



Sunsight Alignment System (SAS) Training

AntennAlign Alignment Tool (AAT) and AntennAlign Profile Manager (APM)

Training Agenda for SAS



- **Introduction to the AAT and APM**

AntennAlign Alignment Tool (AAT)

- Features and Functions
- Mounting
- AAT Operation
- Capture Process
- Troubleshooting

AntennAlign Profile Manager (APM) software for PC

- Reference Data
- Locations
- Design Values (Profiles)
- Export File
- Import File
- Reports

Concepts and Definitions

- **Location: the following parameters fully specify exactly where on earth an antenna is located.**
  - **Site Name:** the Site ID allocated to the site by the carrier. This identifier varies in format according to the conventions set by each individual carrier.
  - **Sector Name:** naming used for sectors will depend on the Carrier and can vary between Regions or Markets. The Sunsight Alignment System can define any number of sector names. The most common are Alpha, Beta, and Gamma.
  - **Antenna Position:** Identifies a specific antenna on a sector. The numbering convention of the antenna position may vary by carrier also (e.g., left to right from behind antennas = 1 to n).
  - **Latitude and Longitude:** sometimes referred to as "GPS Coordinates"
    - Decimal coordinates vs. degrees, minutes, seconds
      - AAT uses **DECIMAL COORDINATES**

Concepts and Definitions

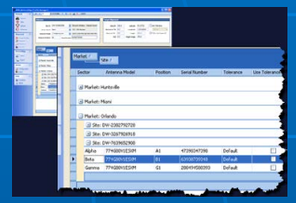
- **Alignment: the following parameters fully specify the alignment of a given antenna:**
  - **Azimuth:** also referred to as “heading” or “bearing”; measured in degrees.
  - **Tilt:** refers to mechanical down-tilt. **AAT convention specifies tilt below zero as positive and above zero as negative.**
  - **Roll:** refers to mechanical roll (plumb). AAT convention specifies clockwise roll as positive and counterclockwise roll as negative as viewed from behind the antenna.
  - **Height:** specifies the height of an antenna above the base of the structure supporting the antenna, typically referred to as “AGL” for “above ground level”. For RF engineering purposes, this height is measured from the middle of the antenna radome.

Alignment Measuring Process – High Data Integrity Model

Alignment target data is entered on PC into AntennAlign Profile Manager (APM)



Close-out Reports printed



Target Profiles exported to SD card (emailed or directly entered

Captured measurement data imported to APM from SD card

Office

Field

SD Card inserted in AAT





Measurement data captured on SD card on antenna

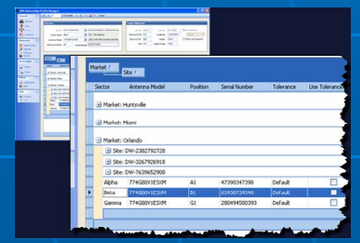
Alignment Measuring Process Direct to AAT

Alignment target data is entered on PC connected directly to the AAT (cable or wireless). Can also use front panel of AAT.

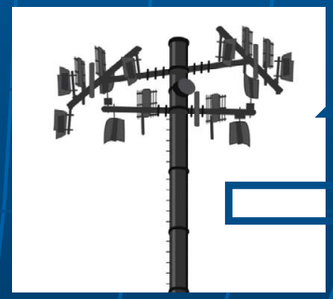






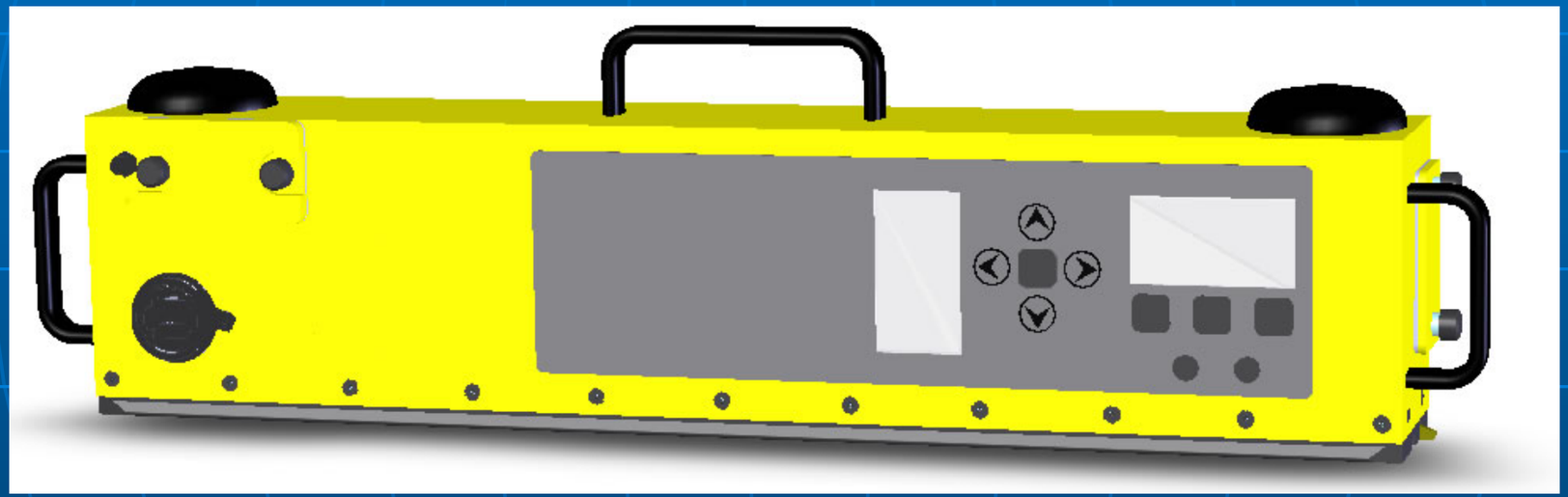


Print Close-out Reports



Alignment Measurements captured on SD card

Introduction to the AAT



AAT Operation

- **The AAT is able to perform and capture 5 measurements**
  - Position: Latitude and Longitude
  - Azimuth
  - Tilt
  - Roll
  - Height (Optional)

AAT Specifications

- Power: Rechargeable batteries or 10 Alkaline C cell batteries
- Operation time: 20 Hrs No Wi-fi / 12 Hrs All Wi-fi / 13Hrs Alkaline No Wi-fi
- Dimensions: 24” long, 2.7” deep and 4 inches tall
- Weight: Approximately 8 pounds (with batteries)
- Waterproof, but not submersible

How the AAT works

- The AAT uses a GPS compass to get azimuth measurements
  - True north
  - No compensation for magnetic declination
- The AAT uses built-in inclinometers to measure tilt and roll
- An attached LASER rangefinder can be used to capture and record height (AGL)
- The AAT can act as a super compass/level (Measure Only mode) or use Target Profile records stored on its SD Card in Align-To-Profile mode.
  - Profiles may be exported from APM
  - Profiles may be created using Onboard APM (optional)
  - Profiles may be created using front panel controls

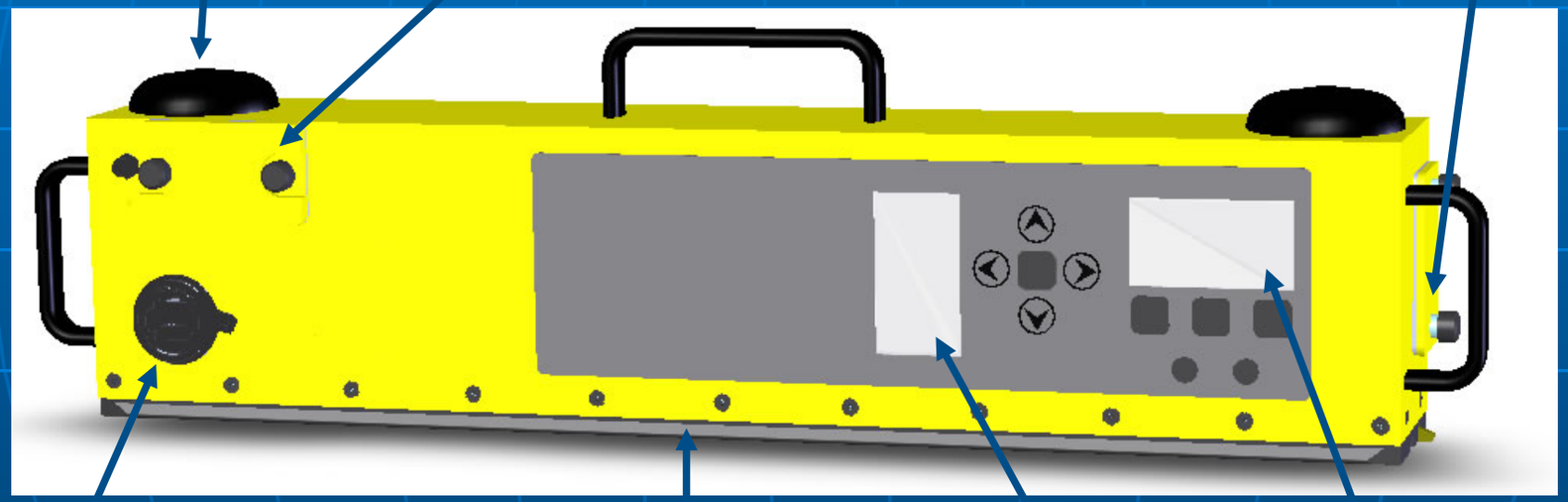
AAT in the field

- Basic Steps
  - Mount the proper mount on the antenna
  - Attach the AAT to the mount
  - Turn the AAT on
  - Set Orientation – first menu option
  - Wait for the AAT to get a GPS signal and acquire azimuth (solid AZM indicator)
  - Choose ‘Measure Only’ for simple measurement mode or ‘Select Site’ for Align-To-Profile mode
  - Make measurements, adjust antenna, capture results

Package Contents

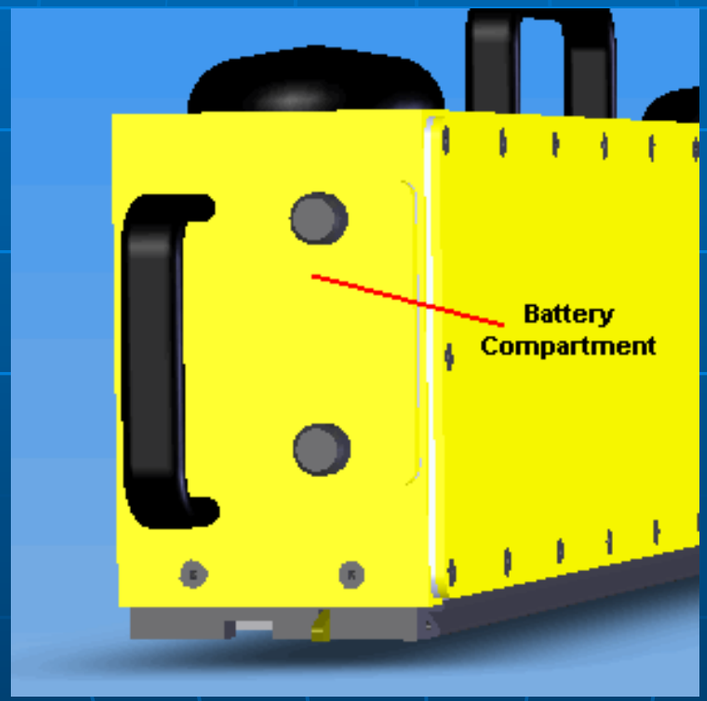
- The AAT product package contains the following items:
  - AAT Case
  - AAT
  - AAT Universal Mounting Brackets w/Straps
  - Rubber Bumpers
  - Card Reader
  - Ethernet Cable
  - Warranty Card
  - Battery Charger
  - Laser Rangefinder (Optional)

Features and Functions of the AAT



The End Panel

- The AAT has a rechargeable battery pack. It can alternatively use 10 standard Alkaline C cell batteries.

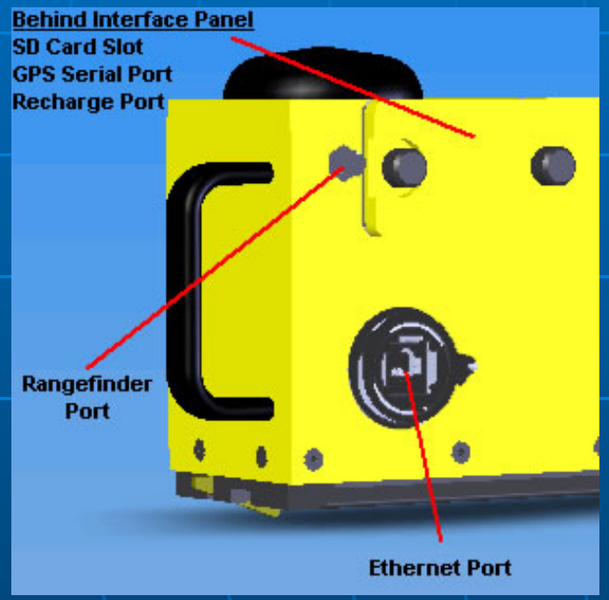


The AAT GPS Antennas

- Care should be taken to avoid impact to the antennas. Make sure these have a clear view of the sky.

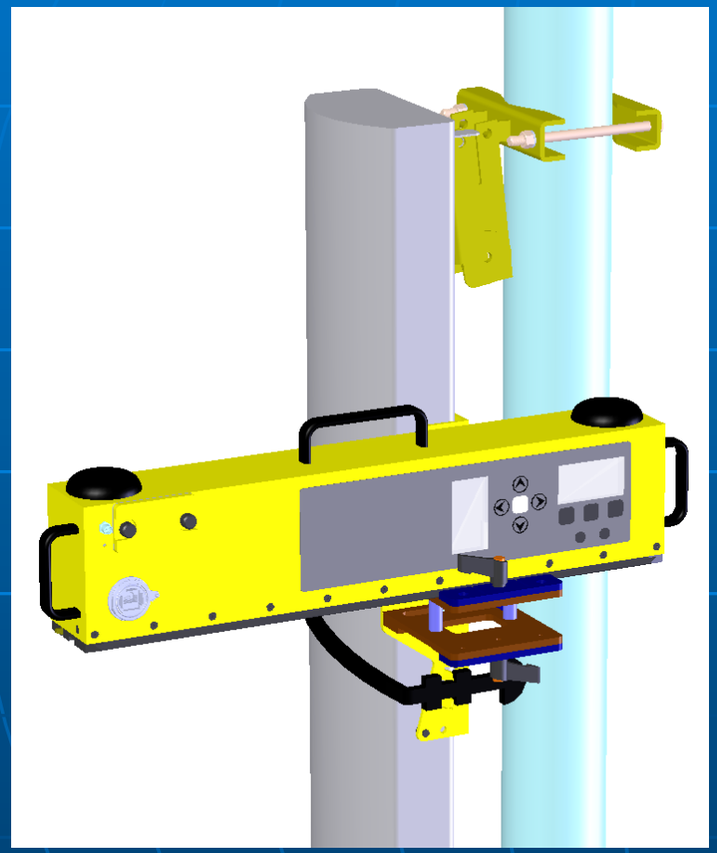


Interface Connector Panel



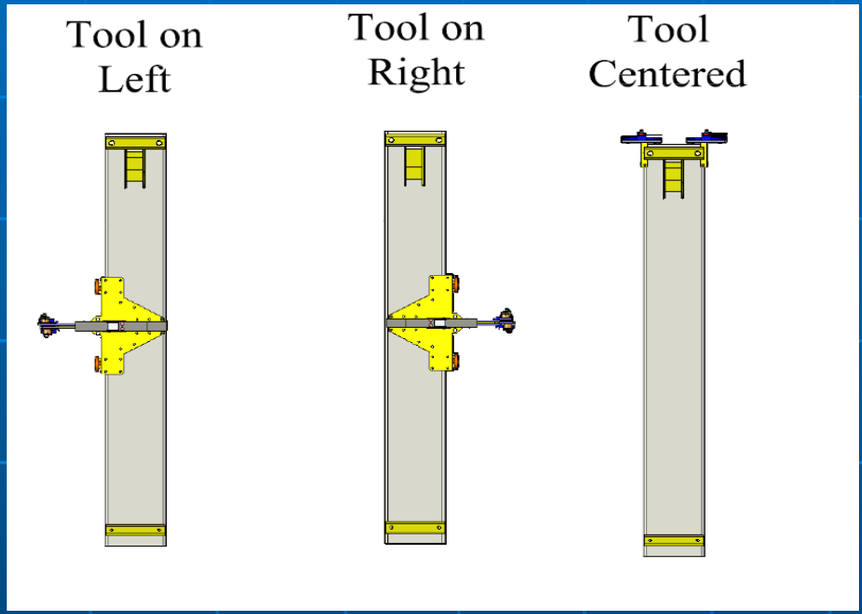
- **SD Card Slot** – Slot for removable SD flash memory card.
- **Battery Recharge Port** – For rechargeables only.
- **Laser Rangefinder Port** (Optional)
- **Ethernet Port** – Connect to onboard web server, or perform firmware upgrades.

Mounting



- Before you can begin using the AAT, the instrument must be firmly attached to the antenna to be aligned. The AAT can be mounted in three ways:
- Top Mount
- Side Mount
- Custom Mount

AAT Mounting Orientation Options



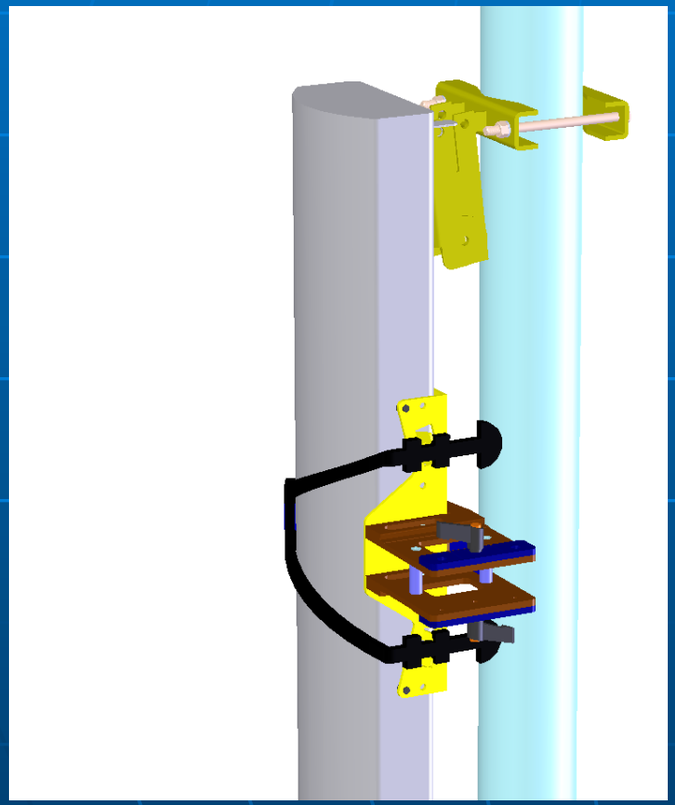
The AAT may be mounted in the following ways:

Tool on left:
- Displays facing left
- Displays facing right

Tool on right:
- Displays facing left
- Displays facing right

Tool centered:
- Displays facing back

Side Mount

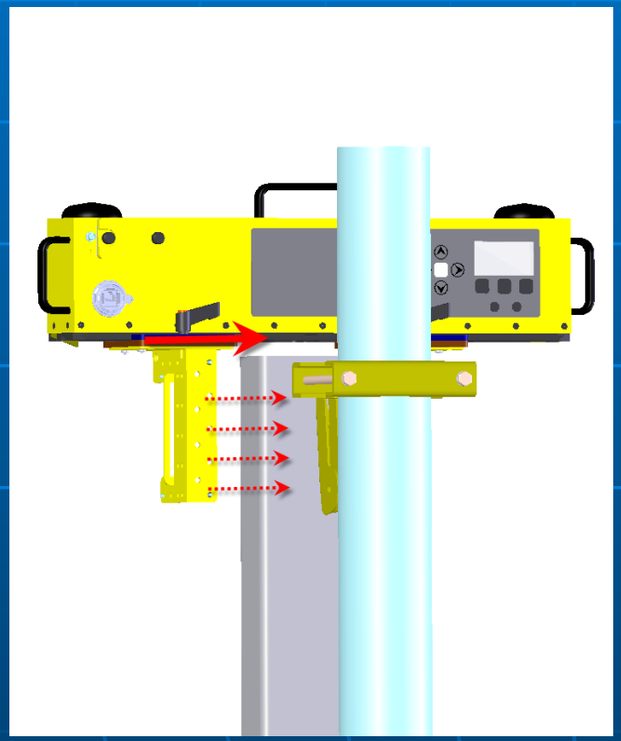


- ***** Always use a tether to secure the AAT *****
- Start with the side mount without the AAT
- Place bumpers on mount so they sit flat against the side and back of the antenna. Do not rest on uneven surfaces.
- Identify slot that is closest to the width of antenna, and least protrudes past the antenna.
- Use correct slot and thread strap into cam buckle.
- Tighten strap so that the rubber stretches to reach attachment points on mount.
- Ensure mount is tight and that all bumpers are in solid contact with the back and side of the antenna.
- Loosen rail cam and insert the AAT into the side mount grip.
- Tighten rail cam and ensure that the AAT is tight against the side mount.

Left Side Mount – Displays Facing Left

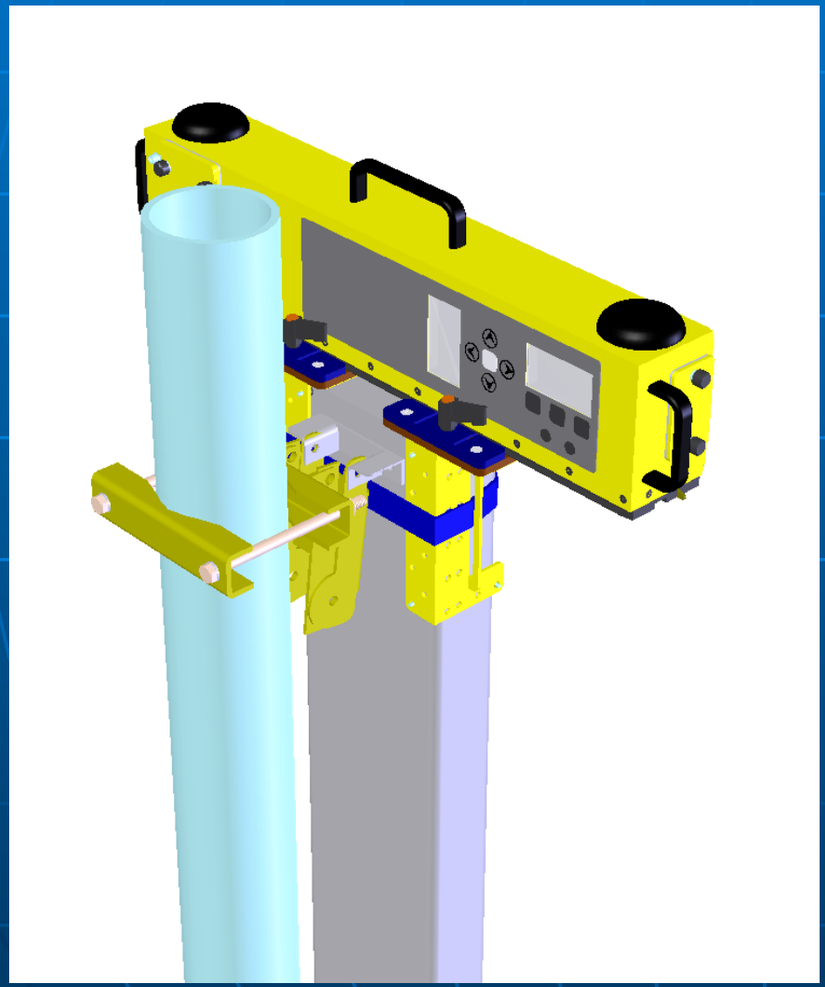


Top Mount View Without Tool



- Tether the AAT using a safety tether (not included) before beginning the mounting process.
- Slide the top mounts onto the AAT mount attachment rail with mount tabs facing inward and flat against back of antenna.
- Place the AAT with mount attached on top of antenna.
- Slide mounts together until they fit the antenna.
- Tighten rail cams until mounts are secure
- Use mount strap to secure AAT to antenna (see next page).

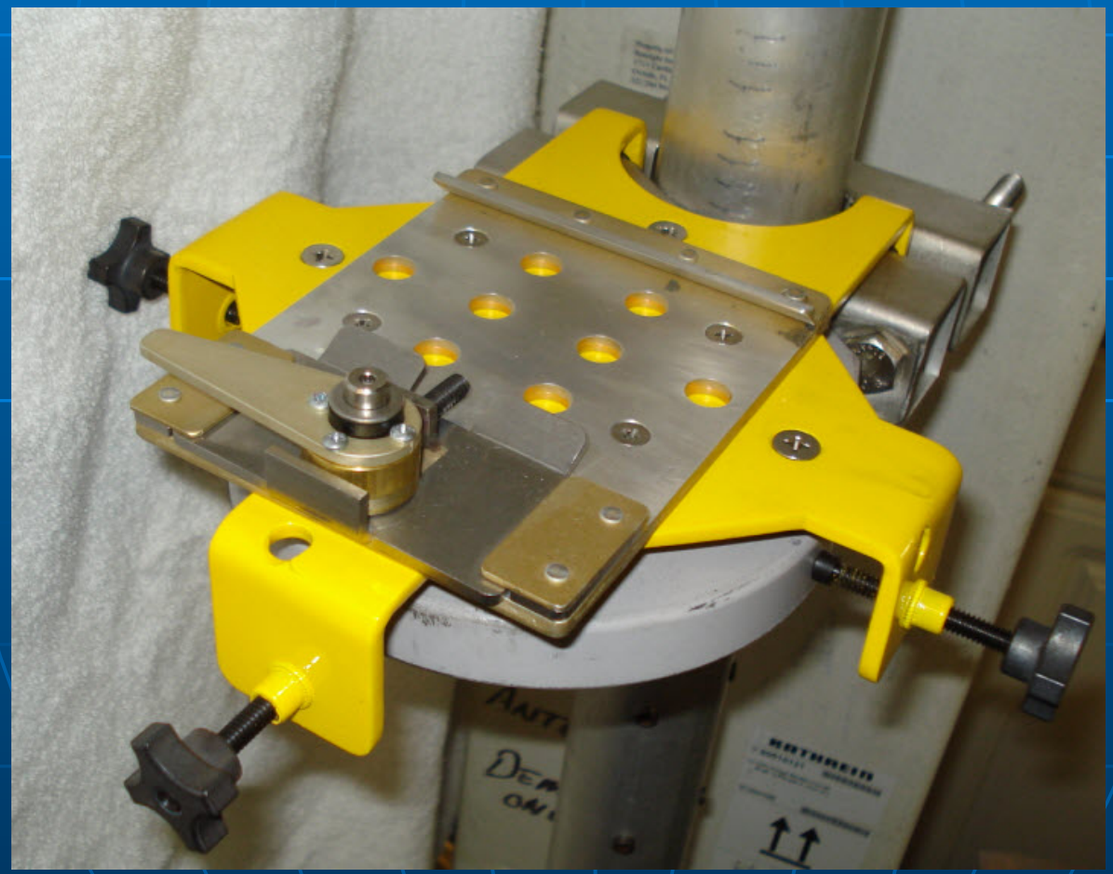
Top Mount View With Tool – AAT Faces Back Orientation



- Feed mounting strap through strap slots and around antenna.
- Strap should be on the outside of the mount on the backplane side so that it applies pressure forward.
- Feed the free end of strap through the strap loop and tighten.
- Ensure the AAT is level and tight against the backplane and side of the antenna.

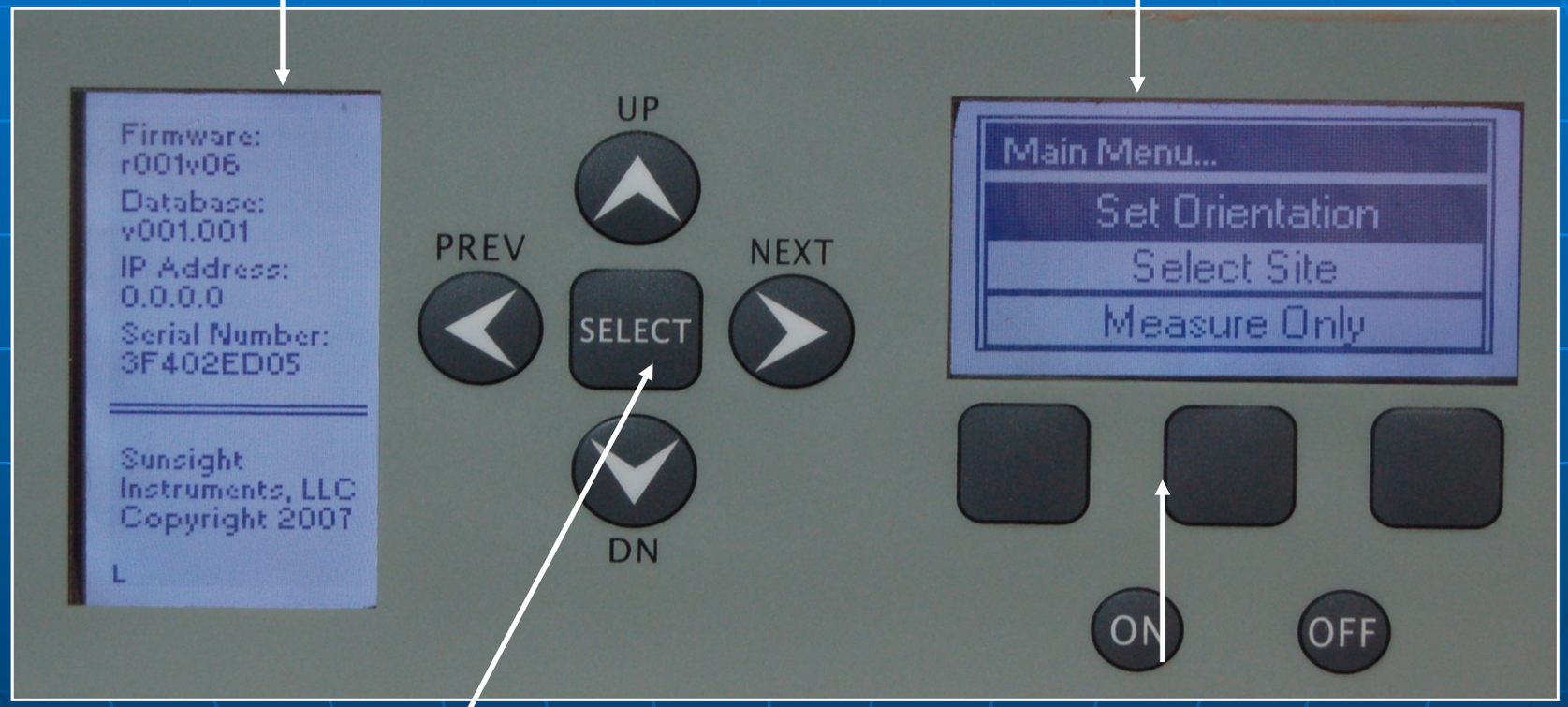
Custom Mounts

- Antennas come in many shapes and sizes, while the included mounts are as universal as possible, some antennas may require custom mounts. Custom mounts can typically be manufactured in 3 weeks.



Make SURE your mount is correctly mounted and flush on the back and sides of the antenna before beginning measurements!!!!

The AAT Control Panel



Entering Data into the AAT

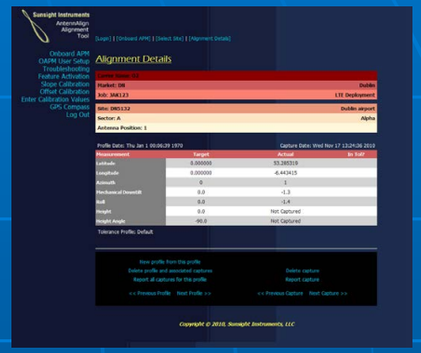
- There are 3 ways to enter data into the AAT:



Virtual Keyboard and soft keys



SD Card with target profile
Data from APM



Onboard APM (OAPM)

The SD Card



- An SD card must be present to use the AAT in **Align-To-Profile** mode. Without the SD card, the AAT is unable to read alignment profiles or store captures.
- In the absence of an SD card, the AAT will automatically enter **Measure Only** mode.

Powering ON the AAT



ON Button

1. Make sure an SD card is inserted.
2. To begin using the AAT, press the **ON** button.
   - The LCD displays will illuminate and the power-up sequence initiates.
   - After a few more seconds, the AAT displays the Main Menu and the tool is ready for use.

Acquiring GPS Signal & Azimuth



GPS Status Indicator

- From startup, the AAT displays a flashing ‘GPS’ indicator to let you know it is attempting to locate satellites.
- Signal acquisition in ideal conditions should occur within 20 seconds and success may be verified by observing the flashing ‘GPS’ indicator transition to a flashing ‘AZM’ indicator.
- Finally, after as much as 90 additional seconds, the ‘AZM’ indicator will stop flashing and remain solid. This indicates that an azimuth has been acquired.

Tips for getting GPS Azimuth

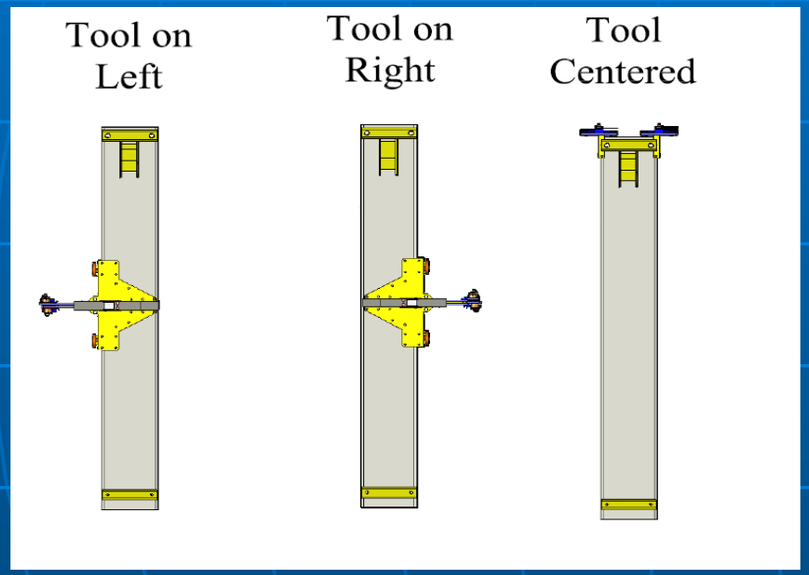
- Acquiring AZM
  - Power on the AAT and let it acquire azimuth from the ground, before climbing tower. This will let it collect data from your location and will make acquiring AZM easier later.
  - GPS gets better over time.
  - Sometimes removing the AAT from the mount and simply holding it out and turning it (make a 180 degree sweep in each direction) will make the AAT acquire AZM faster. Movement gives the GPS compass more data with which to work.
  - Toggle the multi-path filter from high to low (on the GPS Summary page). This almost always will help you to acquire AZM very quickly, but beware of multipath conditions!!!! Many times, after the AAT has collected some data, you can switch back to HiFilter and acquire AZM in a reasonable amount of time. **It is always preferred to use HiFilter.**
  - Use the Trimble GPS Planning software to target the best time of day for your alignment.

    http://www.trimble.com/planningsoftware_ts.asp

Tips for getting GPS Azimuth

- MOUNT THE AAT HIGH SO THAT THE DISPLAYS ARE AT EYE LEVEL!!! This makes the displays easier to read and also gets the GPS antennas above you.
- DO NOT PLACE YOUR HANDS ON OR ABOVE THE ANTENNAS!! GPS is a line-of-sight technology.
- Use the quality indicator to choose the best mounting location – Left/Top/Right. DON'T FORGET TO SET YOUR ORIENTATION CORRECTLY!!
- The top of the antenna is typically the best location for mounting in tough RF environments. Anywhere that affords you more view of the sky is better.
- Avoid TMAs and cabling. Try to mount above these. TMAs can leak RF and if you are too close may interfere. You should be ok though.
- If a large wall is nearby (elevator penthouse), you may encounter RF Multi-path conditions. Move to a different location on the roof, acquire azimuth, and then use the gyro if necessary. Always use HiFilter in these conditions. You may encounter bad readings on LoFilter. Multipath may not exist one or two hours later since the satellites will be in a different position in the sky. Come back to that antenna after you have completed others.
- Always turn off the AAT before handling it vertically. Otherwise, it will remember a "picture" of the world on its side. Use push-and-hold (10 secs) Recalc option on the GPS Summary display to reset the GPS compass if this happens.

Setting Tool Orientation



If AAT is mounted on left or right choose from:
AAT Faces Left or **AAT Faces Right**

If AAT is mounted on top choose **AAT Faces Back**

Choose the setting based on which way the AAT keypad is facing.

- Once you have mounted the AAT onto the antenna and turned it on, choose **Set Orientation** from the Main Menu.
- The three orientations available are defined as if viewed from behind the antenna.
- Use the **UP** and **DN** buttons to highlight your choice.
- Press the **Select** button to confirm your choice.

Antenna Alignment Measurement Modes

- There are three measurement modes available to the AAT user.
- **Measure Only:** This is the simple measurement mode where the AAT acts like a level and a compass. Readings for azimuth, tilt and roll appear on the screen. No measurements can be captured in this mode. Choose Measure Only from the Main Menu for this mode.
- **New Capture:** Select a site, then a profile. Press the Select button, and then choose 'New Capture'. The AAT displays the target data and the actual azimuth, tilt and roll values being measured. Once the adjustments for proper alignment have been made, the actual measurements are captured and saved to the SD card. These are the measurement values that will appear on reports from APM. The 'New Capture' choice is only available after acquiring azimuth.
- **Partial Capture:** There will be situations where GPS signals are unavailable. The AAT cannot measure azimuth without good GPS signals. In this case the AAT can still be used to measure and record tilt, roll and height values (among others). Partial Capture mode is used just like New Capture mode, but excludes azimuth measurements.

Measure Only Mode



- **To obtain a simple measurement:**
- This mode advances the instrument directly into **Measure Only** mode.
- Tilt and Height are displayed in the vertical screen
- Azimuth and Roll are displayed in the horizontal screen.
- Use this mode to obtain a quick visual measurement.
- Note: If sufficient GPS reception is not available such that the Azimuth reading cannot be obtained, the Azimuth field on the horizontal display will display dashes '---'.

Selecting an Alignment Profile



Steps:

- Scroll down to **Select Site** on Main Menu and press **Select** key.
- Scroll down to desired site on Main Menu and press **Select** key.
- Scroll left or right to desired alignment profile (by Site/Sector/Antenna Position) and press **Select** key.
- Choose **New Capture** from Main Menu if Azimuth is available, **Partial Capture** if Azimuth is not available.

Antenna Alignment – Gauges or Digits





Left most soft key

- **New Capture:**
  - Selecting **New Capture** from the Main Menu advances the AAT into one of two measurement modes.
  - Alignment Capture Screen – **Gauges Mode** (Default).
  - Alignment Capture Screen – **Digits Mode**.
- Pressing the left most soft key toggles between these two visual modes.

Capture Procedure



- **To Obtain a New Capture:**
  - Plug Laser Rangefinder (optional) into the port and capture height measurement (procedure on next slide).
  - Adjust antenna to specified alignment using gauges/digits.
  - Press **Select** to capture antenna alignment for this profile.
  - Scroll down to desired delay/ collection period: 5/5, 15/15, or 30/30 seconds and press **Select**.
  - A preview of the captured values will be displayed after the countdown completes.
  - Press ‘Save’ to write the capture to the SD card. Press ‘Reject’ if you would like to make an adjustment and try again. Press “ORide’ if you would like to save the captured values, even though they are out of tolerance.

Using the LASER Rangefinder

Basic Rangefinder Operation

- Peer through the viewfinder and select a hard flat surface (ideal)
  - Parking lot
  - Concrete foundation of the tower
- Depress the 'fire' button once to power on the rangefinder.
- Press the up or down buttons one or more times to select 'VD' mode.
  - Displays vertical distance in the viewfinder
  - The AAT will ALWAYS calculate vertical distance, regardless of mode
- Press and hold the 'fire' button for two seconds to take the measurement.

Viewing and Capturing Rangefinder Results on the AntennAlign

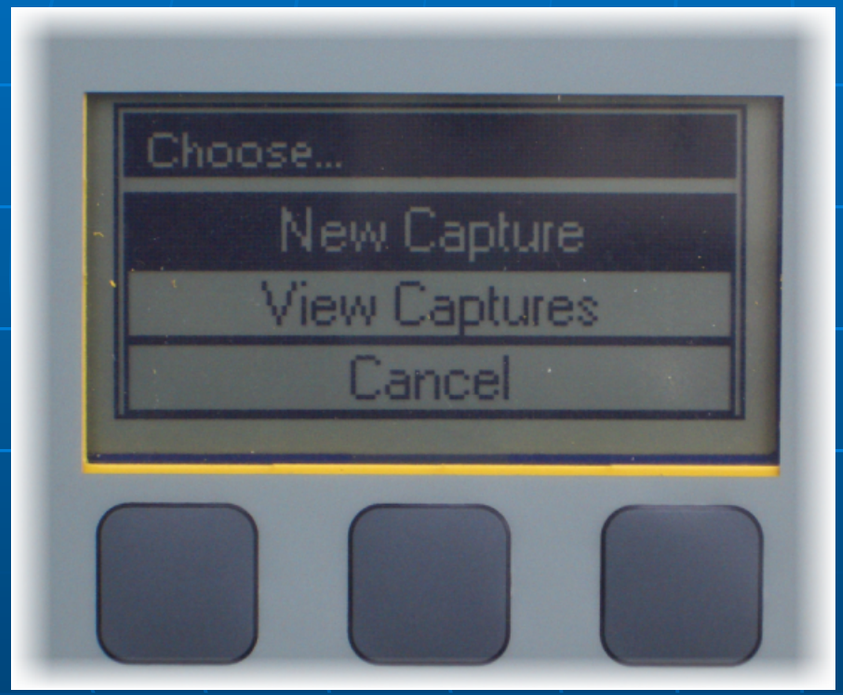
- Rangefinder results may be viewed on the following displays
  - ‘Measure Only' display
  - 'Gauges' display
  - 'Digits' display
- To capture height results in 'Align to Profile' mode
  - Select ‘New Capture’ and choose either the ‘Digits’ or ‘Gauges’ display
  - Take your height measurement before beginning the capture countdown
  - Your height will be stored along with the other capture data if you press the 'Save' or 'ORide' softkey after previewing the capture results.

Using the LASER Rangefinder

Rangefinder Notes

- The LASER rangefinder contains an accelerometer which detects the angle at which the rangefinder was held during the height measurement.
- The AntennAlign uses this angle (referred to as 'Height Angle') to calculate the vertical distance
- Sunsight has determined that accurate height measurements occur when the rangefinder is held downwards at an angle between -45 and -90 degrees from horizontal.
  - Exceeding these limits will cause the AAT to display arrows (VVV or ^^^) indicating that the rangefinder should be aimed further down (or up).
- Your data manager may have specified a Height Angle tolerance profile which further restricts the angle at which the rangefinder may be held.
  - Violating this tolerance specification will cause the AntennAlign to display 'Angle OOT'. Adjust the angle of the rangefinder, or choose a different target and then retry the measurement.
- Because of rangefinder software limitations when the rangefinder is configured in VD mode, measurements at angles steeper than -90 degrees are not possible.
  - Switching to SD mode on the rangefinder allows measurements from -45 to -135 degrees.
  - This will allow LASER shots between the climbers legs (behind the climber).

Reviewing Capture Results



- **View Captures:**
- Choose the Select Site menu item from the Main Menu.
- Select a site to display related profiles, or select **[ALL]** to display all profiles.
- Use the **PREV** and **NEXT** navigation buttons to find the Profile of interest.
- Press the **Select** button to confirm your choice.
- Choose **View Captures** from the profile options menu.
- If any exist, the first Capture record will be displayed.

Reviewing Capture Results



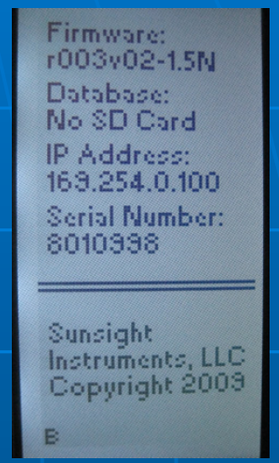
- **View Captures:**
  - Use the **UP** and **DN** keys to scroll the horizontal display so that the details of the entire Capture record may be viewed.
  - If more than one Capture record exists for the selected Profile, press the **PREV** and **NEXT** keypad buttons to scroll through them.
  - Note: If desired, the soft key for Delete may be used to delete the Capture currently being viewed.

Onboard Web Server

- A web server is embedded in the AAT and can be used to:
  - Activate software features
  - Calibrate Tilt and Roll
    - GPS does not require calibration
  - Troubleshoot any system software issues
  - Create, review and report Alignment Profiles and Captures (using optional feature Onboard APM)
  - Remote control the AAT over the Ethernet or Wi-fi connection

Onboard Web Server

To access the Onboard Web Server, both the AAT and the connecting PC/Laptop/PDA must have an IP address. The AAT default static IP address is always 169.254.0.100. If the AAT is plugged into a router or LAN, the dynamically assigned IP address will be displayed in the vertical AAT window after 30 seconds.



The PC/Laptop/PDA IP address may be set in one of the following two ways:

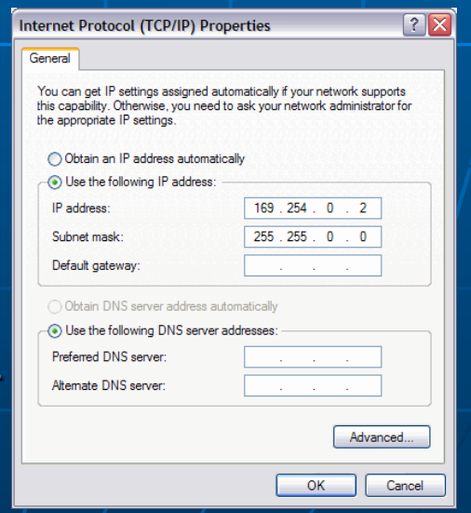
Auto IP

- Just connect the AAT with an MS Windows PC using an Ethernet cable or Wi-fi (optional feature). No additional configuration is required, but you must wait approximately 60 seconds for an AutoIP address to be assigned to your PC by Windows.

OR

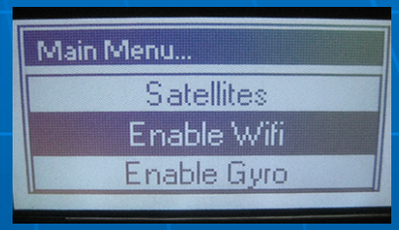
Static IP

- Right-click 'Properties' for your network adaptor
- Select 'Internet Protocol (TCP/IP)' from the list
- Click 'Properties'
- The following dialog box will appear
- Record existing settings, you may need to restore them later
- Type in the values displayed in the dialog box on the right.
- Click 'OK", then click "OK" again to close all dialogs.



Using Wi-fi

If your AAT is equipped with the optional Wi-fi feature:



- From the Main Menu, select 'Enable Wi-fi' to enable the AAT's Wi-fi module.
- Within 60 seconds, the AAT should be identified as an available ad hoc connection within the computer or PDA's wireless management software.
  - The SSID (network name) of this ad hoc connection will be 'AAT 8nnnnnn' where 8nnnnnn is the serial number of the AAT.
- Select this connection and click the 'Connect' button.
- After using the Wi-fi connection, select 'Disable Wi-fi' from the Main Menu (or power down the AAT) to disable the AAT's wi-fi module.
  - Each time the AAT is powered the 'Enable Wi-fi' option must be selected to enable the Wi-fi module.
  - To preserve battery power, only enable Wi-fi when you intend to connect to the AAT's onboard website.

Using Wi-fi

Notes about Wi-fi:

- The AAT connects to your computer as a direct ad-hoc connection, not as an access point. Sunsight recommends that you disable other connections to the Internet while using this connection.
- Microsoft Windows may label the connection 'Unidentified Network' while the search for an IP address is underway. After 60 seconds, once AutoIP is complete, MS Windows may label the network 'Limited Access Connection'. This indicates that access to the Internet is unavailable, however communication with the AAT is possible by typing http://169.254.0.100 in your browser's URL textbox.
- Configuring your network adaptor with a static IP address in the 169.254.xxx.yyy range (any address other than 169.254.0.100) will eliminate the 60 second AutoIP wait period. Consult your operating system's help documentation for further information.

Onboard Web Server

Accessing the Onboard Web Site

- Verify that the connection shows “connected” when the AAT is powered on and connected
- The AAT displays its current IP address on the vertical display while you are at the main menu. The default is static IP address is “169.254.0.100”.
- Launch Internet Explorer and type the AAT’s IP address in the address (URL) bar. For example, http://169.254.0.100.
- The login page of the AAT onboard website will appear.

Calibration

- The AAT can be calibrated by the user. In most cases, the AAT does not have to be returned to the factory.
- Azimuth does not require calibration.
- Tilt and Roll rarely need to be calibrated, but should be checked periodically.
- To check the tilt and roll calibration
  - Power up the AAT and select Measure Only
  - Position the AAT on a smooth level desk or table.
  - Note the tilt and roll values
  - Turn the AAT 180 degrees and place it in exactly the same spot
  - Compare the new tilt and roll values with the ones noted in the previous step. They should be approximately the same values, but have the opposite sign (negative/positive). If they are different by more than .2 degrees, the AAT should be recalibrated.
- To recalibrate the AAT tilt and roll, access the Onboard web server and follow the instructions under the Offset Calibration menu item (Supervisor login).

Onboard APM

Onboard APM is a software feature that allows an AAT user to access the AAT profiles and captures from a web browser on a laptop or PDA.

- Select and view Profiles and Captures in a user-friendly web display
- Create new profiles from a selected profile, or from blank
- Display reports in a printer friendly format
  - Site Alignment Results Report
  - Capture Detail Report
- Print to PDF and send via e-mail
  - PDF conversion program not included

Onboard APM

Understanding the differences between APM and Onboard APM

- OAPM
  - Embedded Web Application (resides on AAT)
  - No custom software required on the PC/Laptop/PDA
  - No Internet connection required – pages served by AAT
  - Uses SD Card for storage
  - Reduced data set / No support for Tolerance Profiles
- APM
  - Custom MS Windows application
  - Enterprise quality SQL Server / SQL Express database
  - Multi-client / single-server architecture possible
  - Manage multiple AATs
  - Data integrity process
  - Integration with planning and optimization tools

Onboard APM

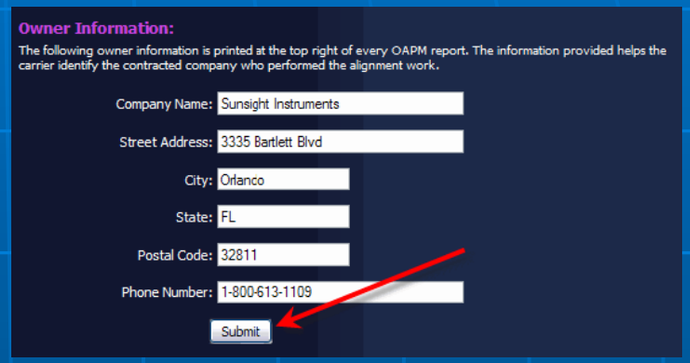
OAPM User Setup

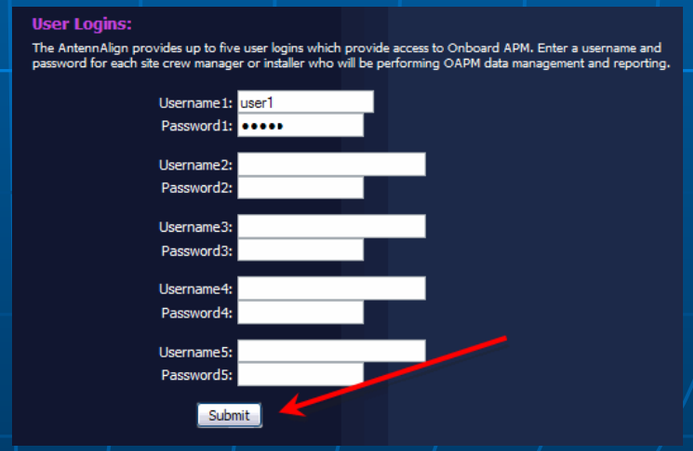
Owner Information

- Enter company address and phone number
- Displayed at the top right of all OAPM reports

User Logins

- Up to 5 easy to remember username/ password combos
- Access limited to Troubleshooting and OAPM





Onboard APM

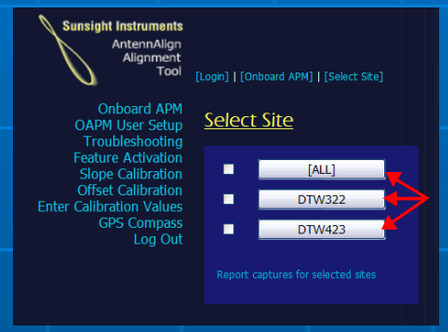
Displaying Profile and Capture Information

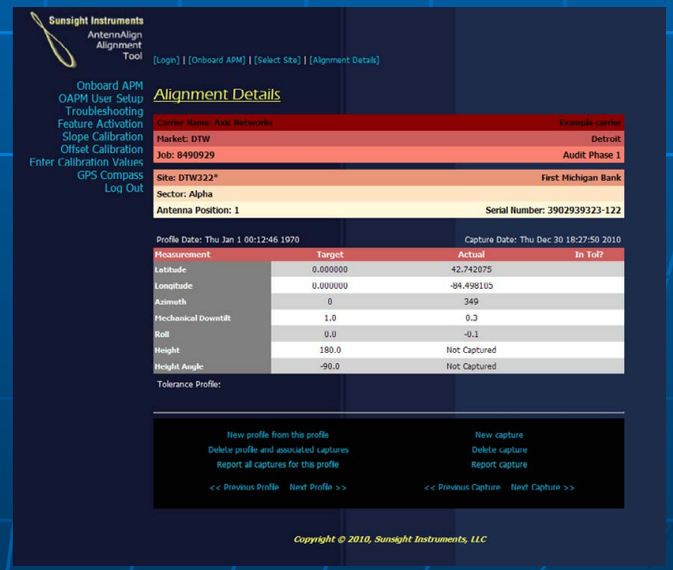
Select a Site

- Select OAPM from the Navigation links on the left.
- Select a Site from the buttons displayed

View Alignment Details

- Site/Sector/Antenna Position, etc.
- Target alignment data
- Captured alignment values (if captures present)
- Tolerance results (if profile was created by APM and a Tolerance Profile was specified)
- Traverse profiles and captures by clicking ‘Previous’ and ‘Next’



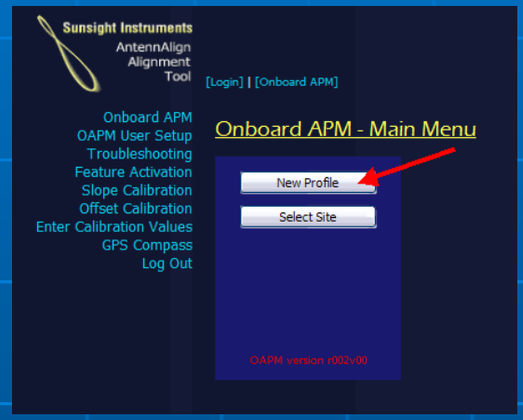


Onboard APM

Creating a New Profile in OAPM

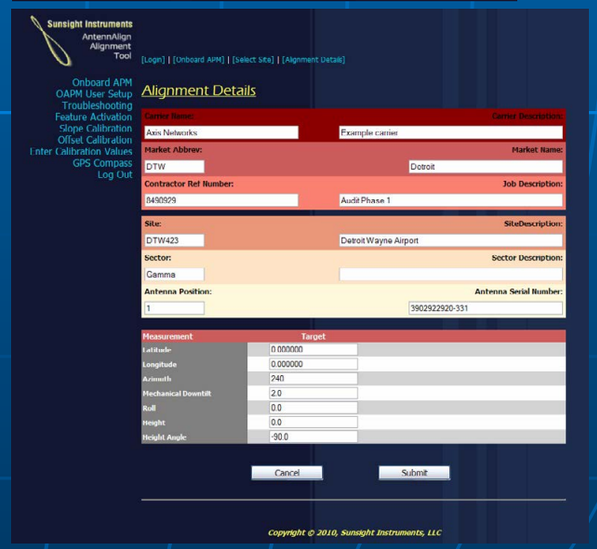
Create From Blank

- Select “New Profile” from the OAPM Main Menu
- Select a Site from the buttons displayed
- Fill in the Profile Form
- Click “Submit”



Create From Selected

- Select a Site
- Select a Profile
- Click “New profile from this profile”
- The profile form will be pre-populated with fields from the selected profile
- Change only the fields that require modification
- Click “Submit”

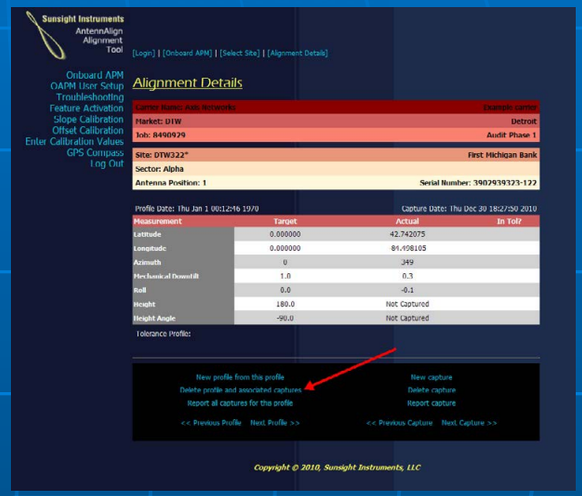


Onboard APM

Deleting Profile and Capture Information

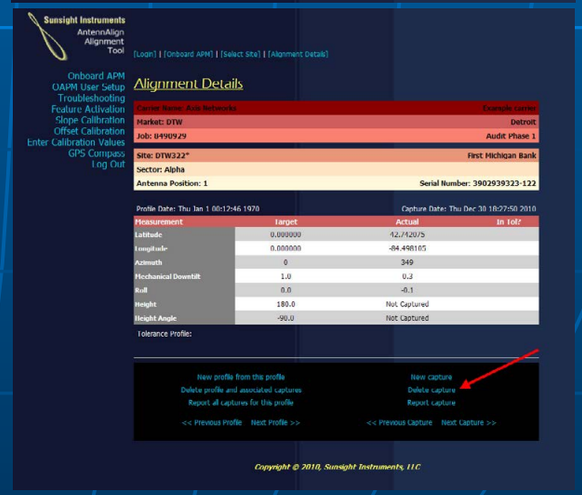
Delete a Profile

- Select a Site
- Select a Profile
- Click “Delete profile and associated captures”
- A confirmation message will be displayed. Click “Ok” or “Cancel”
- Do not delete a profile that contains captures you need!



Delete a Capture

- Select a Site
- Select a Profile
- Select a Capture
- Click “Delete capture”
- A confirmation message will be displayed. Click “Ok” or “Cancel”



Onboard APM

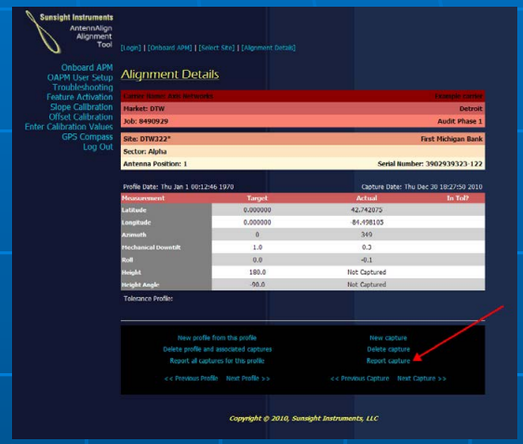
Displaying and Printing a Capture Detail Report

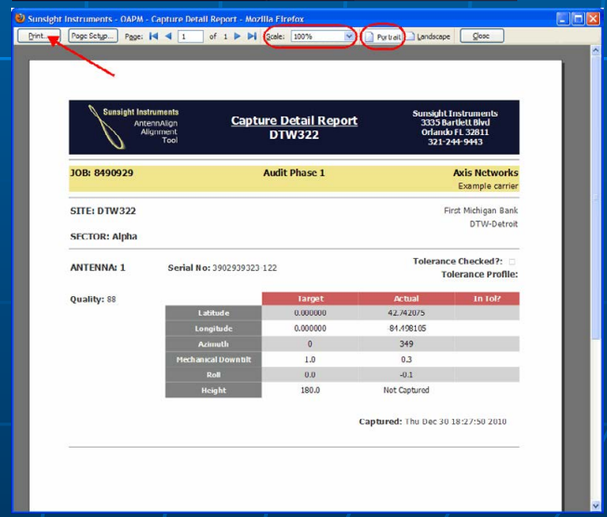
Select a Capture

- Choose a capture to be reported
- Click “Report capture” or “Report all captures for this profile”

Print Preview Capture Detail Report

- Choose “Print Preview” from the “File” menu of the browser.
- Set scale to “100%”
- Set orientation to “Portrait”
- Print
  - Select a local or networked printer
  - Select a PDF Converter (not included)



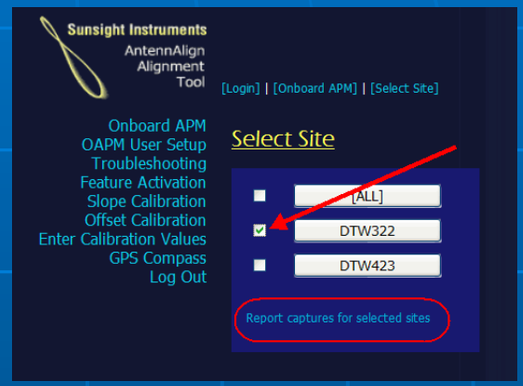


Onboard APM

Displaying and Printing a Site Alignment Results Report

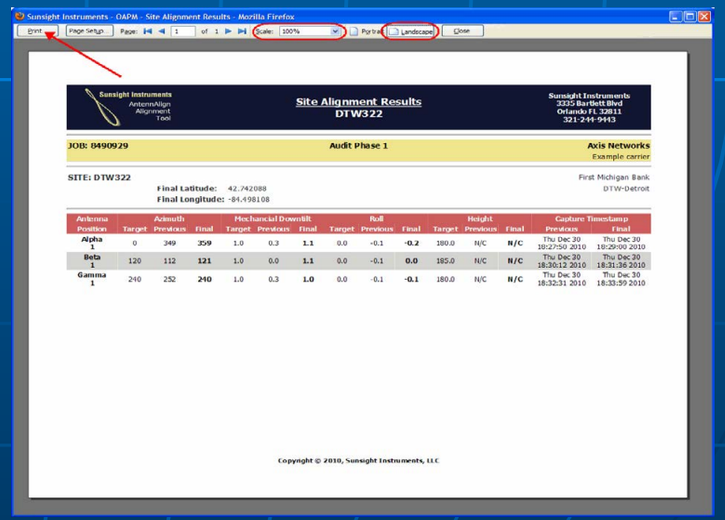
Select a Site

- Place a checkmark in the box next to the Site Button for each Site to be reported (or check "[All]")
- Click "Report captures for selected sites"

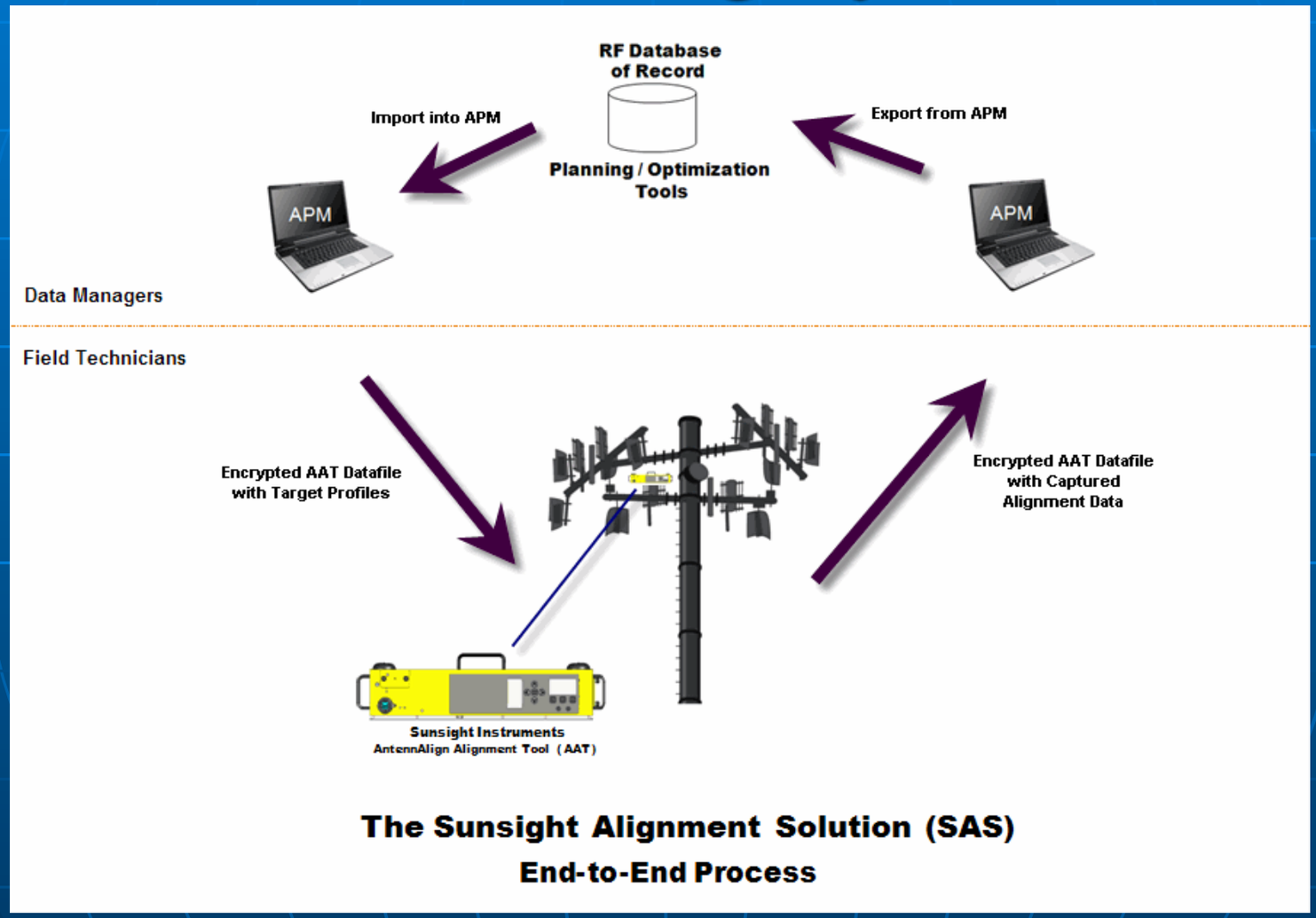


Print Preview Site Alignment Results Report

- Choose "Print Preview" from the "File" menu of the browser.
- Set scale to "100%"
- Set orientation to "Landscape"
- Print
  - Select a local or networked printer
  - Select a PDF Converter (not included)



APM Data Integrity Process

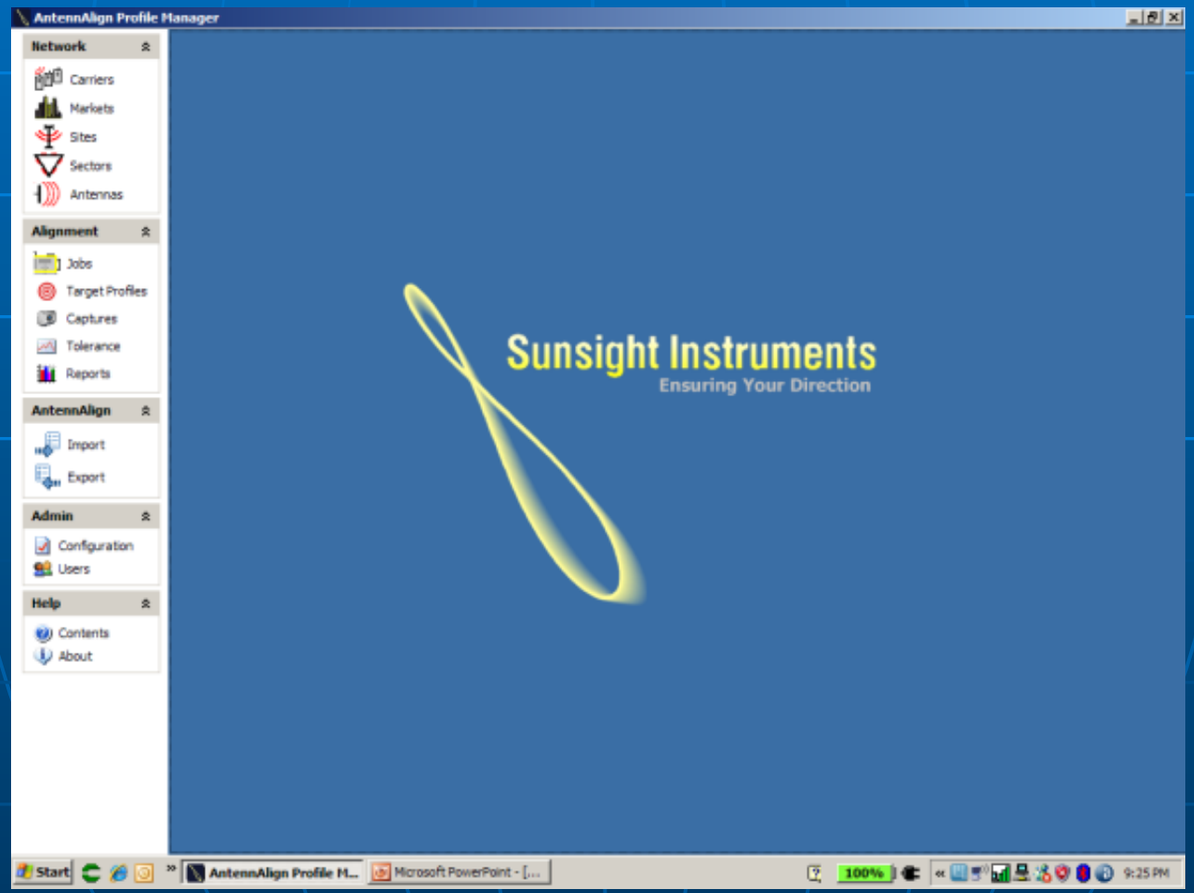


The Sunsight Alignment Solution (SAS)

End-to-End Process

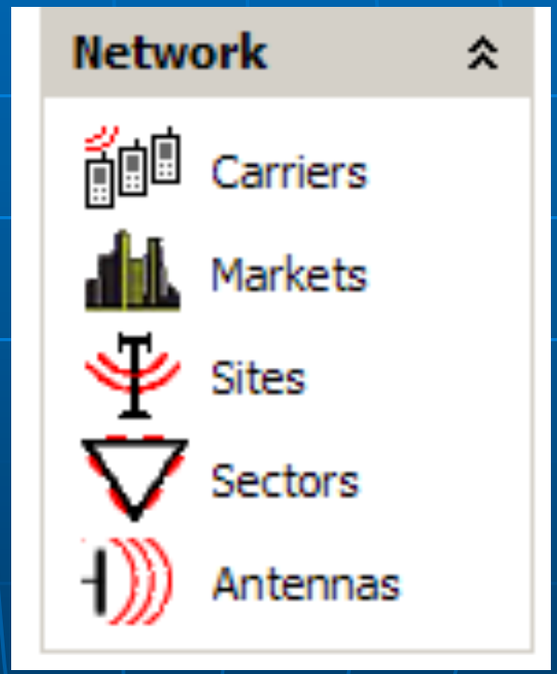
AntennAlign Profile Manager

Windows Application
Runs on laptop or single PC
Optionally runs on server
Uses Microsoft SQL database products



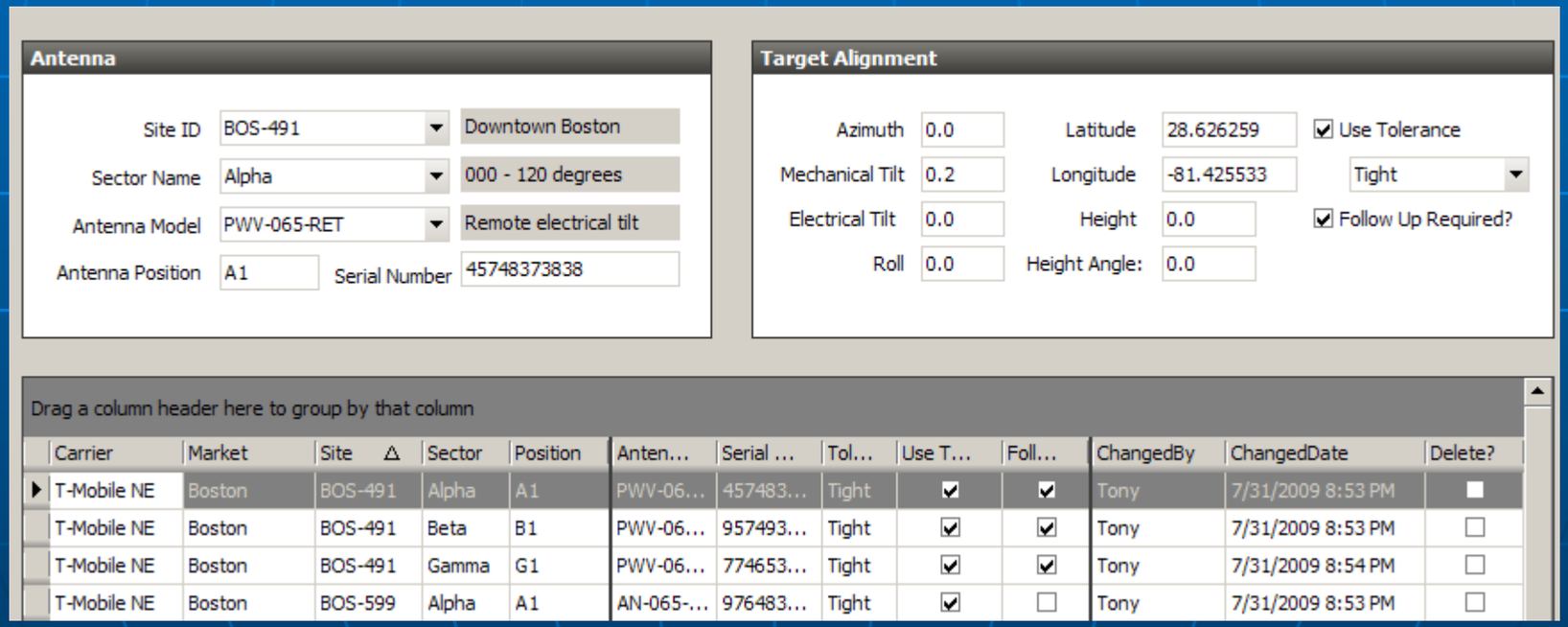
Hierarchy of APM Data

- APM is configured using the hierarchy:
  - Carrier
  - Market
  - Site
  - Sector
  - Antenna



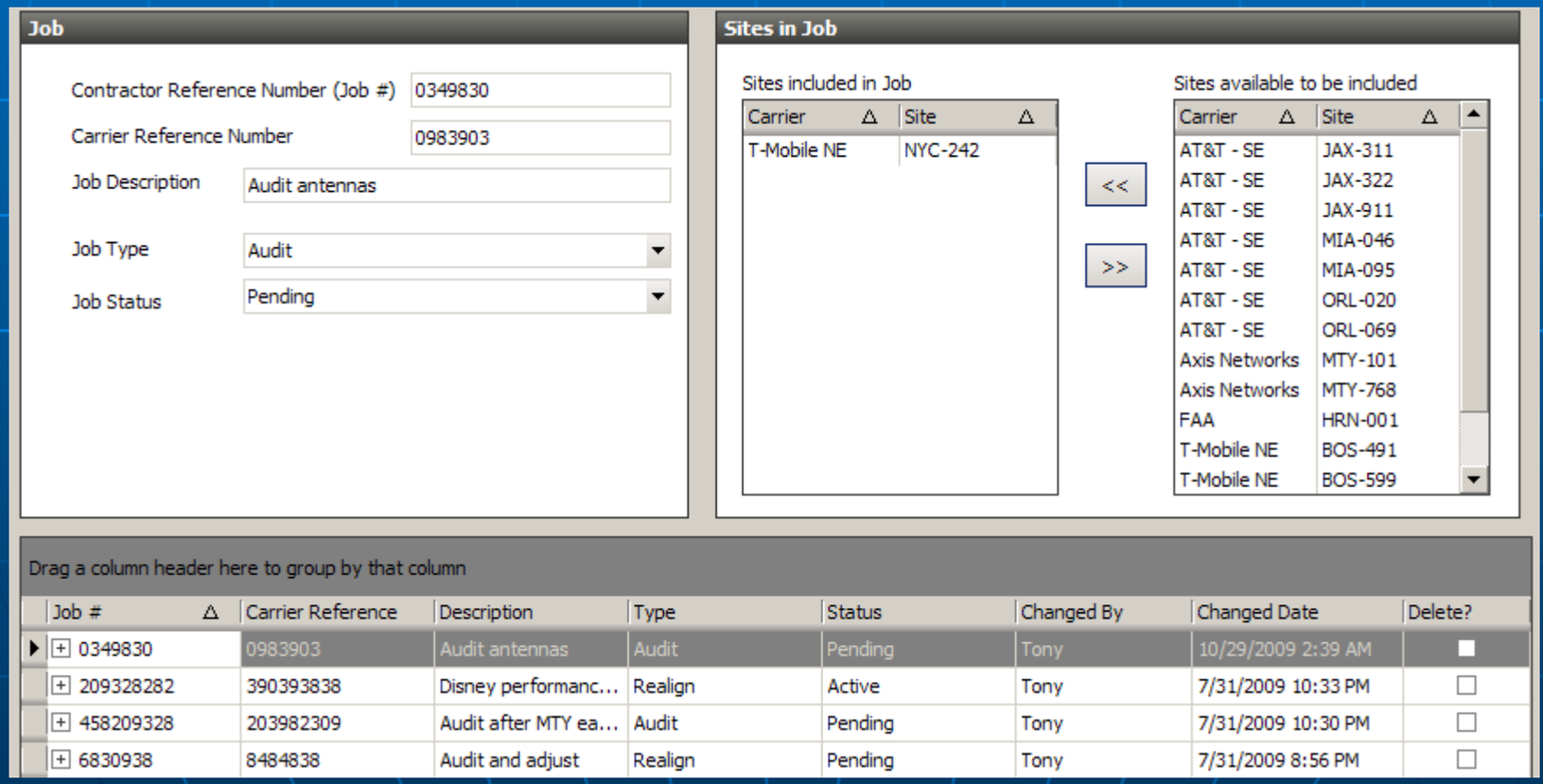
APM Target Profiles

- Profiles can be created and edited in APM
- Profiles contain the target data for measurement of an antenna



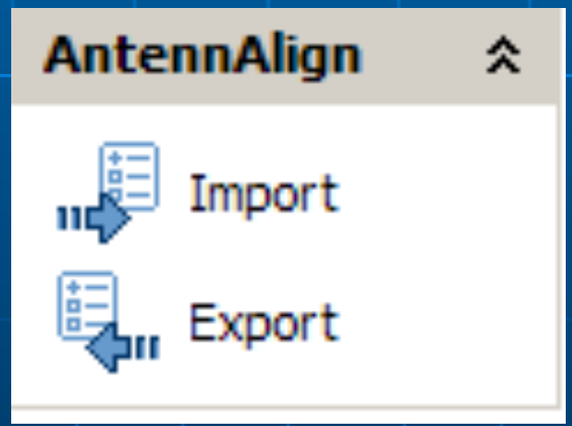
APM Jobs

- One or more sites are associated with a Job.
- Profiles for a given Job's sites may then be selected for export on the 'Export' screen



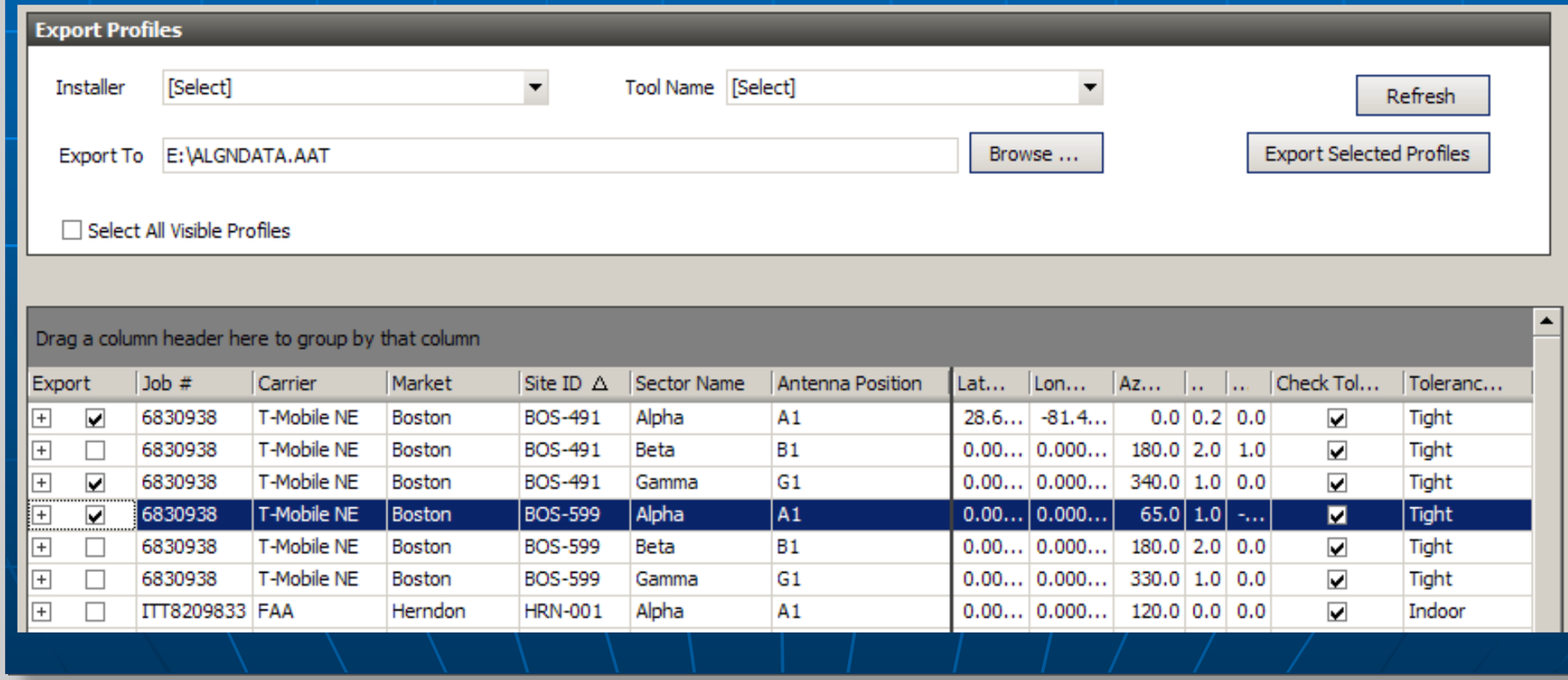
APM Data Handling

- Profiles are exported to the SD card for the AAT
- Measurements are made and Captures are saved on the SD card for each profile using the AAT.
- Captures can then be Imported from the SD card into APM
- The user is presented with the captures and may review them before accepting them into the database



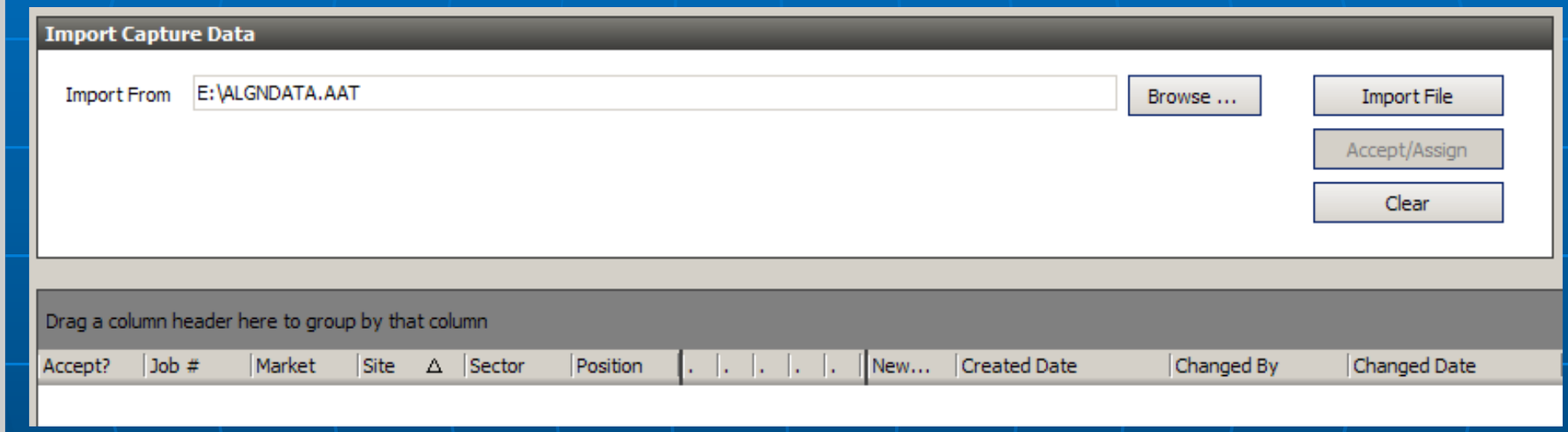
APM Data Handling - Export

- Select the profiles to export
- Save them either on the SD card or another location on the laptop (then email to installer)
- On the SD card, the file named ALGNDATA.AAT will always be the current file in use. Rename any file you export to this filename when copying it to the SD Card.
- Files with a numeric extension are backup files. (One for each 'save')



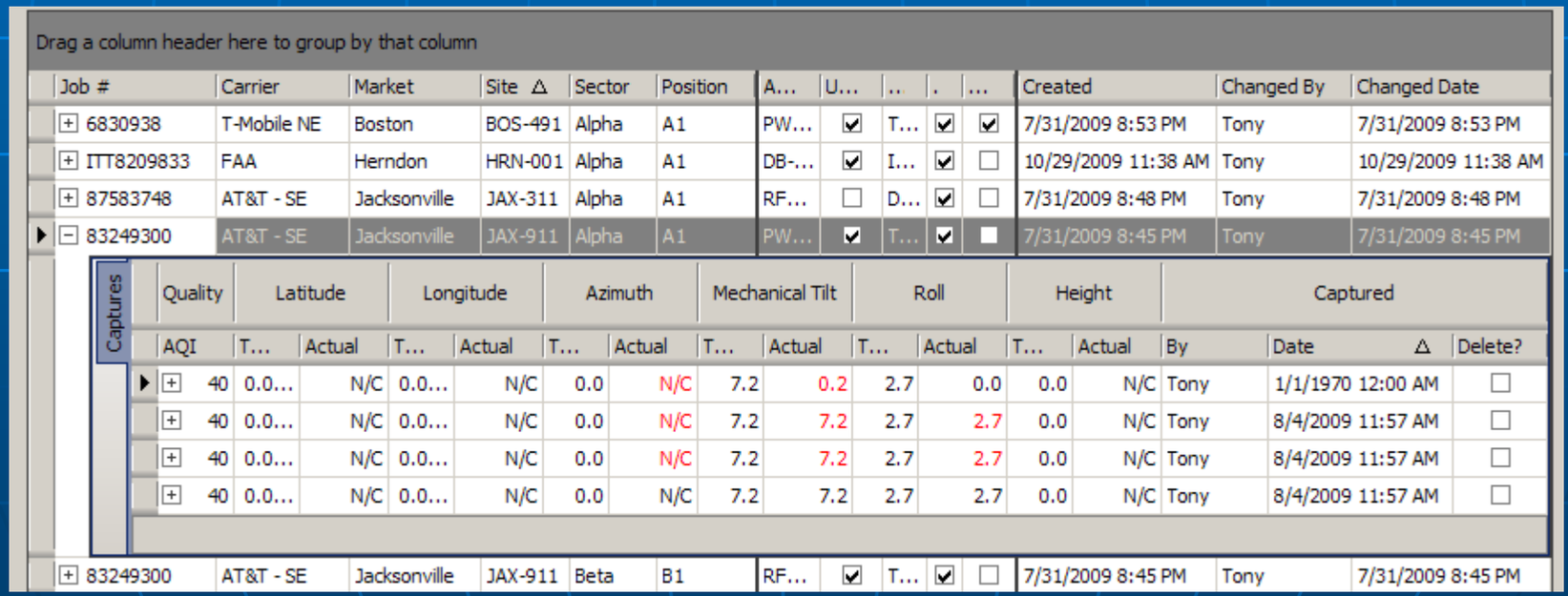
APM Data Handling - Import

- Navigate to the ALGNDATA.AAT file on the SD card
- Choose Import to import the current data file



APM Captures

- Captures are associated with the profile selected when making the capture



Drag a column header here to group by that column

Job #	Carrier	Market	Site	Sector	Position	A...	U...	...	.	...	Created	Changed By	Changed Date
6830938	T-Mobile NE	Boston	BOS-491	Alpha	A1	PW...	☑	T...	☑	☑	7/31/2009 8:53 PM	Tony	7/31/2009 8:53 PM
ITT8209833	FAA	Herndon	HRN-001	Alpha	A1	DB-...	☑	I...	☑	☐	10/29/2009 11:38 AM	Tony	10/29/2009 11:38 AM
87583748	AT&T - SE	Jacksonville	JAX-311	Alpha	A1	RF...	☐	D...	☑	☐	7/31/2009 8:48 PM	Tony	7/31/2009 8:48 PM
83249300	AT&T - SE	Jacksonville	JAX-911	Alpha	A1	PW...	☑	T...	☑	☐	7/31/2009 8:45 PM	Tony	7/31/2009 8:45 PM

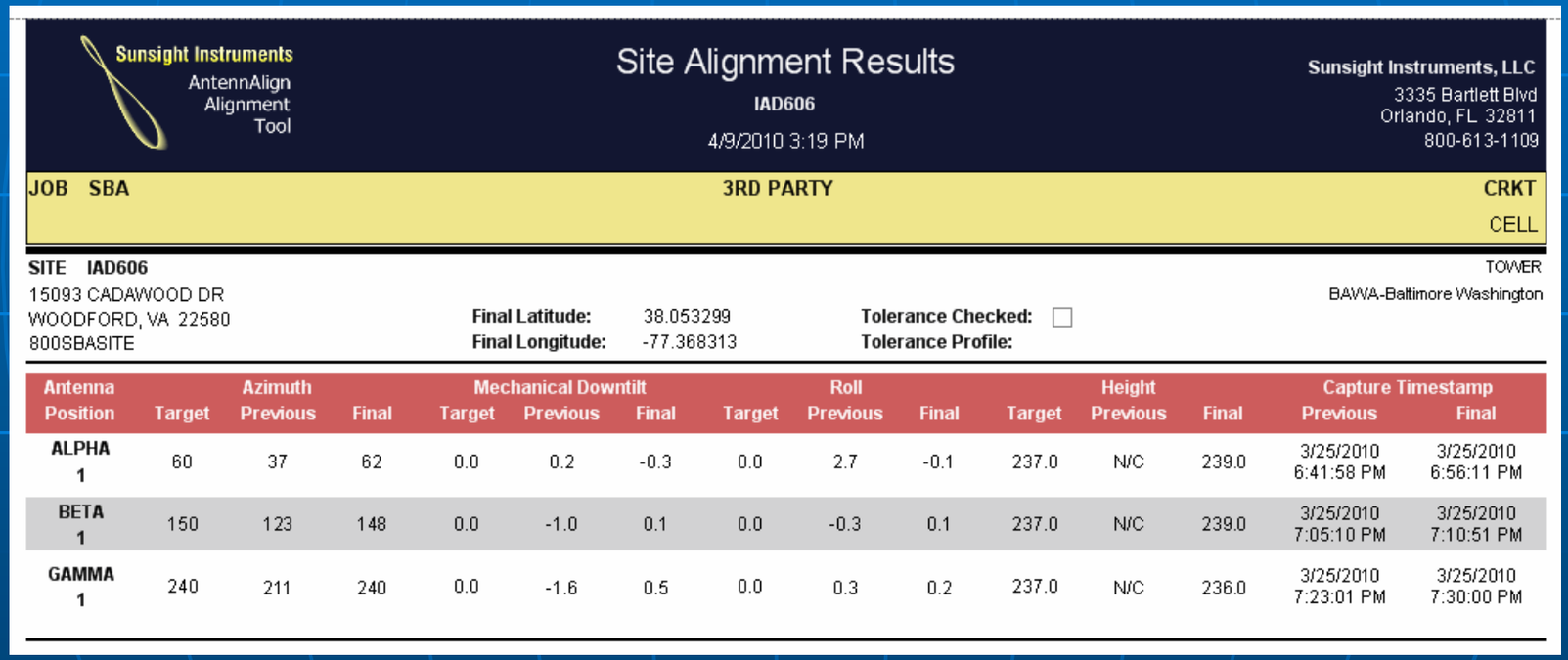
Captures

Quality		Latitude		Longitude		Azimuth		Mechanical Tilt		Roll		Height		Captured		
AQI	T...	Actual	T...	Actual	T...	Actual	T...	Actual	T...	Actual	T...	Actual	By	Date	Delete?
40	0.0...	N/C	0.0...	N/C	0.0	N/C	7.2	0.2	2.7	0.0	0.0	N/C	Tony	1/1/1970 12:00 AM	☐
40	0.0...	N/C	0.0...	N/C	0.0	N/C	7.2	7.2	2.7	2.7	0.0	N/C	Tony	8/4/2009 11:57 AM	☐
40	0.0...	N/C	0.0...	N/C	0.0	N/C	7.2	7.2	2.7	2.7	0.0	N/C	Tony	8/4/2009 11:57 AM	☐
40	0.0...	N/C	0.0...	N/C	0.0	N/C	7.2	7.2	2.7	2.7	0.0	N/C	Tony	8/4/2009 11:57 AM	☐

83249300	AT&T - SE	Jacksonville	JAX-911	Beta	B1	RF...	☑	T...	☑	☐	7/31/2009 8:45 PM	Tony	7/31/2009 8:45 PM

APM Reports

- APM can create reports on captured data
- 4 Report come with APM
- Custom reports can be developed, if needed, for a nominal fee.



Sunsight Instruments
AntennAlign
Alignment
Tool

Site Alignment Results

IAD606

4/9/2010 3:19 PM

Sunsight Instruments, LLC
3335 Bartlett Blvd
Orlando, FL 32811
800-613-1109

JOB SBA | **3RD PARTY** | **CRKT** CELL

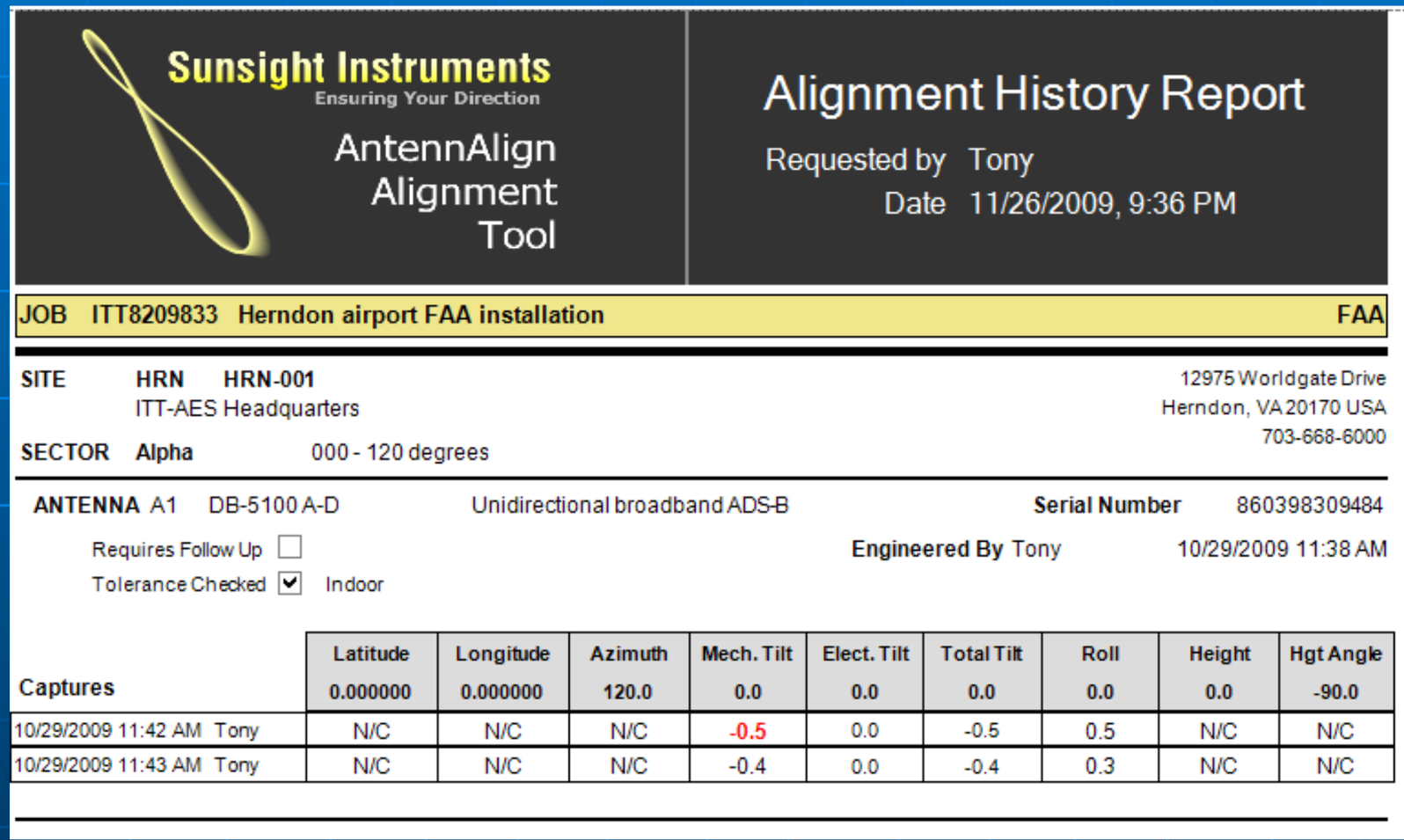
SITE IAD606
15093 CADAWOOD DR
WOODFORD, VA 22580
800SBASITE

Final Latitude: 38.053299
Final Longitude: -77.368313
Tolerance Checked: ☐
Tolerance Profile:

TOWER
BAWA-Baltimore Washington

Antenna Position	Azimuth Target	Azimuth Previous	Azimuth Final	Mechanical Downtilt Target	Mechanical Downtilt Previous	Mechanical Downtilt Final	Roll Target	Roll Previous	Roll Final	Height Target	Height Previous	Height Final	Capture Timestamp Previous	Capture Timestamp Final
ALPHA 1	60	37	62	0.0	0.2	-0.3	0.0	2.7	-0.1	237.0	N/C	239.0	3/25/2010 6:41:58 PM	3/25/2010 6:56:11 PM
BETA 1	150	123	148	0.0	-1.0	0.1	0.0	-0.3	0.1	237.0	N/C	239.0	3/25/2010 7:05:10 PM	3/25/2010 7:10:51 PM
GAMMA 1	240	211	240	0.0	-1.6	0.5	0.0	0.3	0.2	237.0	N/C	236.0	3/25/2010 7:23:01 PM	3/25/2010 7:30:00 PM

APM Reports – cont.



Sunsight Instruments
Ensuring Your Direction

AntennAlign
Alignment
Tool

Alignment History Report

Requested by Tony
Date 11/26/2009, 9:36 PM

JOB ITT8209833 Herndon airport FAA installation **FAA**

SITE **HRN** **HRN-001**
ITT-AES Headquarters

12975 Worldgate Drive
Herndon, VA 20170 USA
703-668-6000

SECTOR **Alpha** 000 - 120 degrees

ANTENNA A1 DB-5100 A-D Unidirectional broadband ADS-B **Serial Number** 860398309484

Requires Follow Up ☐
Tolerance Checked ☑ Indoor

Engineered By Tony 10/29/2009 11:38 AM

Captures	Latitude 0.000000	Longitude 0.000000	Azimuth 120.0	Mech. Tilt 0.0	Elect. Tilt 0.0	Total Tilt 0.0	Roll 0.0	Height 0.0	Hgt Angle -90.0
10/29/2009 11:42 AM Tony	N/C	N/C	N/C	-0.5	0.0	-0.5	0.5	N/C	N/C
10/29/2009 11:43 AM Tony	N/C	N/C	N/C	-0.4	0.0	-0.4	0.3	N/C	N/C

APM Reports – cont.

Sunsight Instruments
Ensuring Your Direction

AntennAlign
Alignment
Tool

Capture Detail Report

Requested by Tony
Date 11/26/2009, 9:37 PM

JOB ITT8209833 **Herndon airport FAA installation** **FAA**

SITE **HRN** **HRN-001**
ITT-AES Headquarters

12975 Worldgate Drive
Herndon, VA 20170 USA
703-668-6000

SECTOR **Alpha** 000 - 120 degrees

ANTENNA A1 DB-5100 A-D Unidirectional broadband ADS-B **Serial Number** 860398309484

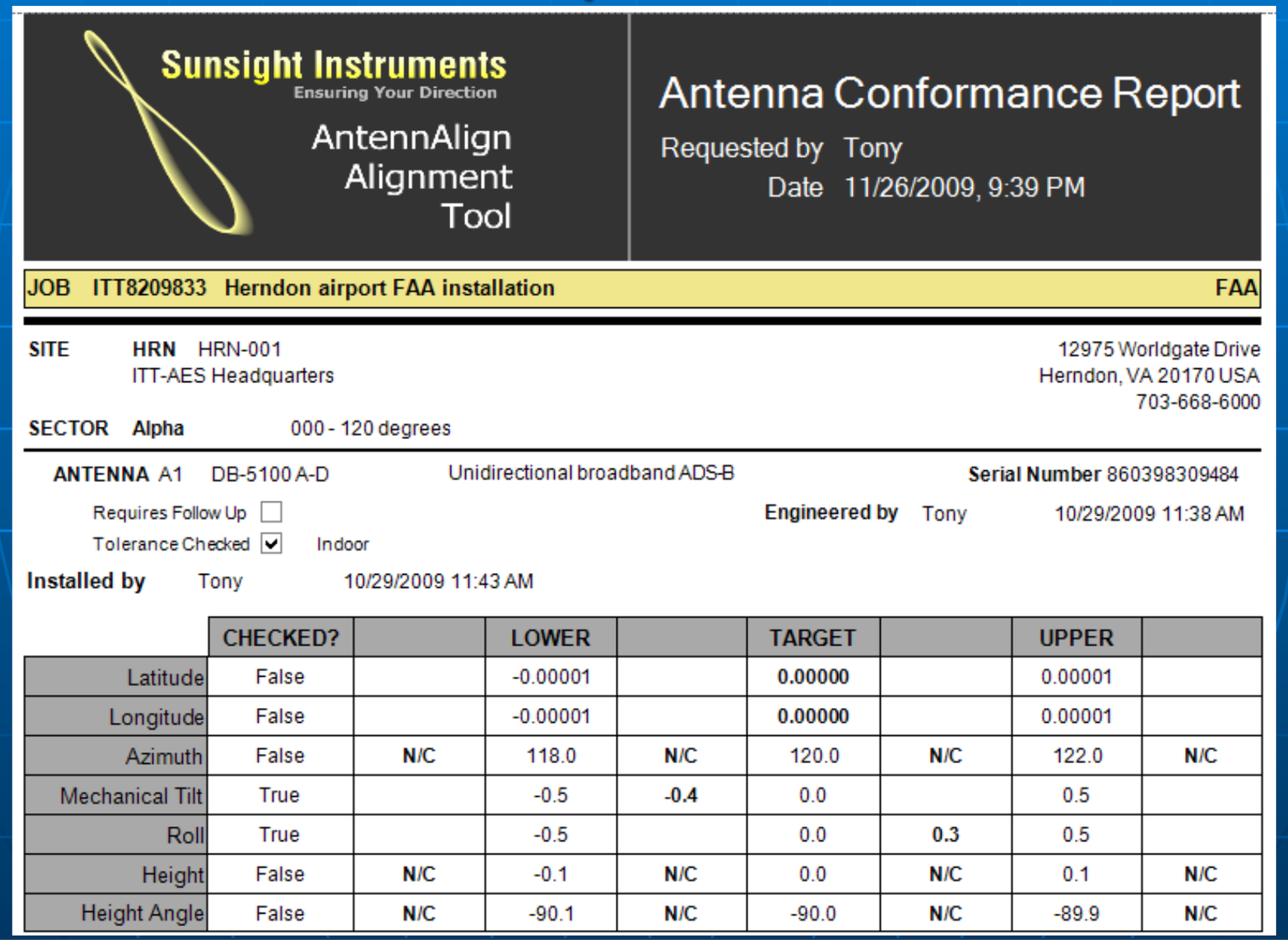
Requires Follow Up ☐
Tolerance Checked ☑

Engineered By Tony 10/29/2009 11:38 AM
Installed by Tony 10/29/2009 11:43 AM
Tolerance Indoor
Quality 40

Mech Tilt		Elect Tilt		Total Tilt
-00.4	+	00.0	=	-00.4

	TARGET	ACTUAL
Latitude	0.000000	N/C
Longitude	0.000000	N/C
Azimuth	120.0	N/C
Mech Tilt	0.0	-0.4
Roll	0.0	0.3
Height	0.0	N/C
Height Angle	-90.0	N/C

APM Reports – cont.



Sunsight Instruments
Ensuring Your Direction
AntennAlign Alignment Tool

Antenna Conformance Report
Requested by Tony
Date 11/26/2009, 9:39 PM

JOB ITT8209833 Herndon airport FAA installation FAA

SITE HRN HRN-001
ITT-AES Headquarters

12975 Worldgate Drive
Herndon, VA 20170 USA
703-668-6000

SECTOR Alpha 000 - 120 degrees

ANTENNA A1 DB-5100 A-D Unidirectional broadband ADS-B Serial Number 860398309484

Requires Follow Up ☐
Tolerance Checked ☑ Indoor

Engineered by Tony 10/29/2009 11:38 AM

Installed by Tony 10/29/2009 11:43 AM

	CHECKED?		LOWER		TARGET		UPPER	
Latitude	False		-0.00001		**0.00000**		0.00001	
Longitude	False		-0.00001		**0.00000**		0.00001	
Azimuth	False	**N/C**	118.0	**N/C**	120.0	**N/C**	122.0	**N/C**
Mechanical Tilt	True		-0.5	**-0.4**	0.0		0.5	
Roll	True		-0.5		0.0	**0.3**	0.5	
Height	False	**N/C**	-0.1	**N/C**	0.0	**N/C**	0.1	**N/C**
Height Angle	False	**N/C**	-90.1	**N/C**	-90.0	**N/C**	-89.9	**N/C**

Users

- **Programmer** - This role is normally reserved for Software Engineers of Sunsight Instruments, or an operating company's IT staff. Given full access to all facilities and data, users with this role must have expert knowledge of the system.

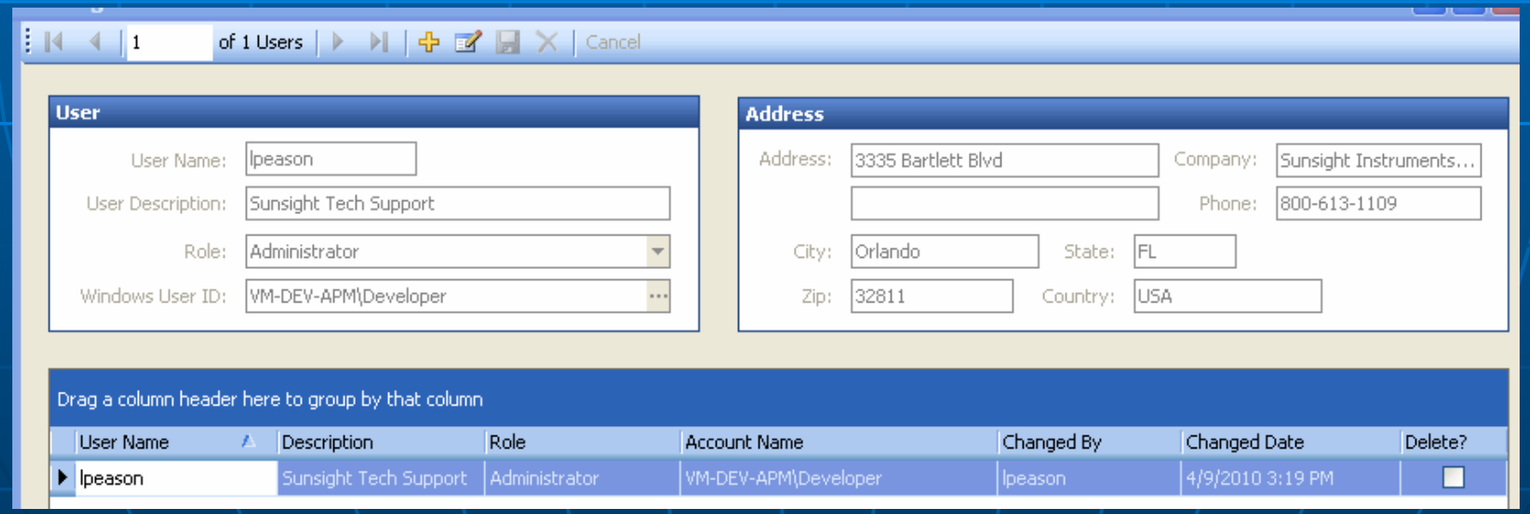
- **Administrator** - This role is the default role of the initial user, but several users may be assigned Administrator access if deemed appropriate. Only administrators may delete items in the database. Administrators have the ability to add and remove other users. Care should be taken to protect the Administrator password!

- **RF Designer** - Normally used by RF Engineers or other network designers, this role provides the ability to create and edit alignment profiles. As persons in this role typically manage teams of installers, they are also given permission to import and export captures. However, RF Designers must request an administrator to delete any records they deem inappropriate.

- **Installer** - Installers are provided read-only access to APM for viewing the results of their work and generating reports. Being able to view archived capture records informs installers of baseline alignment conditions before they climb the tower.

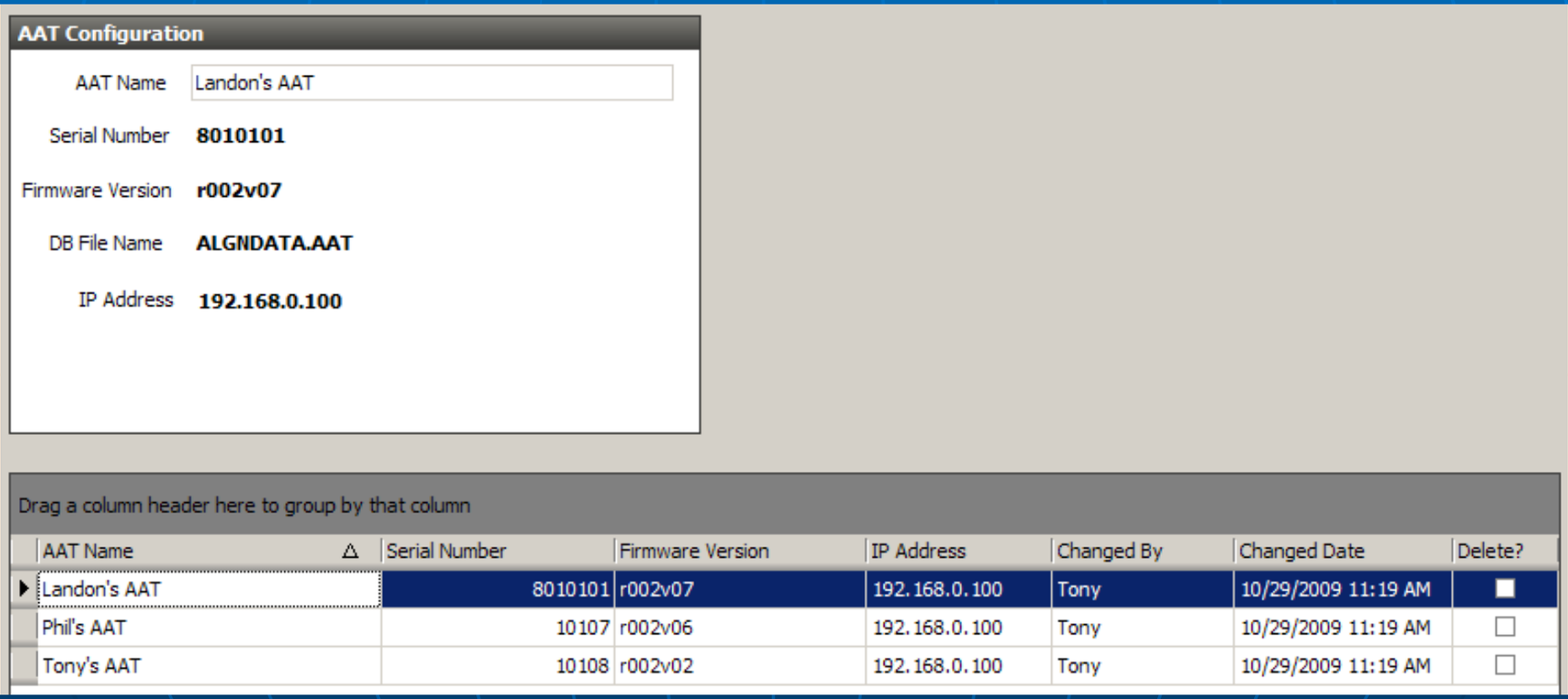
Users

- Create users and associate their MS Windows network login to grant them access to APM.
  - One Windows login allowed per APM license.
- Create users without an MS Windows login to credit them for their alignment work, even if they are not allowed to access APM.
  - Unlimited number of these users.
- Enter company and address info. This will appear on the top of the reports, thereby crediting the correct contractor for the alignment job.



Configuration

- Identifies the AAT tools registered in your version of APM
- Perform an ‘Import’ of a new AAT data file to register a new tool and add it to this list.



Integration with Planning Tools

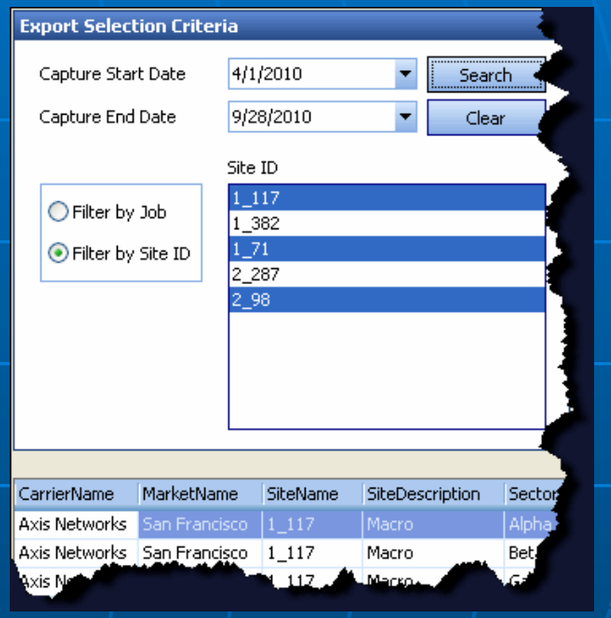
Import Service:

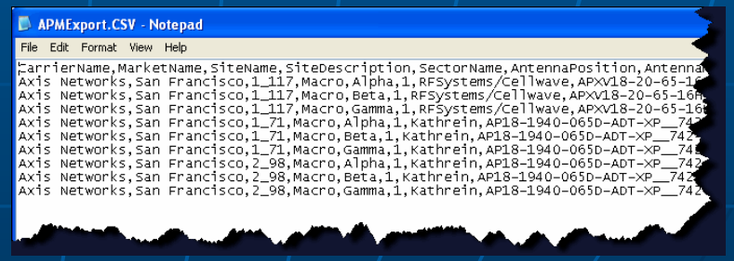
- Service provided by Sunsight Instruments
- Occasional large scale imports from your formatted spreadsheet or database
- Custom data manipulation available

Export Feature

- Licensed feature within APM (optional)
- Export only the data you need
  - Select data fields
  - Create custom column mappings
  - Filter results to be exported
- Multiple export formats available
  - CSV
  - XLS
  - PDF
  - TXT
- Custom exports available
  - Drop-in export modules
    - No software upgrade required
  - Custom data handling
    - Retrieval
    - Manipulation
    - Formatting
    - Output







Hands On Training

- In our next session we will:
  - Configure APM
  - Create Profile and Job
  - Export data
  - Mount AAT and capture data outdoors
  - Import Data
  - Create Report

Training / Reference Materials

- Copy of this presentation
- HTML Help file in APM – Select '(?) Contents' at bottom left
- Quick Reference Card – shipped with AAT
- Downloadable Help File on Sunsight website
  - www.sunsight.com
  - Create login and register product to gain access to documents

Items Related to Renting

- Communication between companies
  - Support Responsibilities
  - Status meetings
  - Issue Tracking
  - Order Tracking
  - Points of contact
- Calibration
- Spares
- Return and Repair
- Onsite repair
- Multiple logins
- Training
- APM management
- Communication between companies