Common faults in recording

Feedback

Feedback is the squealing sound heard when a mic is too close to the speakers and picks up its own signal.

Feedback		
Audio description	Fault	Solution
Feedback in recording *(squealing sound)*	Mic is too close to speakers and is picking up its own signal	• Turn master fader down or • move mic further away from speakers or • reduce treble slightly

Popping and blasting

The explosive sounds in singing and speech that cause audible pops and thumps in a recorded vocal especially when singer sings 'P' or 'B'.

Popping and blasting		
Audio description	Fault	Solution
Too much 'p' or 'b' sound	Popping and blasting	• Use a pop guard • angle mic position slightly off-axis to the performer so that the singer sings across it

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Compressor

- A dynamic processor that can automatically control the gain of a signal.
- Once the incoming signal has reached a predetermined threshold, the compressor reduces the output of the signal by an amount determined by the ratio control. Effectively this is like a fraction, so if a ratio of 2:1 is set the amount of signal above the threshold will be halved, a ratio of 4:1 means it is quartered and so on.
- Compressors also have an attack control, which determines how quickly the compressor reacts, and a release control, which determines how quickly the compressor stops compressing once the signal has gone below the threshold again

Compressor		
Audio description	Fault	Solution
Drum Kit does not sound natural.	The drum mix has been over compressed.	• Reduce the compression ratio or • adjust the threshold.
Audio description	Fault	Solution
Lifeless sound, without any dynamic range	Over compression	• Reduce the compression ratio or • adjust the threshold.

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Distortion / overload

This is the term for having too much audio signal gain on a channel during the recording process.

With the audio signal input gain set too high, the signal will overload and distort, which is indicated by a red light on the channel

Distortion		
Audio description	Fault	Solution
Audio is distorted	Gain is set too high and clipping is occurring	• Turn gain down • Use a compressor/ limiter
Audio description	Fault	Solution
Vocalist has a wide dynamic range causing distortion	Audible distortion at louder passages	• Move mic further away from vocalist • Use a compressor • Turn the gain down • Change the type of microphone

Quantisation

- MIDI notes can be quantised in a number of ways. At the most basic level, notes can be moved either backwards or forwards, making them rhythmically accurate.
- On a MIDI workstation quantising notes can be 'snapped' to a specific rhythm, for example quavers or triplets.

Quantisation		
Audio description	Fault	Solution
MIDI track is out of time	Inadequate quantisation - track is out of time with the rest of the audio	• Quantise (snap the notes to a specific note value - eg. quavers) or • re-record the track playing the part in time

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Sibilance

Sibilance		
Audio description	Fault	Solution
Too many 's' or 'sh' sounds creating a lisping or spitting noise on vocal recordings	Sibilance, caused by: • Bad microphone technique • Over use of equalisation. While it is predominantly an issue on vocal tracks, it can also be heard on cymbal tracks.	• Reduce the high/ treble eqs • Re-position the microphone • A device called a de-esser may be employed to remove the problem.

Hiss

Background hiss		
Audio description	Fault	Solution
Hissing sound	Background hiss	• Turn up recording level when recording • Move microphone closer to source • Reduce treble eq.

Spillage/leakage

The overspill from one instrument into another instrument's microphone. This will only occur where more than one instrument is being simultaneously miked up in the same room. It is also know an **'Bleeding/ leakage'**

It is difficult to totally eradicate it. There may also be leakage from a pair of headphones if the monitoring or foldback volume is turned up particularly high. *e.g. It is not unusual, for a click track monitored through headphones to leak into one or more of the drum microphones.*

Sound spillage/ leakage		
Audio description	Fault	Solution
Sound from another instrument is being picked up by another channel	Sound spillage/ leakage/bleeding	• Use more directional, close mic • Use sound separation/ screens • Record performers on different occasions
Audio description	Fault	Solution
Metronome click is heard throughout individual track	Sound spillage/ leakage/bleeding	Turn down headphone monitoring

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EQ issues

High EQ		
Audio description	Fault	Solution
Sound is thin and too much hiss	Too much high EQ	• Reduce high EQ.

Low EQ		
Audio description	Fault	Solution
Sound is wooly, distorted and unclear	Too much low EQ	• Reduce low EQ.

Hum

Hum		
Audio description	Fault	Solution
A low-frequency noise (50Hz) normally called mains hum	Faulty equipment/ wiring	• Check and replace faulty equipment/ wiring

Cross fade This is a technique where as one sound source fades out, another fades in. In audio engineering terms it can form a seamless transition when cutting between different takes of the same track

Beat matching This is a technique used by DJs to move seamlessly from one song to the next.

As one song is being played, the next song is lined up. By using pitch shift on the turntable to slightly speed up or slow down the tempo of the upcoming song, the tempos are matched. The DJ then crossfades from one song to the next. This process can then be repeated.

Cross fade/ Beat matching		
Audio description	Fault	Solution
Track is out of time when crossfade is applied.	The two tracks have not been beat-matched correctly and are out of sync.	• Beat-match the new track to the track playing or • match/sync the pulse of the new track to the existing track.

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Proximity effect

All directional microphones (i.e. *cardioid*, *supercardioid*) are subject to the proximity effect. 'Proximity effect' happens when the microphone moves closer to the sound source, resulting in an **increase in bass response**. Professional singers often work with this effect to increase 'warmth' when desirable. https://www.youtube.com/watch?v=911b7ZYzJJI

Proximity Effect		
Audio description	Fault	Solution
Boomy, excessive low frequencies are heard from vocals *(this can happen when using close mic' technique)*	Proximity effect because mic is too close to speaker. singer's mouth	Move mic further away from vocalist
Audio description	Fault	Solution
Sound is very thin *(this can happen when recording using Stereo mic'ing at a large distance)*	Proximity effect because mic is too far away resulting in loss of bass frequency	Move mic closer to sound source

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Noise gate

- A signal-activated switch.
- If a signal reaches a preset threshold, the noise gate opens and allows the signal to pass through. If the threshold is not met, the gate stays shut, eliminating any lower level background noise or hiss.
- Gates are very effective and useful devices in the studio, operating as automatic mutes or cuts to reduce low-level background noise while recording using microphones.

Background noise		
Audio description	Fault	Solution
Too much background noise	• Threshold on noise gate is set incorrectly or • Microphone is placed too far away	• Set noise gate to appropriate threshold to eliminate unwanted background noise or • Move mic closer to source

Audio description	Fault	Solution
When you listen to the audio, the voice heard dips in and out instead of staying at one consistent volume.	Noise gate has been poorly applied to the track/	• Set noise gate to appropriate threshold to achieve a balanced recording

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Sample Frequency

- The speed at which an A/D converter takes snapshots of the incoming signal in a second.
- The more samples it can take in a second the greater the increase in the frequency response and therefore the better the quality of the A/D converter.
- CDs feature a sample rate of 44.1kHz, or 44,100 individual snapshots in any 1 second, DVDs feature a sample rate of 48kHz, but it is not unusual to find digital recording systems and hardware with sample rates up to 192kHz

Sample Frequency		
Audio description	Fault	Solution
Recording quality is poor - it is very muffled and woolly sounding	Recording has been converted at too low a sample frequency	Save/ import at a higher sample rate/ frequency

General Midi

- A digital language that enables devices to talk to one another in a standardised format.
- While MIDI was originally devised for keyboards and musical instruments, more and more effects processors and devices are responding to it and may be programmed using MIDI. General MIDI became an industry standard set of sounds and controllers which promoted a greater degree of compatibility across equipment

General midi		
Audio description	Fault	Solution
Sounds out of tune/wrongly assigned instruments.	The file has not been imported as a General MIDI file or the DAW has not been assigned different voices to each channel.	• Import the file as a General MIDI file or • assign each channel the correct sound/voice/instrument.

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