Chapter 14: Controlled Remote Tug Telemetry

Overview

The WinFrog **Controlled Remote Tug Telemetry** module (also called **Remote Control**) and the **WinFrog Remote** package enable one central WinFrog system to track other vehicles in the work area, with WinFrog systems installed on them, and to control the configuration and operation of the WinFrog systems on them. The central WinFrog, or controller, then provides the appropriate vehicle information to selected remotes to enable them to monitor and track the vehicles it is deemed necessary for them to see. This vehicle information includes fairlead information and anchor location and status, thus the remote WinFrog systems are able to display anchor patterns, live anchors, and the associated anchor cables. This provides an operational area safety factor in addition to the convenience of operating all WinFrog systems from one controller. **Note:** there is only one controller in a given network.

Both the **Controlled Remote Tug Telemetry** module and the **WinFrog Remote** system require a communications medium to operate. However, the **Remote Control** module is able to operate over a TCP/IP network using socket connections and the WinFrog Multi-Vehicle Positioning and Telemetry (MVP&T) system (see the **MVP&T** chapter). The **WinFrog Remote** can only operate using the **WinFrog Telemetry**.

The **Remote Control** capability has a number of possible uses but has been developed primarily to support work vessels in construction, such as anchor handling tugs for pipe lay projects or structure float outs and placements. A typical configuration has a pipe lay barge/vessel operating as the controller and the anchor handling tugs as the remote sites. The surveyor at the controller is able to control the basic system configurations and operations of the remote sites, thus providing the tug's crews with operational information such as that required for the deployment and recovery of anchors without the requirement of having survey personnel onboard the tug.

Communication redundancy is also supported when using **WinFrog Telemetry**. Installation of 2 radio-modems on each vehicle, operated at different frequencies, with both being added to WinFrog at each site enables WinFrog to provide redundancy for Controlled Remote operations. No operator intervention is required at the Remote site while the operator controls which radio group to use from the Controller.

Note: In order to use socket connections, the computers must be have the TCP/IP protocol installed and correctly configured. Refer to the Windows™ documentation for necessary installation and configuration instructions.

The following summarizes the capabilities of the Controller with the Remote Control option:

Configurations

Vehicle Positioning Parameters	Configuration of the vehicle positioning parameters as accessed via the **Configure Vehicle-Devices** dialog with the exception of the addition and removal of data types using the

	Add and **Delete** buttons and setting the **Data Source**. It does include the filter selection and associated settings, dead reckoning, gating, etc.
Device (Data Type) Configuration	Configuration of the data types attached to the vehicles including the antenna offsets, Primary/Secondary settings, graphics on, and accuracy. **Note:** this data type configuration is the same as that performed from the **Configure Vehicle-Devices** dialog with the **Edit** button, not from the **I/O Devices** window.
Vehicle Presentation Configuration	Configuration of all aspects of the vehicle presentation as accessed with the **Vehicle Presentation** dialog.
Vehicle Shape	Configuration of the graphic representation of the vehicle as accessed via **Configure Vehicle Outline** dialog.
Vehicle Offsets	Configuration of the vehicle offsets and selection of the offset to use with the **Configure Offsets** dialog.
Waypoint Selection	Configuration of the waypoint selection for the remote vehicle. **Note:** any files directly accessed for the selection of this point are those in use at the control site, not the remote site. Once selected, the actual waypoint data are transferred.
Line Selection	Configuration of line selection for the remote vehicle. **Note:** any files directly accessed for the selection of this point are those in use at the control site, not the remote site. Once selected, the actual line data are transferred.
Graphics Configuration	Configuration of the **Graphics** window 1 at the remote site. It is expected that this is the only open window. If more are open, it is assumed that the operator at the remote site is knowledgeable enough to manipulate them. The control extends to all components of the standard graphics configuration (with the exception of chart control) including zoom in, zoom out, and pan. It is possible to select an option to display the remote graphics configuration at the control site using **Graphics** window 1 to ensure the remote site graphics are providing the necessary information. It should be noted that any change in the graphics configuration, scale, or centering made at the remote is automatically sent back to the control system to keep the two systems synchronized.

Event Configuration	Configuration of the eventing at the remote site. It should be noted that even though the event data can be configured to be sent to the control site for monitoring, all data logging is accomplished at the remote site.

Data Transmissions

Remote Position Transfer	Configuration of the transmission interval of the Remote station's positional information to the Controller. These data are used to track the **Remote** at the **Controller**.
Remote Data Transfer	Configuration of the transmission interval of the Remote station's raw device data to the Controller. This permits troubleshooting capabilities of the Remote's system from the Controller.
Remote Event Data Transfer	Configuration of the transmission interval of the Remote's **Event** data to the Controller. This enables monitoring of the eventing process configured for the Remote.
General Position Transfer	Selection of the vehicles whose positional information will be transmitted to a Remote to enable it to track vehicles other than itself.

File Transmissions

Working Waypoint File	The Controller's current **Working Waypoint** file can be transmitted to a selected Remote which will then automatically use it as it's **Working Waypoint** file.
Working Line File	The Controller's current **Working Line** file can be transmitted to a selected Remote which will then automatically use it as its **Working Line** file.
Working Picture File	The Controller's current **Working Picture** file can be transmitted to a selected Remote which will then automatically use it as its **Working Picture** file.

Security

It is important to note that the standard WinFrog license has full Controller capability. The **Remote Control** feature is controlled by the license or modules available on the **remote** WinFrog vessels. That is, the WinFrog on the remote vehicles must either be licensed to use the Controlled Remote Tug Telemetry module or actually be the WinFrog Remote package.

Remote Sites

WinFrog with the Controlled Remote Tug Telemetry Module versus the WinFrog Remote Package

WinFrog with the **Controlled Remote Tug Telemetry** module (also known as Remote Control) operates the same way as the **WinFrog Remote** package with respect to the remote control application itself. Therefore, with the exception of the first steps followed in the case of starting the Controlled Remote Tug Telemetry module, the use of both is the same from an operator's perspective. The exception to this is that the **WinFrog Remote** package cannot be accessed over a TCP/IP network.

When running WinFrog with the **Controlled Remote Tug Telemetry** module, the operator must configure WinFrog to operate as a Remote via the main menu. The **WinFrog Remote** package automatically runs as a Remote.

WinFrog with the Remote Control module has all WinFrog functionality, including the ability to configure and track multiple local vehicles. The WinFrog Remote package supports a single local vehicle and has restricted functionality in keeping with its purpose of providing basic navigational and positional functionality on a remote vessel without a trained operator.

Remote Control with Telemetry versus TCP/IP Network

The differences between the operation of the **Remote Control** module at the remote site with a TCP/IP network and telemetry are as follows:

- For operation with the telemetry, a telemetry device must be added to the **Remote WinFrog** and configured accordingly. This is not required for TCP/IP network.
- For operation with a TCP/IP network, the computers on the network must be configured to use the TCP/IP protocol and the IP address of the **Remote WinFrog** systems must be determined. This is not required for the telemetry.
- When operating with the TCP/IP network, a listener window is opened automatically. Closing this will disconnect the network connection (irrecoverably, except by exiting and re-running WinFrog). However, closing the device window will not affect the telemetry application.
- The TCP/IP network transfers data at a much higher rate than the telemetry units.

Configuring a Remote Site

It is important to note that for the purpose of setting up the **Remote WinFrog**, with the exception of a single step, you proceed as if setting up a normal WinFrog. In the case of the **WinFrog Remote** package, this setup is for a single vehicle operation, that vehicle being the one on which the system is installed.

The following provides an overview for setting up the **Remote WinFrog** with references to the chapters of this manual that cover the topics in steps.

To Configure a Remote Site

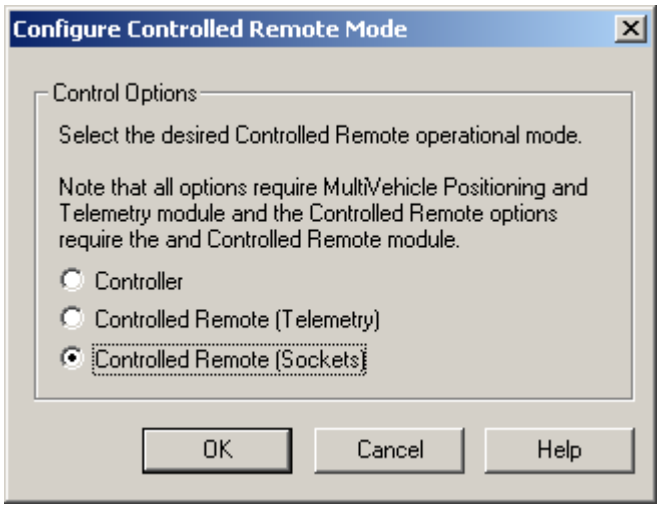
1 Start the WinFrog as installed on the **Remote** vehicle. If this is a **WinFrog Remote** package, proceed to step 3.

Note: A remote requires a security key in order to operate, whether it is a standard WinFrog with the **Controlled Remote Tug Telemetry** module or the **WinFrog Remote** package.

2 Configure **Controlled Remote Mode** (WinFrog only).

From the main menu **Configure** item, select **Controlled Remote Mode**. You will be warned that changing the Controlled remote Mode will affect existing connections. Select Yes to proceed.

The **Configure Controlled Remote** dialog will appear.



Select either **Controlled Remote (Telemetry)** or **Controlled Remote (Sockets)** as required for the application. Click **OK** to apply the change. A message will be presented confirming the mode change made.

3 **Configure** the geodetics and units.

This is very important because the geodetics and units cannot be configured via the **Remote Control** option from the **Controller**.

See the **Configuring Geodetics and Units** chapter for details.

4 Setup the working directories.

See the **Working Directories** chapter for details.

5 Assign working files.

See the **Working Files** chapter for details.

Note: The transfer of picture files, line files, and waypoint files by telemetry can be a time consuming process, so it is best to load the initial files at this stage.

6 Create the local vehicle(s) as required for operations on the vessel on which the system is installed.

See the **Vehicles** chapter for details.

7 From the **Configure Vehicle-Devices** dialog, select **Real-Time** as the **Data Source**. While there is no need to configure the other parameters as this can be done later from the control

site (the exception to this is detailed in Step 8 below) it is recommended that the configuration be performed in its entirety.

Note: The vehicle name, in conjunction with Ship ID or TCP/IP address, is used to identify the remote from the controller. This comparison is exact, including being case sensitive. Therefore, it is critical to note the name(s) exactly as entered at the **Remote** in order that the **Controller** can be configured to connect to this remote. In the case of **WinFrog**, the **Controller** can connect to any of the **Remote's** local vehicles.

8 Add devices.

See the **Peripheral Devices** chapter for details.

The adding of devices and the associated configuring of them, including the communication parameters and any device specific configuration, must be executed at the **Remote** as these tasks cannot be performed remotely from the **Controller**.

Note: In order to access the **Configure Device** window, place your cursor in the device tree portion of the **I/O Devices** window, click the right mouse button, and choose the **Configure Device** option.

If the remote is to be controlled via telemetry, the WinFrog telemetry device must be added at this stage (see the **Multi-Vehicle Positioning & Telemetry** chapter). There is no device associated with the TCP/IP connection.

9 Attach the data types (**GPS, Position, Gyro, Heading,** etc.) to the vehicle.

This must be performed at the **Remote** because it cannot be done from the **Controller**. Available telemetry data types are not to be attached. For the **Remote Control** feature, the telemetry is associated with the system, not a specific vehicle.

Note: The exception to this is if the telemetry is providing RTCM corrections that are then to be used in a WinFrog pseudorange solution for **GPS Positioning** at the Remote. In this case, the telemetry data type **DGPS-CORs** is attached to the vehicle. However, it is recommended that at the Remote, the RTCM corrections be output directly to the GPS receiver and the DGPS position from this receiver be used for the Remote positioning. This is due to two reasons. The first is that the configuration of the **PSEUDORANGE** data type is not currently supported by the Controller/Remote interface. Secondly, the DGPS positioning at the Remote using a single DGPS Reference Station solution directly from a GPS receiver is less complicated to setup and monitor, and thus better suited for **Remote WinFrog** operation. It will meet the accuracy requirements for the majority of remote vessel operations.

See the **Vehicles** chapter for details.

10 It is recommended that a configuration file be created at this point. (Use the **File > System Config File… Save** option.) This can be accessed at a later time to reset the **Remote WinFrog** to the correct remote settings and state, if required.

Remote Site Operation

When the **Remote WinFrog** system boots up, regardless of how the system was exited with respect to open windows, only the **Graphics1** and **Vehicle1** windows open and fill the screen. It is expected that these will meet the requirements of the navigation and vehicle tracking at most **Remote WinFrog** systems. A standard WinFrog run as a remote boots up as a normal standard package with all windows as they were when WinFrog was last exited.

If the remote is running in TCP/IP network mode, a window will open in the top left of the screen behind the **Graphics** window. The socket connection is associated with this window and would be lost if this window was closed. Therefore, this window cannot be closed.

It is intended that operator action is not required nor, other than the manipulation of **Graphics1** window, is it expected. However, on some vessels the ship's personnel will be knowledgeable about computers and may wish to take advantage of having a navigation and positioning package onboard. This will not impact the operation of the **Remote WinFrog** as a remote unless changes are made to those components critical to the operation as a remote or operation in general. These critical areas are as follows:

- Adding, removing, and editing of devices, especially the **Telemetry** device if the communications between the Controller and the Remote is via telemetry.
- Attaching and removing of data types to and from a vehicle. If the configuration of the data types is changed, this can be addressed from the Controller.
- Modifying the geodetics.
- Do not remove any Controlled Remote vehicles (this is controlled by the controller).
- Do not change the data source for any Controlled Remote vehicles.

In the case of a standard WinFrog being run and operated by trained personnel but utilizing the controlled remote option to support a connection to another vehicle, operational constraints are fewer and less critical. The issues to be aware of are as follows:

- Do not change the name of the vehicle that is being used for the connection.
- Do not add any telemetry device data items to any vehicles.
- Do not remove any Controlled Remote vehicles (this is controlled by the controller).
- Do not change the data source for any Controlled Remote vehicles.

Note: changes to the **Remote WinFrog** are **not** sent back to the **Controller**, with the exception of changes to the **Graphics1** window. Any changes made to the configuration of this window, including the actions initiated from the toolbar buttons, such as **Zoom In**, and any changes made from the configuration dialog are transmitted to the **Controller** to maintain synchronization of the graphics configuration.

Note: As mentioned in the setup procedure, it is recommended that after the **Remote** is originally setup, a configuration file be created using **File > System Config File… > Save**. Thus, should the **Remote WinFrog** become corrupted from operator interference, the operator can be instructed to load this configuration file using the **File > System Config File… >Load** option. This will reset the **Remote WinFrog** to the correct state for **Remote Control** operation.

Remote Site Telemetry Redundancy

The Remote site supports redundancy with respect to the TELEMETRY device driver. All TELEMETRY device drivers added to WinFrog at the Remote site are checked for messages from the Controller. Any messages from the Remote to the Controller are sent over all these devices. The TELEMETRY device in use is determined by the configuration of the respective Controlled Remote window. In this way, the Remote site is able to utilize whatever TELEMETRY device is being used without any operator intervention, thus providing redundancy for the Controlled Remote communications.

Control Sites

Operation Overview

The **Controller** is a standard WinFrog system and is configured as such. It is also secured in the usual manner.

If the **Remotes** are to be accessed via telemetry, the **Telemetry** device must be added to WinFrog and configured (see the **Multi-Vehicle Positioning & Telemetry** chapter). No telemetry data types are attached to any vehicles.

If the **Remotes** are to be accessed using a TCP/IP network, there is no device associated with the Controller/Remote communications to be added. However, the **Controller** computer must have the TCP/IP protocol installed and correctly configured.

The operation of WinFrog as a **Controller** is enabled when you open up one of up to ten **Controlled Remote** windows. It is from this window that the connection to a **Remote** is configured and established. The subsequent control of the **Remote** and the data flow between the **Controller** and the **Remote** is also handled via this window. One window is required for each **Remote** and must be kept open (though it can be minimized) in order to maintain the connection. Thus, up to ten **Controlled Remote WinFrogs** can communicate with the **Controller** simultaneously.

Once connected, control of the remotes can also be executed from the other display windows (see the **Operator Display Windows** chapter). For example, a waypoint can be selected from the **Setup Waypoint Tracking** dialog box accessed via the **Vehicle Text** window when the desired **Remote** vehicle is displayed in the window (click the right mouse button and click the **Setup Waypoint Tracking** option).

Note: the changes made to a **Remote** from the **Controller** are not reflected at the **Controller** until confirmation is received from the **Remote** that the configuration change was received and applied. It is important to note that you can manually initiate all processes, even those performed automatically during the connection process, such as querying the **Remote** for its vehicle data type list and the associated configurations (**Sys Config** button).

The Controlled Remote Window

The **Controlled Remote** window provides the connection to the Remote. As soon as it is opened or loaded from either an ini or cfg file, it attempts to make a connection to its Remote. If it is unsuccessful, it repeats the attempt every minute indefinitely.

For a set of **Controlled Remote** windows configured to use the same telemetry device (cell), only one **Controlled Remote** window can attempt to connect at one time. All the other **Controlled Remote** windows associated with this telemetry device must wait their turn.

Once the connection is made, a complete configuration exchange takes place. The Controller transmits a vehicle list and the complete configurations for each of these vehicles to enable the Remote to configure its vehicle list and all associated vehicles. The Remote, in turn, transmits its local vehicle configuration to the Controller.

On subsequent re-connections, the vehicle list is transmitted, but the transmission of the associated configurations and the transmission by the Remote of its local vehicle configuration are skipped. This makes subsequent re-connections more efficient by eliminating the transfer of data that is considered to have already been exchanged. Exceptions to this occur in two instances. The first is if the **Controlled Remote** window's **Address** button is clicked and the resulting dialog is exited using the **OK** button. In this case, the next re-connection process will involve the complete configuration exchange sequence. The second case is when the list of vehicles the Remote is tracking is changed. At that time, the new vehicle list is sent and the complete configuration for each is sent.

During the connection and subsequent exchange of configuration data, there are messages that are considered to be critical and those that are considered to be non-critical. If the appropriate acknowledgment or response is not received from the Remote after three attempts to send data or query for data considered to be critical, the connection process is aborted. If this occurs while working with messages considered non-critical, the process simply moves on to the next step.

While connected, the Controller checks the communications once a minute by transmitting a "heartbeat" to the Remote, which returns the message to indicate the communications are okay. If unsuccessful, this attempt is tried three times each minute before aborting the attempt. If the Controller's attempts to initiate a heartbeat response from the Remote fail for 5 consecutive minutes, it disconnects from the Remote. It will try and reconnect every minute after this.

At the Controller, any changes to the configuration of any vehicle that is being tracked by any Remote are automatically transmitted to the Remotes to maintain synchronization.

Note: when not connected, not all options in the **Controlled Remote** window are accessible.

The name of the Remote vehicle associated with a **Controlled Remote** window is included in that window's title bar.

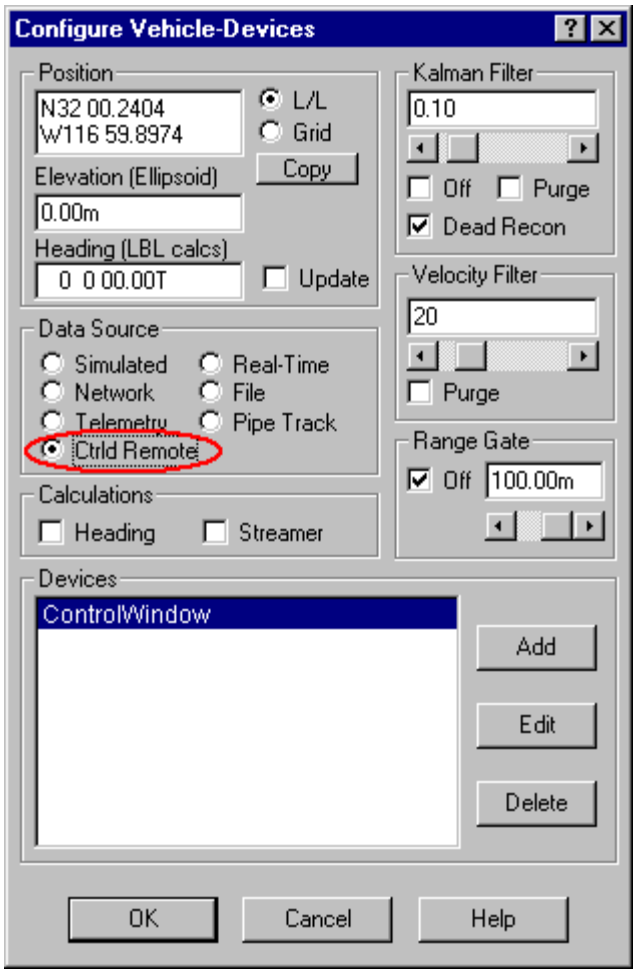
To Add and Configure a Controlled Remote in the Controller's Vehicle List

All remote vehicles that are to be tracked at the Controller using the information from **Controlled Remote** windows must be added to WinFrog (see the **Vehicles** chapter).

There are a few points specific to a Controlled Remote.

1 In the **Configure Vehicle-Devices** dialog, set the **Data Source** to **Ctrld Remote**.

No further configuration is required in this dialog, with the exception of devices, if required. The only devices that can be added to a controlled remote vehicle at the controller are output devices.

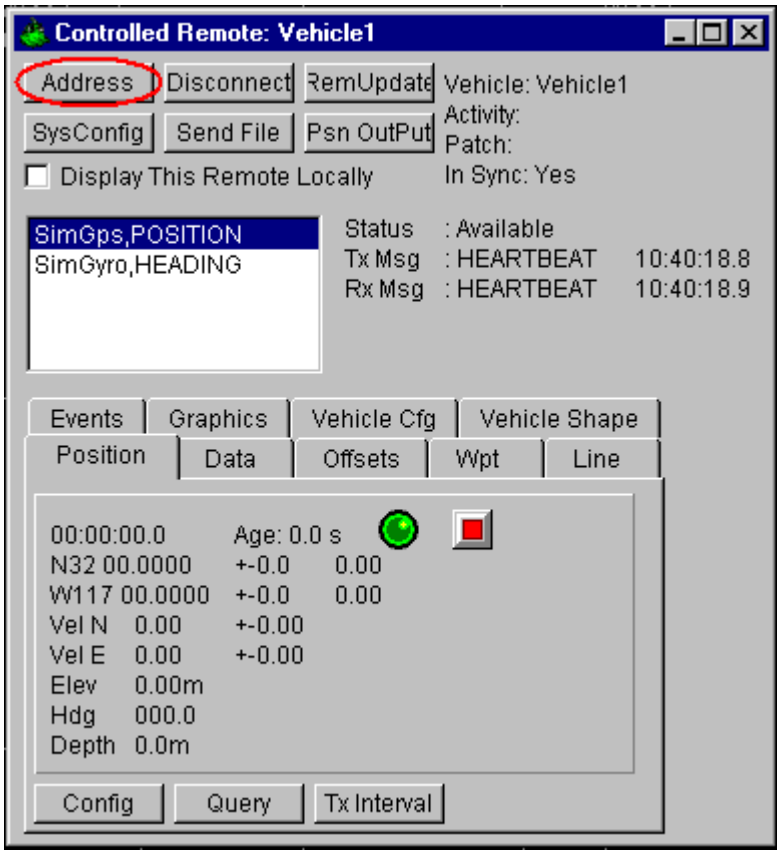


2 Vehicle Presentation dialog

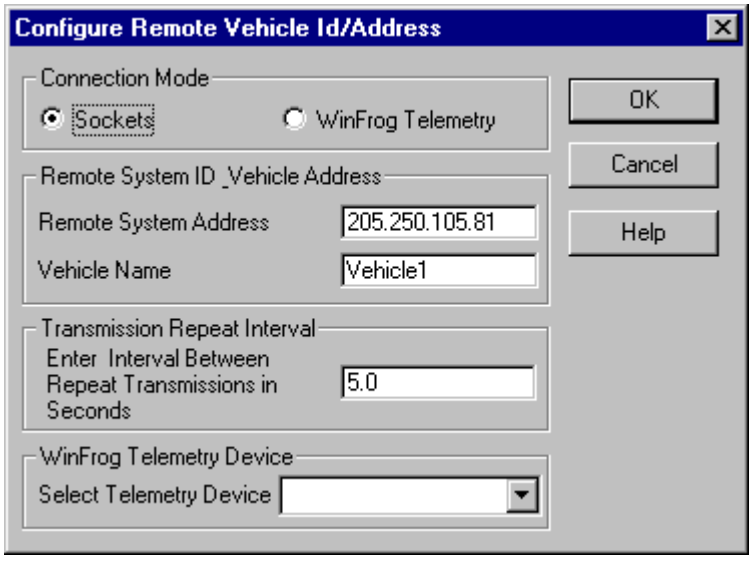
The name of the Controlled Remote must be entered here exactly as it is entered at the Remote. If this is not done, the data from the associated **Controlled Remote** window will not be associated with this vehicle.

To Connect to a Remote

1 From the **View** menu, choose the **Controlled Remote** option.



2 Click the **Address** button and configure the communications protocol and Remote name and ID/address.



Connection Mode

Sockets	Select this option to use the TCP/IP sockets as the communications medium.
WinFrog Telemetry	Select this option to use the WinFrog Telemetry device as the communications medium.

3 Select the appropriate **Connection Mode**.

If using **Sockets**, enter the IP address of the WinFrog Remote computer, e.g. 10.0.0.10. To determine the IP address of the Remote, open a DOS window on that computer and type **ipconfig** and press Enter. If the computer is correctly setup for TCP/IP protocol, the IP address displays.

If using the WinFrog Telemetry device, enter the Ship ID as entered for the **Remote WinFrog's Telemetry** device configuration (see the **Multi-Vehicle Positioning & Telemetry** chapter). The parameter entered here is the address used to identify the WinFrog system that is communicated with using this window.

4 Enter the Remote's local **Vehicle Name**.

The local vehicle at the Remote is generally considered to be the vehicle on which the Remote system is installed. In the case of the **WinFrog Remote** package, this is the only local vehicle. In the case of a standard WinFrog operating as the Remote, there may be multiple local vehicles. Any of these may be used.

The name entered is used to identify the vehicle at the Remote that the Controller actually connects to. All subsequent vehicle based actions executed from the Controlled Remote window are addressed to this vehicle. Position and data transmissions from the Remote to the Controller are for this vehicle.

Note: In the case of multiple local vehicles at the Remote, enter the name of the vehicle that is to be tracked at the Controller. If another vehicle is to be tracked at some point of operations, disconnect from the Remote, change this entry to the other vehicle and re-connect.

Note: The Remote vehicle's name must be entered exactly as entered at the Remote.

The Controller uses this name and the name entered for the respective vehicle added to the Controller (see the **To Add and Configure a Controlled Remote in the Controller's Vehicle List** section) to associate the data from the Remote with a vehicle in the Controller's vehicle list. This association enables the Remote vehicle to be displayed for monitoring and tracking it in the various windows.

Note: If the ID/address is correct but there is an error in the vehicle name, the **Controlled Remote** window will connect to the Remote WinFrog system but will be unable to refine the connection to the correct vehicle. As a result, the connection will appear to be okay, but there will be no communication from the Remote's local vehicle itself.

Note: If the Remote vehicle's name is entered correctly here, but the name of the respective vehicle as added to the Controller's vehicle list does not match this name exactly, problems will be encountered. The data will appear in the **Remote** window correctly and the communications with the Remote will operate correctly. However, the Controller will not be able to correctly associate the data from the Remote with the vehicle it has added for tracking and the position in the **Vehicle Text** window will be yellow and won't update.

5 Enter a **Transmission Repeat Interval**.

When the Controller transmits a query, configuration data, or a file segment, it waits for the appropriate response. If it does not get a response within the time interval entered here, it repeats the transmission. The process is repeated three times. If the appropriate response is not received, the transmission is aborted. The default of five seconds is a reasonable initial setting if using the **WinFrog Telemetry**, though this can usually be reduced to three in reasonable conditions. If using sockets, an interval of one second is reasonable.

6 If using the **WinFrog Telemetry** for communications, select the **WinFrog Telemetry Device** from the dropdown list. WinFrog supports the use of multiple telemetry devices in cells. All telemetry devices added to the Controller are listed here.

Note: the positions received from a Remote in one cell can be transmitted to a Remote on another cell. This permits the use of multiple cells with only a few Remotes in each. The fewer the Remotes in a cell, the faster the attainable update rates within that cell.

Note: Redundancy of telemetry communications can be implemented by using two cells. In this scenario, rather than being used to support a large number of Remotes by being located on different Remote vehicle groups, they are co-located on vehicles of the same group. All TELEMETRY devices at the Remote are checked for messages from the Controller and all messages from the Remote to the Controller are sent over all of these same TELEMETRY devices. The cell used is the one selected for that Remote at the respective Controlled Remote window. It is important to note that while operator intervention is not required at the Remote sites, it is at the Controller. When a communication failure with a Remote site is noticed, the alternate TELEMETRY device (cell) must be selected at the Controller. If detected and acted upon early enough, WinFrog does not even go through the connection process as the cells are switched. Only that Remote that is experiencing problems needs to be switched.

7 Click **OK** to exit.

Note: if an attempt to connect to a **Remote** is already in progress after exiting the **Address** dialog box, perform the following corrective steps.

- Return to the **Address** dialog.
- Change the **Connection Mode** from the desired mode**.**
- Click **OK** to exit.
- Return to the **Address** dialog.
- Re-select the correct **Connection Mode**
- Click **OK** to exit.

This will reset the connection to the Idle state regardless of what stage it had previously been in.

8 The list of vehicles being tracked by the Controller and those to be tracked by the Remote can be configured now, before attempting to connect to the Remote, or later, after the connection is complete. An advantage of doing it before connecting is that if all the vehicle configurations are already known (i.e. all the other Remotes have already been connected to and interrogated for their configurations), the time consuming process of transmitting the configurations is executed at connection time. A disadvantage is that if the vehicle list for the Controller is incomplete or the configurations for all the vehicles (including any other

Remotes) is incomplete, the current configurations will be sent now and then have to be re-transmitted as each vehicle configuration is completed.

If it is desired to edit the Remote vehicle list at this point, refer to the **To Edit The Remote's Vehicle List** section.

9 The **Status** line, in the **Controlled Remote** window, should indicate **Idle**. Click the **Connect** button to initiate the connection process. The progress can be monitored by viewing the Status, Tx Msg and Rx Msg lines. The appropriate Status line message is given here for each stage. For more information concerning the messages given in the Tx Msg and Rx Msg lines, refer to the **Monitoring the Controller/Remote Communications** section.

The process is as follows:

- Controller looks for the Remote. Status is **Connecting**
- After detecting the Remote, the Controller synchronizes with the Remote. Status is **Syncing**.
- If the Controller cannot detect the Remote it returns to the **Idle** state. If this occurs, click the **Connect** button again. If the Remote still cannot be detected, the communication settings for the Controller and the Remote must be checked to ensure they are correct. An incorrect address and/or Ship ID is often the cause of the problem. If using the WinFrog Telemetry, check the **I/O Devices** window for this device to ensure that the telemetry network is operating correctly.
- The Controller sends the communication parameters to the Remote, including the **Vehicle List** that the Remote is to use. Status is **Initializing**.
- The Controller then waits 30 seconds for the Remote to configure its vehicle list. Status is **Waiting n seconds**, where n is the count down from 30 seconds.
- If the connection is a re-connect after a successful connection has previously been made, and no changes to the **Address** or **Vehicle List** have been made, the next two steps are skipped.
- The Controller updates the Remote with the configurations of the vehicles in the **Vehicle List**, sent during the initialization stage above. If the list is empty, this step is skipped. Status is **Updating**.
- The Controller queries the Remote for its complete configuration. Status is **RqstCnfg**.
- When the Remote's configuration download is complete, the Controller transmits a **StartPulse** to the Remote and looks for a reply. This message informs both systems that the configuration exchange is complete. Status is **Starting**.
- When the Controller receives the Remote's **StartPulse** reply, the connection process is completed. Status is **Available**.

Note: When using sockets, many of the stages occur so quickly that the associated status is displayed and then replaced by the next stage status in such a fashion that it is not even detectable by the operator.

To Disconnect from a Remote

1 Click the **Disconnect** button.

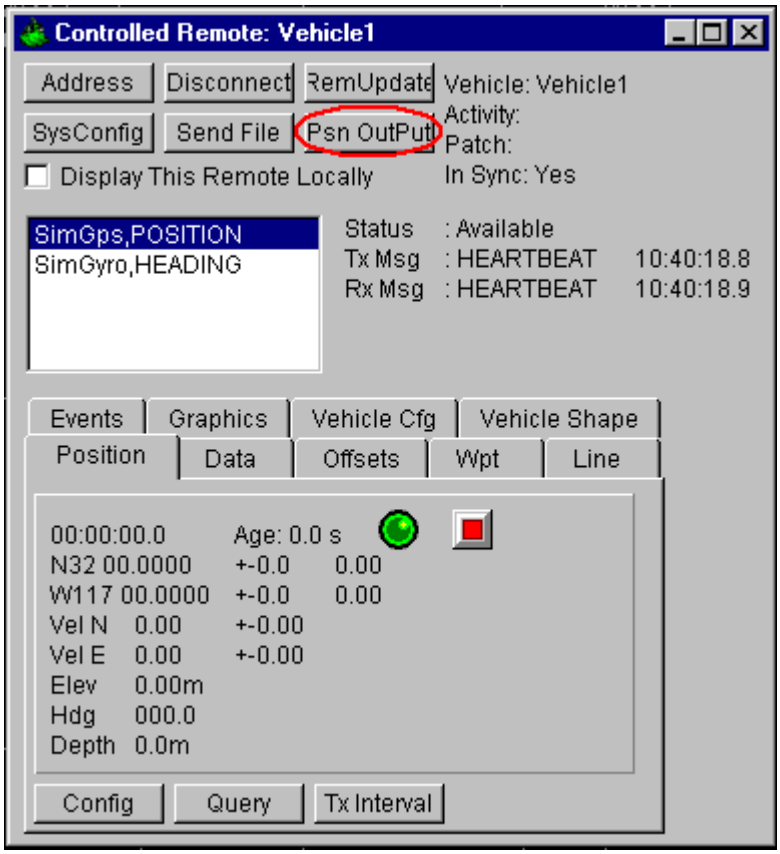
2 The Controller transmits a disconnect message to the Remote and awaits a reply. Status is **Disconnecting**.

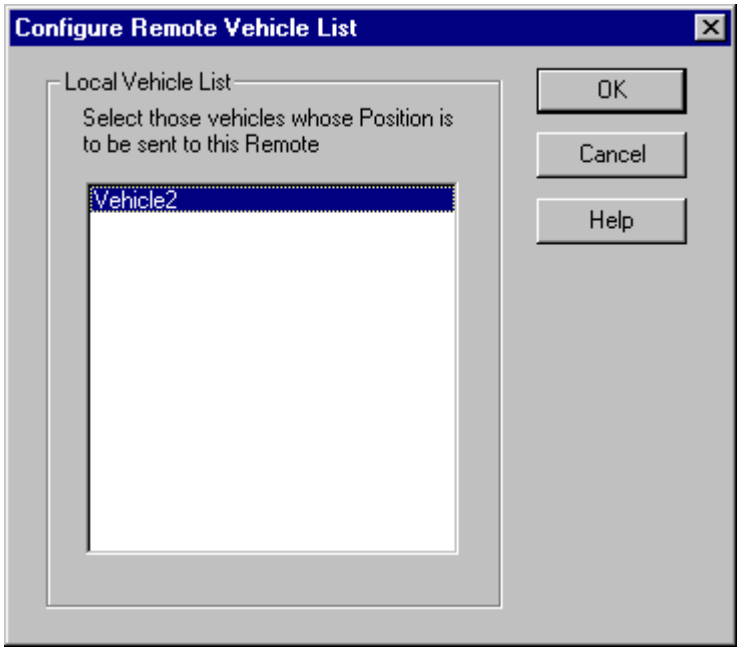
3 When the reply to the disconnect message is received from the Remote, the Controller changes to the **Idle** state. Status is **Idle**.

4 If after three transmissions of the disconnect message, the Controller has not detected the appropriate reply from the Remote, the Controller resets its connection state and changes to the **Idle** state. Status is **Idle**.

To Configure the Vehicle List for the Remote

1 Click the **Psn Output** button.





2 In the **Configure Remote Vehicle List** dialog, the **Local Vehicle List** contains the names of those vehicles being tracked by the Controller, except the remote vehicle that this Controlled Remote window is currently connected to.

Note: When connecting to a Remote with multiple local vehicles, it is possible to connect to and track any of the Remote's local vehicles and subsequently change this and connect to and track a different Remote local vehicle. As a result, it is possible that a local vehicle associated with the Remote appears in this list because it is not the one that is currently connected to. If this vehicle is inadvertently selected to be tracked by the Remote via the Controller, the Remote ignores it and maintains the original local vehicle.

Any vehicle that is already selected to be tracked at the Remote is highlighted. To select an unselected vehicle, click on it in the list and it will become highlighted. To de-select a selected vehicle, click on it in the list, and will become un-highlighted.

3 Click the **OK** button.

4 The Controller transmits the vehicle list to the Remote. Status is **Initializing**.

5 The Controller waits 30 seconds while the Remote re-configures its vehicle list. Status is **Waiting n seconds**, where n is the count down from 30.

6 The Controller sends the complete configuration for each vehicle on the list. Status is **Updating**.

7 The Controller resumes normal communications. Status is **Available**.

The position data for four vehicles is sent in any one position transmission by the controller. If there are more than four vehicles on the list to be transmitted, they will be cycled through. The actual position output rate is determined by the fastest selected Tx Interval for a Remote position update rate in any of the **Controlled Remote** windows sharing the same telemetry device.

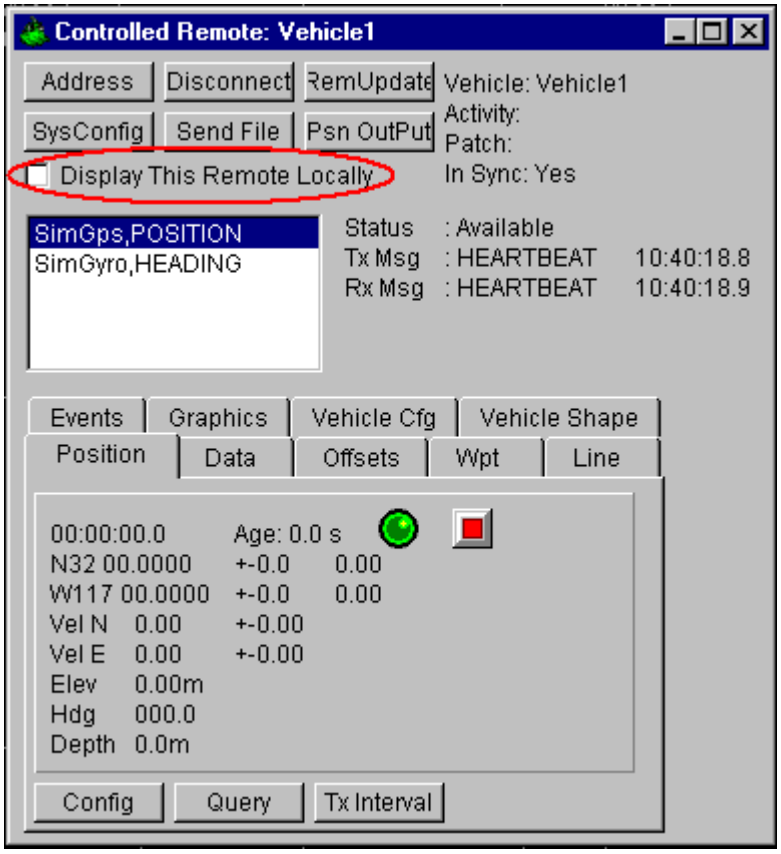
If more than one Remote is in a given telemetry cell, the **Tx Msg** line will indicate the

transmission of the position output message in only one of the **Controlled Remote** windows.

To Display the Remote Graphics at the Controller

1 Check the **Display This Remote Locally** box.

Any other **Controlled Remote** window that has this checked is automatically set to unchecked.

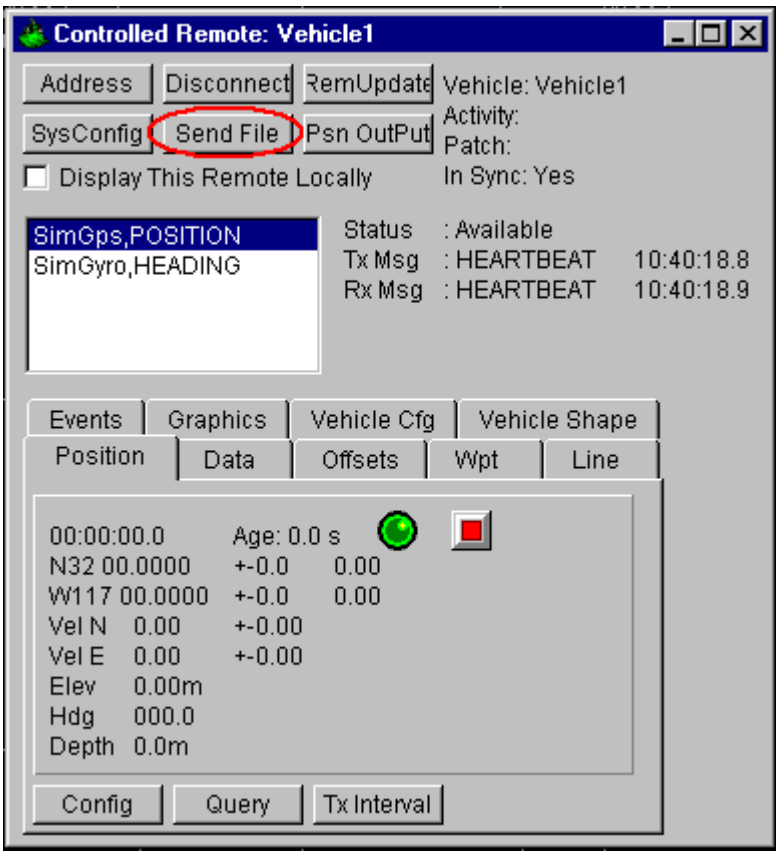


Checking this box automatically sets the configuration for the Controller's **Graphics1** window to match the configuration for the same window on the Remote. This enables the Controller to monitor what the Remote is seeing.

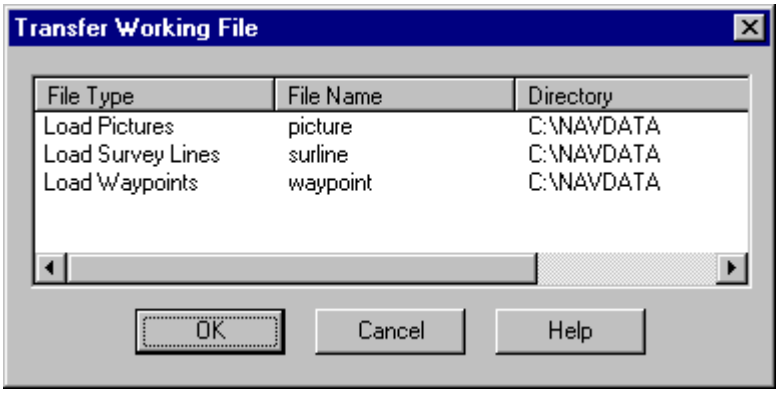
Note: this forces the Controller to use the same **Graphics1** window configuration, but it does **not** mimic all factors affecting the display of data in the this window, due to the limitations of the synchronization of the Controller and the Remotes. For example, the Controller's **Graphics1** window displays all vehicles set to be displayed at the Controller, whereas the Remote may not even be configured to track all vehicles. As a result, the Controller's **Graphics1** window will not be exactly as the Remotes. While in this mode, if the **Graphics1** window on the Controller has the focus, any toolbar graphic functions, such as Zoom In, and any change in the configuration for this window will be transmitted to the Remote as if they were accessed directly from the **Controlled Remote** window via the **Graphics** tab. They will not be applied at the Controller until an acknowledgment of the changes transmission has been received from the Remote.

To Send a Working File to the Remote

1 Click the **Send File** button in the **Controlled Remote Window**.



2 In the **Transfer Working File** dialog, select the **Working File** to transfer to the Remote, either pictures, survey lines, or waypoints.



3 Click the **OK** button. The transfer starts immediately.

The Controller transmits the file in segments. After transmitting each segment, it waits for confirmation that the Remote has received that segment without errors. If necessary, the Controller makes three attempts to transmit each segment. If unsuccessful after three attempts to send the same segment at any stage in the file transfer, the transfer is aborted.

The **Status** of the process can be monitored with the **Tx Msg** and **Rx Msg** lines in the **Controlled Remote** window. The following messages may be found in the status lines:

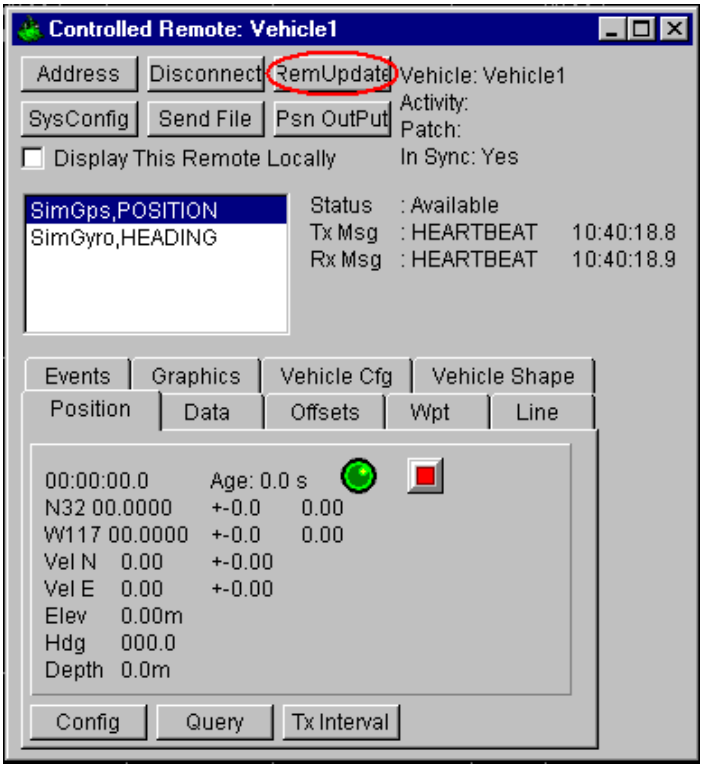
Tx Msg :FILE REC n	Controller has sent file segment n
Tx Msg :FILE ABORT	Controller has aborted the file transfer
Rx Msg: FILE Rn CFM	Remote has received segment n OK
Rx Msg: FILE Rn ERR	Remote has received segment n with an error, Controller will re-transmit this segment.
Rx Msg :FILE ABORT	Remote has confirmed aborted file transfer.

4 At the Remote, when the file transfer is completed, the new file automatically replaces the current relevant Working File and is written to the disk.

Note: In the case of the Working Waypoint file, it is important to note that if a waypoint is configured to use a vehicle shape as its icon, the shape information is not included in the waypoint file. The vehicle shape is retrieved from the vehicles the respective WinFrog is tracking. Therefore, if the Remote has not been configured to track the respective vehicle (see **To Configure the Vehicle List for the Remote**) the vehicle shape is not available and the icon used in the Graphic windows defaults to a square.

To Force an Update of the Configuration of the Vehicles on the Remote's Vehicle List

1 Click the **RemUpdate** button.

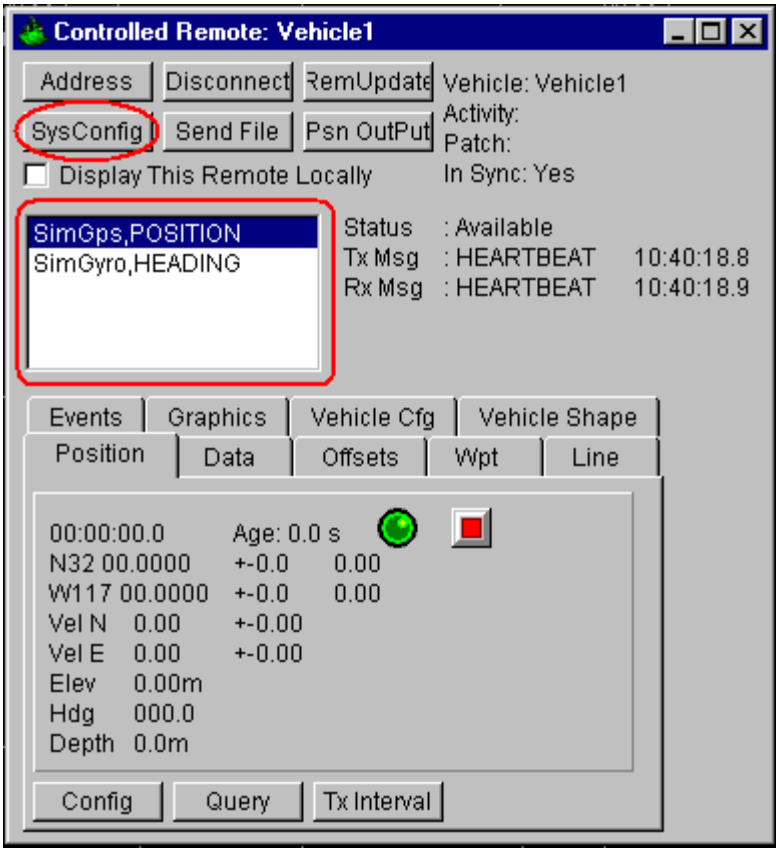


2 The Controller sends the complete configuration for each vehicle on the list. Status is **Updating**.

3 The Controller resumes normal communications. Status is **Available**.

To Interrogate the Remote Vehicle Data Type List and Configuration

1 Click the **Sys Config** button.



2 The Controller queries the Remote for the list of device data types that are attached to the Remote's local vehicle and their associated configurations. The **Tx Msg** line will show **SYS CFG QRY**. When the Remote responds, the **Rx Msg** line will show **ITM TYPE**.

3 The data types attached to the vehicle are listed in the list window to the left of the status lines.

To Query the Remote Vehicle and System for Configurations

1 Select the tab associated with the data of interest.

2 Click the **Query** button.

3 The Controller sends the associated query message to the Remote. This is indicated in the **Tx Msg** line.

4 The Remote responds by sending the configuration data to the Controller. This is indicated in the **Rx Msg** line.

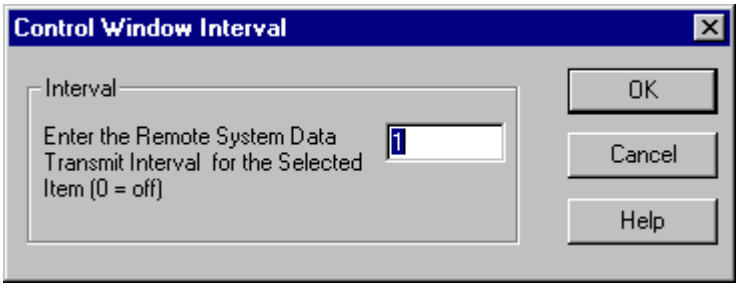
5 The information in the tab is updated accordingly. Further review of the configuration is possible by clicking the **Config** button (see the **To Configure the Remote Vehicle and**

System section).

To Set the Remote's Data Transmission Rate

1 Select the tab associated with the data of interest.

2 Click the **Tx Interval** button.



3 Enter the desired update rate in seconds.

Note: it is important that the update rate is not set at a rate that exceeds the communications mode. To enhance the performance of the Controlled Remote feature, only that data that are required should be transmitted by the Remote back to the Controller.

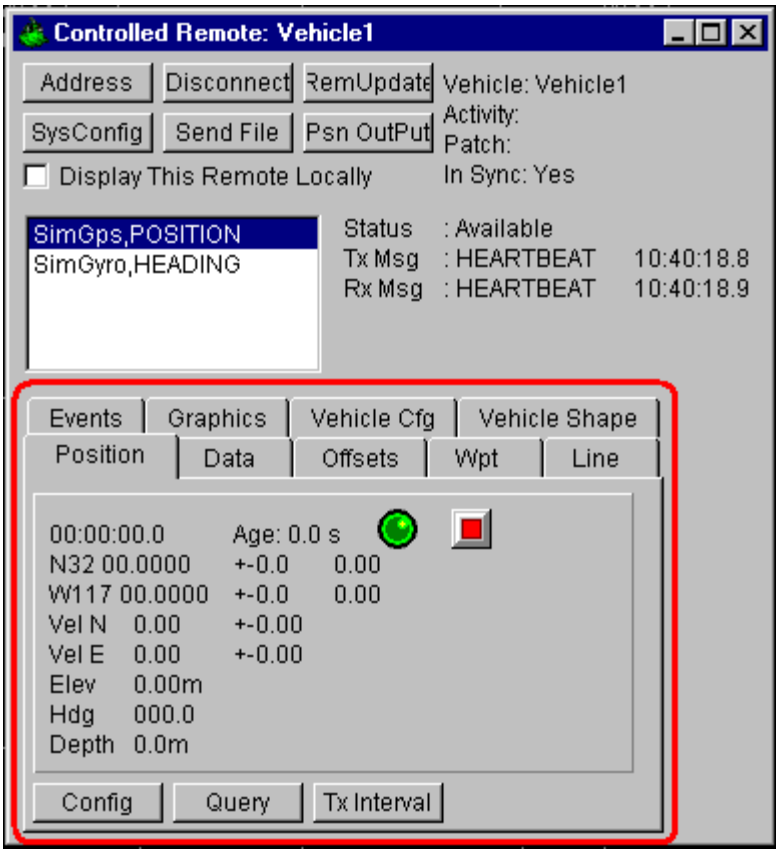
4 Click **OK**.

5 The Controller sends a communication configuration message to the Remote. This is indicated in the **Tx Msg** line with **COM CFG UPD**.

6 The Remote sends a confirmation message back to the Controller. This is indicated in the **Rx Msg** line with **COM CFG UPD**.

Monitoring and Configuring the Remote Vehicle and Graphics

The tabs in the **Controlled Remote** window and their associated buttons below them enable you to view specific information about the Remote vehicle and graphics and query and configure the Remote with respect to the data type tab selected.



To Configure the Remote from the Controlled Remote Window

1 Click the tab for the appropriate data, then click the **Config** button.

The associated configuration dialog will appear. This reflects the associated configuration at the Remote. This is an important point as there are several areas where this may result in confusion if this is not considered.

If you click the **OK** button to exit the **Configuration** dialog, the appropriate configuration message is transmitted to the Remote. The change is not reflected at the Controller until it has received a confirmation from the Remote that the configuration message was received and implemented. At this time, the changes are made at the Controller as well. The changes are then transmitted to all Remotes.

If a configuration message is not acknowledged by the Remote after three attempts, the configuration is aborted. No message is currently presented to you with this information. Therefore, any attempt at re-configuring a Remote must be monitored during the communications process to ensure it was successful. The status of the communications can be monitored in the Tx Msg and Rx Msg lines. It can also be checked by re-accessing the associated configuration dialog. If the Remote acknowledged the configuration, the changes will be present in the configuration dialog. If not, the configuration settings will have reverted to their original state.

Note: the configuration for the Remotes can also be manipulated from the standard WinFrog locations when the Remote vehicle is selected. For example, from the **Vehicle Text** window displaying a Remote vehicle, use the right mouse button to access the pop-up menu and select

Configure Offsets. Changes made here are transmitted to the Remote. They will then be reflected at the Controller once confirmation has been received from the Remote that the configuration change was received and implemented. There are exceptions to this. These will be discussed later in this section.

The individual configuration dialogs will not be discussed here unless there are specific points that require comment. Refer to the appropriate chapters for information on the associated configurations.

To Interrogate the Remote from the Controlled Remote Window

1 Click the tab for the appropriate data, then click the **Query** button.

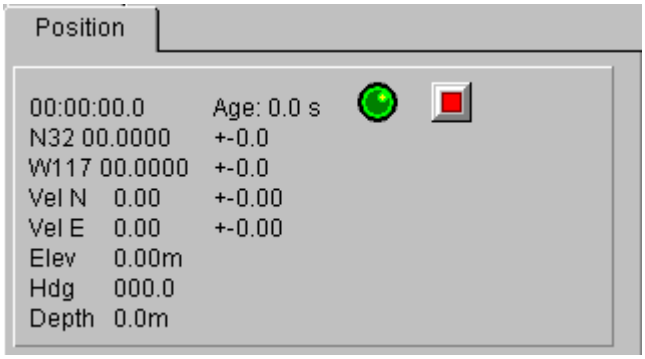
The Controller sends an interrogation to the Remote, which, in turn, will reply with the appropriate configuration data. The query will be repeated three times if an appropriate reply is not received from the Remote. If still unsuccessful, the query is aborted. **Note:** there is not a message to advise you that the query is aborted, so you should monitor the query process to ensure it is successful.

Note: to set the data transmission rate for the Remote from the **Controlled Remote** window, see the **To Set the Remote's Data Transmission Rate** section. Only the **Position**, **Data**, and **Event** tabs have an associated **Tx Interval** button.

The following details the available tab displays and the associated configuration, query, and transmission if comments are required.

Position Tab

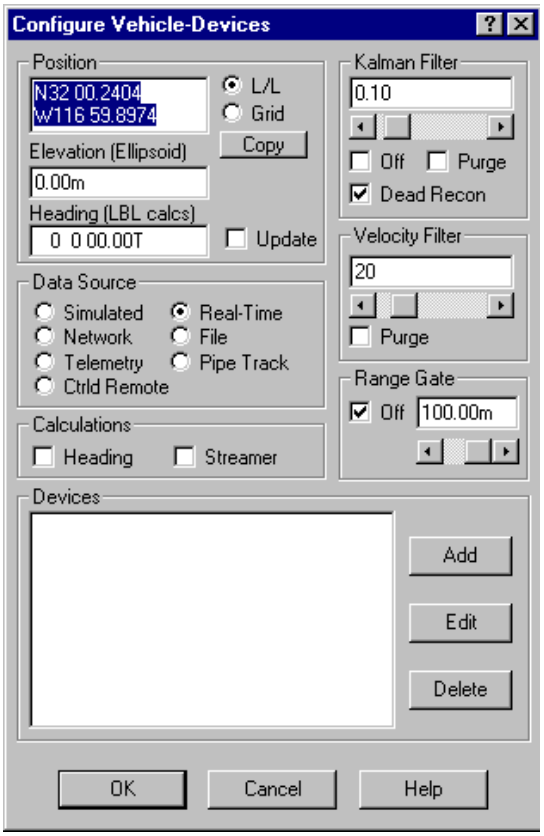
Displays the position information for the Remote if the associated Tx Interval has been set such that the Remote is transmitting the position data back to the Controller.



The display includes:

- The time of the position and the age of the data used for the position at the Remote.
- Latitude and longitude in the Remote's local ellipsoid complete with the standard deviation (from the Kalman Filter).
- Velocity North and East vectors with the standard deviations (from the Kalman Filter).
- Elevation
- Heading
- Water Depth
- Position status LED indicating the status at the Remote. If the age of the data exceeds 15 seconds the LED is yellow; if the age exceeds 30 seconds, the LED is red. In addition, if the age exceeds 30 seconds an audible alarm sounds. This is acknowledged by clicking the red button in this tab.

If you click the **Config** button while this tab is displayed, the **Configure Vehicle-Devices** dialog opens. This operator interface is susceptible to incorrect configuration. There are several important aspects to this configuration.



Notice that although the **Data Source** is set to **Real-Time**, there are no devices displayed. It is important that you do not try to add devices (click the **Add** button) from this dialog. If data types are added, the information is not transmitted to the Remote because this capability is not supported by the **Remote Control** feature. However, they will remain in the list adding confusion to the operation that is really occurring.

Changing the **Data Source** results in the change being implemented at the Remote and causes the Remote vehicle to stop positioning correctly. Do **not** change this setting.

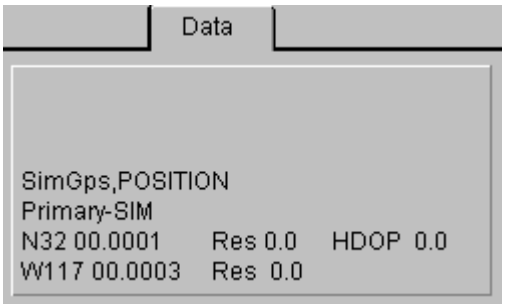
The configuration information in the **Position**, **Kalman Filter**, **Velocity Filter**, and **Range Gate** panels are the configuration items intended to be manipulated from the Controller.

It is also important to note that when the **Configure Vehicle-Devices** dialog is accessed from any other part of the Controller, such as via the right-click in the **Vehicle Text** window (when the Remote vehicle is displayed), it does not send a configuration message to the Remote when exited with the **OK** button. It does display the current settings of the **Position**, **Kalman Filter**, **Velocity Filter**, and **Range Gate** panels at the Remote. If these settings are changed here, the Remote is not changed, but the same dialog accessed via the associated **Controlled Remote** window will show these new settings. Therefore, do **not** change the settings of the **Position**, **Kalman Filter**, **Velocity Filter**, **and Range Gate** panels from here for a Remote. The **Configure Vehicle-Devices** dialog accessed from anywhere but the **Controlled Remote** window is only for the designating the vehicle as a **Ctrld Remote** and adding output devices as required (see the **To Add and Configure a Controlled Remote in the Controller's Vehicle List** section).

Data Tab

Displays the raw data for the Remote if the **Tx Interval** associated with this tab has been set such that the Remote is transmitting the raw data back to the Controller. The specific data displayed are controlled by selecting a data type in the **Data Type List** in this window. The display is the same format used in the **Calculations Window** for **Data Item Text**.

Note: the transmission of raw data is given a lower priority by the Remote than any other data being transmitted. As a result, the update rate for the raw data may not be as high as set using the **Tx Interval** button. The viewing of the raw data is intended for troubleshooting the Remote system. If required, the position transmission interval for the Remote should be set to 0 seconds (off) and only the data set to transmit.



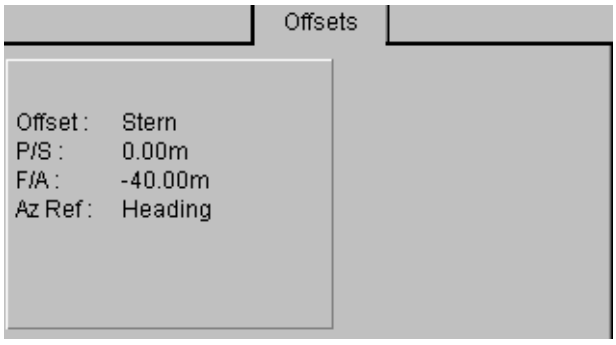
The configuration for the data type is accessed by clicking the **Config** button when the data tab is displayed. The configuration (and **Query** if clicked) is for the data type displayed at the time the button is clicked. The configuration for the data types at the Remote are only accessible from here. The configuration dialogs accessed are the same as those accessed for the data types via the **Configure Vehicle-Devices** dialog when a data type is highlighted and the **Edit** button is clicked.

Note: If the Remote has the position auto-switching feature on, the display of the primary/secondary usage status of each POSITION data item in the Data Tab may be incorrect if switching has occurred. This is because the status is sent only when new data for each item is transmitted. To verify which is being used as the primary, temporarily switch on transmission of the data item from the remote and note if the data is updating. If so, then the status is correct.

The data transmission rate set by clicking the **Tx Interval** button controls the transmission of the raw data for all data types, not just the one displayed at the time.

Offsets Tab

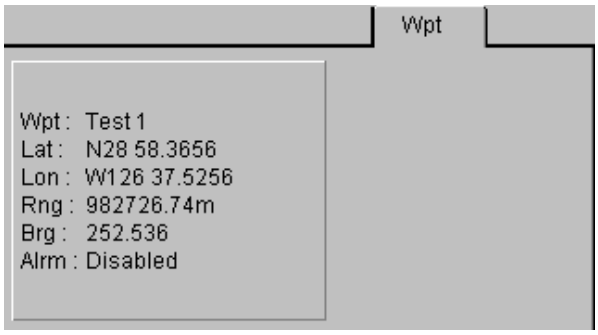
Displays the current vehicle offset selected for the Remote.



The configuration of the offsets for the Remote can be accessed from here or anywhere else offsets are configured at the Controller (i.e. from the **Vehicle Text** window when the Remote vehicle is displayed, use the right mouse button to access the pop-up menu and select the **Configure Offsets** option) with the same results.

Wpt Tab

Displays the active waypoint and waypoint tracking information for the Remote.



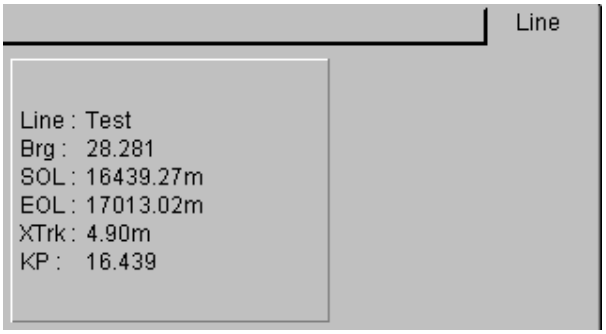
The configuration of the active waypoint for the Remote can be accessed from here or anywhere else a waypoint can be selected at the Controller (i.e. from the **Vehicle Text** window when the Remote vehicle is displayed, use the right mouse button to access the pop-up menu and select the **Setup Waypoint Tracking** option) with the same results.

When a waypoint is selected, the waypoint tracking configuration and the associated waypoint data are transmitted to the Remote. Therefore, the **Remote's Working Waypoint** file does not need to be synchronized with the Controller in order to configure the waypoint tracking for the Remote. The waypoint file accessed when selecting a waypoint at the Controller for the Remote is, in fact, the Controller's **Working Waypoint** file.

Note: The exception is the case of the waypoint selected for tracking being configured to use a vehicle shape as the icon. The respective vehicle shape is not included in the waypoint data transmitted to the Remote, it is retrieved from the current vehicle list for the respective WinFrog. Therefore, if the Remote has not been configured to track the respective vehicle (see **To Configure the Vehicle List for the Remote**) the vehicle shape is not available and the icon used in the Graphic windows defaults to a square.

Line Tab

Displays the active line name and line tracking information for the Remote.

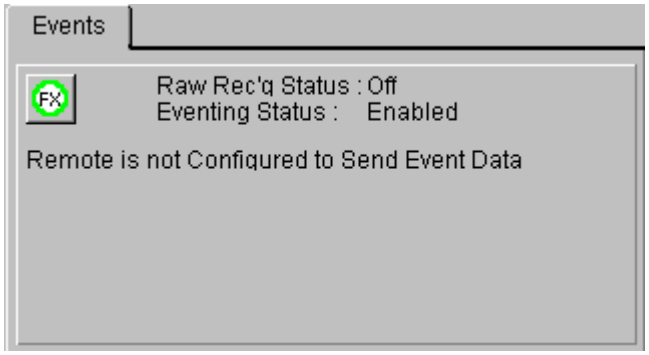


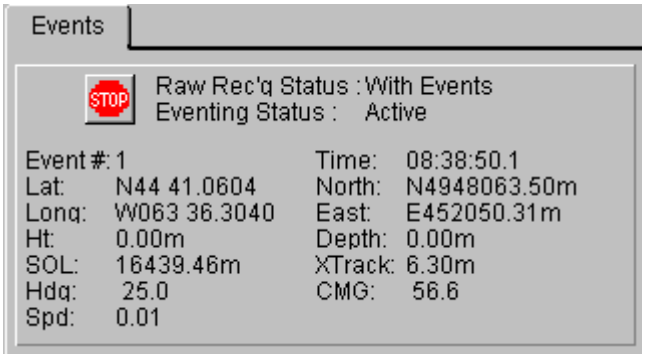
The configuration of the active line for the Remote can be accessed from here or anywhere else a track line can be selected at the Controller (i.e. from the **Vehicle Text** window when the Remote vehicle is displayed, use the right mouse button to access the pop-up menu and select the **Setup Line Tracking** option) with the same results.

When a line is selected, the line tracking configuration and the associated line data are transmitted to the Remote. Therefore, the Remote's **Working Survey Line** file does not need to be synchronized with the Controller in order to configure the line tracking for the Remote. The line file accessed when selecting a line at the Controller for the Remote is, in fact, the Controller's **Working Survey Line** file.

Events Tab

Displays the event status and data for the Remote. If the remote vehicle is not set as the primary event vehicle then the Configuration and Query buttons are disabled. The **Start Events** and **Stop Events** buttons are located directly within this tab if the **Events** are enabled or active, respectively.





The configuration of the Eventing at a Remote requires two stages of configuration communications, the first to setup the eventing parameters and the second to define and create the appropriate files. If either fails, the event configuration aborts.

The actual configuration is the same as if being executed for a local vehicle. Refer to the **Eventing** chapter. The starting and stopping of the events is controlled via the buttons that are shown in this tab at the appropriate stages of event setup and execution. These mimic those in the standard WinFrog toolbar.

It is important to note that even the though the event data can be sent by the Remote back to the Controller, it is only logged at the Remote.

Note: the eventing configuration accessed here is for the Remote only. Eventing configuration accessed anywhere else at the Controller is for the Controller system. The two are independent, including the setting of the **Event** states of **Off**, **Primary**, and **Secondary** in the **Vehicle Presentation** dialog.

Note: if the Remote is a WinFrog Remote package instead of WinFrog with the Remote module, it does not support Eventing. In this case, when the **Events Tab** is selected, the statement *This Remote Vehicle does not support Eventing.* is displayed in the tab and the **Config**, **Query** and **Tx Interval** buttons are disabled.

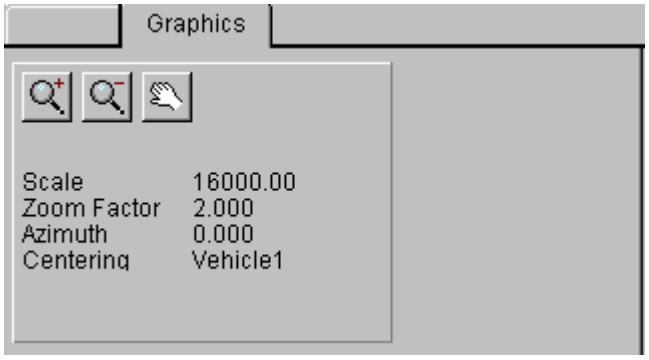
Note: The option to select the event file format version to use for logging is configurable from the Controller if the Remote supports the option (i.e. standard WinFrog with the Remote module, v 3.7 and later). In this case, the **Event Configuration** dialog that is opened when the **Config** button is clicked from this tab includes a **Format Version** button. Clicking this accesses the **Event File Format Options** dialog (see **Specifying the Event File Format** in the **Eventing** chapter). If the Remote does not support this option (pre v3.7), this button is disabled.

Note: When entering the event file name from the **Event Secondary Configuration** dialog, the Controller does not know the respective folder path so it cannot inform the operator of the maximum allowed file name length. If the total length of the file path and name is determined by the Remote to exceed the maximum allowed length, this information is passed back to the Controller. A message informing the operator of this is displayed and the event setup is aborted.

Note: the Controlled Remote **Event** configuration does not support the configuration and control of MBES data logging at the Remote even if that site is running WinFrog with the MBES Data Logging module.

Graphics Tab

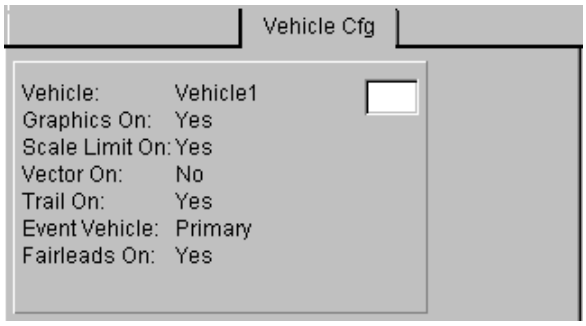
Displays the **Graphics1** window configuration basics for the Remote. There are also **Zoom In**, **Zoom Out**, and **Pan** buttons located directly in this tab to directly control the Remote.



Note: The configuration and manipulation of the Remote's **Graphics1** are only possible from here (unless the **Display This Remote Locally** checkbox is checked). In this case, any action and configuration executed on the **Graphics1** window at the Controller acts directly on the Remote **Graphics1** window.

Vehicle Cfg Tab

Displays the basic vehicle presentation configuration for the Remote, including a rectangle displaying the current vehicle color. The associated configuration dialog is **Vehicle Presentation**.



The configuration of the Vehicle Presentation for the Remote can be accessed from here or anywhere else a track line can be selected at the Controller (i.e. from the **Vehicle Text** window when the Remote vehicle is displayed, use the right mouse button to access the pop-up menu and select the **Vehicle Presentation** option) with the same results.

The exception to this is as follows:

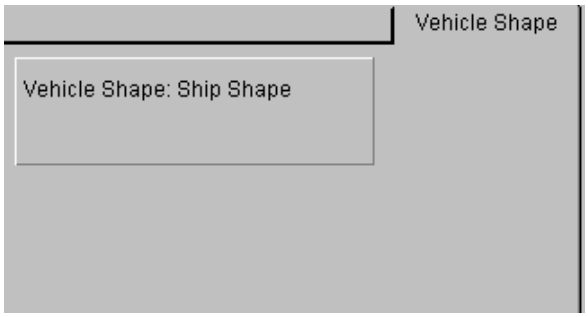
The manipulation of the **Event Generation** settings is associated with where this dialog is opened. If opened from the **Controlled Remote** window, these settings affect the Remote vehicle at the Remote. If opened from anywhere else at the Controller (i.e. from the **Vehicle Text** window when the Remote vehicle is displayed, use the right mouse button to access the pop-up menu and select the **Vehicle Presentation** option) these settings affect the Remote vehicle at the Controller. Therefore, the **Event Generation** settings at the Controller and the Remote are independent.

It is important to note that the name of the Remote can be changed from this dialog. If this is done, the name entered for the **Remote Vehicle Name** for the associated **Controlled Remote** window (see the **To Connect to a Remote** section) must be

changed to reflect this. Otherwise, though the connection to the Remote WinFrog will remain operational, communications with the Remote vehicle will cease.

Vehicle Shape Tab

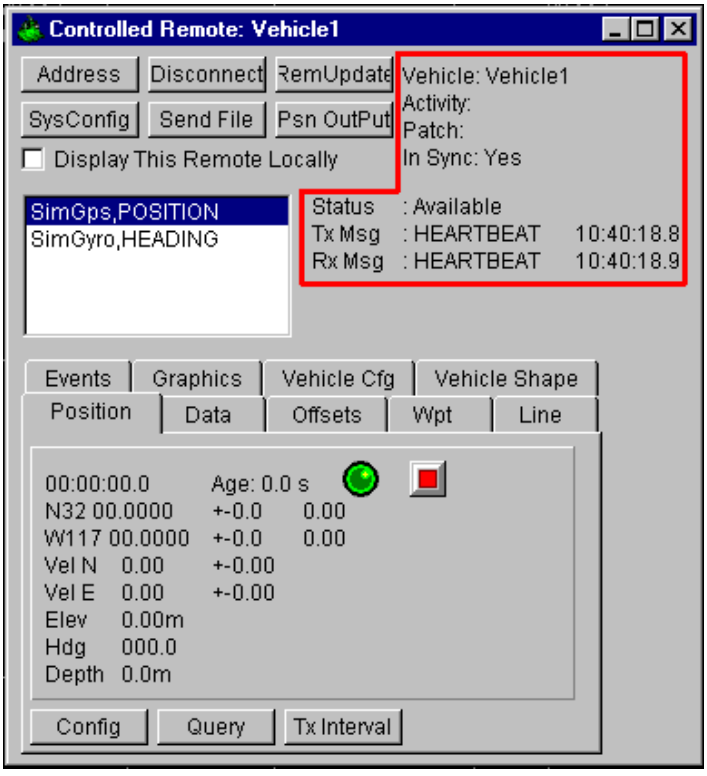
Displays the vehicle shape type for the Remote. The configuration associated with this tab is the **Configure Vehicle Outline** dialog.



The configuration of the **Configure Vehicle Outline** for the Remote can be accessed from here or anywhere else a track line can be selected at the Controller (i.e. from the **Configure Vehicles** dialog when the Remote vehicle is highlighted, click the **Configure Vehicle Outline** button) with the same results.

Monitoring the Controller/Remote Communications

The **Connection Status** lines display the status of the Controller/Remote connection plus current activity. The second to fourth lines in the top right hand corner pertain to OBC Seismic operations. The remaining status lines are general.



Vehicle The name of the Vehicle to which the **Controlled Remote** window is configured to connect.

Activity The current seismic-related operation in which the Remote vehicle is currently involved.

Patch The name of the patch in which the Remote vehicle is working.

In Sync The status of the synchronization of the Controller and the Remote with respect to the seismic line set.

Status The connection state in which the system is currently. The possible states are listed here. The first 5 states listed are associated with the unconnected and connecting stages. The remaining items are associated with the connected stage.

- **Idle** The connection is idle, no communications are being attempted.
- **Waiting For Address** There was an error in the sockets connection, the socket is waiting for an address.
- **Connecting** The connection with the Remote WinFrog system is underway.
- **Connected** The connection with the Remote WinFrog system has been made.
- **DisConnecting** The Controller is disconnecting from the Remote.
- **Idling** The controller is waiting to connect.
- **Syncing** The controller has connected and is now synchronizing with the Remote.
- **Initializing** The controller is sending the connection configuration to the Remote to initialize the communications. It also sends the list of vehicles to be tracked by the Remote at this point.
- **Waiting n seconds** The controller waits for 30 seconds while the Remote sets up its vehicle list and initializes each vehicle.
- **Updating** The controller sends the configuration for all the vehicles that the Remote is to track.
- **RqstCnfg** The controller requests the Remote vehicle's configuration.
- **Starting** The controller sends a start pulse to the Remote to tell it that the controller is ready to proceed after the connection process and exchange of configurations is completed. The Remote responds in like.
- **Available** Indicates the connection has been successfully made including the exchange of the start pulses and communications are operating normally.
- **Confirming** Periodically the Controller confirms the connection by sending a **Heartbeat** to the Remote and the Remote responds in like.

Tx Msg Displays the last message type transmitted via this window and the time it was sent to the transmit queue. The message can be any of the following:

Waiting to Connect	Another window is trying to connect, this window is waiting its turn.
DISCONNECT	Disconnect message.
CONNECTING	Connect message.
COM CFG UPD	Communication configuration message.
SYS CFG QRY	Querying the Remote vehicle data types.
VEH CFG QRY	Querying the Remote vehicle configuration.
VEH SHP QRY	Querying the Remote vehicle shape.
VEH O/S QRY	Querying the Remote vehicle offset configuration.
PSN CFG QRY	Querying the Remote vehicle position calculation configuration.
ITM CFG QRY	Querying the Remote vehicle data types configuration.
LIN CFG QRY	Querying the Remote vehicle line tracking configuration.
WPT CFG QRY	Querying the Remote vehicle waypoint tracking configuration.
GRF CFG QRY	Querying the Remote WinFrog Graphics1 window configuration.
EVT CFG QRY	Querying the Remote vehicle eventing configuration.
STARTPULSE	Startpulse message to instruct the Remote WinFrog to start normal communications.
HEARTBEAT	Heartbeat sent by the Controller to confirm communications with the Remote WinFrog are still okay.
FILE ABORT	The **Working File** transfer has been aborted due to no response from the Remote WinFrog confirming receipt of file segments.
VEH SHP UPD	New Remote vehicle shape configuration sent to the Remote WinFrog.
OTH VEH UPD	New configuration affecting one of the vehicles tracked by the Remote sent to the Remote.
ANC STE UPD	New anchor status for any vehicle sent to the Remote.
PSN CFG UPD	New Remote position calculation configuration sent to the Remote.
LIN CFG UPD	New Remote vehicle line tracking configuration sent to the Remote.
WPT CFG UPD	New Remote vehicle waypoint tracking configuration sent to the Remote.
VEH O/S UPD	New Remote vehicle offset configuration sent to the Remote.

VEH CFG UPD New Remote vehicle presentation configuration sent to the Remote.

GRF CFG UPD New graphics configuration sent to the Remote.

EVTs UPD New Remote vehicle event configuration sent to the Remote, where s is one of the following:

- **DSB** Disabling eventing.
- **CFG** Configuring eventing
- **ENB** Enabling eventing
- **STR** Starting eventing
- **ACT** Activating eventing
- **STP** Stopping eventing

ITM CFG UPD Remote vehicle data type configuration sent to the Remote.

FIL REC n Working File segment sent to the Remote, where n is the segment number.

GRF UPD CFD Confirmation of new Remote graphics configuration confirmation sent by the Remote to the Controller, sent to the Remote.

PSN DATA Vehicle position data message sent to the Remote.

VCF n UPD Vehicle presentation configuration (other than the Remote) sent to the Remote, where n is the vehicle number.

VSH n UPD Vehicle shape configuration (other than the Remote) sent to the Remote, where n is the vehicle number.

VFL n UPD Vehicle fairlead configuration (other than the Remote) sent to the Remote, where n is the vehicle number.

VAN n UPD Vehicle anchor state and configuration (other than the Remote) sent to the Remote, where n is the vehicle number.

Rx Msg Displays the last received message type received from the Remote associated with this window and the time it was taken from the receive queue.

These can be any of the following:

CONNECTING Confirms connecting process started.

HEARTBEAT Heartbeat received, response to one sent by the Controller, confirms communications are okay.

STARTPULSE Startpulse message, response to one sent by the Controller to indicate Remote is ready for normal communications.

ENDWAITING Confirms Controller can stop waiting for the Remote to configure its vehicle list.

DISCONNECT	Confirms the disconnect message sent by the Controller was received.
FILE ABORT	Confirms the aborting of the file transfer as initiated by the Controller.
FIL Rn CFM	Confirms the file segment n was received.
FIL Rn ERR	Error in the file segment n was detected. This segment is re-sent by the Controller.
ALARM DATA	Alarm data.
GRF DATA	Graphics1 configuration.
EVT SP# DATA	Specific Event data, i.e. the data for the last event generated by the Remote.
EVT DATA	General Event configuration data.
EVT START	Eventing started.
EVT s CFD	Eventing configuration stage confirmed, where the stage is indicated by s, which can be one of the following:
DSB	Disabling eventing.
RCT	Initial configuration, actual eventing parameters.
CFG	Secondary configuration, event file parameters.
ENB	Enabling
STR	Starting
STP	Stopping
DSB	Disabling
COM CFG CFD	Confirms communications configuration was received.
GRF CFG CFD	Confirms Graphics1 configuration was received.
VCF CFD	Confirms other vehicle presentation configuration was received.
VFL CFD	Confirms other vehicle fairlead configuration was received.
VSH CFD	Confirms other vehicle shape configuration was received.
AST CFD	Confirms other vehicle anchor status configuration was received.
PSN DATA	Remote vehicle's Position data.
ITEM DATA	Remote vehicle's data type raw data.
VEH O/S CFG	Remote vehicle's offset configuration.
PSN CFG	Remote vehicle's position calculation configuration.
VEH CFG	Remote vehicle's presentation configuration.
VEH SHP	Remote vehicle's shape configuration.
WPT DATA	Remote vehicle's waypoint tracking configuration.
LIN TRK DATA	Remote vehicle's line tracking configuration.

LIN DATA	The line data for the Remote vehicle's track line.
ITM TYPE	Remote vehicle's data type list.
ITM CFG DATA	Remote vehicle's data type configuration.
PSN CFG CFD	Confirms Remote vehicle's position calculation configuration received.
WPT CFG CFD	Confirms Remote vehicle's waypoint tracking configuration received.
LIN TRK CFD	Confirms Remote vehicle's line tracking configuration received.
LIN DAT CFD	Confirms line data for Remote vehicle's line tracking received.
ITM CFG CFD	Confirms Remote vehicle's data type configuration received.
VEH CFG CFD	Confirms Remote vehicle's presentation configuration received.
VEH O/S CFD	Confirms Remote vehicle's offset configuration received.
VAN STE CFD	Confirms Remote vehicle's anchor status configuration received.
VEH SHP CFD	Confirms Remote vehicle's shape configuration received.

Remote Control and Anchor Handling Operations

The **Remote Control** feature is closely linked with the **Anchor Handling** window.

All changes in the fairlead and anchor status caused by a **Pick**, **Drop**, **Edit**, or **Reset** function executed from this window at the Controller is immediately transmitted to all Remote vehicles. Thus, all Remotes are able to display the fairleads and anchors graphically in real-time, including the designation of live anchors. In addition to improving the coordination of operations, it also provides a safety benefit.

This window also enables target data to be sent to the Remotes. When the **Tx** function is executed from the **Anchor Handling** window, the target information is sent to all Remotes where it is automatically set as the respective vehicle's **Active Waypoint** and displayed graphically as a bull's eye with 3-meter rings.

Operating Restrictions

There are some restrictions to the use of the Remote Control feature:

- Remote control of the graphics does not extend to the charting capabilities.
- When configuring the position information of a remote, only the position and height, Kalman Filter and median filter controls, dead reckoning and gating are to be controlled. Enforced restrictions for these items is not yet implemented.
- **Vehicle Offset** names are not displayed at the remote.
- Anchor names are not transmitted or displayed at the remote