

4 channel Assessment Gathering

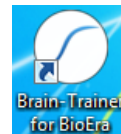
Brain-Trainer for BioEra, Optima+ and TC26 Cap/Electrodes

CONFIGURE SETTINGS

Once the device configuration is done, it does not need to be repeated at subsequent sessions. However, channel settings will need to be set for 4 channels, linked references for each assessment.

Open Software

Open *Brain-Trainer for BioEra*. There should be a shortcut on your desktop.

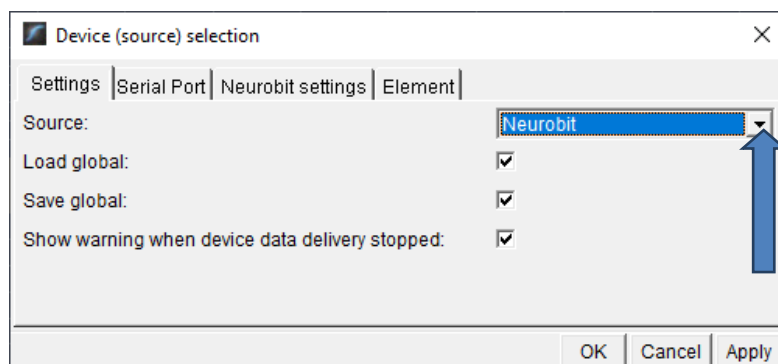


Select your device

Click the gear icon in the lower center of the Main Menu.

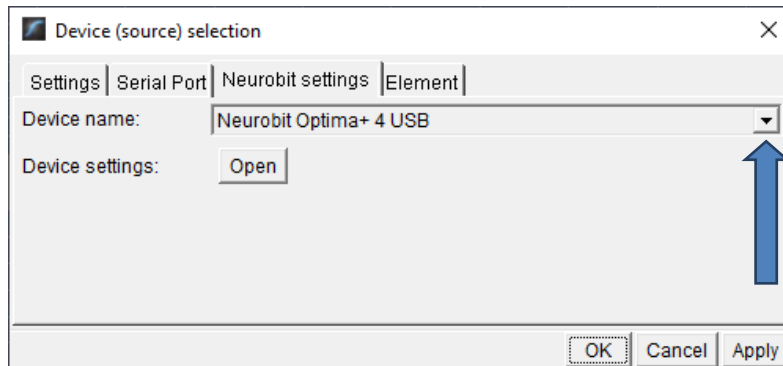


The "Device selection" window will open. Click the down arrow, scroll down and select your source if you have not done so. *TIP: Type the first letter of the device repeatedly until you see it as an option.*



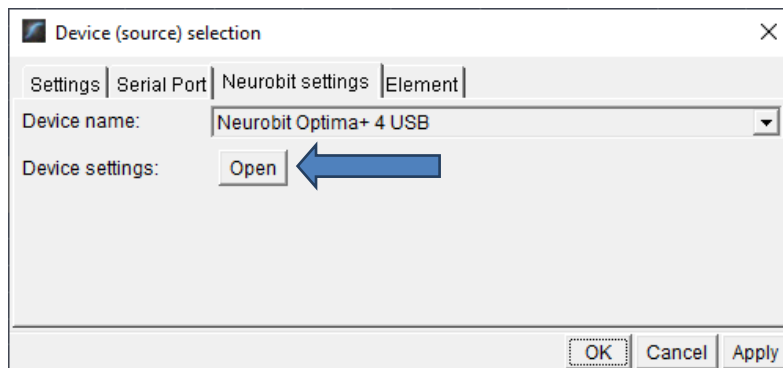
There is no need for a serial port, so leave that tab unchanged.

Select the "Neurobit settings" tab. Click the down arrow and scroll down and select your device name. Click "Apply." Now your selection should be saved.

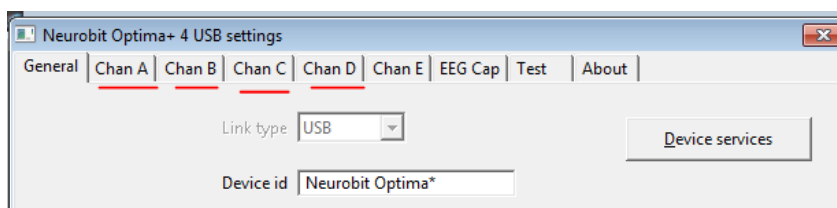


Configure channels

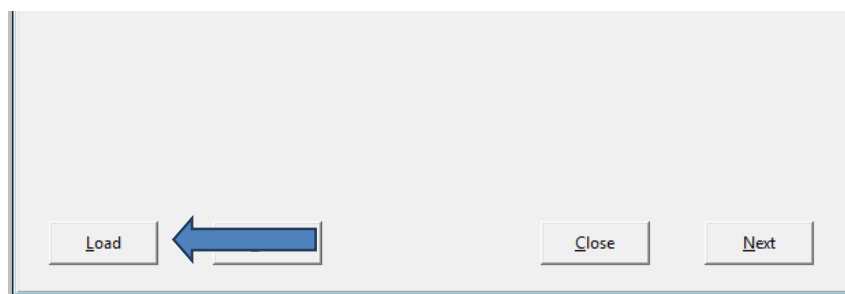
Click the "Open" button for Device settings and the Device settings window will open.



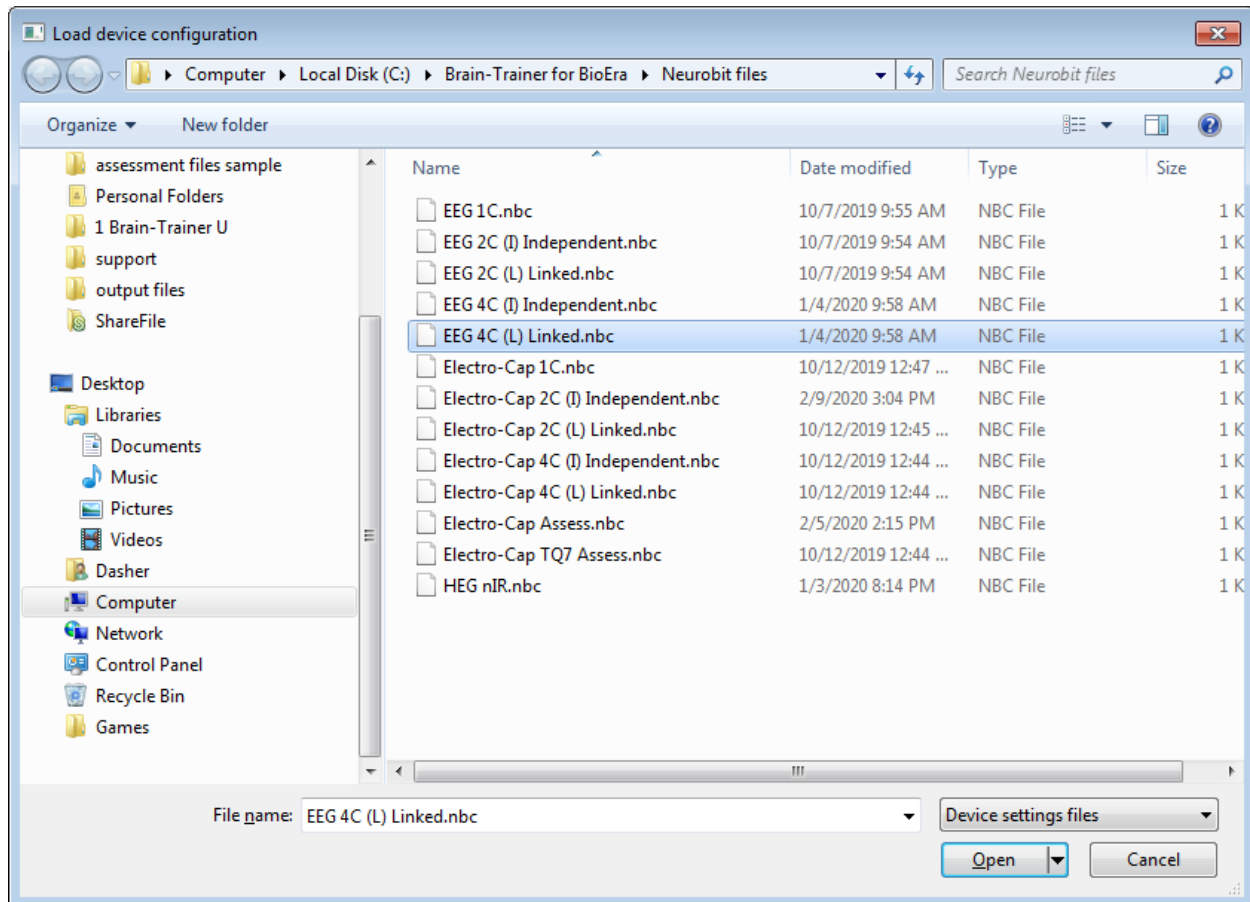
There is a tab for each measurement channel to enable and configure channels you plan to use in the next session.



For convenience, you can load pre-configured settings. Click the "Load" button at the bottom left.



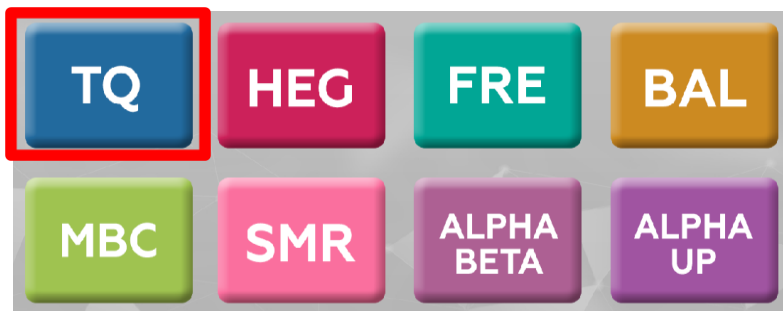
Now navigate to the folder C:\Brain-Trainer for BioEra\Neurobit files. Select the file *EEG 4C (L) Linked* as your settings. Click "Open", then "Close". Click "OK" to close the Device selection window.



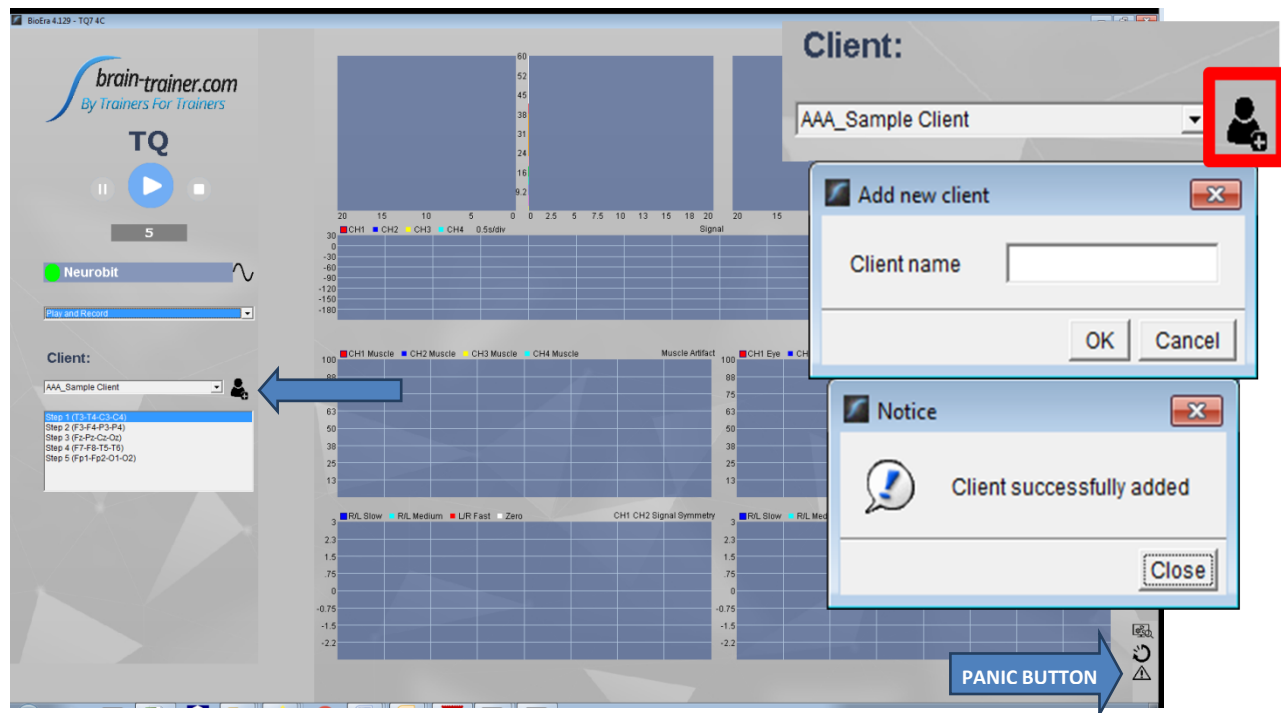
Alternatively, you can manually turn on selected measurement channels (*Channel enable* option on individual channel tabs A, B, C, D).

Open the Design

Click the "TQ" button on the Main Menu screen and the TQ design will open.



Click the icon "Add client", enter the name of the client and click "OK". Close the Notice window.



Now select the client from the list. *TIP: If you do not see the client's name, click the "panic button".* **Files will be saved in the location C:\Brain-Trainer for BioEra\session\[client folder]\Assessment xxx...**

APPLY ELECTRODES

Place cap and insert saline-saturated electrodes for Step 1. Active sites Channels A, B, C, D: **T3, T4, C3, C4**.

Placing Ground and Reference Electrodes

- The ground/neutral on the TC26 Trainer's Cap is at **AFz** and must ALWAYS be used with conductive saline solution.
- **A1** and **A2** are used as references for all steps, placed behind the ears.

Placing active electrodes

When gathering from homologous sites (e.g. T3 and T4, C3 and C4), electrodes from left hemisphere should always go in Channel A, right hemisphere in Channel B. When gathering on the midline (z sites), furthest front electrode should go in Channel A.

Connect the electrode wires to the unit.

Optima+: **AFz** VG (ground); **A1** -A; **A2** -B; **T3** A+; **T4** B+; **C3** C+; **C4** D+

Active Sites/Tasks (Suggested Order)

- **T3/T4 and C3/C4**—Client **listens for detail**. Read or tell a story or article with detailed information in it while the client listens. Tell the client you may ask questions after the recording. Ask open-ended questions first (e.g. "what was the paragraph about?") and move to greater detail.

- **F3/F4 and P3/P4—Digit-span working memory** test. For the first 30-40 seconds read a series of digits (0-9) one second apart (start with 5 digits) and ask the client to repeat them. If client can do 5, try 6, then 7. You may choose to pause after 30-40 seconds to do Reverse Digit Span: Explain the task (listen to the numbers and repeat them in reverse order)
- **Fz/Pz and Cz/Oz—Eyes partly open.** Client **imagines a desired future change** in himself.
- **F7/F8 and T5/T6—Client reads silently for detail.**
- **Fp1/Fp2 and O1/O2—Pattern recognition**, counting the number of occurrences of the letter sequence "t, h and e", whether in a word (e.g. **their**, **another**) or as a word itself.

EXPLAIN PROCESS TO THE CLIENT

- First minute of recording will be relaxed, still, with eyes closed and still.
- Second minute of recording will be relaxed, eyes open and still.
- Third minute of recording will be relaxed performance of a task with eyes open. Explain that this is not a test of the client's performance but a way of seeing how the brain responds to the challenge.

Before recording each area, explain the task and verify the client understands what to do.

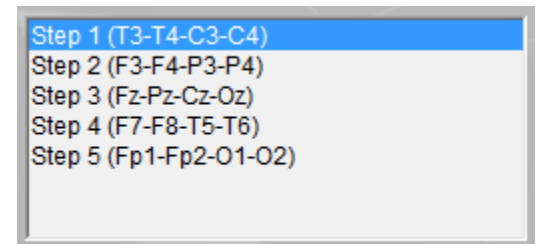
Verify that the client is relaxed, sitting straight with both feet on the floor with eyes closed or open as appropriate.

GATHER DATA

In the design, make sure that "Play and Record" is selected.

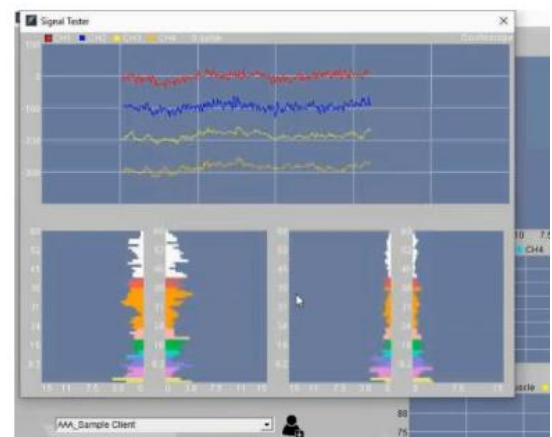
Step 1


- Select "Step 1".
- Click the "Signal Tester" button and observe [signal quality](#).



Check signal quality

- In the Oscilloscope very regular, mechanical and fast waves suggest artifact. Very large waves or rolling/wandering baseline for a channel also suggest problems. Channels should show about the same amount of activity. A very attenuated signal in one or more channels indicates a poor connection.
- In the Power Spectrum windows look for spikes at 50 Hz or 60 Hz depending on your electrical system. If these are dominating the spectrum, there may be electromagnetic interference or you may have a poor connection between the skin and electrode
- If all channels show spikes and you are using a laptop, try unplugging the power transformer from the wall and the computer to run on battery. See if the spikes drop or disappear.
- If there are signal problems, re-prep electrodes and verify that the signal has improved.
- When signal is good, close the Signal Tester window.



Be ready to close eyes when you click "Play."  As soon as you click "Play" the timer will count down 5 seconds, after which the assessment data gathering will start recording the first minute. You will see a prompt on the screen for what state the client should be in (eyes closed, eyes open, task).

Step 1 - Eyes Closed

1. Ask the client to keep eyes closed and press "Play". After 1 minute of recording, the design will automatically pause.
Tip: Keep mouth slightly open to avoid muscle artifact in T3 and T4. Be careful with eye movement. If a problem, ask client to lightly hold eyelids with fingertips.
2. Ask the client to keep eyes open and press "Play" to continue recording. After 1 minute, the design will automatically pause.
Tip: Ask client to look downward, trying to fix the gaze at a point to avoid eyes blinking.
3. Explain the task and press "Play" and begin performing the task. The task of this step is to **listen** carefully to the details of the text. After 1 minute, recording will end automatically.

At the end of the recording, the "Play" button will be replaced by the "Restart" button.

Step 2

- Click the "Restart" button to restart the design and prepare it to start the next recording.
 - Select "Step 2". Wait the the light to turn green before recording again.
 - Move electrodes to their next positions. Active sites Channels A, B, C, D: **F3, F4, P3, P4**.
 - Press "Signal Tester" button to check for signal quality. Then close.
1. Ask the client to keep eyes closed and press "Play". After 1 minute of recording, the design will automatically pause.
Tip: Be careful with eye movement. If a problem, ask client to lightly hold eyelids with fingertips.
 2. Ask the client to keep eyes open and press "Play" to continue recording. After 1 minute, the design will automatically pause.
Tip: Ask client to look downward, trying to fix the gaze at a point to avoid eyes blinking.
 3. Explain the task and press "Play" and begin performing task. The task of this step is **digit span**. Have client repeat a series of digits. After 1 minute, recording will end automatically.

Step 3

- Click the "Restart" button to restart the design and prepare it to start the next recording.
 - Select "Step 3". Wait the the light to turn green before recording again.
 - Move electrodes to their next positions. Active sites Channels A, B, C, D: **Fz, Pz, Cz, Oz**.
 - Press "Signal Tester" button to check for signal quality. Then close.
1. Ask the client to keep eyes closed and press "Play". After 1 minute of recording, the design will automatically pause.
Tip: Be careful with eye movement. If a problem, ask client to lightly hold eyelids with fingertips.



2. Ask the client to keep eyes open and press "Play" to continue recording. After 1 minute, the design will automatically pause.
Tip: Ask client to look downward, trying to fix the gaze at a point to avoid eyes blinking.
3. Explain the task and press "Play" and begin performing the task. The task of this step is **visualization**. Imagine a future situation that you would like to happen. After 1 minute, recording will end automatically.

Step 4

- Click the "Restart" button to restart the design and prepare it to start the next recording.
 - Select "Step 4". Wait the the light to turn green before recording again.
 - Move electrodes to their next positions. Active sites Channels A, B, C, D: **F7, F8, T5, T6**.
 - Press "Signal Tester" button to check for signal quality. Then close.
1. Ask the client to keep eyes closed and press "Play". After 1 minute of recording, the design will automatically pause.
Tip: Be careful with eye movement. If a problem, ask client to lightly hold eyelids with fingertips.
 2. Ask the client to keep eyes open and press "Play" to continue recording. After 1 minute, the design will automatically pause.
Tip: Ask client to look downward, trying to fix the gaze at a point to avoid eyes blinking.
Explain the task and press "Play" and begin performing the task. The task of this step is **silent reading**. After 1 minute, recording will end automatically.
Tip: Reading material should be held at eye level (use a book stand) to minimize artifact.

Step 5

- Click the "Restart" button to restart the design and prepare it to start the next recording.
 - Select "Step 5". Wait the the light to turn green before recording again.
 - Move electrodes to their next positions. Active sites Channels A, B, C, D: **Fp1, Fp2, O1, O2**.
 - Press "Signal Tester" button to check for signal quality. Then close.
1. Ask the client to keep eyes closed and press "Play". After 1 minute of recording, the design will automatically pause.
Tip: Be careful with eye movement. If a problem, ask client to lightly hold eyelids with fingertips.
 2. Ask the client to keep eyes open and press "Play" to continue recording. After 1 minute, the design will automatically pause.
Tip: Ask client to look downward, trying to fix the gaze at a point to avoid eyes blinking.
Explain the task and press "Play" and begin performing the task. The task of this step is **pattern recognition**. Ask the client to look for the consecutive letters "t h e" in the text, within one or more words, and count how many times the letter combination appears. After 1 minute, recording will end automatically.
Tip: Reading material should be held at eye level (use a book stand) to minimize artifact.

Sites	CH1	CH2	CH3	CH4	Task
Step 1	T3	T4	C3	C4	Listening
Step 2	F3	F4	P3	P4	Digit Span
Step 3	Fz	Pz	Cz	Oz	Imagine Desired Change
Optional	F7	F8	T5	T6	Silent Reading
Optional	Fp1	Fp2	O1	O2	Pattern Recognition

Trainer Tools

- There are display graphs: Muscle artifact and Eye Artifact and Signal Symmetry.
- The artifact graphs should be fairly stable with the lines close together. The Symmetry graphs show the difference between one hemisphere and the other. The values generally will be above the zero line.
- If either of the artifact graphs shows a consistent problem, stop the recording and resolve the problem.
- If there are strong asymmetries, verify that these aren't due to poor connections, eye or muscle artifact.
- Recording the cleanest, most accurate possible data is the trainer's primary task here. Excessive or constant artifact in a file can't be fixed after the fact.

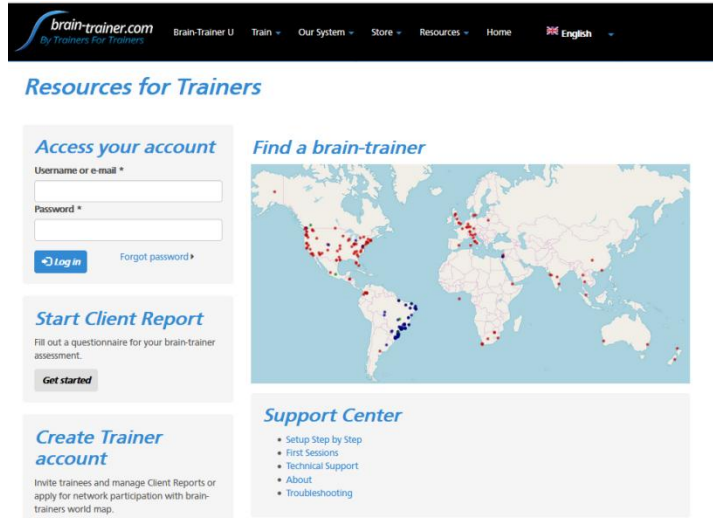
Using the TQ7 Client Report

The Client Report is considered when determining the final selections for the Whole-Brain Training Plan. This should be completed and saved in the client folder. A saved file is ready for import.

If receiving the Whole-Brain Training Plan service (included with most packages), use this link to [Create Client Report](#). Otherwise, you may use the link your trainer has provided or start here: <https://provider.brain-trainer.com>.

Complete the Report

Complete the questionnaire, taking the opportunity to get an understanding of issues present.



Save File

After completing all questions, click the **Save Client Report** button to save the Client Report file. A name is automatically assigned to the file with "CRep" in the name. The file is available immediately for download. A copy will be sent to the trainer if a trainer has been specified.

Appendix: TC26 Trainer's Cap Sites

