nielsen

NACAT

User Manual

Release 4.3 Revision J2

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Revision History

Revision	Date	Changes Made
A	2004-04-28	Initial release
B	2008-01-10	Removed all references to the hardware key, added registered trademark for NACAT, updated the Nielsen logo, and replaced references to nielsenmedia.com with nielsen.com.
C	2009-10-29	Updated EULA
D	2011-01-12	Added references to Nielsen Watermarks detection; added procedures; removed references to Facility Display Setup, which is no longer in the application; removed references to installing from a CD
E	2013-12-31	Added InfoSID display
F	2015-01-30	Removed DirectX API and added WASAPI for audio capturing; enabled SIDMAP display; resolved issues related to InfoSID, which was added in revision E; added option for selecting preferred audio capturing mode as line-in or loopback capture (playback)
G1	2017-02-10	Version 4.0: added CBET detection and settings for changing text color for CBET, instructions on copying and editing the SIDMAP.txt file, and added install of and instructions to run vcredist_x64.exe to install missing DLLs; updated system requirements
G2	2017-03-08	Release 4.0.5: main window now has *Lx* instead of *Layer x* and shows the SID below *System Status*
G3	2017-12-4	Release 4.0.8: The Tool/Setup menu now includes a new field, Optional base log-file name, which allows the user to customize the naming of the output files.
H	2018-1-25	Release 4.1: Restructured the software to create separate libraries for decoder classes and to provide more reliable handling of INFO SIDs.
I	2018-04-26	Release 4.2: Updated to use latest decoder software. Added channel-selection to Set-Up menu. Corrected display of CBET time code.
J	2018-06-13	Release 4.2: Edited manual to include description of new features.
J2	2018-12-14	Release 4.3: Edited manual to include description of new feature.

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Overview

NACAT®—Nielsen Audio Code Analysis Tool—is software that captures audio, decodes Nielsen audio codes, and logs and displays the information to the user. The NACAT application enables monitoring, troubleshooting, and verification of Nielsen audio encoders. NACAT decodes the following:

- Program content (PC)
- Final distributor (FD)
- Network layer (CBET – NETTS)
- Local layer (CBET – LOC)
- Time stamp
- Encoded channel (left and right displayed, only left monitored)
- Source Identifier (SID)
- Type of encoding (commercial or non-commercial)
- DST (Daylight Saving Time) or Standard Time

This document covers how to install NACAT, set it up to monitor Nielsen audio encoders, and change preferences.

Customer Support: Encoder Support Group

Telephone	800-537-4872 option 2
Email	Encoders@Nielsen.com
Software Updates	engineeringportal.nielsen.com

System Requirements

For the best NACAT software performance, the PC on which it runs should have the following configuration.

- Microsoft® Windows 7 operating system or a later version (64-bit)
- 1 GHz or faster 64-bit processor
- Minimum of 4 GB RAM memory
- 15 MB of hard disk space for the application
- 20 MB or more of hard disk space for log files (Periodic maintenance of these files may be required.)

Note A typical log file requires approximately 2 MB of hard disk space/day.

- Line level audio input (-10dBV consumer IHF input level)

Incompatibilities and Performance Anomalies

NACAT has **not** been fully qualified on all configurations of operating software and computer hardware, and you may experience anomalies with your particular configuration. Contact the Encoder Support Group to report any NACAT abnormalities you experience.

When using a laptop, it is recommended that it should have a direct Line-input to the sound card instead of connecting through a port replicator. Microphone input to the sound card as an audio source is **not** recommended and is **not** supported.

Set Up the NACAT Application

Follow the install instructions and then perform the procedure to set up audio input.

Install NACAT

Use this procedure to install the NACAT application to a hard drive.

1. Use Control Panel to remove any previously installed versions of NACAT. Make certain that all files are removed from the “Program Files (x86)\Nielsen\NACAT” folder.
2. Double-click NACAT_Installer_4.3.exe.
3. Follow the prompts. When the installation is complete, an icon for NACAT appears on the Desktop and entries for NACAT and vcredist_64-bit.exe appear in the Start menu.

Set Up Audio Input

Important **Do not use the microphone input**; the frequency response of the microphone input could adversely affect the code detection performance of the NACAT application.

1. Do one of the following:
   - If you are monitoring file-based streams, go to step 2.
   - If you are monitoring line input, connect audio line level input sources to the Line In ports on the sound card. Connecting to the left audio is necessary; connecting to the right is optional. Line In is the only supported recording input.

2. Start the NACAT application. One of the following occurs:
   - Messages about missing DLLs appear. Go to step 3.
   - NACAT starts and a Preferences dialog box appears. Go to step 4.
   - NACAT starts without a dialog box appearing. Go to step 5.
3. From the Start menu, launch vcredist_x64.exe. The executable installs the missing DLLs. Restart the NACAT application and do one of the following:
   - If a Preferences dialog box appears, go to step 4.
   - If a Preferences dialog box does not appear, go to step 5.
4. To accept the current preferences, click Cancel, or to change any of the current values, refer to the table in “Edit Preferences.” When you have finished, go to step 5.
5. Verify the input mode is correct for your setup. On the Menu Bar, click Tool > Audio Capture Mode.
6. On the dialog box, do one of the following:
   - For detection of codes in a file, select Loopback Capture, and click OK. Go to “Use NACAT” on page 15.
   - For detection of codes in a live stream, select Line In and click OK. See “Adjust Audio Input for Line-In Audio” below.

Note NACAT retains this setting from session to session.

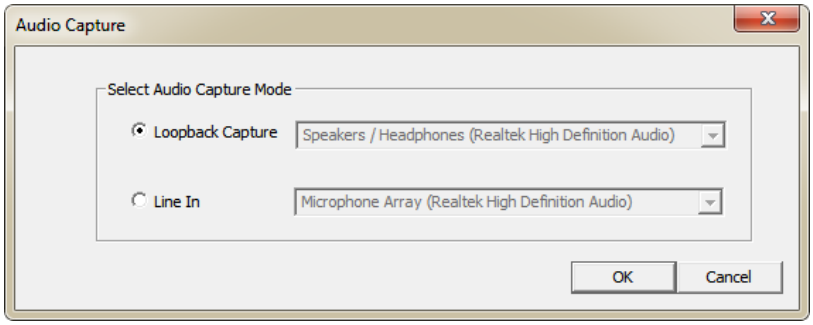

Figure 1 – Audio Capture Mode Setting

Adjust Audio Input for Line-In Audio

The goal of these adjustments is to keep the waveforms on the NACAT window within the correct range for audio code detection as shown in Figure 2.

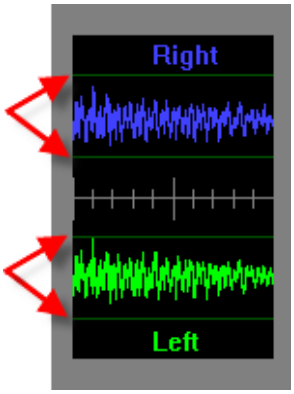

Figure 2 - Waveforms Showing Correct Audio Adjustment

1. Connect audio line level input sources to the Line-In ports on the sound card.

   Important **Do not use the microphone input as a line in source.** The frequency response of the microphone input could adversely affect the code detection performance of the NACAT application

2. Place the NACAT window (#1 in Figure 3) so that when you open the Sound (#2) and Properties (#3) windows in the next 2 steps, you can watch the waveforms as you adjust the levels.
3. On the menu bar, select Tool > Sound Mixer. The Windows Sound dialog box appears.

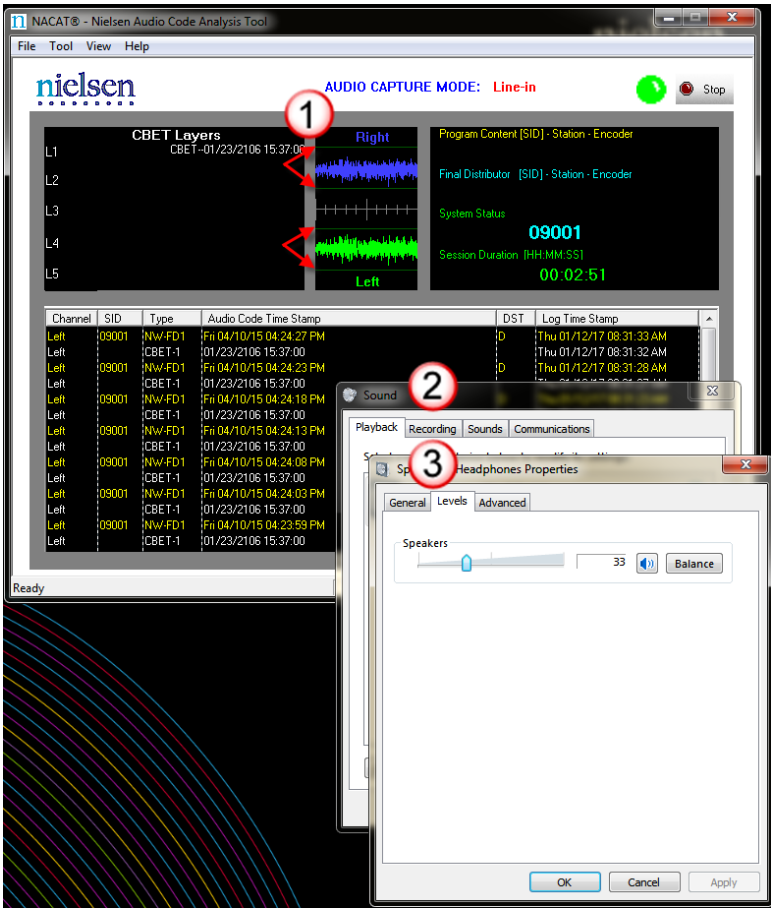

Figure 3 – Sound Playback Levels

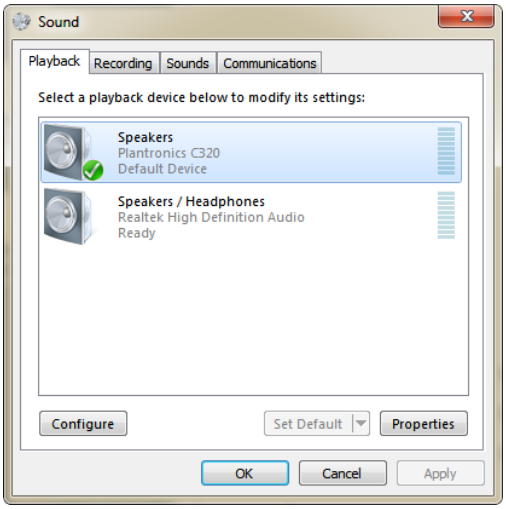

Figure 4 – Sound Mixer

4. Select the default playback device.
5. Click Properties.

6. Click the Levels tab and adjust the volume levels so that the waveforms on the NACAT window are within the proper range (Figure 2).

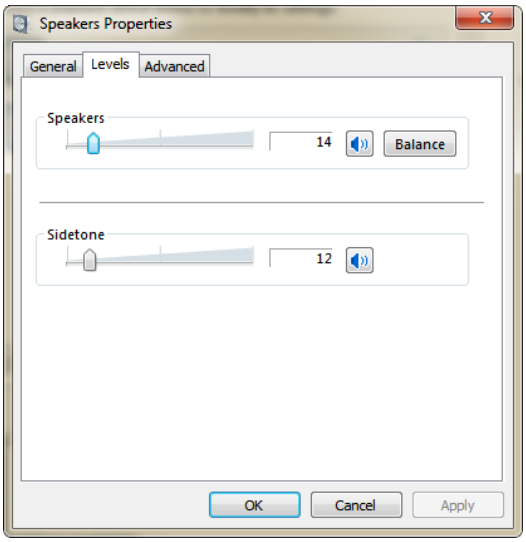

Figure 5 – Playback Device Audio Levels

7. Click the Advanced tab and, in Default Format, **ALWAYS** select **16 bit, 48000 Hz (DVD Quality)**.

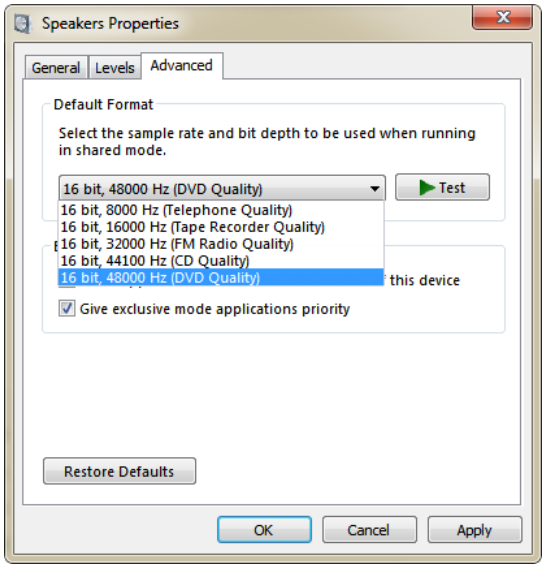

Figure 6 – Playback Device Sample Rate and Bit Depth

8. To close the Properties dialog box, click OK.
9. On the Sound dialog box, click the Recording tab.

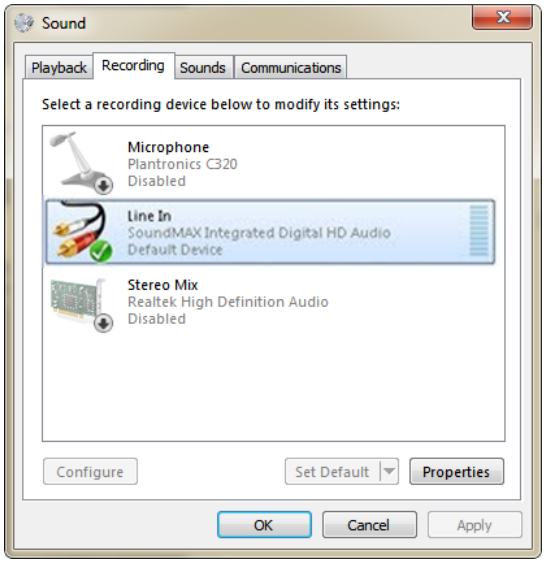

Figure 7 – Recording Device

10. Select the default device and click Properties.
11. Click the Levels tab.
12. Adjust the Line In level so that the waveforms on the NACAT window are within the correct range.

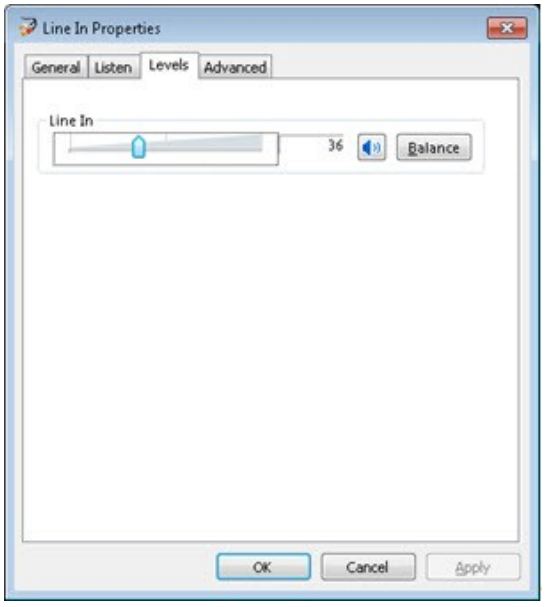

Figure 8 – Recording Device Audio Levels for Line In

13. Close the Recording Control panel.
14. Go to “Use NACAT” in the next section.

Use NACAT

1. Do one of the following:
    - If you are monitoring file-based streams, begin playing the file and go to step 2.
    - If your setup uses line input and you have not already done so, connect the device running the audio signal to the Line In port of the PC running the NACAT application.
2. Open the NACAT application.

    Note If you need to change the audio settings, see “Set Up the Audio Input” on page 9.
3. On the NACAT main window, click Start. For details on understanding the window, see “NACAT Window Description” on page 19.

Edit Preferences

Changing the values in the Setup dialog box is optional.

The NACAT Setup dialog box enables you to change features such as the text color for the codes, when “no code” warnings appear, whether to alert when no codes are detected, and so on. There are also options to change the default location for storing log files, the sound of the no code alarm, and whether or not to display the InfoSID.

1. Click the Stop button on the main window.
2. On the Tool menu, select Setup.
3. On the Setup window, click a field and either click the ellipsis (...) or click a selection on a drop-down menu.
4. When you have made all of your changes, click OK on the Setup window.
5. Click Start on the main window to resume audio-stream processing.

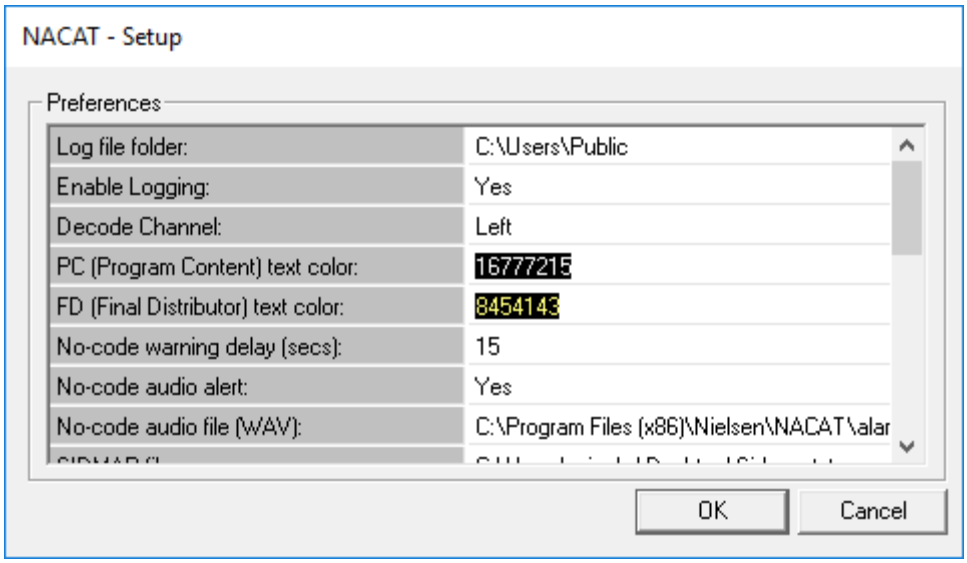

Figure 9 – Setup Dialog Box

Table 1 – Preferences

Preference	Description
Log file folder	When “Enable logging” is set to “Yes,” the “Log file folder” field identifies the location where the log files are created and stored
Enable Logging	When “Enable Logging” is set to Yes, NACAT creates output files in the Log file folder.
Decode Channel	Select Left to decode the left channel, select Right to decode the right channel or select Both to decode both left and right channels. Note that if you change the decode-channel while the audio is streaming, there will be a transition period during which the buffered audio codes from the original channel will be incorrectly labeled with the name of the new channel, both on the screen and in the log files.
PC (Program Content) text color FD (Final Distributor) text color NAES2 codes text color NW codes text color CBET codes text color CBET Layer 1 text color CBET Layer 2 text color CBET Layer 3 text color CBET Layer 4 text color CBET Layer 5 text color	Assigns a color to the code details that appear in the Session Information and History sections on the main window. **Note** Although you can set each type of code to a different color, too much variety can be distracting.

Preference	Description
No-code warning delay (secs)	Sets the maximum number of seconds that can pass without any codes detected before an alert is issued or an alarm is sounded.
No-code audio alert	Establishes whether an audio alert sounds when audio codes are missing for longer than the value in “No-code warning delay”.
No-code audio file (WAV)	Assigns an audio file to play when “No-code warning delay” value is exceeded
SIDMAP file	Identifies the location of the file that determines how the SID displays in the upper left and upper right panels. See “Change How NACAT Displays SIDs” in the next section.
Display InfoSID	Establishes whether, when present, InfoSIDs are reported in the infosid output file.
InfoSID data file	(Used by original equipment manufacturers) Assigns location of the InfoSID.xml file, which specifies parameters of the encoder
CSid(Layer 1) view Login	For back office use only
Optional base log-file name	Allows the user to customize the output file names by defining a prefix.
Decimal Or Hexadecimal(CBET)	Sets the numeral system in which CBET SIDs appear in the history window.
Enable CBET	Set CBET details to appear or not

Change How NACAT Displays SIDs

To change how station identifiers display in NACAT, edit the SIDMAP.txt file.

1. In a Windows Explorer, browse to the location of the NACAT.exe file.
2. Copy the file, SIDMAP.txt, to a different location (such as your Desktop).

   Note In Settings, enter the location of your copy of the file into the “SIDMAP file” field. See “Edit Preferences” on the previous page.

3. In a text editor, open your copy of SIDMAP.txt (Figure 10).

   Example

```
9001, Test SID 1
9002, Test SID 2
32750, RTVOD C3 Hardware
32751, RTVOD C7 Hardware
32755, RTVOD C3 Software
32756, RTVOD C7 Software
32762, InfoSID 1
```

```
32763, InfoSID 2
32764, InfoSID 3
0xf302, CBET Test SID 1
```

4. Do any of the following that apply:

   - At the end of the file, press <Enter> and add a new line in the format:

     ```
     SID, Name
     ```

     Where,

     The SID is in decimal or hexadecimal format. For CBET SIDs, exclude the CBET layer, entering only the last 4 hexadecimal digits.

     The name is alphanumeric.

     Note In the example in step 3, the last line displays an identifier CBET in hexadecimal.

   - Edit an existing line to add a name for a SID (Figure 11).
   - Edit an existing line to remove the name of a SID (Figure 12).

5. Save the file.

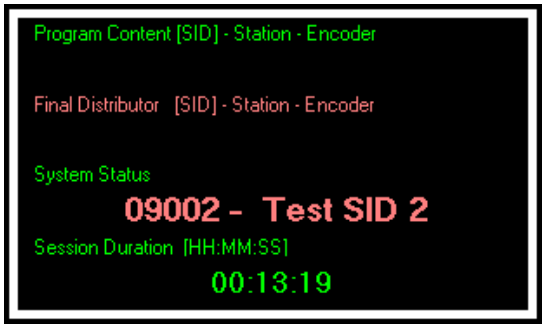

Figure 10 – With Name for SID

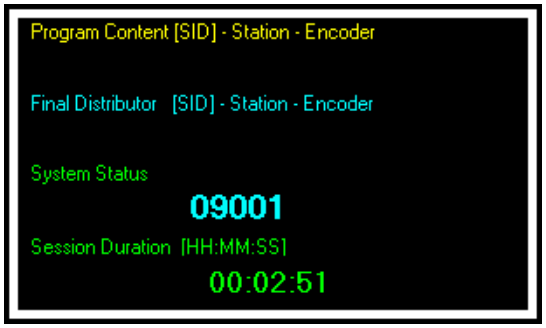

Figure 11 – Without Name for SID

Uninstall NACAT

To uninstall the NACAT application, use the Windows Control Panel procedure for uninstalling programs. When the Control Panel indicates that NACAT has been uninstalled, make certain that all contents of the NACAT installation folder (C:\Program Files (x86)\Nielsen\NACAT) have been removed.

Note A message may appear indicating that one or more of the OLE objects did not properly uninstall. This message does not indicate an actual problem so it requires no action.

NACAT Window Description

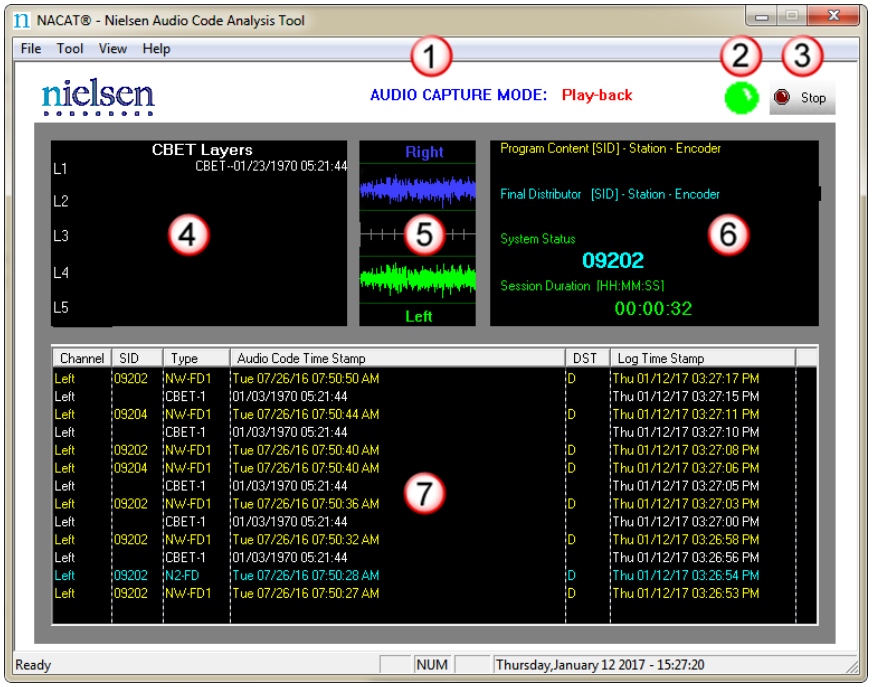

Figure 12 - NACAT Main Window Sections

The main window includes the following components. Refer to the numbers, 1 through 7, in Figure 13.

Table 2 – Window Description for Figure 13

Number	Description
1	Audio Capture Mode: Play-back (Loopback Capture) or Line-In
2	LED: flashes to indicate that a Source Identification (SID) code has been received
3	Start/Stop: starts and stops monitoring
4	CBET Session Information: Displays the identifier (CSID) of the CBET information found in the signal. The “Lx” label at the left of each row identifies the CBET layer to which the CSID pertains. If the CSID appears in the SID Map file, then station information appears in the window adjacent to the CSID.
5	Audio wave display: displays the right and left channels of the incoming audio

Number	Description

6	NAES Session information: displays the following information found in the signal:
	• Program Content SID: displays the most recently detected PC code.
	  • N2: indicates the code is NAES II code
	  • N2HF: indicates the code is NAES II High-Frequency
	  • NW: indicates the code is Nielsen Watermarks code
	  • NWCC: indicates Nielsen Watermarks commercial code
	• Final Distributor SID: displays the SID, Date, Time, and DST status for the most recently detected NAES II or Nielsen Watermarks Final Distributor code.
	• System Status: displays messages and warnings during an active monitoring session
	• Session Duration: displays the monitoring period for this session

7	• History: displays a running log of the audio codes that have been received. This information is stored in a set of log files. When a new session begins, NACAT automatically generates a new set of log files. For information on where the log files are stored or for instructions changing their location, see “Edit Preferences” on page 15.
	• Channel: Indicates the audio channel that is being decoded.
	• SID: specifies the Source Identification number that enables Nielsen to credit viewing
	• Type: specifies the audio code type. The user may customize the color display for each of the NAES code types (PC, FD) as well as for each of the CBET layers. See “Edit Preferences” on page 15.”
	• Audio Code Time Stamp: displays the date and time stamp for the corresponding SID. CBET time rolls over every 28 days, so dates may appear in the future and may not match the Log Time Stamp.
	• DST: specifies whether DST was in effect for the encoder that generated the audio codes (applies to NAES codes only)
	  • S indicates that the time stamp is set for Standard Time
	  • D indicates that the time stamp is set for DST
	• Log Time Stamp: specifies the date and time NACAT detected the code
	Note that for INFO SIDs, additional information may be displayed if it is available in the InfoSID.xml file.

Troubleshooting Tips

If...	Try this:
Audio level is too low	On the Tool menu, select Recording Control and adjust the audio level of the Line input, so that the audio signal is within the green lines.
No audio on either channel	• Ensure that the physical connection is connected into the Line input jack. • On the Tool menu, select Recording Control and ensure that the Line input is selected.
Audio on one channel only	• Ensure that you have audio input for both channels. • Ensure that the RCA plugs are properly plugged into both the audio source and the PC running NACAT.
No Nielsen Codes detected	• Ensure that the station being monitored is encoded with NAES II, NAES II HF, Nielsen Watermarks, Nielsen Watermarks Commercial Code, and/or CBET Layers 1 through 5. • Ensure the audio signal is between the green lines. • Ensure the Stop button appears in the upper right corner of the main window. If the Start button appears, click it to start monitoring. • Ensure that the selected channel is receiving an audio signal. • Before making any change to the audio hardware configuration, exit NACAT; restart NACAT when all hardware is reconnected.
NACAT application does not launch	• Ensure that your system meets the minimum system requirements. • NACAT system files may be corrupted. Uninstall and reinstall the NACAT application.
Not receiving a “No FD code audio alert”	On the **Tool** menu, select Setup and ensure the following: • That you have not been receiving an FD code longer than the setting in the “No FD code warning delay (minutes)” field • That a working WAV audio file is selected in the No FD code audio file (WAV) field. The WAV audio file must be shorter in duration than the no-audio-code delay value (in seconds) that you selected on the setup menu.
Pressing the space bar on my keyboard causes processing to stop.	On some computers, pressing the space bar has the same effect as clicking the Stop button. Avoid pressing the space bar while NACAT is processing an audio stream.

If…	Try this:
I installed the new software, but it appears that the previously installed NACAT version is running.	Make certain that before installing the new version of NACAT, you first used Control Panel to uninstall the previous NACAT version. After uninstalling, make certain that all contents of the NACAT installation folder have been removed.
No log files are generated during audio processing	Make certain that the log file folder that you selected on the Tools/Setup menu exists and is writable.
After running NACAT for a long period of time, the application crashes.	The history window consumes memory as it scrolls. Make certain that your computer has enough memory to run the application long-term. If not, you should periodically clear the history window.