

DNS One AAX

Dialogue Noise Suppressor



CEDAR 

CEDAR Audio Limited
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GETTING STARTED

The DNS One AAX is the latest addition to CEDAR's DNS family, and comprises the DNS One process in standalone form plus the DNS CS control system that allows you to control the DNS2000 and DNS3000 hardware units.

Compatibility

DNS One AAX can be used with Mac-based Pro Tools systems running Pro Tools 10.1 and later.

Unpacking

Your DNS One AAX package should contain the following components:

- software CD-ROM
- USB dongle
- warranty registration card

Assumed Knowledge

This manual assumes that you are fully conversant with your Mac and that you know how to operate Pro Tools. It will refer to operations that are common to these products, but will not attempt to explain them.

Troubleshooting Non-CEDAR Components

If you encounter problems with your Macintosh®, OS X®, or Pro Tools®, please refer to the relevant manuals or contact the dealer that supplied these to you. Unless appointed independently as authorised dealers for the following products, CEDAR Audio's dealers will not attempt to provide technical support for:

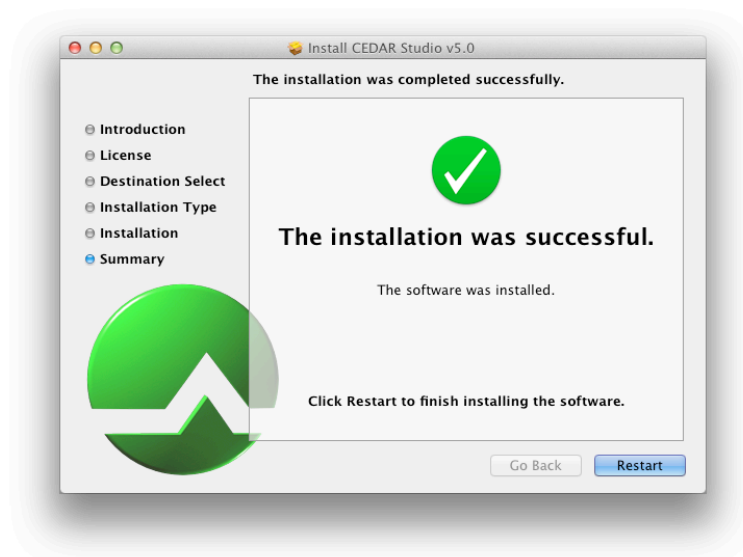
- Macintosh computers
- Mac OSX
- Digidesign hardware
- Digidesign software

INSTALLING DNS ONE AAX

- Insert the CD.
- Ensure that any older versions of the plug-in (if any) are archived and removed from the plug-in folder.
- Double-click on the installer package:
CEDARStudio.mpkg
- Follow the instructions offered by the installer.
- Ensure that you have sufficient space on your drive.



- Press the Continue button when prompted and the software will be installed. A message will appear to tell you that the operation has been completed successfully.



- Insert the DNS One AAX dongle into any available USB socket, and DNS One AAX is ready for use.

LICENCE MANAGER

This section of the manual is relevant if you are upgrading from a previous version of DNS One to DNS One AAX, or if you are installing a full version over a previous, timed version.

Ensure that the dongle is inserted and invoke the Licence Manager at:

Applications/CEDAR/LicenceManager

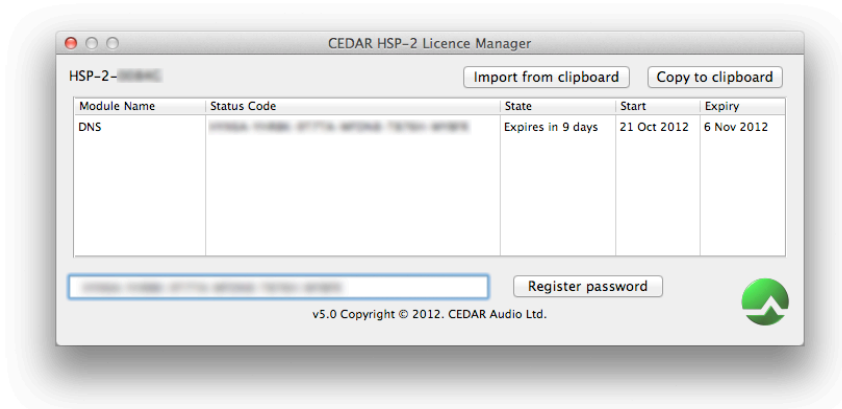
If you using a dongle that has previously been supplied for use with earlier versions of CEDAR software, the firmware upgrade window will appear. Click on Yes to upgrade the dongle's firmware to support the latest software.

WARNING:

You cannot reverse this operation. If you perform it to upgrade to DNS One AAX, this dongle will no longer authorise and run the RTAS version of DNS One or any other CEDAR Studio processes.



When the firmware upgrade is complete (or if it has not been necessary) the Licence Manager will appear. This shows the CEDAR software that is currently installed on the host system.



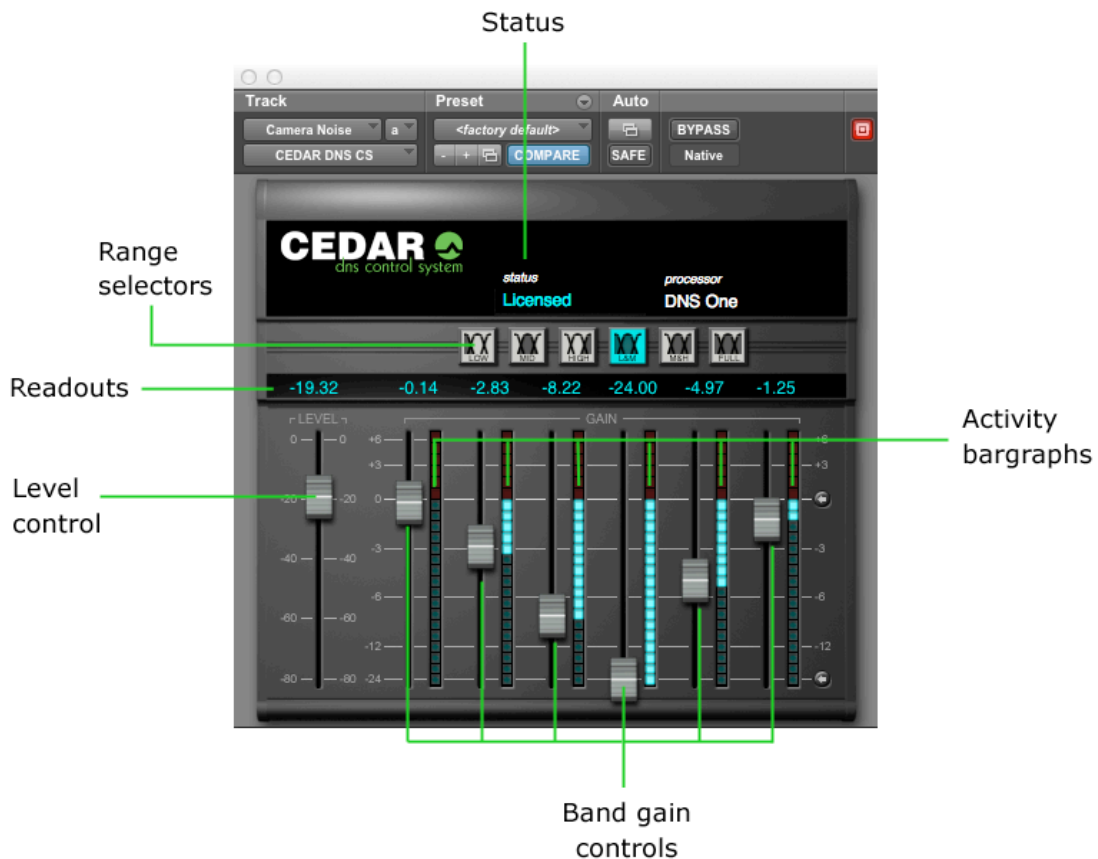
To install a licence that connects new software to the existing dongle, type the password supplied by CEDAR Audio into the **Register password** window. (You may also **Import from clipboard** if appropriate.) When accepted, the password will change from red to black. Press the **Register password** button to complete the registration. The new software is now ready for use.

There may be occasions when CEDAR Audio requires your Status Codes. If so, use the **Copy to clipboard** button to copy and paste this information into an email or other suitable document.

IN USE

Invoke the standalone version of DNS One AAX (choose "CEDAR DNS One" in the menu) or the DNS CS control system for the DNS2000 and DNS3000 hardware units (choose "CEDAR DNS CS" in the menu) in the usual fashion, as required.

Using the standalone version of DNS One AAX



Range Selectors

The Range Selectors concentrate the unit's activity into the desired part of the audio spectrum. Selecting any of these ranges concentrates all of the filters within DNS One AAX's filter bank across that part of the audio spectrum.

Range	Frequencies covered
Low	20Hz - 400Hz
Mid	200Hz - 6kHz
High	4kHz - 18kHz
Low+Mid	20Hz - 6kHz
Mid+High	200Hz - 18kHz
Full Range	20Hz - 18kHz

Band Gain Controls

DNS One AAX divides a signal into a large number of well-defined bands. Sophisticated digital filters analyse each of these bands and suppress the noise independently in each. The innovative design of this filter bank allows you to adjust DNS One AAX using relatively few controls.

The Band gain controls determine the maximum amount of processing that DNS One AAX will apply in each band.

Level Control

The Level Control tells DNS One AAX how much noise is present in the input.

Activity Bargraphs

These offer a visual indication of the activity in each of the bands.

Status

The following status messages may appear:

Message	Explanation
Licensed	DNS One AAX is licensed and working correctly.
Pending	A licence has been issued to start at some point in the future.
Timed	A timed demonstration licence is being used.
Expires in xx days	A timed licence is nearing its expiry.
Expired	A timed licence has expired.
Disabled	The ability to host timed licences has been disabled. This message will appear if you are running timed licences and the battery in the dongle has failed.
Unlicensed	The dongle does not contain a licence for DNS One AAX.
Detached	The dongle was removed while DNS One AAX was running – please reinsert.

Error messages

If there is a problem when you launch DNS One AAX, please follow the instructions on the error message that appears.

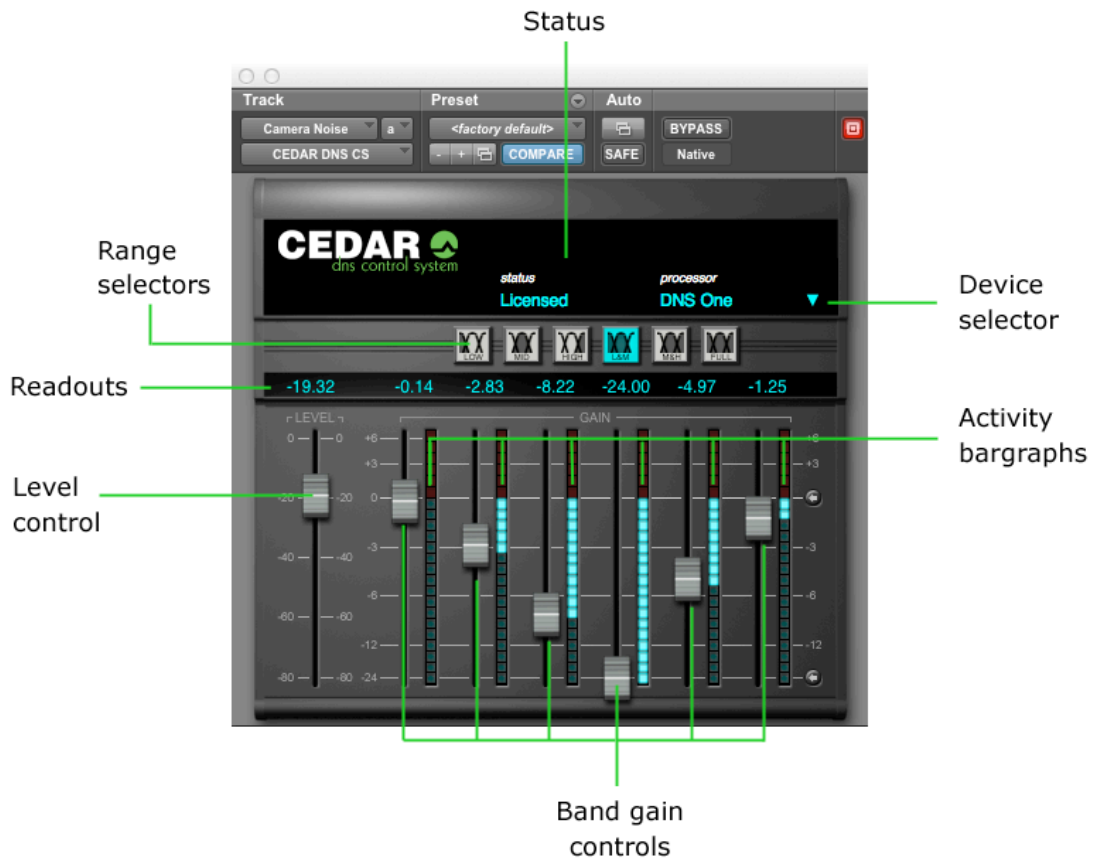
Generic Pro Tools Plug-in Controls

The standard Pro Tools plug-in facilities are provided. These have generic operation, and are described in the Pro Tools documentation.

Automation

The Band Gain settings, the Level and the Range Selectors appear in the Plug-In Automation screen and, together with the Pro Tools bypass control, may be automated in standard Pro Tools fashion.

DNS CS CONTROL SYSTEM



You can connect the DNS CS control system in its AAX form to any of the following three CEDAR products:

- DNS One AAX
- DNS2000
- DNS3000

The drop-down list on the plug-in displays all of the DNS processors that are currently available, and it allows you to select which processing engine will be controlled by this instance of the DNS Control System. In all other ways, the controls are identical with the standalone version of DNS One AAX.

There are two ways to access DNS One AAX. Access it via the DNS CS control system if you wish to switch quickly between the software and hardware implementations.

For information regarding the use of DNS CS, please refer to the manual that came with your DNS2000 or DNS3000.

TUTORIALS

Launch the DNS One AAX in its standalone form or through the DNS CS Control System, as you wish.

Range Selector

Your first job for any noise reduction will be to identify the frequency range or ranges in which the unwanted noise lies, and select any of six possible processing ranges by clicking on the appropriate buttons.

With practice, you will be able to identify the range by ear. Until then, you may prefer to use the methods described in the following case studies.

Level Control

Next, you should identify the noise level within the audio. With the appropriate range selected, pull all six Band Gain controls and the Level control down fully or use the **DNSQuickStart** preset to do so. Now increase the Level slowly. At first, you will hear very little happen but, at some point determined by the noise content of the recording, you will hear the noise disappear. You should attempt to determine the point at which this occurs.

When the Band Gain controls are fully down, maximum processing occurs for any given Level setting, thus making identification of the noise easier.

Band Gain Controls

Once you have chosen the Range and determined the Level, you control the action of DNS One AAX's filter bank using the Band Gain controls.

The six faders represent six frequency bands (each containing multiple filters) distributed from lower frequencies (left) to higher frequencies (right) across the selected range.

You will use the Band Gain controls to control the amount of noise attenuation performed in each band, adjusting them to suppress as much noise as possible without introducing unwanted artefacts into the desired signal.

Noise suppression occurs in a given band when the fader is below 0dB. However, there are occasions when you might wish to boost the signal in a given band, and you can do this by moving the appropriate fader above 0dB.

You can move all the Band Gain controls to 0dB or to -24dB by pressing the appropriate reset arrow to the right of the faders themselves.

Case studies

The following three examples illustrate ways to use DNS One AAX. They may not be the ways that you choose to operate it for all jobs, but they will get you started.

Case 1: Suppressing traffic noise and other ambient sound

DNS One AAX can suppress background noises such as road traffic, aircraft, air conditioning, wind, rain, and many other common soundstage, location, and outside broadcast (remote) problems that contaminate audio. If your signal exhibits any of these problems, you can suppress them as follows.

First, identify the frequency range(s) in which the noise lies.

You should be able to do this by listening to the problem. However, if this proves difficult, you can use the following method.

It is not important that you find the perfect settings at the first attempt. In particular, you will be able to refine your Level and Band Gain settings once you have found the correct range.

Begin as follows:

Ensure that DNS One AAX is not in Bypass

Select Full Range

- ➔ Set all six Band Gain controls to -24dB
- ➔ Move the Level control to -80 and then raise it until the noise disappears

At this point you have determined an approximate setting for the Level. This is necessary for determining the range but it is likely that you will refine this later in the procedure.

When the Level is close to the ideal setting, you should see the Activity Bargraphs in the Control System flicker in response to the signal content.

Now continue as follows:

- ➔ Raise the Band Gain controls to 0dB (no processing occurs)
- ➔ Adjust the Band Gain controls to suppress the noise

You should always attempt to suppress the noise with the minimum of damage to the desired signal.

In all likelihood, you will find that the leftmost Band Gain controls are pulled down significantly, whereas the central and rightmost are close to 0dB. This tells you that the problem does not lie in the upper frequencies, so you should use the Range Selectors to select Low+Mid. Then repeat the steps marked '➔'.

If you now find that you are using all six faders in similar fashion, it is likely that the noise is distributed across the entire Low+Mid range. However, if the suppression is still heavily biased towards the left-hand faders, you should now select the Low range and repeat the procedure.

If you select Low alone and cannot suppress the noise, it is probable that there is considerable noise energy in the Mid band, so you should return to using Low+Mid ranges.

For many problems such as traffic noise, the noise will lie primarily in the range 50Hz - 1.5kHz. In this case, Low+Mid will be the correct choice.

Second, optimise the Level control.

Listening carefully to the audio, refine the Level setting so that the noise is correctly identified without introducing audible artefacts. If this proves difficult, you can return the Band Gain controls to -24dB for this stage.

DNS One AAX takes a short period to settle after moving the Level control (especially in the lower ranges) so you should not adjust it rapidly.

Third, refine the Band Gain controls for optimum suppression.

Set all six Band Gain controls to 0dB. Now increase and decrease the gain in each band separately while listening to the effect that each has on the noise. This will identify the bands that contain the majority of the noise. (Do not be alarmed if all six bands contain significant noise. This is not unusual.)

Let's assume that the greatest improvement occurs when you reduce the gain in bands 3 and 4. This suggests that the noise is concentrated in an approximate range of 200Hz to 1kHz. You should now find the optimum positions for all six faders. The greatest cuts will lie in bands 3 and 4, whereas bands 1, 2, 5 and 6 should remain as close to 0dB as possible to ensure that minimal signal damage occurs in the bands that do not contain much noise.

The final configuration might look like this:



Case 2: Suppressing tape hiss

DNS One AAX can suppress the tape hiss that mars many older recordings. It will also improve the signal/noise ratio of dialogue tapes that have been poorly copied as well as those that are several generations old.

First, identify the frequency range(s) in which the noise lies.

You should follow the procedure laid down in the previous example to determine the range(s) in which the problem lies. For most instances of tape hiss, you will find that the Mid+High ranges are most appropriate. In a few cases you may find that the High range alone is most suitable.

It is not as common to require suppression in the Low range because hiss is usually less prominent at lower frequencies, and it may also be masked by the genuine audio in the range.

Second, optimise the Level control.

To determine the correct Level, you should again follow the procedure described previously.

Third, refine the Band Gain controls for optimum suppression.

As in the first tutorial example, you should start with all six Band Gain controls at 0dB. You should then increase and decrease each control individually to find the bands that contribute most hiss to the signal. Because tape hiss often exhibits a white profile at Mid and High frequencies, you may find that satisfactory results are achieved with the Band Gain controls set in a horizontal line.

However, hiss is generally less annoying at very high audio frequencies. Consequently, you may be able to reduce the amount of processing in the uppermost bands. This will help to ensure that any low amplitude signal components lying at high frequencies (which provide much of the 'air', 'ambience' or 'life' in a signal) are passed with little or no attenuation.

The final configuration might look like this:



Case 3: Suppressing excessive reverberation

In many situations, DNS One AAX can suppress excessive reverberation. This can be useful in TV production when you need to match the audio from a large recording studio or soundstage to visual images set in a small room or other enclosed space. Suppressing reverberation can also be beneficial in increasing the intelligibility of poor dialogue recordings.

The method used to suppress reverberation is quite different from that applied in the previous examples, and is as follows:

First, set the range in which the reverberation lies.

In general, reverberant spaces include soft materials that absorb high frequencies more rapidly than middle and lower frequencies. Even bare rooms with hard walls include these soft materials: they are the people who are speaking.

Consequently, you will find that Low+Mid is almost always the most appropriate combination of ranges for suppressing reverberation.

Second, set the Band Gain controls.

You should set all six Band Gain controls to -24dB. This will ensure that (if the Level is set correctly) DNS One AAX applies maximum suppression to the tails of the sound.

Third, optimise the Level control.

Starting at its minimum position (-80dB) increase the Level control slowly. At some point before full noise suppression becomes apparent, you will hear the tails of louder sounds become truncated.

You can adjust the amount of truncation of the reverb using the Level control rather than the Band Gain controls.

The final configuration might look like this:



CONTACT INFORMATION

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German language:	www.cedaraudio.de

Worldwide Dealer List

For an up-to-date dealer list, please visit www.cedaraudio.com, and click on 'Contact Us' followed by 'Worldwide Dealer List'.

TECHNICAL SUPPORT

Should you experience difficulties with DNS One AAX, please contact your local dealer or CEDAR office. Alternatively, you may send an email to support@cedaraudio.com. In either case, please provide the following details:

- Your dongle serial number and software version number.
- Details of the host system and version numbers.
- A precise description of the problem.

LICENCE AND LIMITED WARRANTY

1. DEFINITIONS

In this Licence and Limited Warranty the following words and phrases shall bear the following meanings:

'the Company' is CEDAR Audio Limited of 20 Home End, Fulbourn, Cambridge, CB21 5BS, UK;

'the System' means any instance of DNS One AAX and the DNS CS Control System software systems developed by the Company;

'this Document' means this Licence and Limited Warranty.

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2.1 The terms and conditions of this Document are implicitly accepted by any person or body corporate who shall at any time use or have access to the System, and are effective from the date of supply of the System by CEDAR Audio Limited to its immediate customer.

2.2 The Company hereby grants to the Licensee and the Licensee agrees to accept a non-exclusive right to use the System.

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The waiver by either party of a breach of the provisions hereof by the other shall not be construed as a waiver of any succeeding breach of the same or other provisions, nor shall any delay or omission on the part of either party to exercise any right that it may have under this Licence operate as a waiver of any breach or default by the other party.

7. NOTICES

Any notices or instruction to be given hereunder shall be delivered or sent by first-class post or telecopier to the other party, and shall be deemed to have been served (if delivered) at the time of delivery or (if sent by post) upon the expiration of seven days after posting or (if sent by telecopier) upon the expiration of twelve hours after transmission.

8. ASSIGNMENT AND SUB-LICENSING

The Licensee may at his discretion assign the System and in doing so shall assign this Licence its rights and obligations to the purchaser who shall without reservation agree to be bound by this Licence. The original Licensee and any subsequent Licensees shall be bound by the obligations of this Licence in perpetuity.

9. LIMITATION OF LIABILITY

The Company's maximum liability under any claim including any claim in respect of infringement of the intellectual property rights of any third party shall be, at the option of the Company either:

(a) return of a sum calculated as the price received for the System by the Company from its immediate customer depreciated on a straight line basis over a one year write-off period; or

(b) repair or replacement of those components of the System that do not meet the warranties contained within this Document.

The foregoing states the entire liability of the Company to the Licensee.

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11. ENTIRE AGREEMENT

The Company shall not be liable to the Licensee for any loss arising in connection with any representations, agreements, statements or undertakings made prior to the date of supply of the System to the Licensee.

12. TERMINATION

This Licence may be terminated forthwith by the Company if the Licensee commits any material breach of any terms of this Licence. Forthwith upon such termination the Company shall have immediate right of access to the System for the purpose of removing it.

13. SEVERABILITY

Notwithstanding that the whole or any part of any provision of this Document may prove to be illegal or unenforceable the other provisions of this Document and the remainder of the provision in question shall remain in full force and effect.

14. HEADINGS

The headings to the Clauses are for ease of reference only and shall not affect the interpretation or construction of this Document.

15. LAW

This Document shall be governed by and construed in accordance with English law and all disputes between the parties shall be determined in England in accordance with the Arbitration Act 1950 and 1979.

DNS One AAX

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