LoTW New User Guide

Get going with Logbook of The World

Version 1.01

You may be wondering "Why does Logbook of The World exist? What is it for?" and "Should I bother with it?"

The answer is simple.

LoTW makes confirming contacts easier, quicker and cheaper than traditional QSL methods.

Follow this step-by-step guide to get started on LoTW.

Quick-start

If you simply *can't wait* to get going, and provided these two bullet points makes sense to you:

1. Download and install TQSL.

2. In TQSL, request a Callsign Certificate.

Then read on. This guide has step-by-step instructions and tips on how to get going with LoTW.

Note: this guide is occasionally updated.
The definitive current English version is available at
www.G4iFB.com/LoTW_New_User_Guide.pdf
Please use and share that URL.

Logbook of The World
New User Guide

Contents

Document history

Version	2020	Changes made
1.01	17th Sept	Yet more minor corrections (thanks Jim W2JC).
1	12th Sept	Final corrections, plus notes about automating LoTW uploads. Ready to publish!
0.8	11th Sept	Added warning about not installing TQSL with privileges. Numerous corrections (thanks Bob AK5U). Flow chart boxes linked to steps (thanks Jim W2JC).
0.7	8th Sept	Added links to help on logging software LoTW functions; "Quick Start Guide" retitled "New User Guide" … but file name and URL not yet updated
0.6	7th Sept	Added info about non-US hams' license validation step
0.5	4th Sept	Expanded chapter 4 on downloading LoTW confirmations
0.4	1st Sept	Added info about postcard/FCC address validation code for US hams
0.3	30th Aug	Transferred into MS Word to work on the formatting, diagrams, details and tips
0.2	July-Aug	Various additions & changes discussed & made by a team of collaborators and commentators from the ARRL LoTW Forum
0.1	19th July	First skeleton draft roughed out in Google Docs by ZL2iFB to launch the project

1 Introduction

Logbook of The World provides a reliable means of validating and confirming QSOs. The system is trusted by over 100,000 radio amateurs from all parts of the globe ►. Part of the reason that awards such as DXCC remain popular is that they are widely acknowledged as genuine, meaningful achievements. Things are *deliberately* made tough for cheaters and fraudsters so that honest DXers can continue to trust the awards.

Logbook of the World Status

1,212,706,203	QSO records have been entered into the system.
242,733,271	QSL records have resulted.
133,662	Users are registered in the system
193,443	Certificates are active
29,378,307	User files have been processed

1.1 LoTW glossary

After following a link, use Alt-left arrow to go back.
On a Mac, try Command-left arrow. Good luck.

Term	Meaning
Callsign Certificate	A digital (electronic) file, issued by ARRL after they have checked that you are, in fact, the licensee for a properly-issued amateur callsign.
Confirmed	Both parties agree that they made a QSO at a given date and time, on a particular band and mode.
Download	Computer data gets sent 'down' from a server, such as the LoTW computer at ARRL, through the Internet to our computer.
DXCC	ARRL's prestigious **DX C**entury **C**lub award for confirmed QSOs with at least 100 of the 340 recognised 'entities' (mostly countries).
Icon	A distinctive little cartoon-like image, such as 🏆 for a usable Callsign Certificate.
Log	A set of QSO records, often in date and time order.
LoTW	**L**ogbook **o**f **T**he **W**orld – an ARRL computer system running a database application, plus the associated data and procedures.
Matching	Two QSO records 'match' if the pertinent details are identical or close enough to indicate that both parties to the QSO consider it to have taken place.
QSL	A confirmation of a specified QSO in the form of a postcard or electronic record stating the QSO record.
QSO	A contact between two radio amateurs using the amateur bands.
QSO record	Computer data *about* a contact with pertinent details (callsigns, date, time, band, mode *etc.*), similar to the information on a line of a traditional paper logbook.
Signing	As with a contract, when we "sign" a log of one or more QSO records before uploading them, we are formally confirming that these QSOs took place according to the QSO records. The electronic signature is a modern digital equivalent to a wax seal on an important Mediaeval letter.

Term	Meaning
Station Location	Details about where the station is located such as the <u>DXCC entity</u>, state, province or oblast, <u>county</u>, <u>Maidenhead grid square</u>, <u>CQ</u> and <u>ITU zones</u> and <u>IOTA reference</u>.
Station log	An electronic <u>log</u> containing details of all the <u>QSOs</u> we have made, often under several personal callsigns (*e.g.* novice/restricted and full licenses, contest calls).
TQSL	The **T**rusted **QSL** program, used to manage <u>Callsign Certificates</u> and <u>Station Locations</u>, and <u>sign</u> and <u>upload</u> QSO records to <u>LoTW</u>.
Upload	Send computer data from our computer 'up' to a server, such as the <u>LoTW</u> system, via the Internet.
Validation Code	An 8-character sequence mailed on a printed postcard to the registered FCC addresses of US hams in order to confirm their license addresses.

NOTE: this simplified glossary complements <u>the official LoTW glossary</u>.

1.2 History

Logbook **o**f **T**he **W**orld (<u>LoTW</u>) was released by the **A**merican **R**adio **R**elay **L**eague (ARRL) on September 15th 2003. Writing for the ARRL's QST journal in October 2003, Wayne Mills N7NG conjured up a vision: "Imagine being able to submit evidence of a contact electronically, and have it count towards awards. No muss, no fuss - just a simple procedure under a system that ensures the validity of the QSO." Right there at the outset, the fundamental objectives of <u>LoTW</u> were clear: it would provide a simple way to ensure the validity of amateur radio contacts (<u>QSOs</u>) submitted for awards.
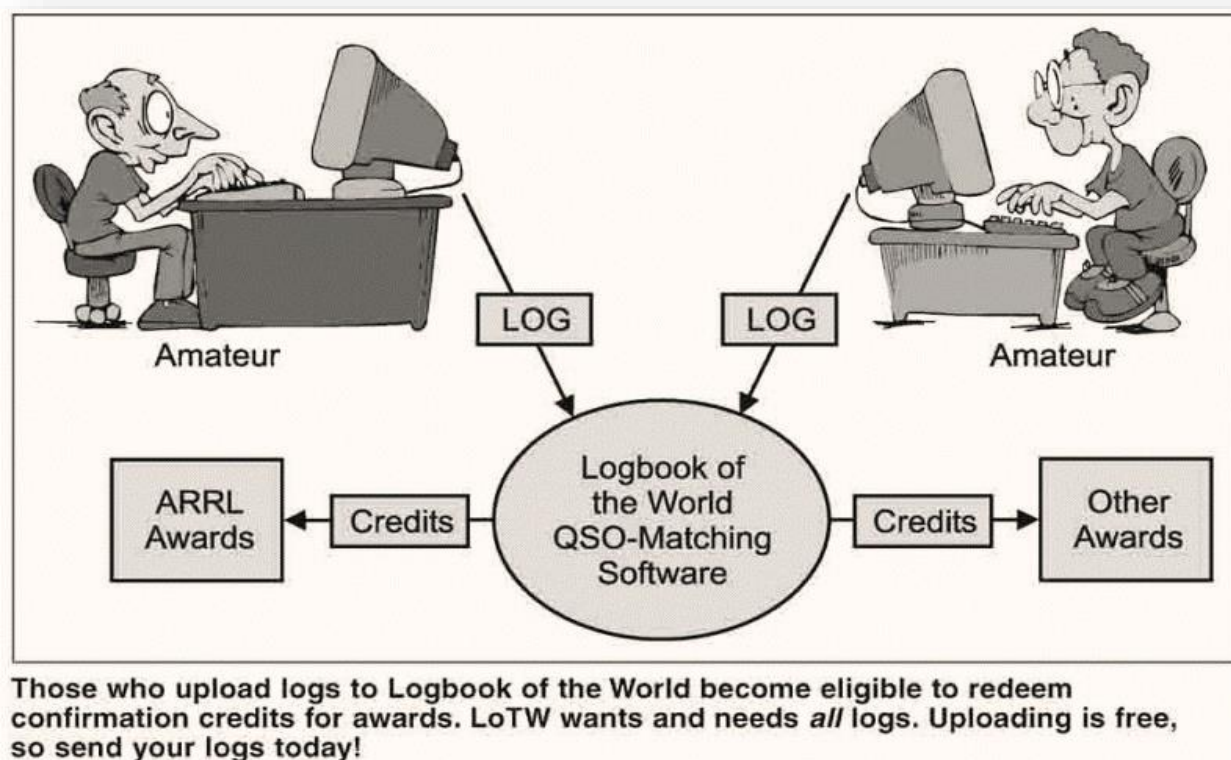

Figure from N7NG's 2003 QST article

1.3 LoTW overview

Despite the name, **Logbook** *of The World* barely qualifies as a logbook. It is a way to record only the most basic information about the QSOs we make - for example ►. The top section, **Station**, shows information that LoTW has about me - my callsign, DXCC entity, CQ and ITU zones, IOTA island reference and my 6-character Maidenhead grid square. The lower section, **Worked Station**, shows information about a QSO I *claim* to have made with another ham. I have told LoTW both our callsigns, the date and time, the band and the frequencies on which I *claim* to have made the QSO.

Station	
Call Sign	ZL2IFB
DXCC	NEW ZEALAND (170)
CQ Zone	32
ITU Zone	60
IOTA	OC-036
Grid	RF80HL
Worked Station	
Worked	R2AL
Date/Time	2020-08-02 20:18:15
Mode	FT8 (DATA)
Band	20M
Frequency	14.07646
Receive Frequency	14.07535

Record ID 1215315450 Received: 2020-08-02 22:47:57

All of the information in that QSO record was supplied by me. I generated and uploaded it … and I may have made mistakes. I could even have made it up. That's why confirmations are so important.

Unless and until R2AL *also* uploads details of the same QSO, it is merely a claim. If R2AL uploads something fundamentally different about the QSO (*e.g.* if he claims that it was actually on 40m rather than 20m) then LoTW would not accept that the QSO took place. **Only if our claims are essentially the same does LoTW agree that we made the QSO** - in other words the QSO is confirmed.

> 'Essentially the same' does *not* mean 'identical'. LoTW allows leeway on some of the details, such as the time and frequencies.

Station	
Call Sign	ZL2IFB
DXCC	NEW ZEALAND (170)
CQ Zone	32
ITU Zone	60
IOTA	OC-036
Grid	RF80HL
Worked Station	
Worked	R2AL
DXCC	EUROPEAN RUSSIA (54)
CQ Zone	16
ITU Zone	29
Grid	KO85PP
Oblast	Moskva (Moscow) (MA)
Date/Time	2019-12-22 07:34:45
Mode	FT8 (DATA)
Band	15M
Frequency	21.07464
QSL	2020-03-02 09:13:16

Record ID 1114819323 Received: 2019-12-22 16:44:21

◄ Here is the LoTW QSO record for a previous QSO with R2AL. Vladimir *has* already uploaded his QSO record for that QSO and the details match, so that QSO is confirmed for both of us on LoTW. *His* DXCC entity, zones, grid square and oblast are all shown - information that Vladimir supplied in the QSO record *he* uploaded. He has *my* QTH information as well – once a QSO is matched, both parties have it.

A bit like those impressive awards and plaques on a DXer or contester's shack wall, digital certificates are electronic proof of something. For LoTW, a Callsign Certificate issued by ARRL proves that the person claiming to be, say, "W1AW" really *is* the properly licensed amateur holding that callsign. That's important because anyone could *claim* to be W1AW and *claim* to have W1AW's definitive log. More likely, a pirate or cheat might falsely *claim* to have the log for, say, "P5DX" hoping to confirm fake contacts with that extremely rare DXCC entity.

Checking and verifying QSOs is the main purpose of LoTW. As with QSL cards, the aim is to provide trustworthy evidence confirming or proving that logged QSOs *really did take place as claimed* between duly licensed amateurs. The difference is that LoTW is all electronic, using digital data.

There's more to this than piracy and fraud. Have you ever noticed someone getting your callsign wrong during a QSO? With QRM and QSB, mistakes are common. That's why we spell out callsigns phonetically on voice modes, and repeat callsigns so often in QSOs on all modes. We also need to be careful to spot and correct typing mistakes if we are logging electronically.

LoTW is designed to check the details from each party to a contact before confirming it. LoTW offers a higher level of proof and security than other electronic QSL systems, sufficient to be used for awards such as DXCC. Anyone could *claim* to have contacted more than a hundred countries: *proving* it takes more effort!

These are the main controls associated with LoTW:

1. We must **register** with ARRL in order to submit our logs. The registration step involves proving that we are the properly licensed holders of our callsigns.

2. Having registered, we are issued a Callsign Certificate that we will use to sign our log. Signing combines digital information from the Callsign Certificate with the logged QSOs in such a way that LoTW can confirm that:

   (a) the log came from the holder of the callsign; *and*

   (b) the log was not altered after it was signed (*e.g.* by changing or inserting false QSO details).

> The way we demonstrate that we are properly licensed varies between countries: **US** hams' details are verified against the FCC's records; **non-US** hams submit their license plus address information (such as a utility bill) to ARRL HQ by post or send/take it to a local ARRL-authorized DXCC card checker to get it checked.

Under the covers, LoTW uses a **P**ublic **K**ey **I**nfrastructure based on a clever application of cryptography. Applying certificates would be quite confusing for new users but most of the details are taken care of by the software that we use - in particular, a program called TQSL (**T**rusted **QSL**). TQSL manages our Callsign Certificates, signing and uploading logs, and requests for new or replacement Callsign Certificates. It simplifies the process and hides the technical complexity for us.

1.4   Why should we use LoTW?

Prior to LoTW, confirmations were made using QSL cards - paper cards with written or printed details of on-the-air radio contacts - that were sent by post, either directly from ham-to-ham or via QSL bureaus run by the radio societies. Although QSL cards are still used by some, this is a slow, labor-intensive and relatively costly process. It generally takes months or years to exchange QSL cards.

> Other forms of QSLing are complementary, not alternatives, to LoTW. Some of us enjoy collecting exotic postcards from far-off lands as well as receiving electronic confirmations on LoTW. QSL cards are worth showing to shack visitors or friends at the club, or pinning to maps on display boards at special event and demonstration stations.

LoTW eliminates the need to exchange paper QSLs to confirm contacts. LoTW dramatically reduces the effort, cost and time to receive confirmations. Many contacts made today will be confirmed in *minutes* through LoTW. Cumbersome mailing and sorting systems are no longer required, and **LoTW is free for all licensed amateurs**.

> "When I returned to ham radio after >60 years of QRT, LoTW was one of the pleasant surprises. For old folks like me, the chance to get confirmations very quickly is a real blessing. Were it not for LoTW, I would never have made DXCC or WAS." [W3UEC]

If you are a serious DXer, you know how frustrating it can be waiting for QSL cards to arrive to confirm each new country. Whether you post your QSLs and cash direct, or just hope for cards to arrive via the worldwide QSL bureau, collecting confirmations on paper can be tedious, not to mention expensive. Then once you've got your tidy little stack of QSL cards and you wish to apply for awards such as DXCC or WAS, you still need to get them checked and verified by the relevant organization.

Quite simply, LoTW makes the whole process quicker, easier, cheaper and more reliable.

It is worth using LoTW because:

- It is widely trusted by amateurs around the world

- It is free to upload your QSOs and download confirmations

- Confirmations from LoTW generally arrive within hours, days or weeks of the QSOs, rather than years later for QSL cards sent via the bureau, and without the printing and postage costs

- Most of the process is automated: with the right software, your QSOs can be signed and uploaded in the background as soon as they are logged

- Confirmed QSOs can be submitted by either party for DXCC and other awards: even if you are not chasing awards, the people you contact may be very grateful to have your QSOs confirmed so they can claim awards - especially if you are in a rare location or making remarkable DX QSOs

> LoTW simply checks and confirms that claimed QSOs were genuine – no big deal, right? So why can't LoTW use more basic security? The reason is that authentication is important. Would you be happy if the LoTW confirmation of a QSO with, say, Heard Island was retracted because it was discovered the log had been faked or hacked?

- It's quite a buzz to see 'new ones' appear in the list of recently-confirmed QSOs, like this ▼ Those ticks against 'TRISTAN DA CUNHA & GOUGH IS' indicate that both I and Nigel ZD9XF had uploaded our QSO records to LoTW. The LoTW system had found two matches, and noted that these now confirmed QSOs counted

| TRISTAN DA CUNHA & GOUGH IS | ✔ | 30M; Challenge |
| TRISTAN DA CUNHA & GOUGH IS | ✔ | 17M; Challenge; CW; Mixed |

as a new country for me for the mixed, CW, Challenge, 30m and 17m DXCC awards. The confirmations came through just a few days after the QSOs at essentially zero cost to both of us.

With LoTW, we upload our logs periodically to the ARRL's LoTW website where they are entered into a database system that cross-matches our QSO records against other uploaded logs generating electronic confirmations for all QSOs that match. LoTW confirmations normally come through within days or weeks as soon as both parties to a QSO upload their logs to LoTW, provided the QSO records match.
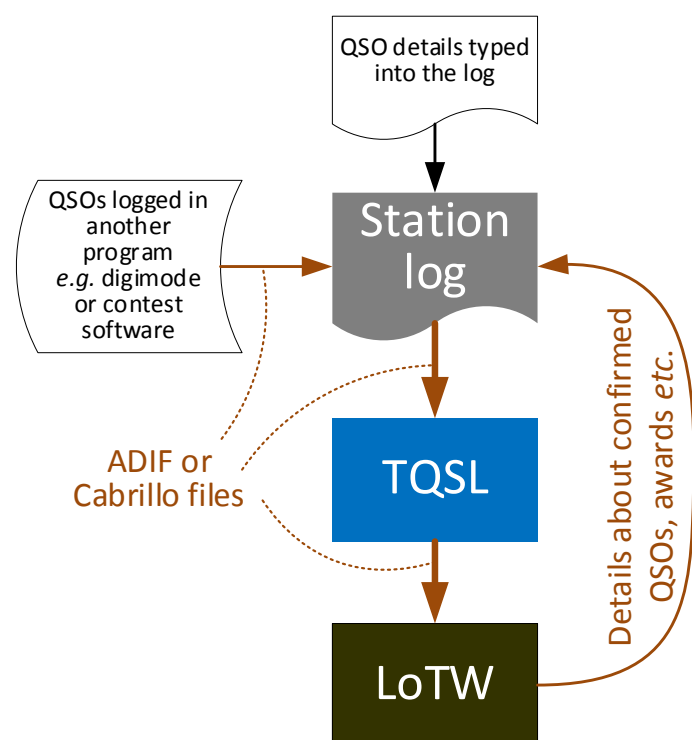
The LoTW system tracks our progress towards DXCC, VUCC, WAS and WPX awards and, when we are ready to claim them, it handles the award applications electronically for us. For QSOs that have been verified in LoTW, there is no need to hunt through our shoeboxes for the relevant QSL cards, fill out the application form and submit the cards for verification. However, we may still choose to submit QSL cards for specific DXCC countries or US states for those bands and modes which are not yet confirmed on LoTW ... or we can wait patiently in the hope that eventually they will all be confirmed on LoTW. **QSOs with *all* current DXCC entities have been confirmed using LoTW.**

2   Generating an electronic log

In order to use LoTW, you need an electronic record of your QSOs, specifically a log in ADIF or Cabrillo format:

- **A**mateur **D**ata **I**nterchange **F**ormat (**ADIF**) lets us send data about logged QSOs between programs (*e.g.* between your logging software and the LoTW system).   It has records comprising named fields for the pertinent information about each QSO (*e.g.* dates, times, bands, modes and callsigns)

- **Cabrillo** is a simpler columnar format, originally designed for contest entrants to submit their logs for adjudication. When viewed or printed, a Cabrillo file resembles a physical logbook.

> Some digital mode software such as WSJT-X and JTDX, contest loggers such as N1MM+ and WinTest, and portable loggers for SOTA *etc.*, only provide basic QSO logging features … but even these can usually generate and export ADIF files. You can sign and upload those ADIF files to LoTW using TQSL, or you can import the ADIF into a full-function station logger first, with the advantage of maintaining a complete log of all your activities and the ability to manage your QSL records, awards *etc*.

QSO details typed into the log

QSOs logged in another program *e.g.* digimode or contest software

Station log

ADIF or Cabrillo files

Details about confirmed QSOs, awards *etc.*

TQSL

LoTW

◄ Most of us use logging programs to generate and maintain electronic station logs. Logging programs can generate the ADIF or Cabrillo files needed to upload our logs to LoTW.

> You can probably type historical QSO details from old logbooks into your log.

◄ Full-featured logging programs can also use confirmations downloaded from LoTW to update our station logs, indicating which logged QSOs have been confirmed, and maintaining the statistics as we prepare to apply for awards such as DXCC.

If you want to upload just a few QSOs from a paper log to LoTW, you can type the QSO details into TQSL using the **Create an ADIF file for signing and uploading** button ►.

Another option is the ARRL Basic Log 500 spreadsheet.

> **F**ast **L**og **E**ntry by DF3CB is a popular program for typing-up old hand-written logs quickly and efficiently, *provided* you can still read the scrawl …
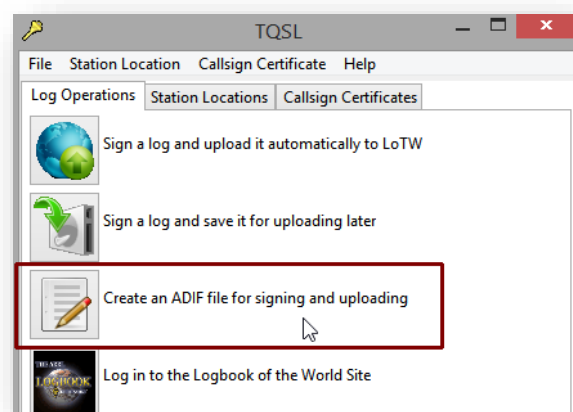
3 Applying for your first Callsign Certificate

To join LoTW and obtain your first Callsign Certificate from ARRL, work your way systematically through
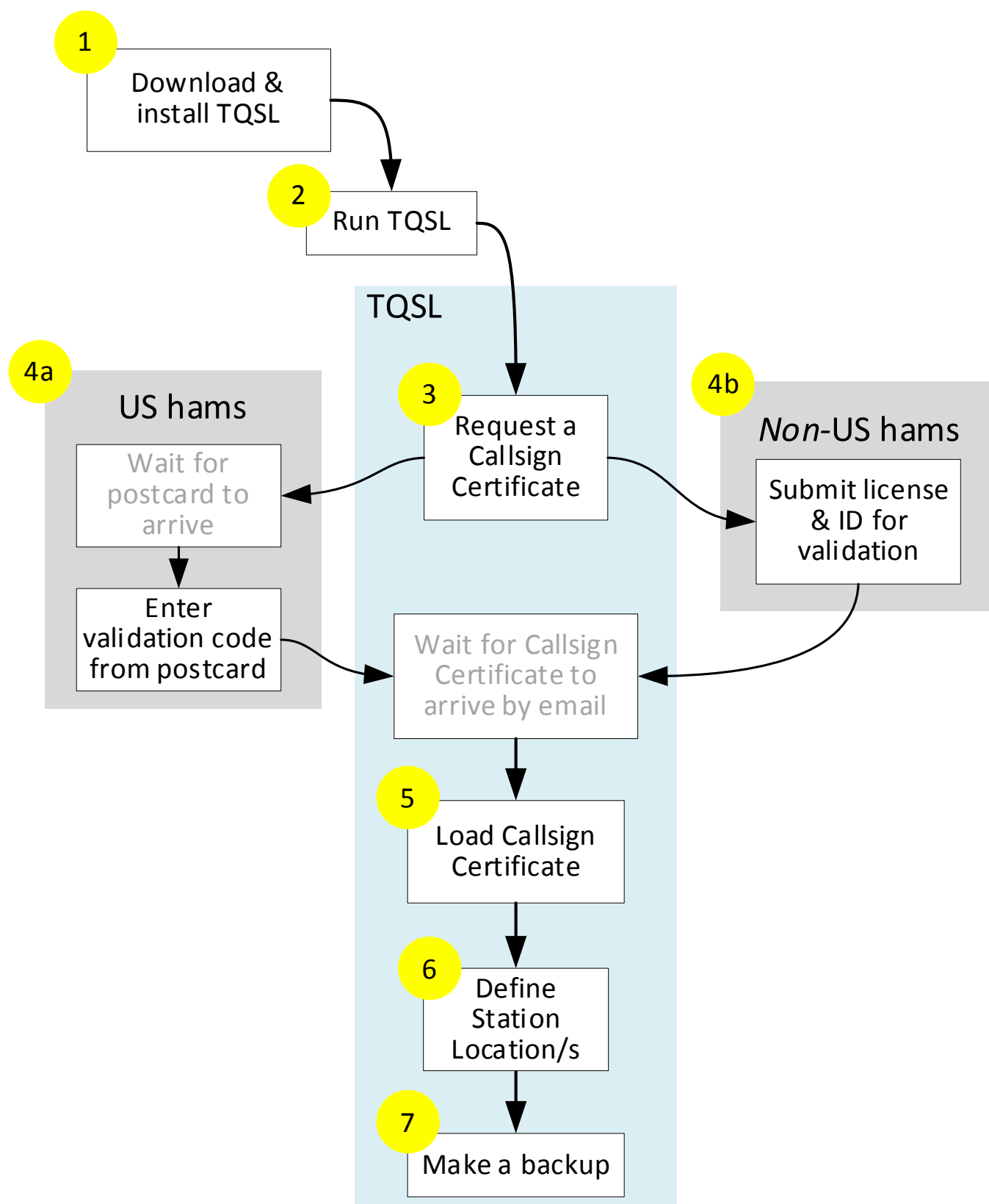
the process using the step-by-step instructions that follow this clickable diagram:

1. <u>Download</u> the <u>TrustedQSL program (TQSL)</u>. Pick the correct <u>download</u> for the operating system you are using *i.e.* Windows, MacOS/OS X, or Linux. Click or double-click the <u>downloaded</u> <u>TQSL</u> installer to install <u>TQSL</u>.

> <u>TQSL</u> will even run on some *ancient* operating systems that are no longer supported by the original suppliers.

> In Windows, do *not* use "Run as administrator" to run the installer. Administrative privileges are unnecessary for the installation or use of <u>TQSL</u>.

2. Run <u>TQSL</u> *e.g.* by double-clicking the <u>TQSL</u> <u>icon</u> on your desktop.

3. Generate a <u>Callsign Certificate</u> request:

- Click to open the **Callsign Certificate** tab ▶
- Click **Request New Callsign Certificate** ▶
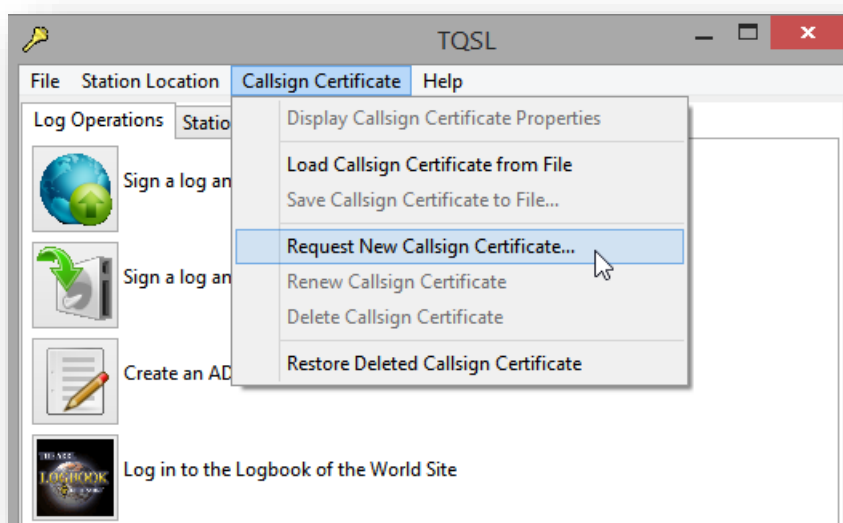
Complete the information requested:

- Click to select the appropriate option – most likely **My current personal callsign** ▶
- Click the **Next >** button ▶
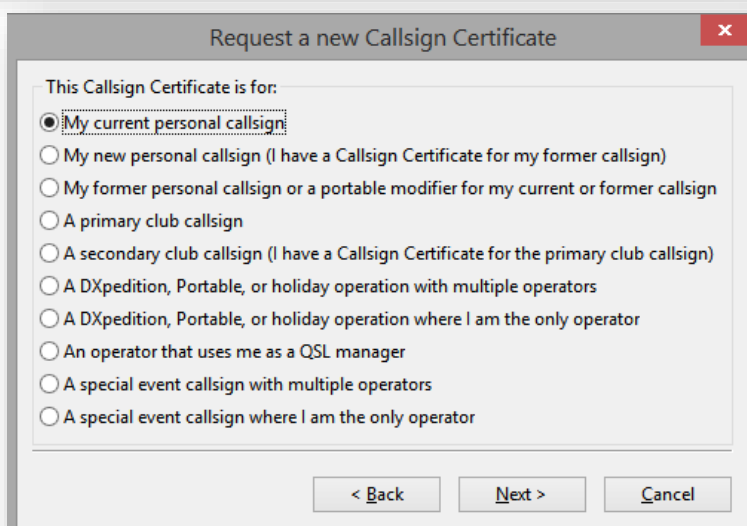
> "I have dithered for years on installing LoTW. After having some initial issues with the installation, I made two calls to ARRL. Now all is well; the support I received from Newington was excellent!" [WU7X]

Complete the next form:

- Type in your callsign ▶

- Click in the <u>DXCC</u> entity box to see the list of countries: scroll down to find yours and click it to select it ▶

- In the same way, click, scroll down and click to select the year, month and day for the **Date of the first QSO you made or will make using this callsign**. That is generally the 'issued' or 'valid from' date stated on your license. ▶

- Your license *may* also have an end date (*e.g.* callsigns issued for special events, or novice licenses that have been upgraded) but <mark>for callsigns that remain current, leave the last <u>QSO</u> date fields blank.</mark>

- Click **Next >** when you are ready to move on …

> ▲ You will not be able to <u>sign</u> and <u>upload</u> <u>QSOs</u> made *before* the first date or *after* the second date (if any) with the <u>Callsign Certificate</u> you are now requesting.

Next form:
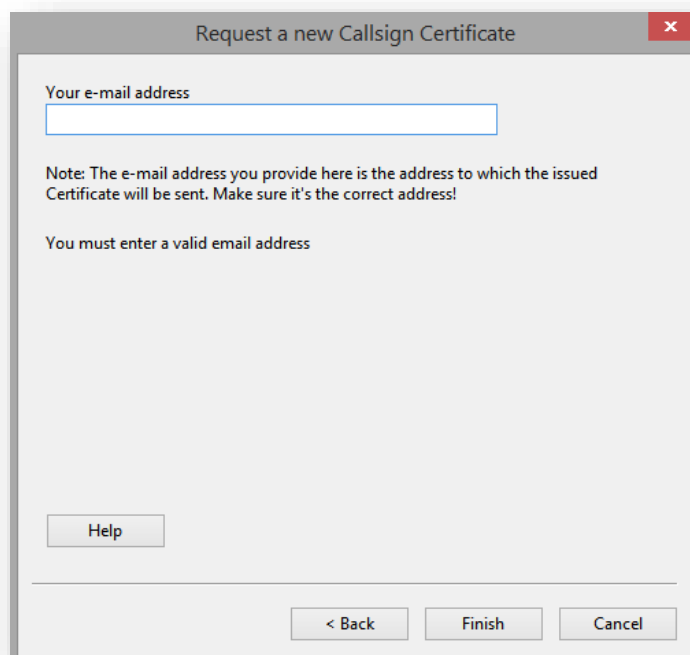
- Type your name and address ▶

  - Normally, this will be the address on your license.

  - For US hams, it must be the address FCC holds for you.

- Click **Next >** when you are ready …

Click the **Help** button for more information ▶

> US hams: does the FCC have your current station address, in fact?
> Now is a good opportunity to check and update it if necessary, avoiding delays around step 4(a).

Nearly done! Complete the final form:

- Type in **Your e-mail address** ►

- Click **Finish** to end the Callsign Certificate request process:

    - TQSL generates a digital message and sends it via the Internet to ARRL

    - Staff at ARRL check your license: if it is all OK, they generate your Callsign Certificate and email it to you

4. (a) **US hams:** wait for a postcard sent to your station address registered with the FCC. The postcard has a Validation Code printed just above your address ►

Follow the instructions printed on the reverse of the postcard to enter *your* Validation Code into the LoTW postcard validation page (the Validation Code shown here is just an example and won't work!).

4. (b) **Non-US hams**: get your license validated by:

- Scanning or photographing your license and identification information, then emailing it to ARRL HQ; *or*

- Taking your license and ID in person to an ARRL-authorised DXCC card checker if there is one for your country; *or*

- Airmailing a copy of your license and ID to ARRL HQ, preferably using registered post. The information is sensitive and valuable, hence this is a last resort.

5. Wait for your <u>Callsign Certificate</u> to arrive by email, then load the <u>Callsign Certificate</u> *onto the same computer you used to create the certificate request* using <u>TQSL</u>.

- This may be as simple as double-clicking the email attachment.

- If that doesn't work, you may need to save the attachment first as a file on your computer (the one on which you created the certificate request), then find that file and double-click it.

- If that still doesn't work, you can run <u>TQSL</u>, click to open the **Callsign Certificate** tab ► then select **Load Callsign Certificate from File** and navigate to the file you saved.
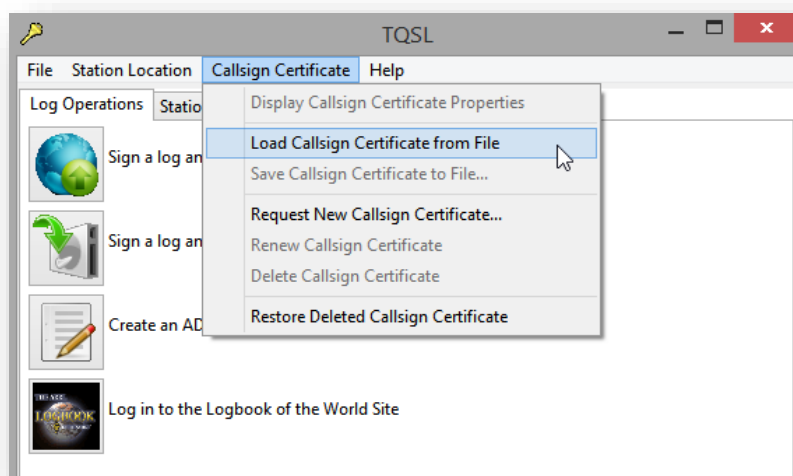
- <u>TQSL</u> electronically checks the <u>Callsign Certificate</u>, marries-up the <u>Callsign Certificate</u> with the corresponding <u>Callsign Certificate</u> request and, if it is all OK, enables the <u>Callsign Certificate</u> for use. You are all set to use the <u>Callsign Certificate</u> to <u>sign</u> your <u>logs</u> and <u>upload</u> them to <u>LoTW</u> (see <u>next section</u>).

> The email also provides your username and password to login to <u>LoTW</u>. Go on, try it!

6. Define one or more <u>Station Locations</u>. <u>Station Locations</u> are needed because callsigns alone are seldom sufficient to know whereabouts a station is, especially within a large <u>DXCC</u> country.

> In this context, 'station' refers to the *transmitter* used to make contacts. If you use a remotely-operated station, the <u>Station Location</u> is where the transmitter is physically installed.

- In <u>TQSL</u>, click **Station Location** on the top menu, then click **Add Station Location** ►
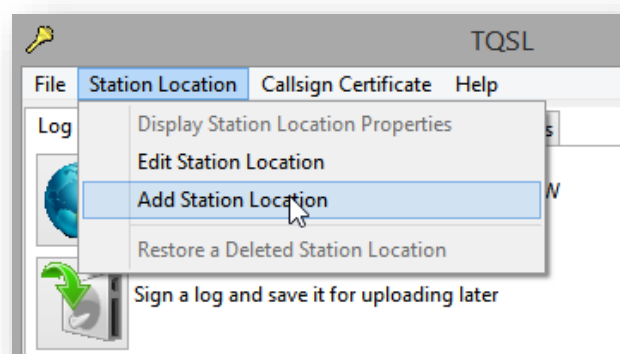
> You *may* not need the security of a password to prevent someone else using your <u>Callsign Certificate</u> to sign <u>QSO records</u> fraudulently. If the risk is low, feel free to remove the passwords from your <u>Callsign Certificates</u> in <u>TQSL</u> using <u>these instructions</u>, making it a bit easier and quicker to <u>sign</u> and <u>upload</u> your <u>log</u>.

- Complete the form by selecting from the drop-down lists and entering the other details requested ►

  > TQSL may suggest some values but check them. Your Grid square, ITU Zone, CQ Zone and (if applicable) IOTA ID will be sent with your QSOs to LoTW, confirming them for the people you contacted. If you are not sure of the details, *please* look them up or ask a friend.

- *Allow 'None' for Call Sign* lets you define a Station Location from which multiple callsigns may be used.
  When you are signing QSOs made from that location, TQSL will ask which callsign you used in order to select the correct Callsign Certificate (if indeed there is more than one).

7. Make a backup of your Callsign Certificate and Station Location/s using TQSL – see the appendix. This step is optional but *highly* recommended.

   > *With* a backup, simply by restoring the backup through TQSL you can recover lost information easily if, say, you get a new computer or the old one breaks down or picks up a virus. *Without* a backup, you'll have to start the entire process again, from the top. …

> "In short, consider TQSL to be putting your QSL card into the mail. You're sending the QSO information out into the world to match a QSO by another operator. That's the basic purpose of LoTW, which is to create QSLs which can be applied to awards. TQSL gives you the way to put that card into 'the mail' so LoTW can store it for QSL matches." [K1MU]

> ### *Well done!*
> *Having completed the most difficult part, you are now all set to start using LoTW.*
>
> *Trust me, the rest is easier and more fun.*

4 Using LoTW

4.1 Logging-in to LoTW

The email that delivered your first Callsign Certificate has the username and initial password you'll need to log-in to LoTW. Change the password to something memorable yet hard for anyone else to guess.

4.2 Signing and uploading your log to LoTW

Once you have obtained your Callsign Certificate, you are ready to start signing and uploading QSO records from your log to LoTW. Here's how …
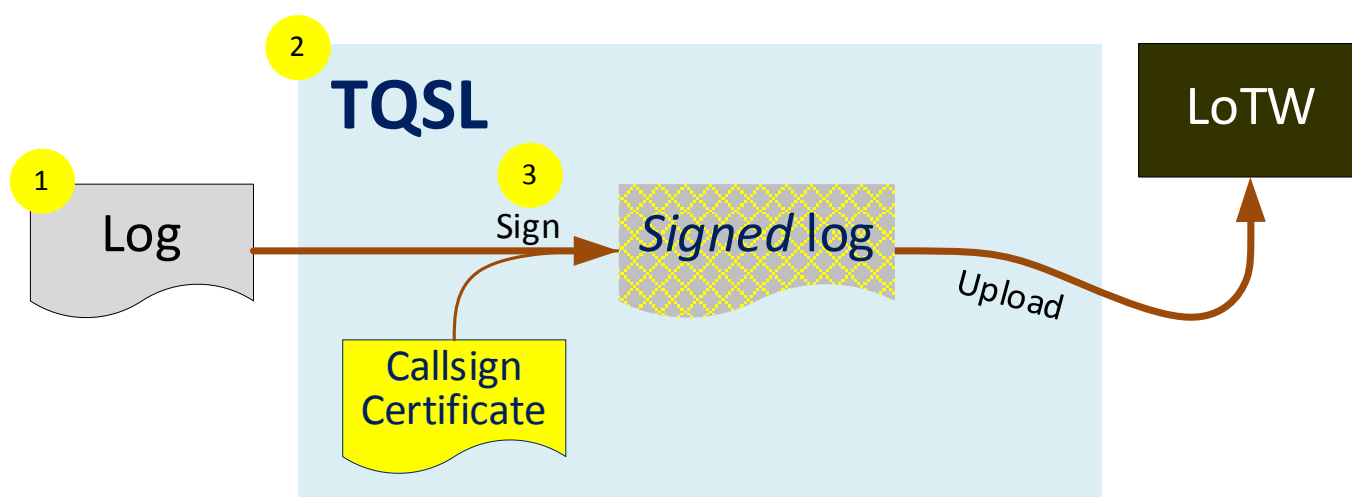
1. Export QSO records from your electronic log as an ADIF or Cabrillo file.

2. Start TQSL.

3. In TQSL, sign the log:

    - Click the **Sign log** button

    - Select the appropriate Callsign Certificate

    - Select the correct **Station Location**

    - Click **Next**

    - TQSL uses your Callsign Certificate to generate a digital signature for the log, appends the signature to the log, and then uploads it to LoTW via the Internet.

    - Upon receiving the file, LoTW checks the digital signature to confirm that this is a legitimate upload, then imports the QSO records into the database.

Little and often works well. In future, export, sign and upload only *new* QSOs, logged since the previous LoTW upload.

If you have multiple callsigns, be careful to export just the QSOs made using a call for which you have a Callsign Certificate, and be sure to select the correct Callsign Certificate for the callsign and the Station Location from which QSOs were actually made.

Only new or changed QSO records are imported into LoTW. Any *exact* duplicates of QSO records previously imported are ignored.

Upload new QSOs to LoTW as often as you can, ideally at least once a month. If you are very active, upload new QSOs more often and check your LoTW confirmations at the same time. Uploading QSOs to LoTW is, in effect, an off-site log backup but it only stores the essential QSO details (date, time, call, mode, frequency/band). Other QSO information (such as name, QTH, reports, notes *etc.*) is callously discarded by the TQSL export and LoTW import routines. See appendix.

When you upload a very large log file, you may see a "*Not Responding*" alert at the top of the window. If you click it, the window will probably go gray and hazy. **This is normal!** Your computer is busy processing the upload, sending the file through the Internet to LoTW. Just wait, patiently. Don't go clicking around trying to 'fix' the situation: you could cause problems.

If you have a *huge* log containing hundreds of thousands of QSOs to upload (*e.g.* from a major DXpedition or a lifetime's log from an active DXer or contester), you *can* simply sign and upload it as usual. After uploading, LoTW will process the log taking roughly an hour to process each 100,000 QSOs. However, if there are issues with the log (*e.g.* QSOs with the wrong dates/times, modes or bands), you would need to correct then sign and upload the QSOs again, a tedious process.

Tim N3QE suggests that, before you go ahead with a huge log, it is better to upload a smaller batch first (*e.g.* a thousand QSOs, preferably recent ones), then check in LoTW how many of them have been confirmed (you should expect something like five hundred matches, roughly 50%). If you upload a thousand recent QSOs and get *zero* matches, something is not right! If the first batch goes to plan, continue uploading further batches until you're all done. The sequence doesn't matter but be sure to upload *all* the batches to avoid leaving gaps in your log in LoTW.

4.3   Automatic signing-and-uploading

Some logging programs make updating LoTW seamless: as soon as a QSO is logged, the QSO details may be *automatically* exported, signed and uploaded to LoTW for you, in the background. To find and configure such a function, browse the logging program's menus, search the built-in help or ask for assistance on the program's support forum.

See the further reading section.

Disable the automatic LoTW updater during contests if the rules prohibit the use of non-amateur means to confirm contest QSOs while the contest is still in progress.

Whether automated or not, the process may fail at several points in several ways, for example if the appropriate Callsign Certificate or Station Location is not available, or if your Internet connection or the LoTW system itself goes down at a critical point. How well the software deals with all possible failures depends on its quality. Some logging programs identify and resolve such problems, recovering automatically and notifying you only if there is something needing your attention. Others may simply fail, perhaps silently … so, take care over the configuration and check that your QSOs are, in fact, being received consistently by LoTW. Keep an eye on the QSO record count in the top right corner of the LoTW screen ► and the date and time of the "Most recent QSO record" shown above the form under the **Your QSOs** tab. For more detail, click the **Your Account** tab then **Your Activity** on the left menu to check that recent uploads have been received and processed correctly.

Today is Fri, 11 Sep 2020 UTC
You are ZL2IFB
Log Off
You have 125,087 QSO records
You have 70,087 QSL records

4.4 QSO matching

The process of matching and confirming signed and uploaded QSO records is *fully automated* within the LoTW system. Whenever an uploaded log is imported into the LoTW database, the system automatically checks every QSO record for corresponding QSO records uploaded by the stations we have worked.
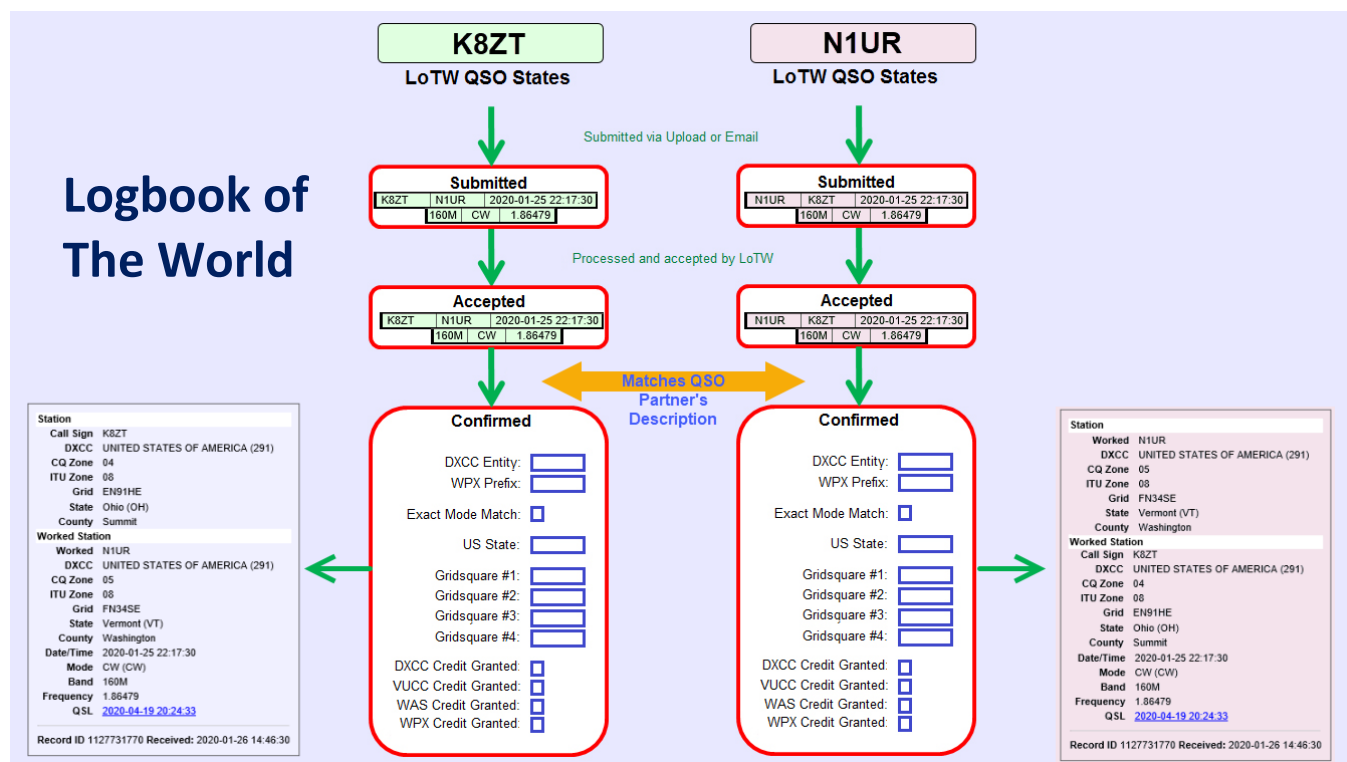

▲   In this example, LoTW has imported a log uploaded by K8ZT. One of the K8ZT QSOs was with N1UR, who has previously uploaded his log to LoTW. LoTW compares the QSO records. Provided there are no significant discrepancies, the QSO is now noted as confirmed for *both* K8ZT *and* N1UR.

Be patient, especially following major contests or when LoTW maintenance/upgrades occur. At busy times, you may need to wait a few minutes, possibly as much as an hour or more, to see the first confirmations coming through.   LoTW is not quite instantaneous but it is *much* quicker than the weeks, months, years or *decades* it can take to exchange QSL cards! If your uploaded log isn't processed as expected and no new confirmations appear for some while (hours or days), check the processing backlog on the Current LoTW status page.

Now K8ZT and N1UR can use the confirmed QSO to apply for DXCC or other awards, just as if they had exchanged QSL cards for the QSO … except the whole signing, uploading and matching process may have taken place just minutes after the QSO, whereas QSL cards generally take weeks, months or years to arrive, longer still for an authorized card-checker to determine by eye whether the cards and QSOs are legitimate.

4.5   Update your <u>station log</u> with <u>confirmations</u> received

Note: this is optional. You may not even have a <u>station log</u> to update! If you do, it is worth updating it from time to time to record <u>confirmations</u> received through <u>LoTW</u>. Here's how ▼
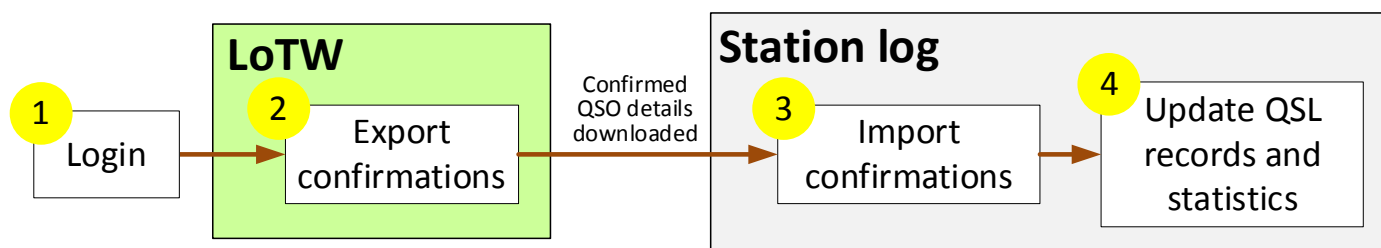
1. <u>Login to LoTW</u> if you are not logged in already. While you are there, by all means browse your recent confirmations received:

    - Click to open the yellow **Recent QSOs** tab.

    - Click the **Most recent QSLs** button on the form (on the right side, under Common Queries) ▼

- A *Contacting logbook server* message appears in pink at the bottom of the form for just a moment, then you'll see a batch of up to 25 <u>confirmations</u> similar to this ▼

- Click **Next** to see the next batch of 25, and so on.

- Click the underlined text to see further details about any <u>QSO record</u>.

- By selecting the relevant Award Account on the form before clicking the **Recent QSLs** button**,** you will also see whether any of the confirmations are valid and can be claimed for awards such as <u>DXCC</u>. Look for rows with a tick and details of the award for which the confirmed QSO may be claimed, like this one with 9Y4DG ▼

2. Export your recent confirmations from LoTW:

- Click the **Download Report** button on the QSOs Menu on the left of the screen ►

- Specify which <u>confirmations</u> you want to <u>download</u> by completing the self-explanatory form ▼
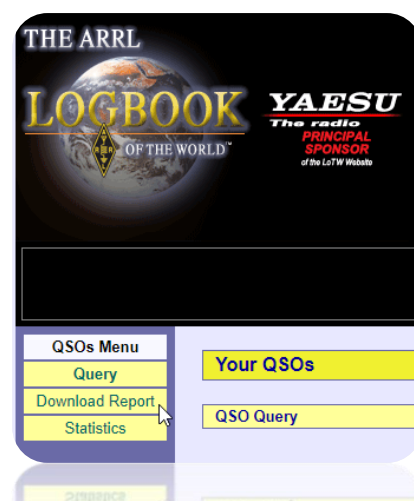

- Click the **Download report** button to generate an ADIF file called *lotwreport.adi* containing the <u>QSO records</u> for your <u>confirmed</u> <u>QSOs</u>, then send it to your computer.

3. Import the <u>confirmations</u> into your <u>station log</u> using the program's "import from LoTW" function.

> The name of the function varies between programs. See the <u>further reading section</u> for links to more info.

4. Your <u>station log</u> should now show which <u>QSOs</u> have been <u>confirmed</u> on <u>LoTW</u>, and are therefore eligible to be claimed for supported awards (more <u>below</u>).

4.6 Other things to do in LoTW

After you login to LoTW, there are several things you can do. We're not going to spoil the surprise by revealing all here: it is better to explore them on your own, at your own pace.
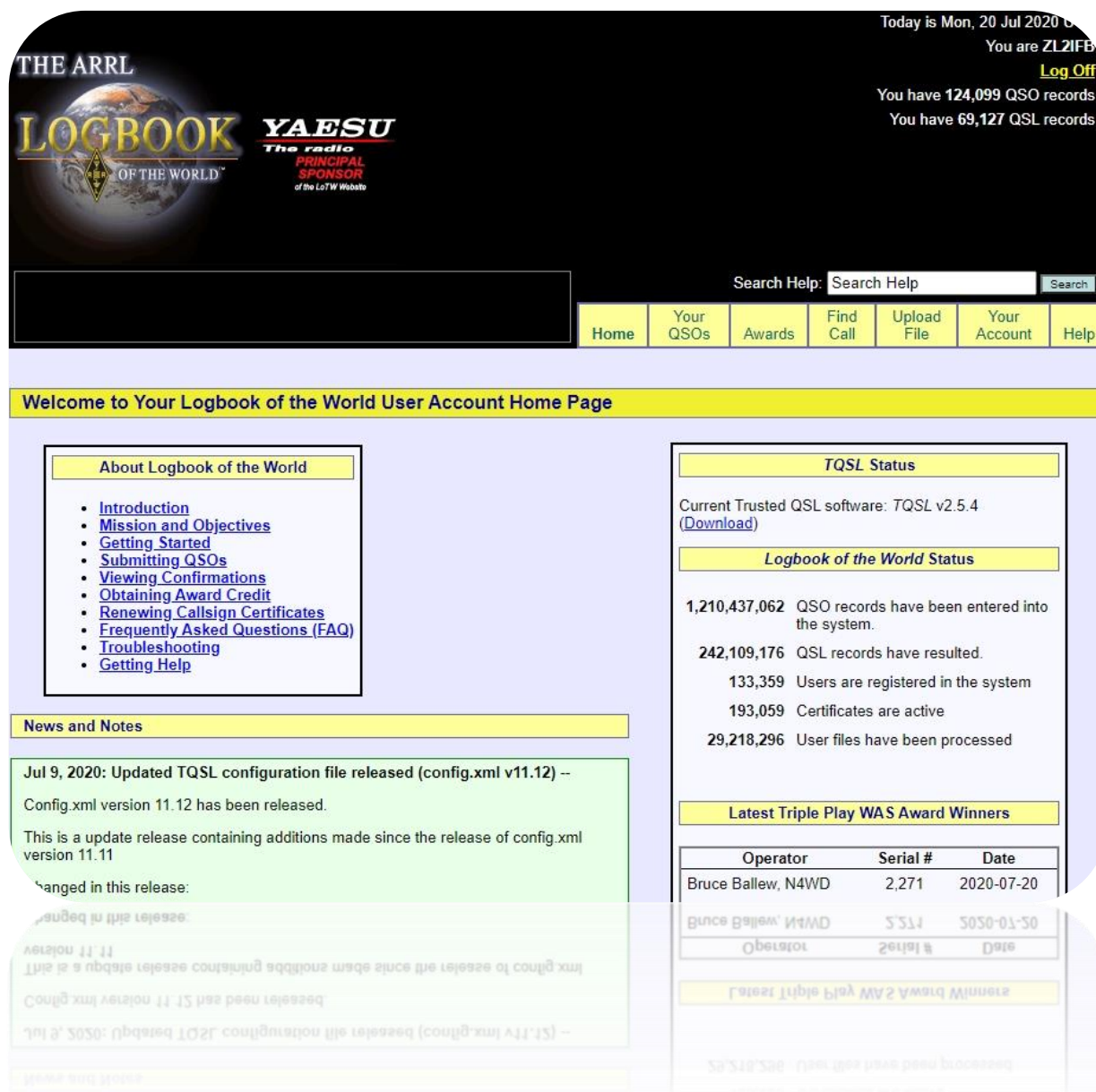
Those yellow boxes at the lower edge of the top black section are tabs - buttons taking you to the main parts of LoTW. Just after you login, you will be at your "Home" page, similar to this one. As a reminder, the word "Home" is in **bold** in its yellow box. If you get lost while wandering around LoTW, simply click that "Home" button to return back to this page - 'go home', as it were.

5 Applying for awards through LoTW

Provided you have accumulated sufficient confirmations, you can apply for some awards *directly* through LoTW. The following awards are currently supported in LoTW: ARRL DXCC (**DX C**entury **C**lub); ARRL VUCC (**V**HF/**U**HF **C**entury **C**lub); ARRL WAS (**W**orked **A**ll **S**tates); CQ WPX (**W**orld **P**refi**x**); CQ WAZ (**W**orked **A**ll **Z**ones).

The first step is to tell LoTW that you are interested in chasing DXCC by requesting a DXCC award account. The same thing applies to the other awards. Your confirmed QSOs will not be credited to the awards unless you have an award account.

Once you have the award account/s, the process continues:

1. Login to LoTW

2. Click the **Awards** yellow tab to open the Logbook Awards screen ►

3. Click to select the relevant award and callsign from the buttons on the left

4. Follow the on-screen instructions! The details vary between awards.

Uploading old and especially rare logs to LoTW provides confirmations for those in the log, and can make you very popular! Valid QSOs with DXCC entities that have since been deleted, for instance, qualify for DXCC at the time the QSOs were made, adding to our 'all time' DXCC counts.

6   Troubleshooting

6.1   What to do about missing <u>confirmations</u>

It can be frustrating when a <u>QSO</u> is not <u>confirmed</u>, particularly the rare or special <u>QSOs</u> you would like to claim for an award. Maybe the <u>QSO</u> was incomplete or incorrectly logged by either party? Did you work a pirate? Does the other person actually use <u>LoTW</u>, and if so when will they get around to <u>uploading</u> their <u>log</u>?

What to do about that:

- Wait patiently! Although the <u>LoTW</u> process is generally faster than direct or bureau <u>QSLs</u>, it is unreasonable to expect *instant* gratification. DXpeditions may wish to consolidate logs from different computers, check and correct known issues (such as obvious typos, <u>QSOs</u> logged in local time instead of UTC, or <u>QSOs</u> logged on the wrong band or mode) *before* signing and uploading the complete, definitive log to <u>LoTW</u>.

- Check <u>when the other person last uploaded to LoTW</u>. Some amateurs don't <u>upload</u> very often, particularly those living in exotic DX locations without Internet access. Some aren't particularly interested in <u>LoTW</u> or <u>DXCC</u>, and can't be bothered <u>uploading</u>. Some may have forgotten how to do it. A polite email may be enough to persuade them, especially if you state the <u>QSO</u> details and explain why you *need* their confirmation, preferably on <u>LoTW</u>.

- Carefully double-check the <u>QSO record</u> in your <u>log</u>. Did you <u>log</u> the date and time in UTC? Is the band and mode correctly logged? What about the callsign: if someone appended their callsign on air with, say, "portable 3", it is uncertain whether they used just their base callsign or added /P or /3 when they <u>signed</u> and <u>uploaded</u> the <u>QSO record</u> to <u>LoTW</u>. Some location modifiers are prepended while others are appended.

> No matter what anyone believes or claims, laws, compliance and conventions vary in practice around the world. Sorry, that's just how it goes.

- If you alter <u>QSOs</u> in your log (for example correcting busted callsigns when <u>QSL</u> cards arrive), you should re-upload the changed <u>QSO records</u> to <u>LoTW</u>. While you might be able to extract the changed <u>QSOs</u> and just upload them, an easier way is periodically to re-upload your entire <u>log</u>. <u>LoTW</u> automatically ignores exact duplicate <u>QSOs</u>. It is not unreasonable to re-upload your entire <u>log</u> *occasionally*. *Please* don't re-upload the same <u>QSOs</u> repeatedly, though, as the processing wastes energy, slows down <u>LoTW</u> and can cause delays for other users.

> Annual re-<u>uploads</u> are a reasonable compromise, for example on your birthday, extract, <u>sign</u> and re-<u>upload</u> every <u>QSO</u> made since your last birthday. <u>TQSL</u> will warn you about duplicate <u>uploads</u>, but it's OK to do it anyway. Call it a birthday treat.

- If you are *desperate* to get a <u>confirmation</u>, you might like to generate, <u>sign</u> and <u>upload</u> duplicate <u>QSO</u> entries with likely callsign variations … but it may be better to email the person concerned to ask for advice.

- Search for and double-check the <u>QSO</u> information stored in <u>LoTW</u>: has the <u>QSO</u> in question in fact correctly completed the entire process of being exported from your <u>log</u>, <u>signed</u> and <u>uploaded</u> using <u>TQSL</u>, then imported successfully into the <u>LoTW</u> database system? Errors are possible along the way.

- Contact the counterparty to check their log. Make it easy for them by clearly stating your callsign, the UTC date and time of the QSO, plus the band and mode.

- If necessary, correct the QSO details in your log, export it as an ADIF file, then sign and upload it to LoTW using TQSL.

Rare DX operators and QSL managers are well aware of chancers 'fishing' for confirmations using common excuses such as "I forgot to log the QSO" or "My hard drive crashed", even though they know or suspect their QSOs were incomplete. Don't waste your effort making vague claims such as "I think it must have been the morning of the 21st" or "It could have been 12 or 15m - my computer disconnected from the radio due to RF interference". This is unethical and inappropriate.

How to increase your LoTW confirmation rate:

- Take care to log QSOs accurately: typos or other logging mistakes cause a lot of grief.

- If possible, connect your computer to your radio to log frequencies and modes.

- Make more digimode QSOs. Almost all digmoders today are using computers to send and receive the digital modes, as well as for logging. Many of us use LoTW too.

- Participate in contests. Competitive contesters log on computers, and most of us upload our logs to LoTW at the same time we submit our logs for adjudication – not least because it substantially reduces the burden and costs of traditional QSL cards.

- Preferentially contact other LoTW users. The LoTW user list identifies us, and you may be able to integrate the LoTW user data with your DXcluster monitoring or logging software.

6.2 Bad Callsign Certificates

If TQSL shows a Callsign Certificate icon *without* its gold ribbon, it is not usable. This can happen if you reload an out-of-date *.tq6* file, because whenever you request a new Callsign Certificate from LoTW, any older Callsign Certificates for the same callsign are automatically marked "replaced".

You can tell the state of a Callsign Certificate by its icon in TQSL, under the **Callsign Certificates** tab ▼
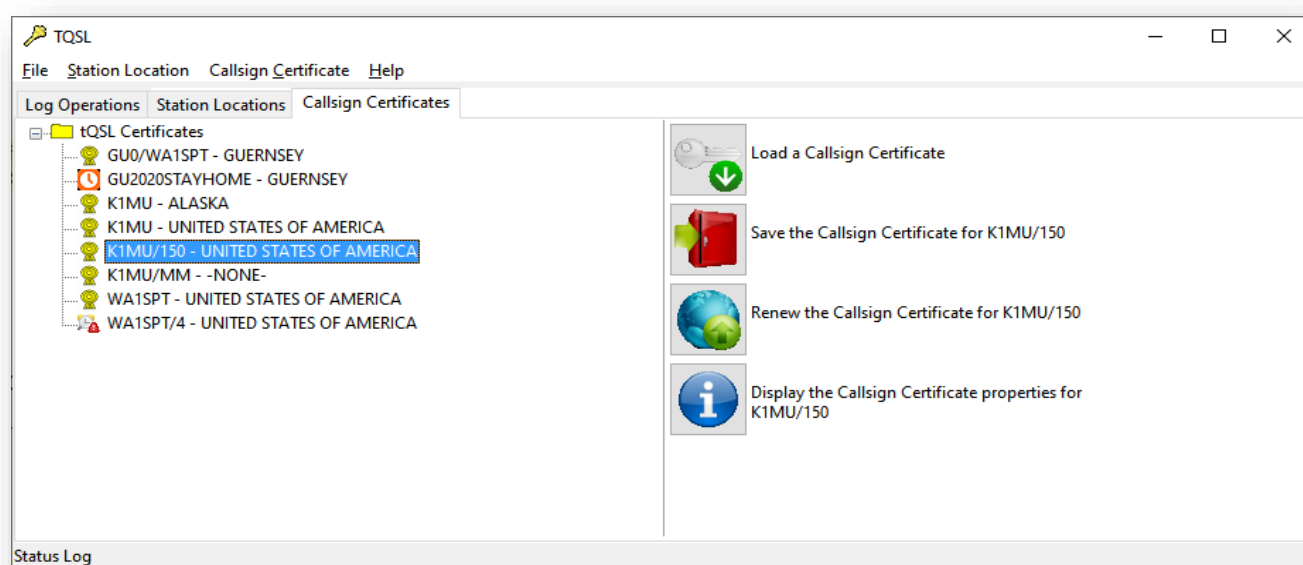
Beside every callsign for which you have requested a <u>Callsign Certificate</u> on your computer, you will see an <u>icon</u> indicating its status:

🏆 **Valid**. This <u>Callsign Certificate</u> is current, functional and ready to use.

🕐 **Pending***. This <u>Callsign Certificate</u> has been requested but not yet supplied and loaded.

⚙ **Replaced***. A more recent <u>Callsign Certificate</u> is available for this callsign.

🏆⚠ **Expired***. This <u>Callsign Certificate</u> reached the end of its validity period. It is no more. You can delete it by right-clicking it then selecting Delete <u>Callsign Certificate</u> ►

🏆 **Broken**. This <u>Callsign Certificate</u> is missing a vital component or has become corrupted and is useless. You might as well delete it too.

* **Pending**, **Replaced** or **Expired** can occur because you previously requested a <u>Callsign Certificate</u> but for some reason failed to complete the process. You may be able to repair it like this:

1. <u>Click here</u> to <u>download</u> your current <u>Callsign Certificates</u> (<u>LoTW</u> will likely ask you to log in with your <u>LoTW</u> username (callsign) and password). A file called *certs.tq6* will be saved in your Downloads folder.

2. Run <u>TQSL</u>.

3. Click to open the **Callsign Certificates** tab ▼
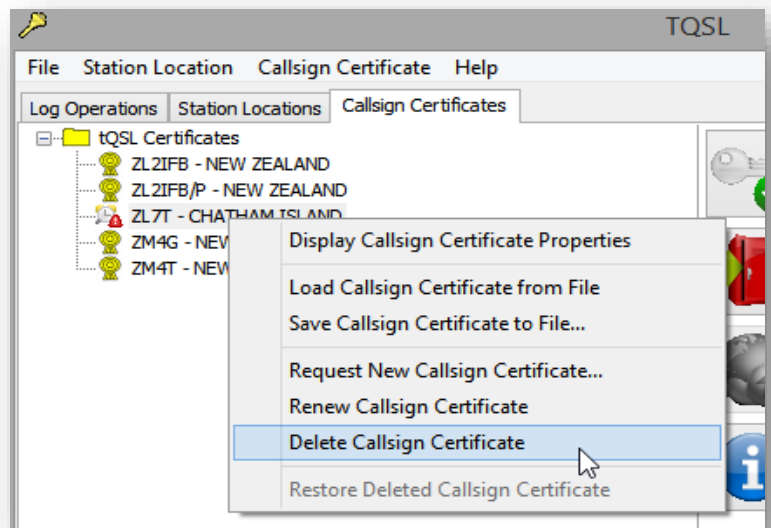
> ◄ The repair process can *only* complete a corresponding certificate request, changing a **Pending**, **Replaced** or **Expired** <u>Callsign Certificate</u> into a **Valid** one.
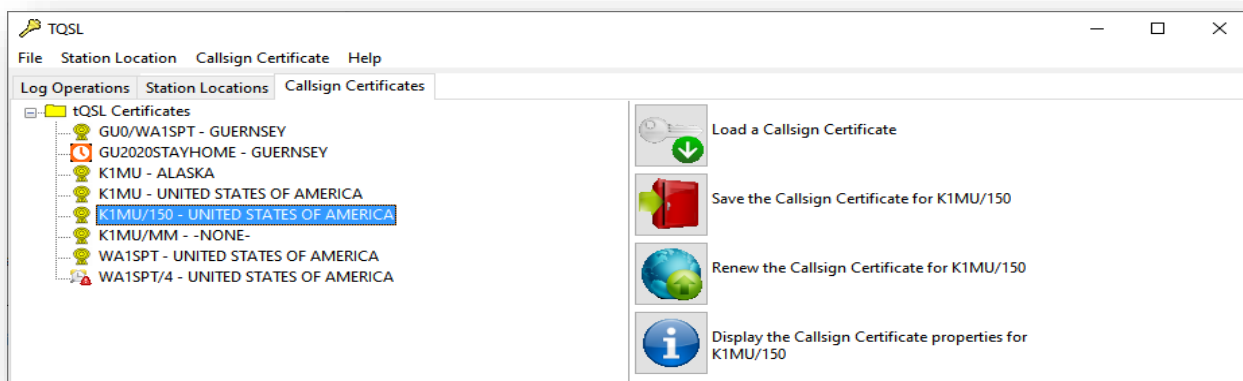
4. Click the **Load a Callsign Certificate** button, then navigate to your Downloads folder and click to select the *certs.tq6* file downloaded in step 1.   When the load is complete, your computer has the most recent Callsign Certificates for any callsigns related to your LoTW account. In TQSL you *should* see at least one 🏆 icon indicating a current, working, Callsign Certificate. If not, start over by making a fresh Callsign Certificate request:

> Any messages about duplicate Callsign Certificates can be safely ignored at this point.

5. Delete the Callsign Certificate for the callsign which you want to use:

   a. In TQSL, click to open the **Callsign Certificates** tab ▶

   b. Right-click the Callsign Certificate you want to delete ▶

   c. Click **Delete Callsign Certificate** ▶

   d. Read the warning message, double-check that you have selected the correct Callsign Certificate, then click **Yes** to delete it ▶
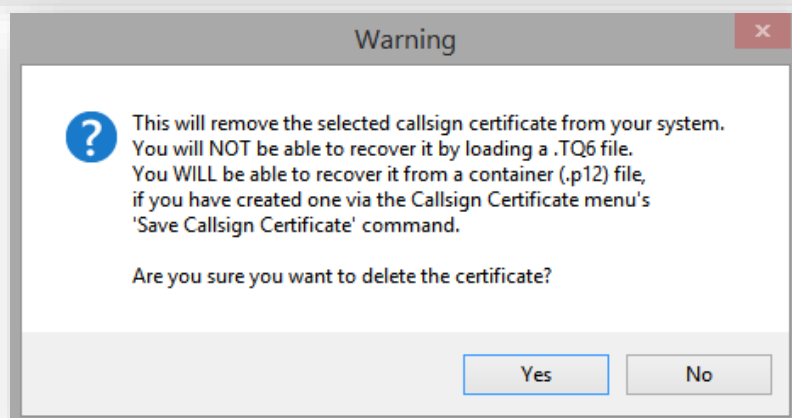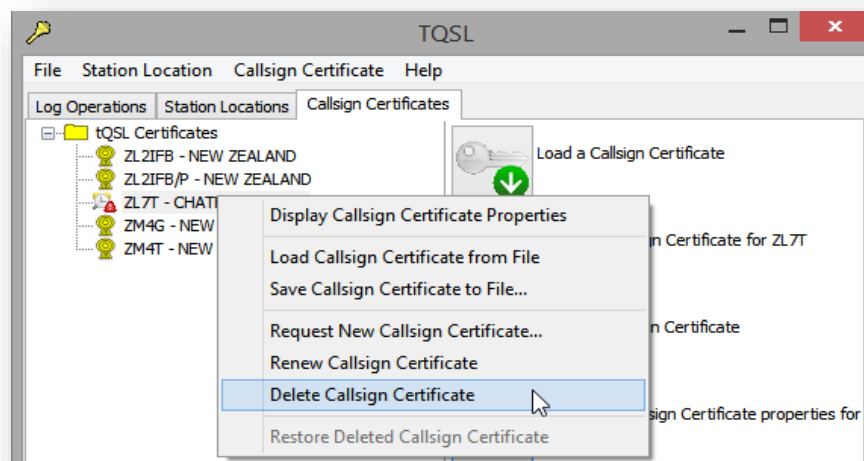
6. Request a new Callsign Certificate for that callsign.

7. *Wait patiently!* Do not do anything with the pending certificate in TQSL. You must wait for the ARRL staff to approve and issue you a replacement Callsign Certificate, manually.   Don't be tempted to ignore the warnings that there is a certificate pending and delete it. Be patient … or you will have to go back around this circuit again!

8. As soon as it is ready, ARRL will sent you a new *callsign.tq6* file as an email attachment, where *callsign* is the callsign for this Callsign Certificate. Save the *callsign.tq6* file from your email client to your *Downloads* folder (how to do that depends on what email software you are using: try clicking, double-clicking or right-clicking the attachment).

9. Open TQSL, if it isn't already running.

10. Select the **Callsign Certificates** tab as shown in the image above.

11. Click **Load Callsign Certificate from File**.

12. Navigate to your Downloads folder, and double-click to open the *callsign.tq6* file which you downloaded and saved in step 4.

13. Your Callsign Certificate should now show the valid icon 🏆 meaning that it is ready to use. Success!

14. When you're all done, delete the *callsign.tq6* file. It is a single-use file. You won't need it again. Should you need to do so, you can always request a replacement <u>Callsign Certificate</u> through <u>TQSL</u>, starting from step 1 of this procedure.

6.3   <u>TQSL</u> shows a "Database Error" when <u>signing</u> a <u>log</u>

In order to reduce the number of duplicate <u>QSOs</u> submitted to <u>LoTW</u>, <u>TQSL</u> maintains an internal list on your computer with information about the <u>QSOs</u> that you have <u>uploaded</u> already.

"Database Error" means that, somehow, <u>TQSL</u>'s internal <u>QSO</u> list has become corrupted. This has nothing to do with the <u>log</u> being processed, or <u>LoTW</u>: it is a fault within <u>TQSL</u> itself.

If a "Database Error" happens when <u>TQSL</u> is initially setting up to <u>sign</u> a <u>log</u>, <u>TQSL</u> will recover automatically by deleting its list of <u>uploaded</u> <u>QSOs</u> and starting afresh, but if you're in the middle of <u>signing</u> a <u>log</u> when the error happens, the automated fix doesn't work so you must step in.

> Don't fret! Although <u>TQSL</u> may have lost *its* list of previously-processed <u>QSOs</u>, <u>LoTW</u> still has all your <u>signed</u>, <u>uploaded</u> and processed <u>QSO records</u> stored safely on the server. <u>LoTW</u> efficiently skips past exact duplicate <u>QSOs</u> if they are ever <u>uploaded</u> again.

To correct "Database Error" manually (on a Windows system):

1. Open Windows Explorer by holding down the Windows-logo key and pressing "E".
2. In the address bar (labeled "Quick access" in windows 10), click and then enter the following:

   ```
   %AppData%\TrustedQSL
   ```

   Then press **Enter** to open the directory where <u>TQSL</u> stores its <u>QSO</u> list.

3. Right-click any of the following files and choose **Delete** to remove them:

   - *duplicates.db*

   - *__db.** meaning files such as *__db.001, __db.002, __db.register etc*.

   - *log.** meaning files like *log.00000010 etc*.

4. <u>TQSL</u> will re-create its internal <u>QSO</u> list automatically the next time you <u>sign</u> and <u>upload</u> a <u>log</u>.
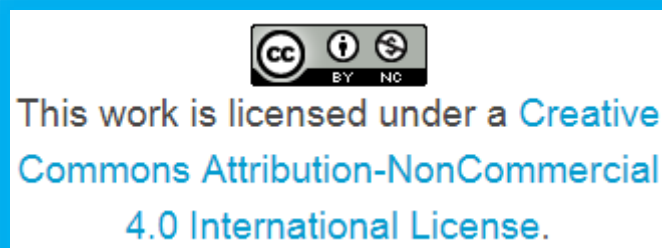
Feedback comments, corrections, additional tips and other suggestions to improve on this guide are very welcome: please email Gary@isect.com.

7   Further reading

Here are some useful reference sources with additional information:

- ARRL's online help for LoTW is extensive, well written, definitive and worth browsing.

- ARRL LoTW reflector is an email group for LoTW users, a source of hints and tips, and a great place to go for help if you get stuck or have queries and concerns. Members of the reflector initiated and provided numerous inputs to this very guide.

- ARRL LoTW Getting Started Guide plus brief quick-start guides (available *soon!*).

- Current LoTW status shows recent uploads queued up, waiting to be processed into the database.

- Last upload dates shows when stations last uploaded their logs to LoTW.

- List of LoTW users maintained by ARRL and HB9BZA.

- Websites for LoTW, ARRL, DXCC, ADIF, TQSL *etc*.

- LoTW help desk has FAQs and troubleshooting tips, and you can 'submit a ticket' to ask for human assistance with specific LoTW problems.

- DXCC help desk lists the email addresses for human assistance with specific DXCC problems.

- Guidance on connecting logging programs to LoTW:

    - **A**mateur **C**ontact **Log**: LoTW help

    - **Club Log**: how to use LoTW

    - **DX4win**: look for LoTW in the help

    - **DXLab**: step-by-step instructions for QSLing with LoTW and reference documentation

    - **HRD Logbook**: setup instructions (may change as the documentation gets updated)

    - **Log4OM**: full instructions (from page 100)

    - **Logger32**: uses the L32logSynch add-on by N2AMG

    - **LOGic:** LoTW uploads and downloads are automated (browse built-in help for more)

    - **MacLoggerDX**: instructions

    - **QRZ Logbook**: LoTW Certificate Import and LoTW Download quick start guides

    - **Swisslog**: LoTW support information

- Wayne Mills, N7NG (2003). "Introducing Logbook of The World". *QST* **87** (October), pages 46-47.

- Wikipedia page: https://en.wikipedia.org/wiki/Logbook_of_The_World

Appendix: <u>TQSL</u> updates

The Trusted QSL application (<u>TQSL</u>) is updated by its author from time to time. Sometimes the program itself is changed, sometimes the 'configuration file' with details about countries and zones, occasionally both.

If you see messages like this after you start <u>TQSL</u> …
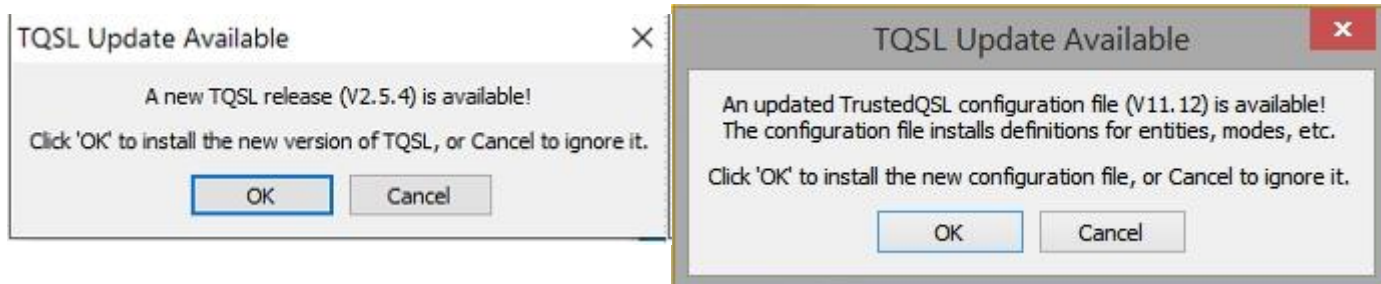
… then it's time to update:

1. Click OK. If there are two messages each with OK buttons, do the "new TQSL release" (program update) first.

2. Gaze on in bewilderment as the software <u>downloads</u> the new release and updates itself, automatically. This can take a moment. You may notice <u>TQSL</u> closing and reopening.

3. If there is a further update still waiting, click the OK button and wait for the configuration file to <u>download</u> and update itself, automatically. This is usually quicker, almost instantaneous, and ends by displaying a success message ►

4. Start using the updated <u>TQSL</u> the same as the original version – only with different (hopefully fewer!) bugs and the proper configuration.
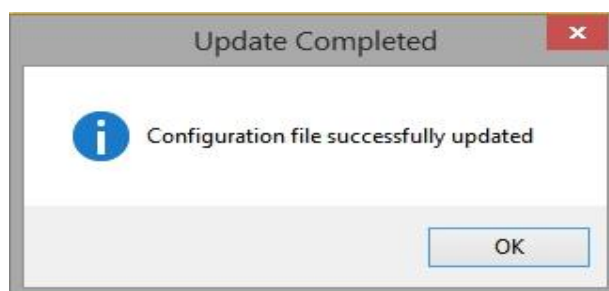
If something goes wrong with an update, programs *usually* revert to the previous un-updated version and warn you that the update failed ... but then you're on your own. Sorry, the automation has let you down. You may be lucky if you run the update again, perhaps after rebooting your computer first. If the update still fails, you can try emailing the author of the software, asking a passing computer whizz-kid for assistance, calling the help desk or emailing the <u>LoTW</u> reflector.

Please don't just ignore update messages and warnings though. If it is not a convenient time to update, it is OK to click the cancel button/s on the update messages and continue using the current un-updated application for a while, but probably not forever.

Appendix: Renewing a <u>Callsign Certificate</u>

When <u>TQSL</u> starts up, it automatically checks for program updates and <u>Callsign Certificates</u> nearing the end of their 3-year validity, soon to expire. You'll see pop-up messages telling you what's going on.

It's easy to renew a <u>Callsign Certificate</u> through <u>TQSL</u>: simply follow the prompts.

You will be asked to confirm the callsign, <u>DXCC</u> entity and license validity period. ►

The <u>Callsign Certificate</u> generation process is largely automated and normally takes minutes. However, it may be delayed if the LoTW systems are busy, down for maintenance *etc*. Unusual <u>Callsign Certificate</u> requests need to be checked manually by ARRL staff before being processed, which takes time. If the emails don't arrive, wait patiently. Check your spam box. If you *still* haven't received the emails a few days later, contact the ARRL LoTW help desk for assistance.
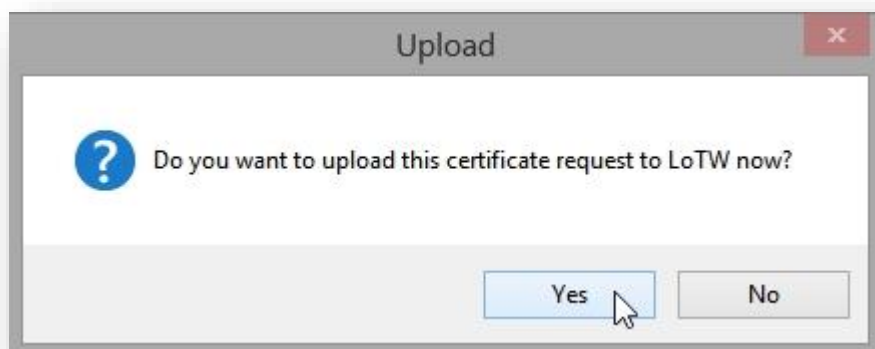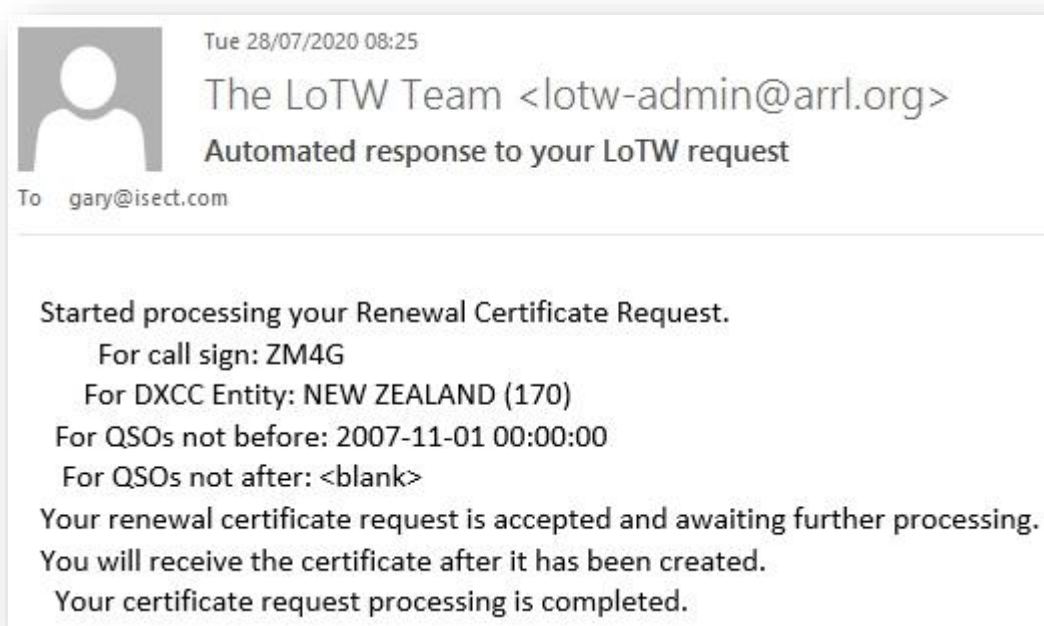

It's best to apply for a replacement <u>Callsign Certificate</u> *before* your old one expires … but even if you are a bit late, the old one can still be used to sign a request for a replacement.

You should receive a pair of emails from ARRL, first one confirming that the Callsign Certificate request has been received and checked, and your certificate is being generated:

Shortly after you should receive a further email with your new Callsign Certificate attached.
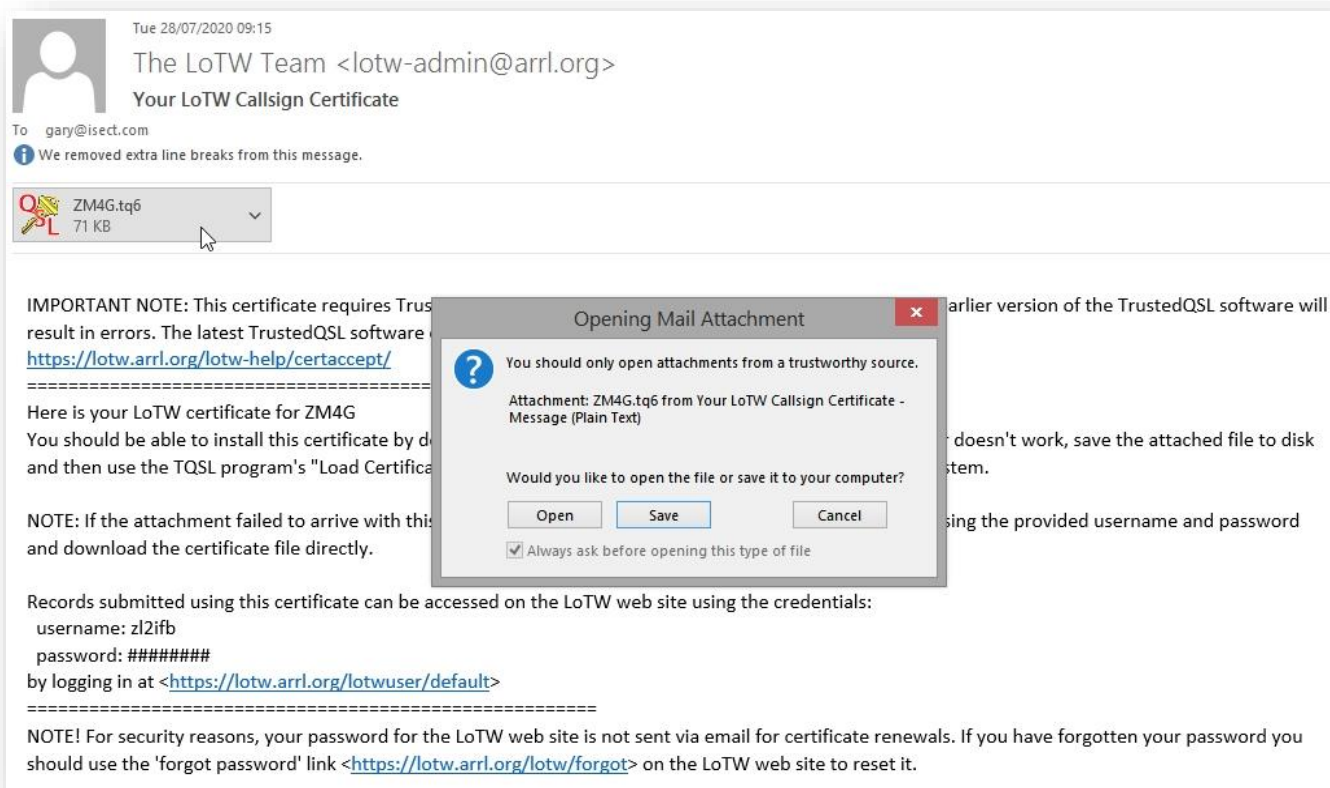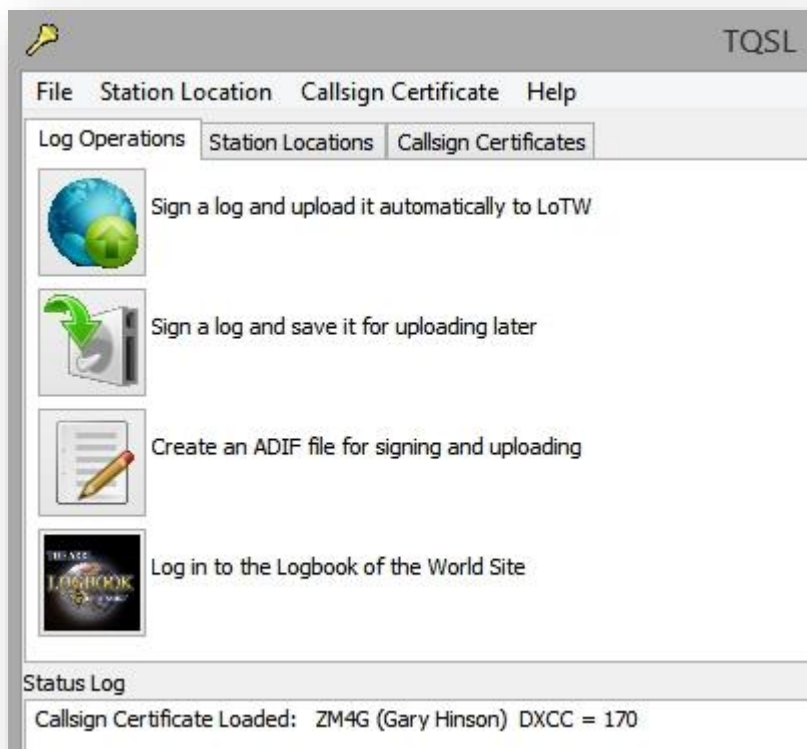
Don't forget to make a fresh backup at the end of the process - see the next appendix.

Appendix: Backups

Backups protect us against incidents and accidents that would damage or destroy valuable information. Trust me, it is much easier and quicker to restore a backup than attempt to recreate your log from scratch following a computer crash, theft, virus infection or mistake when "tidying up the directories". The trick is to make backups and store them safely.

> Radio clubs might usefully offer a backup service, helping members generate backups of their logs and TQSL information, storing them safely, and helping members restore backups if needed. How about suggesting this to your club's committee?

Backing up your Callsign Certificates and other information from TQSL

Backup your TQSL data whenever significant changes occur, such as adding new Callsign Certificates or station locations.

It's easy to do. In TQSL, you will find the option under the **File** menu ▶ Simply click **Backup Station Locations, Certificates, and Preferences …** and follow the prompts to specify where on disk to store the backup. It creates a backup file called *tqslconfig.tbk* by default, storing it in the directory you selected.

Copy the backup file to removable media such as a USB memory stick, CD-ROM/DVD *etc.*, then store it safely away from the computer.
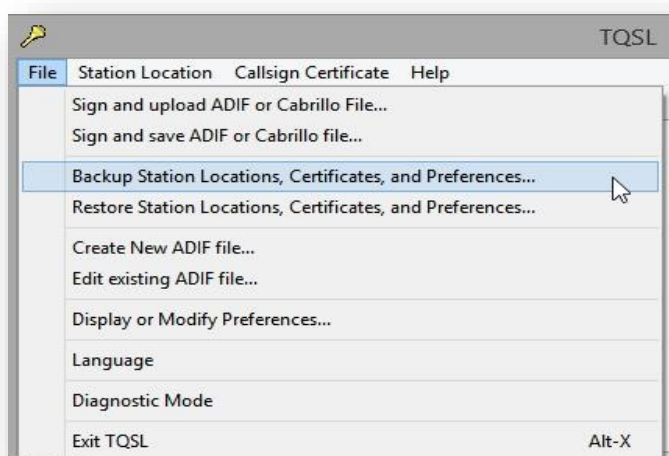
> Cloud storage may be more convenient but what happens if the cloud service fails, or someone accidentally deletes the stored data, or it gets corrupted by ransomware? Do not rely *entirely* on cloud backups for any really important or valuable data. Remember, clouds may bring rain!

Restoring TQSL data (Callsign Certificates, Station Locations *etc.*)

If for some reason you need to do this, you can restore a *.tbk* backup to a fresh installation of TQSL:

1. Download and install TQSL.
2. Run TQSL
3. Click the **File** menu option.
4. Click **Restore Station Locations, Certificates, and Preferences**
5. Follow the prompts to locate and load the *.tbk* file.
6. Check that your Callsign Certificates and Station Locations are present and correct.

> You can restore a *.tbk* backup to a recent installation of TQSL on *any* computer - for instance if a broken shack computer has been replaced, or perhaps you have a laptop for traveling or a friend's computer (*e.g.* a club computer). However, if you elected not to use a password to protect a Callsign Certificate, anyone with access to that system could potentially sign and upload QSOs under your callsign. So either add a password, or only give the *.tbk* file to people you trust.

Backing up your electronic log

If you thought TQSL backups were easy, log backups are even easier: simply sign and upload your QSOs to LoTW. LoTW keeps the essential QSO details in its database, and we can download them later if for some reason we need to recover the information.

Explain how to download the basic log from LoTW

However, **LoTW only stores essential QSO information** *i.e.* callsigns, dates, times, modes and bands or frequencies. Other details such as operator names, QTHs, QSL information and notes are not stored by LoTW - in fact they are not even uploaded since TQSL strips them out before signing our logs.

If you aren't willing to risk losing all that additional information needed to recreate your complete log following an incident, you must make backups of your log by some means *e.g.*:

> Any backup drives or media that remain physically connected to or accessible from your computer (*including* cloud-based backups) are vulnerable to being corrupted/damaged, deleted or stolen. Ransomware typically locks up all accessible data before demanding a ransom payment. A shack fire may well destroy everything. Connect backup devices only while you are making or restoring backups. At other times, store them safely in a different place, ideally a fire safe or safety deposit box. If you are as cautious/paranoid as me, make *multiple* backups and store them separately.

- Your logging program probably has a backup function that lets you save your complete log to disk. It may even do this automatically for you. Check the **File** menu, read the help or ask for support from the software supplier.

- Your logging program probably lets you export your log as an ADIF file. This has the advantage that you can import the ADIF log into other logging programs if the original one turns out to be unusable for some reason (*e.g.* no longer supported and unable to run on current systems).

- Copy the saved log file to removable storage such as a USB memory stick, external hard drive or CD-RW disk, then remove or disconnect it.

Restoring your electronic log

1. Install and configure a modern logging program to your liking.

2. Find and run the option to **import an ADIF log file**.

3. Find your most recent ADIF backup and import it.

4. Deal with any import errors (*e.g.* correct any invalid QSO details).

5. Check that you now have a reasonably complete log *e.g.* does it contain the correct number of QSOs? Are there any unexpected gaps? Are the awards reports showing the correct info? If not, you may need to import other backups as well, hoping that the logging software automatically detects and skips duplicates (otherwise you may have some tedious work ahead to find and delete the dupes - or this may be your cue to install better logging software that handles dupes more intelligently!).

> Tidy up old files from time to time. Once you have sent a *.tq5* certificate request to LoTW, received back the *.tq6* certificate file and loaded it into TQSL, you can safely delete both files. Likewise with the *.tq8* signed logs that you have uploaded to LoTW: there is no need to hold on to the *.tq8* files after they have been uploaded. **Be careful *not* to delete your ADIF logs, of course (*.adi* files), and keep those TQSL backups (*.tbk* files).**

6. Make a fresh ADIF backup of your newly-restored log, and store the backup safely. Trust me, you don't want to go through all that hassle again!