



User's Manual
December 1, 2021. Rev. A

Lifecycle Pro +

Low budget satellite collar taking 1-2 fixes per day for up to 10 years



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Introduction

Lotek GPS Animal Location Systems are based on Global Navigation Satellite System and on other sensors. At Lotek, we continually strive to reduce the size and weight of our products, resulting in some of the lightest and most compact animal tracking products available today. Lifecycle Pro+ units use fixed GPS schedule and can operate in extreme temperatures withstanding very wet conditions.

System Components

Lifecycle Pro + Collar: Collars can be customized to different neck sizes and can optionally include expandable section(s).



Drop-off (Purchased separately): Drop-off mechanisms allow the recovery of animal tracking collars without the complexity and expense of recapturing the animal. Drop-offs are optional and can be added to Lifecycle Pro + collars.



GPS Collar Overview

Functions and Main Components

Standard Functions

1. Collects GPS fixes at pre-programmed intervals: either every 13 or every 23 hours. Fix records consist of time, date, latitude, longitude and fix quality (DOP) information. Other intervals possible on demand.
2. Transmits fixes to Globalstar Satellite System.

Data Transmission

Lifecycle Pro+ collars transmit 1-3 GPS fixes in one message. It needs to be decided by the user before placing an order.

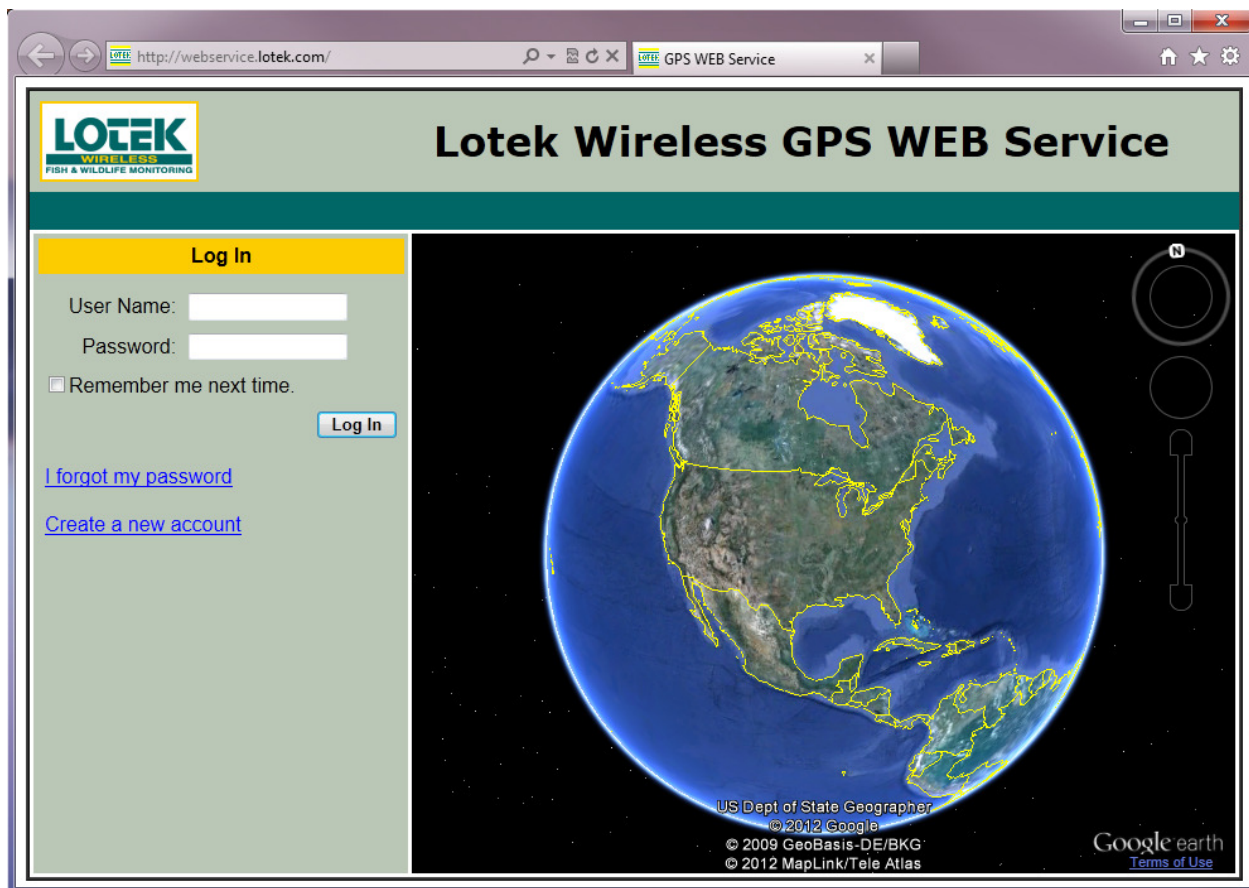
Setup and Remotely Map/View data on WebService

Web Service is a web based user interface which allows viewing and downloading GPS collar data. Lifecycle Pro+ collars are supported by Lotek Wireless Web Service.

Remote data sent from collars will be received and processed at a central server, and then the data will be pumped to a data farm via internet connection. End user only needs an internet connection and a web browser to access his/her data.

Note! IE9, Google Chrome or Firefox is recommended, a minimum screen resolution of 1280X1024 is recommended

Please use the following address to access web service <http://webservice.lotek.com>



Setup Web Service Account

To create a new web service account, click on “Create a new account”

The screenshot shows a web browser window with the URL <http://webservice.lotek.com/CreateAccount.aspx>. The page title is "GPS WEB Service". The main heading is "Lotek Wireless GPS WEB Service". The "Sign Up!" section contains the following fields and instructions:

- User Name:
- Password:
- Confirm:
- E-mail:
- Security Question:
- Answer to Security Question:
- Please provide a proper name (like 'John Smith') so we know how to greet you:

At the bottom of the form are two buttons: "Cancel" and "Create User".

User Name: No restrictions, please keep it easy to remember.

Password: a mix of letters and numbers only. It needs to have a mix of CAPS and lowercase letters and at least one number. Also, it needs to be at least 8 characters long. Password are case sensitive.

E-mail: An e-mail address that will be used to manage your account and reset your password if needed. Regular email accounts, no restrictions.

Security Questions and Answer: The question and answer should be something to which you will know the answer to when asked but unlikely that anyone else would know it. Ex.: Your first car, pet, etc. The answer is case sensitive; it will be needed for reset password.

User name: The real name of the account holder.

Fill in all information and click on "Create User". New account will be logged in automatically for the first time.

Account Settings

Once logged in, click “Account Settings” to manage the account. A newly created account will not have any collars associated with it. A “CFG” file is needed to access any new collar and link it to your account.

Note! New user account holders need to use “Manage Collar List” and CFG file to associate collars to the new account. A CFG file will be emailed to the client once collars have been shipped.

Manage Collar List

Manage collar list allows the user to link the collar ID to the account, so its data is available for downloading and mapping.

The screenshot displays the Lotek Wireless GPS WEB Service interface. The browser address bar shows the URL <http://webservice.lotek.com/AccountManageForm.aspx>. The page title is "Lotek Wireless GPS WEB Service" with a subtitle "New Feature: Device Name for each unit can be set in 'Account Settings -> Edit Device Profile'". The navigation bar includes links: "Welcome, demo! | Logout", "Map GPS Data", "List View & Download", and "Device Configuration".

On the left sidebar, under "Choose ONE user account:", a dropdown menu shows "Demo (Lotek Demo)". Below this, a list of options is provided:

- ☒ Manage Device List
- ☐ Configure Alert/Data Distribution Addresses
- ☐ Edit User Profile
- ☐ Edit Device Profile
- ☐ View History

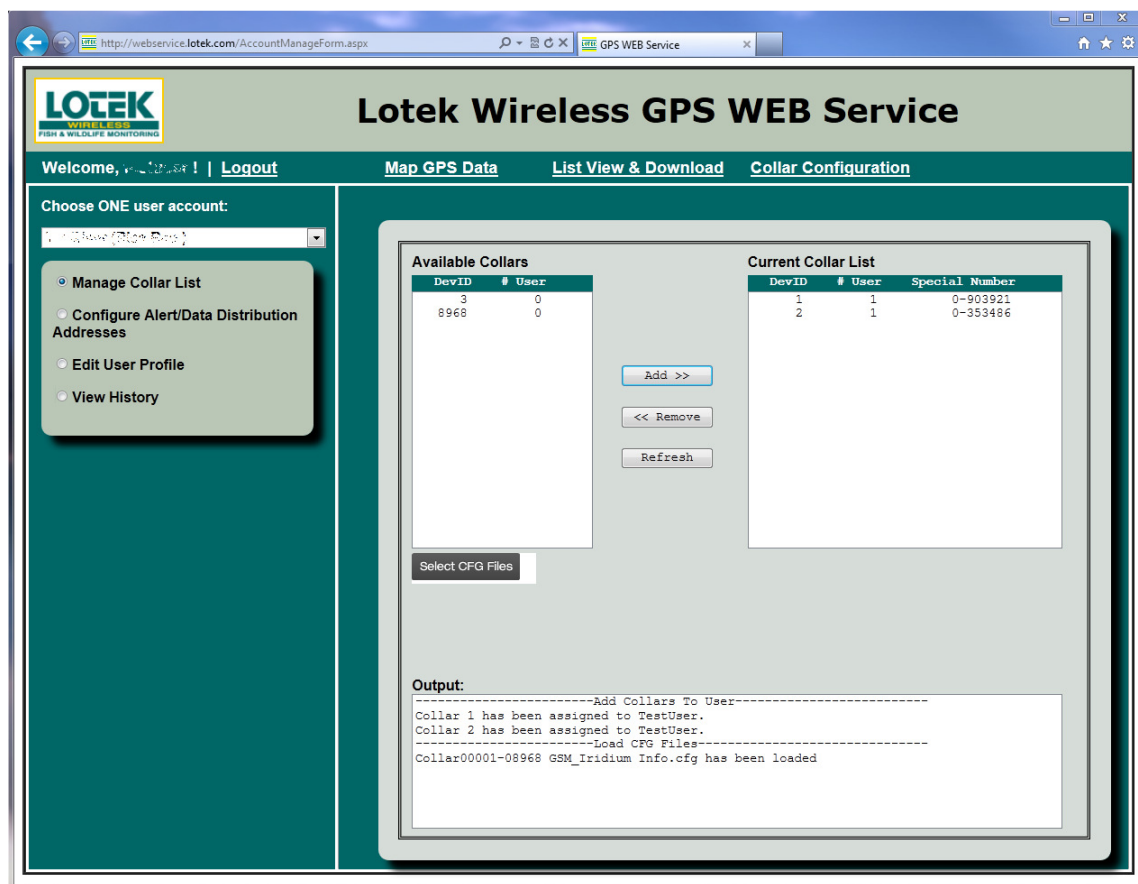
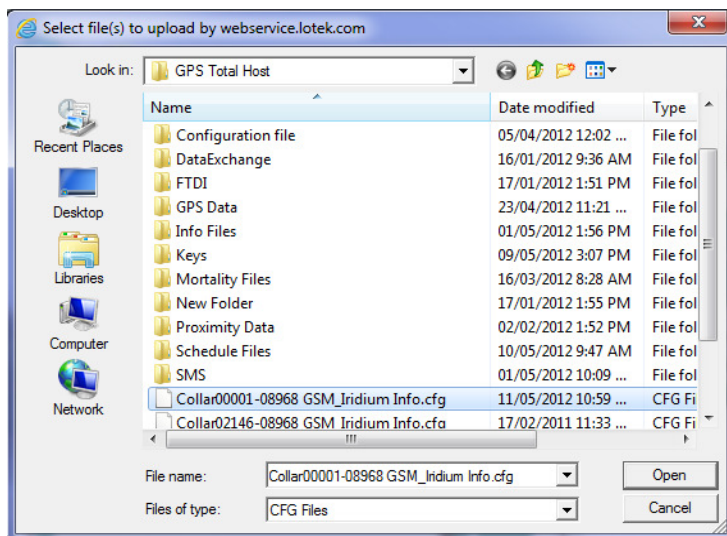
The main content area is divided into two sections:

- Available Devices:** A table with columns "DevID" and "# User". It is currently empty.
- Current Device List:** A table with columns "DevID", "# User", and "Special Number". It contains the following data:

DevID	# User	Special Number
2142	4	300034012589570
6244	4	+12893380509
10052	1	+19052520551
32763	2	300234011310040
34023	2	0-992946
34024	2	0-992935

Between these two tables are buttons: "Add >>", "<< Remove", and "Refresh". Below the "Available Devices" table is a "Select CFG Files" button. At the bottom of the main content area is an "Output:" label followed by a large empty text box.

To add a collar to available devices, click “Select CFG files”. Then select the appropriate CFG file and click “Open”



Select the collar that need to be linked to this account from the “Available Collars” window and then click “Add” to add this collar to the list.

Note! If “Select CFG File” button does not appear, please go to www.adobe.com and update/install the latest version of Adobe Flash Player.

Configure Alert/Data Distribution Addresses

Configure Alert/Data distribution addresses allows user to define email accounts where mortality alerts can be sent.

The screenshot shows a web browser window with the URL <http://websevice.lotek.com/AccountManageForm.aspx>. The page title is "Lotek Wireless GPS WEB Service" with a sub-header "New Feature: Device Name for each unit can be set in 'Account Settings -> Edit Device Profile'". The navigation bar includes "Welcome, demo ! | Logout", "Map GPS Data", "List View & Download", and "Device Configuration". On the left, a sidebar lists options: "Choose ONE user account:" (with a dropdown set to "Demo (Lotek Demo)"), "Manage Device List", "Configure Alert/Data Distribution Addresses" (selected), "Edit User Profile", "Edit Device Profile", and "View History". The main content area is titled "Device Configuration" and contains a form with three columns: "Alert Emails", "Alert SMS Phone Numbers", and "Position Emails (*)". The "Alert Emails" column has one row filled with "jchang@lotek.com" and four empty rows. The "Alert SMS Phone Numbers" and "Position Emails (*)" columns each have five empty rows. A blue note at the bottom of the form states "(*) Applicable to Globalstar data only". A "Submit" button is located at the bottom left of the form.

Alert Email: When a mortality event is received from the collar, which is linked under the current user's account, an email will be sent out in plain text to inform about the time when mortality has happened. The email will be send to all emails listed under "Alert Email" window.

Alert SMS Phone number: When a mortality event is received from a collar linked under the current user's account, an SMS message will be sent out in plain text to inform about the time when mortality has happened to all phone numbers listed under "Alert SMS Phone Number" window.

Note! Please leave those fields blank, or contact Lotek Wireless before fill in the "Alert SMS Phone Numbers", additional charges apply.

Position Email: Please leave those fields blank, or contact Lotek Wireless before filling in these fields.

After creating the user account and linking the collar ID to the account, web service account setup is finished and web service is ready to be used.

Edit User Profile

Edit user profile allows user to change the password, update email addresses, change the security question and answer and update the account holder name. It also allows entering GMT correction.

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- Change Password:** Fields for "Old Password", "New Password", and "Confirm", followed by a "Change Password" button.
- Change Email:** Field for "Email" (containing "jchang@lotek.com") and a "Change Email" button.
- Change Security Question:** Fields for "Current Password", "Security Question" (containing "what is the color of your first pet?"), and "Answer", followed by a "Change Security Question" button.
- Change Customer Name:** Field for "Customer Name" (containing "Lotek Demo") and a "Change Customer Name" button.
- Change GMT Correction:** Field for "GMT Correction" (containing "-05:00") and a "Change GMT Correction" button.

Change Password: Enter your old password, new password, and confirm the new password. Click "Change Password".

Change Email: Enter new email address and click "Change Email". Note: This is the account management email, which is used to inform the user about changes to the account. This is not the mortality notification email address.

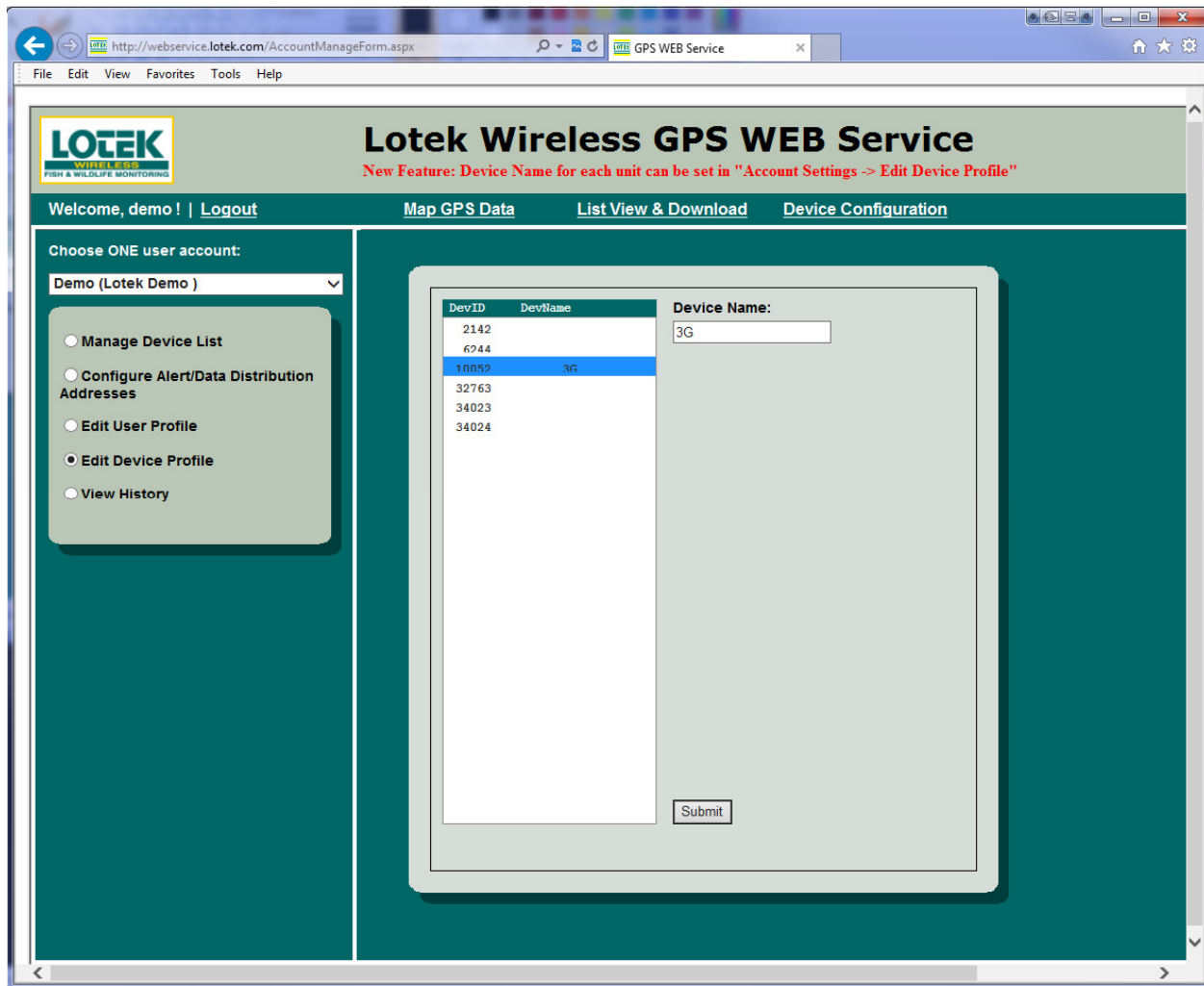
Change Security Questions: Enter the password, new security question and the answer, and click "Change Security Question". Note: Answer is case sensitive

Change Customer Name: Enter new customer's name, and click "Change Customer Name".

Change GMT Correction: Select the GMT correction term, and then click "Change GMT Correction".

Edit Device Profile

Edit device profile allows user to optionally add a maximum 10 characters nickname to each collar ID. Select the Collar ID and fill in the device name. Click “Submit”.



The screenshot shows a web browser window with the URL <http://webservice.lotek.com/AccountManageForm.aspx>. The page title is "Lotek Wireless GPS WEB Service". A red banner below the title reads: "New Feature: Device Name for each unit can be set in 'Account Settings -> Edit Device Profile'". The navigation bar includes links: "Welcome, demo! | Logout", "Map GPS Data", "List View & Download", and "Device Configuration".

On the left, under "Choose ONE user account:", a dropdown menu shows "Demo (Lotek Demo)". Below it are radio buttons for:

- ☐ Manage Device List
- ☐ Configure Alert/Data Distribution Addresses
- ☐ Edit User Profile
- ☒ Edit Device Profile
- ☐ View History

The main content area features a table with columns "DevID" and "DevName". The table lists several device IDs, with "10052" and its name "3G" highlighted in blue. To the right of the table is a "Device Name:" label and a text input field containing "3G". A "Submit" button is located at the bottom right of the form area.

DevID	DevName
2142	
6244	
10052	3G
32763	
34023	
34024	

View History

All activities that took place on the web service, including changes to the user account settings, management of collars list and to remote configuration will be recorded and stored for future reference.

The screenshot displays the 'Lotek Wireless GPS WEB Service' interface. The top navigation bar includes 'Map GPS Data', 'List View & Download', and 'Device Configuration'. The 'List View & Download' section is active, showing a table of events. The table has columns for 'Event Time [GMT]', 'Event Time [Local]', 'Operator', 'Action', and 'Device ID'. The events listed are:

Event Time [GMT]	Event Time [Local]	Operator	Action	Device ID
10-22-2012 14:33:22	10-22-2012 09:33:22	demo	Change GMT Correction	
10-22-2012 14:33:30	10-22-2012 09:33:30	demo	Change GMT Correction	
01-30-2013 19:49:27	01-30-2013 14:49:27	demo	Change Password	
06-25-2013 12:32:24	06-25-2013 07:32:24	demo	Change Password	
08-27-2013 12:14:05	08-27-2013 07:14:05	demo	Change Password	
09-27-2013 14:36:05	09-27-2013 09:36:05	demo	Change Device Name	624

Below the table, there is a 'Page 1 of 1' indicator and a 'Display 10 lines per page' option. The 'Event Details' section is currently empty, showing 'Iridium Server Confirmation'. On the left side, there is a sidebar with a 'Choose ONE user account:' dropdown menu set to 'Demo (Lotek Demo)'. Below this, there are radio buttons for 'Manage Device List', 'Configure Alert/Data Distribution Addresses', 'Edit User Profile', 'Edit Device Profile', and 'View History' (which is selected). At the bottom of the sidebar, there are input fields for 'Start Date', 'End Date', and a 'Select Log Data Type' dropdown menu set to 'Log'. A 'View Data' button is located at the bottom of the sidebar.

To view logs or errors, select the start date and end date. Leaving the dates blank will list all logs and errors available in system., Select “Log” or “Error” to view from the drop down menu, and then click “View Data”.

Map GPS data

After creating the user account and linking the collar IDs to the account, the setup is finished and web service is ready to be used. Log out and log back in to the account or Click on “Map GPS Data” to navigate to Google Earth / Google Map interface.

To map collar data, select a collar or a group of collars , and then define the time period by clicking on “Find Dates” which will search for all available data. Or alternatively, enter the “Search Start Date” and “Search End Date”. You can also check the “Select most recent positions” and further select the time range from the drop down list.

After selecting the dates, click “Fetch & Map” to map the GPS fix on Google Earth / Google Map Interface

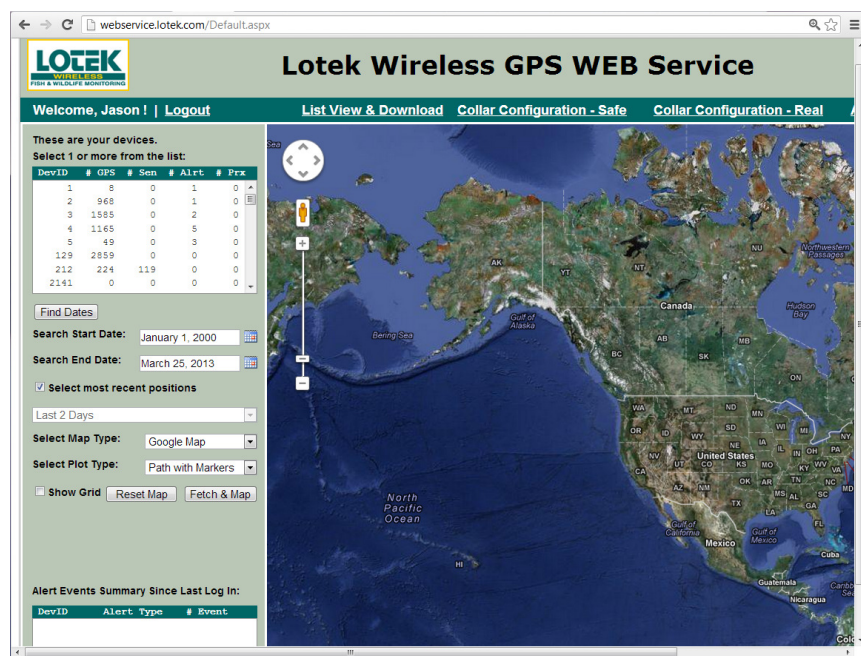
Select Map Type: Allows users to select “Google Map” or “Google Earth” interface.

Select Plot Type: There are 3 options, “1. Markers Only”, “2. Path Only” or “3. Path and Markers”.

Check “Show Grid” if you would like to see grid on Google Earth Interface.

Reset Map: Clicking “Reset Map” will reset the Google Earth plug-in

Mortality Events Since Last Log In: All mortality events which happened since your last login will be listed in this widow.



List View and Download

Click on “List View and Download” to switch to list and download view

To view or download collar data, select the collar, and then define the time period by clicking on “Find Dates” which searches for all available data. Alternatively you can enter “Search Start Date” and “Search End Date”, or check the “Select most recent positions” and further select the time range from the drop down list.

After selecting the dates choose the data type to be “GPS Records”, “Sensor Records”, “Mortality Records” or Proximity Records”, and then click “View Data” to view the data on the screen.

To download data, first select “Available Download Option;” to set the file format. Available choices are: “Text List”, “Spread Sheet (CSV)”, Google “KML file”, Google “KMZ file” or “Lotek Binary Format” (GDF). Click “Download File” to start downloading the data.

The screenshot displays the Lotek Wireless GPS WEB Service interface. The page has a green header with the Lotek logo and navigation tabs: Welcome, Map GPS Data, Collar Configuration, and Account Settings. The left sidebar contains a 'These are your devices' section with a table of device IDs and counts, a 'Find Dates' section with search start and end date fields, and a 'Select the type of data to view' section with radio buttons for GPS Records, Sensor Records, Mortality Records, and Proximity Records. The main content area shows a table of GPS records with columns: Dev ID, Date / Time [GMT], Latitude, Longitude, Altitude [m], Fix Status, DOP, Temp [C], Main [V], and Back [V]. The table lists 20 records for device 6244, showing various timestamps and coordinates.

Dev ID	Date / Time [GMT]	Latitude	Longitude	Altitude [m]	Fix Status	DOP	Temp [C]	Main [V]	Back [V]
6244	2012 05-01-18:22:44	44.0699231	79.4276189	260.04	3D Fix-V	2.2	26.0	3.52	3.68
6244	2012 05-01-18:30:20	44.0699125	79.4276433	258.39	3D Fix-V	2.2	22.0	3.52	3.68
6244	2012 05-01-18:40:21	44.0699214	79.4275989	263.11	3D Fix-V	2.2	20.0	3.52	3.68
6244	2012 05-01-18:50:20	44.0699303	79.4276233	263.54	3D Fix-V	2.0	19.0	3.52	3.68
6244	2012 05-01-19:00:20	44.0699808	79.4276228	253.42	3D Fix-V	2.4	18.0	3.52	3.68
6244	2012 05-01-19:10:22	44.0699700	79.4276419	256.10	3D Fix-V	2.6	17.0	3.52	3.60
6244	2012 05-01-19:20:19	44.0699856	79.4275975	261.52	3D Fix-V	2.6	17.0	3.52	3.68
6244	2012 05-01-19:30:19	44.0699369	79.4275575	262.79	3D Fix-V	2.4	17.0	3.52	3.60
6244	2012 05-01-19:40:23	44.0699681	79.4276197	257.77	3D Fix-V	2.4	16.0	3.52	3.60
6244	2012 05-01-19:50:20	44.0699928	79.4276075	260.68	3D Fix-V	2.2	16.0	3.52	3.60
6244	2012 05-01-20:00:21	44.0699811	79.4276167	264.90	3D Fix-V	2.0	16.0	3.52	3.68
6244	2012 05-01-20:10:53	44.0700081	79.4276406	251.73	3D Fix-V	2.0	16.0	3.52	3.60
6244	2012 05-01-20:20:22	44.0700200	79.4276336	248.92	3D Fix-V	2.2	17.0	3.52	3.60
6244	2012 05-01-20:30:21	44.0700006	79.4276281	251.17	3D Fix-V	2.4	18.0	3.52	3.60
6244	2012 05-01-20:40:21	44.0699931	79.4276181	252.01	3D Fix-V	2.6	19.0	3.52	3.60
6244	2012 05-01-20:50:20	44.0700142	79.4276414	245.29	3D Fix-V	2.4	21.0	3.52	3.60
6244	2012 05-01-21:00:20	44.0699794	79.4276083	252.15	3D Fix-V	2.2	23.0	3.52	3.60

Open Air Testing

1. Place the collar outside in an open area, where the collar can have a full view of the sky
2. Removed the magnet from the upper housing on the collar
3. Wait (2-3 days) until a sufficient amount of data has been acquired
4. Check web service for GPS locations and/or mortality message
5. Place the magnet back on the “M” marking of the collar and secure it in place with a piece of tape
6. Collar is ready for deployment

Deployment

Before proceeding with deploying the collar on an animal, ensure that all the procedures in the previous section of the manual have been followed.

Reminder! Before taking collars outside for initial testing or before final deployment, do not forget to remove the MAGNET. Failing to remove the magnet will prevent VHF beacons, GSP engines and remote communication options on collars to turn ON.

Collar Orientation

For LifeCycle Pro+ model please follow the label at the bottom of the collar, indicating which side facing away from the animal's body.



Adjusting the Belt

Follow these steps to adjust the belt properly:

1. Remove the nuts on the adjustable side of the collar. Do not touch the tamper-proof screws on the fixed side of the collar.
2. Fit the belt around the animal's neck.

For optimum performance, be sure to attach the collar to the animal in accordance with the recommended orientation

3. Tighten the locking nuts onto the studs using a torque set at **8.0 lb·in (0.9 Nm)**

Appendix A

Using torque screwdriver to the correct amount of torque

Torque screwdrivers (purchased separately) are supplied with two torque factory preset adapters (5.3 and 8 lb.in), one hex power bit 3/32" and one nut setter 5/16".



Use brown adapter (marked 8.0 lb.in or 0.9Nm) and nut setter 5/16" to tighten the locknut after adjusting the collar around animal's neck.



Appendix B

Regulatory Information

Contains Transmitter Module
FCC ID: L2V-ST100
IC: 3989AST100



**THIS DEVICE COMPLIES WITH PART 15 OF THE FCC RULES.
OPERATION IS SUBJECT TO THE FOLLOWING TWO CONDITIONS:
(1). THIS DEVICE MAY NOT CAUSE HARMFUL INTERFERENCE, AND
(2). THIS DEVICE MUST ACCEPT ANY INTERFERENCE RECEIVED,
INCLUDING INTERFERENCE THAT MAY CAUSE UNDESIRE OPERATION.**

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy, and if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment OFF and ON, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

WARNING: Changes or modifications not expressly approved by Globalstar may render the device non-compliant to FCC and other regulatory body standards for operation and may void the user's authority to operate the equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This Class B digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de classe B est conforme à la norme NMB-003.

Hereby, Globalstar declares that this ST100 BOARD is in compliance with the essential requirements and other relevant provisions of Directive 2014/53/EU. The declaration of conformity may be consulted at www.Globalstar.com/Regulatory.

NOTICE: This equipment complies with FCC, IC and CE RF Exposure Limits. A minimum of 20 centimeters (8 inches) separation between the device and the user and all other persons should be maintained.

AVIS: Cet équipement est conforme aux RSS-102 Limites d'exposition RF. Un minimum de 20 centimètres (8 pouces) entre l'appareil et l'utilisateur et toutes les autres personnes devrait être maintenue.

Transmit Frequencies: 1611.25 Mhz - 1618.75 Mhz (4 Channels) Max Power Out: 25.82 dBm EIRP

FCC ID: L2V-ST100

CAN ICES-3(B)/NMB-3B

IC: 3989A-ST100



Complies with FCC standards.

FOR HOME OR OFFICE USE

This device contains license-exempt transmitter(s)/receiver(s) that comply with Innovation, Science, and Economic Development Canada's license-exempt RSS(s). Operation is subject to the following two conditions:

1. This device may not cause interference.
2. This device must accept any interference, including interference that may cause undesired operation of the device.

L'émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux
CNR d'Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence.
L'exploitation est autorisée aux deux conditions suivantes:

1. L'appareil ne doit pas produire de brouillage;
2. L'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Appendix C

Contact and Support Information

Don't hesitate to contact us if you would like further information on any aspect of Lotek products and services. This page lists the contact information for all of our locations.

Canada

Lotek Wireless Inc.

Web site: www.lotek.com

(Head Office – for All Applications)

115 Pony Drive, Newmarket, Ontario, Canada L3Y 7B5

Telephone: 905-836-6680 Fax: 905-836-6455

In Newfoundland:

(for Marine Applications)

114 Cabot Street, St. John's, Newfoundland, Canada A1C 1Z8

Telephone: 709-726-3899 Fax: 709-726-5324

UK/Europe

Biotrack Ltd

Web site: www.biotrack.co.uk

(Bird & Terrestrial):

52 Furzebrook Road, Wareham, Dorset, BH20 5AX United Kingdom

Tel: +44 (0)1929 552 992 Fax: +44 (0)1929 554 948

USA

BioSonics Telemetry, LP

Web site: www.biosonicstelemetry.com

Acoustic Fisheries, Pacific Northwest (WA, OR, ID):

4027 Leary Way NW, Seattle, WA 98107, U.S.A.

Tel: 206-783-9356 Fax: 206-782-2244

Australia, New Zealand & Asia

Sirtrack Ltd

Web site: www.sirtrack.com

(Bird, Marine & Terrestrial):

8A Goddard Lane, Havelock North 4130, New Zealand

Tel: +64 (6) 877 7736 Fax: +64 (6) 877 5422