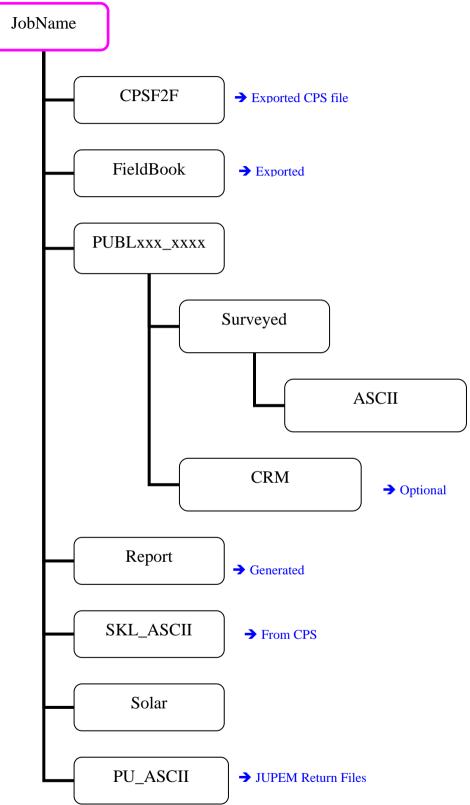
5. Computation Option page is to choose the Mean Line Computation Method.

×
Instrument Setup Workspace Computation Option
Mean Line Computation Method  Mean Direct Line (B/D) Method  Adjusted Coordinates Method
✓ Ignore Adopt Line Message ■ Round Up Lat/Long
Save
OK Cancel Apply

# 10. Attachment

#### 10.1. eTSMTablet Job Folder Structure

C:\eTSMTablet\<JobName>



# 10.2. F2F Work Flow

