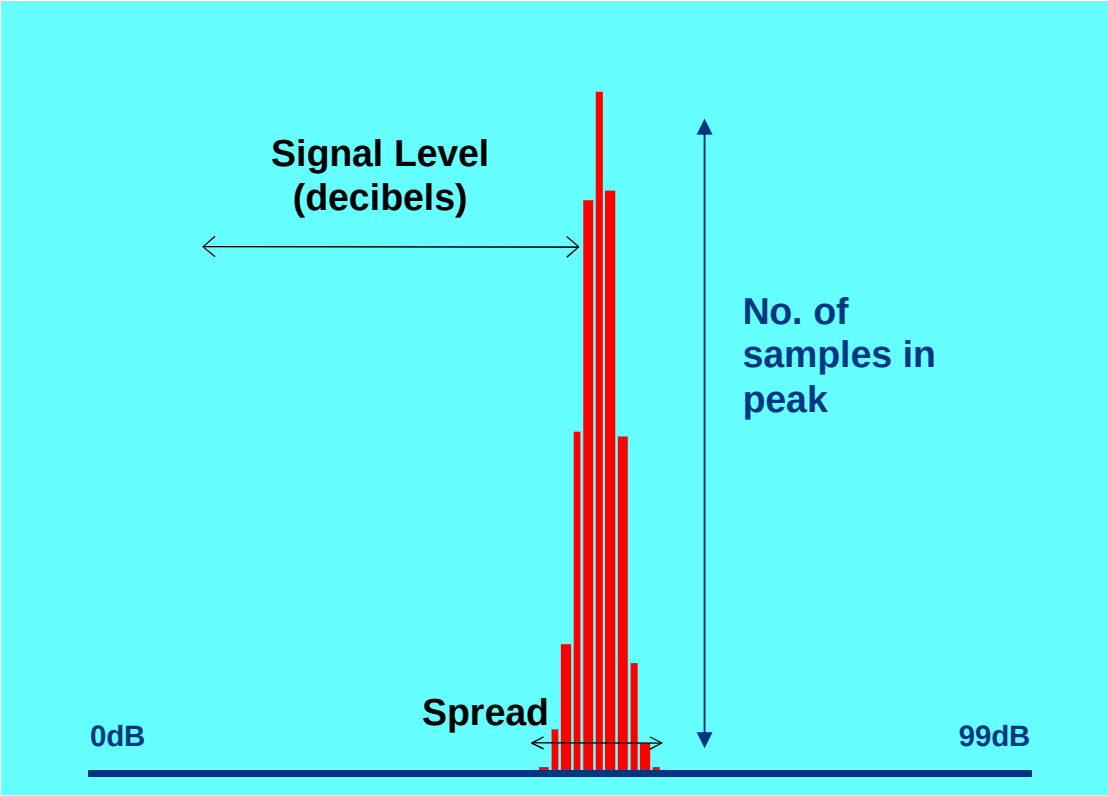
Ref: FAQ0204	Version: 1.0
Title – Permalog+ how to interpret data	
Made By: AB 18/09/15	(Issue 2)

How to interpret Permalog+ leak graphs and data

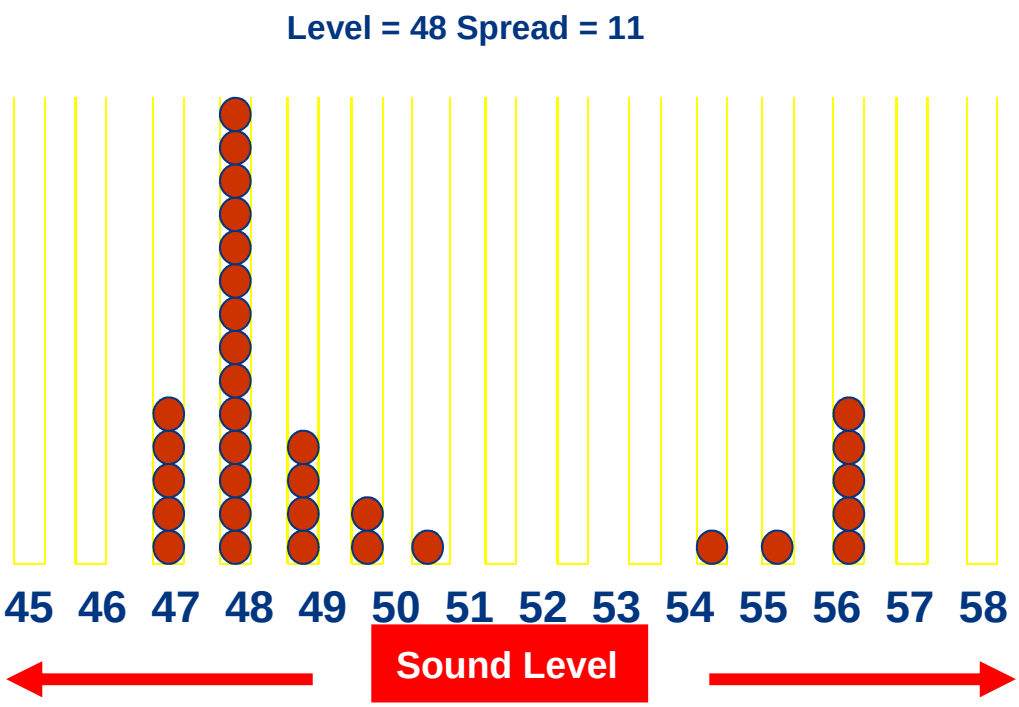
Permalog+ leak noise loggers use two measurables (Sound Level and Spread of sound) to determine whether a leak is apparent or not -

The **Sound level** is measured by the Permalog + between 0dB and 99dB
The signal level in decibels is the point on the scale where the clearly identifiable peak is.

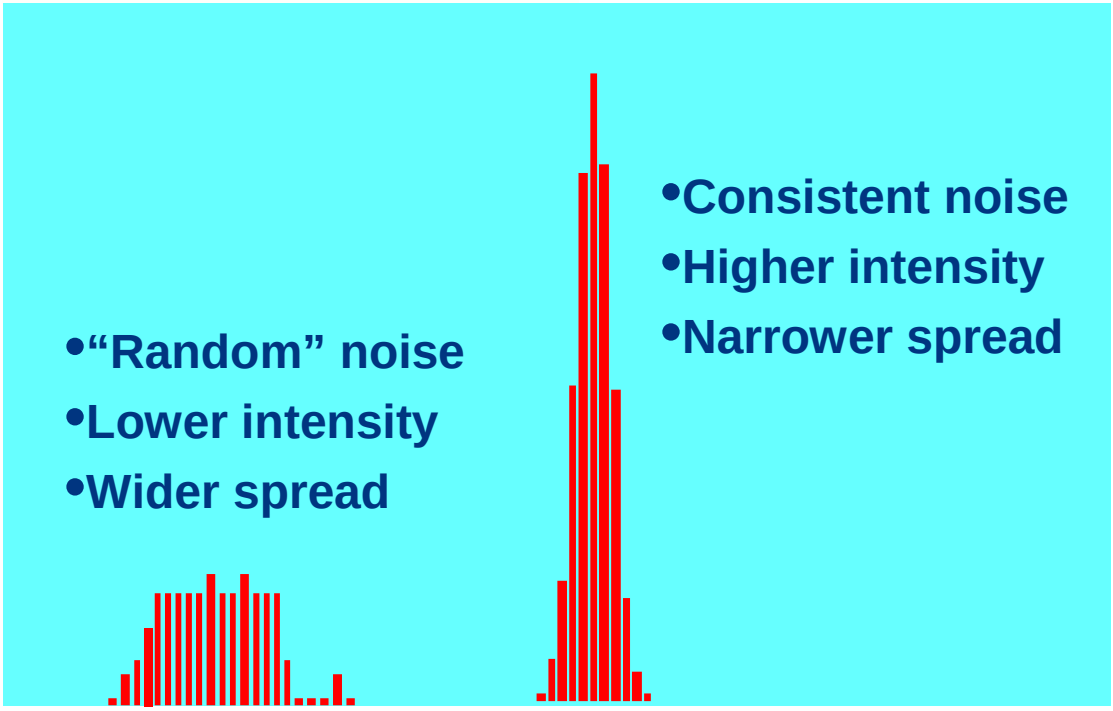
The **Spread** is the number of samples that are included to make the biggest peak



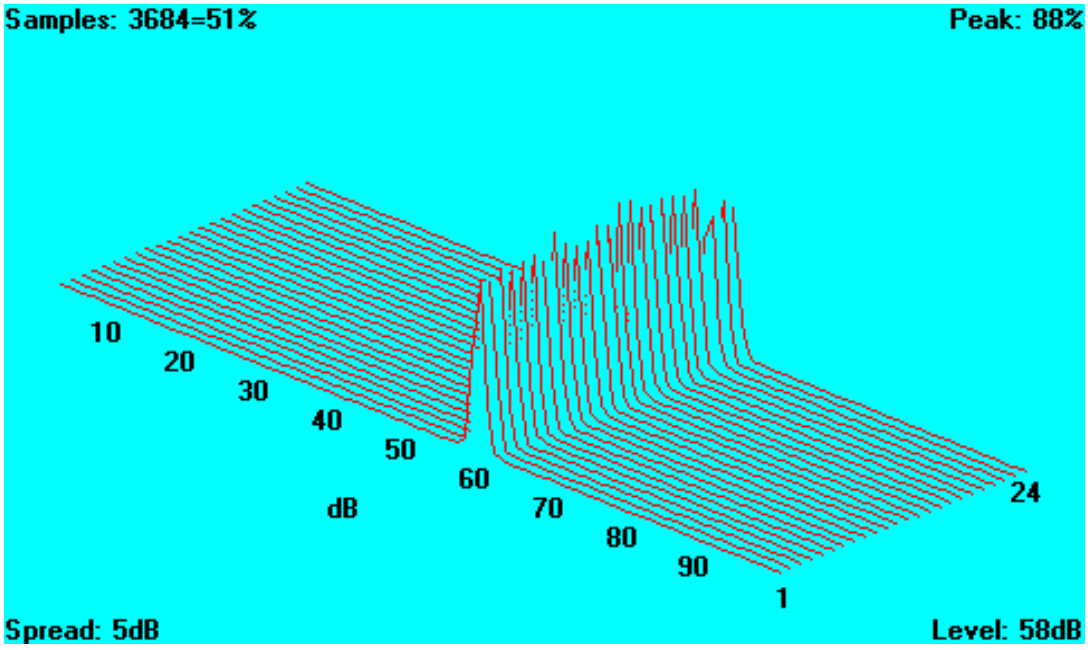
An algorithm makes a determination of level and Spread to determine if a leak is likely – in simple terms the bigger the noise level and the narrower the spread the more likely that a leak is signified.



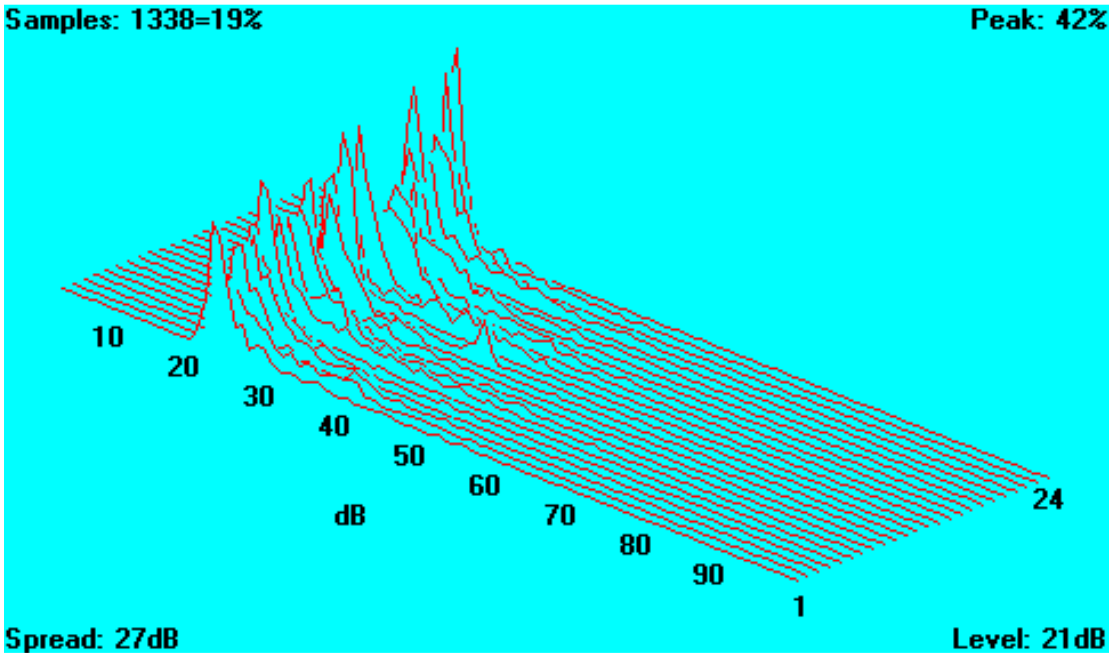
Each test is going to provide different results depending on the ambient noise conditions at any given deployment. A leak is going to be indicated by a consistent noise generated at a higher intensity than any random background noise – so the best indication of a leak is with a high peak with a very narrow spread – as on the right below. The noise on the left is a probably not a leak as it is low intensity and broad spread.



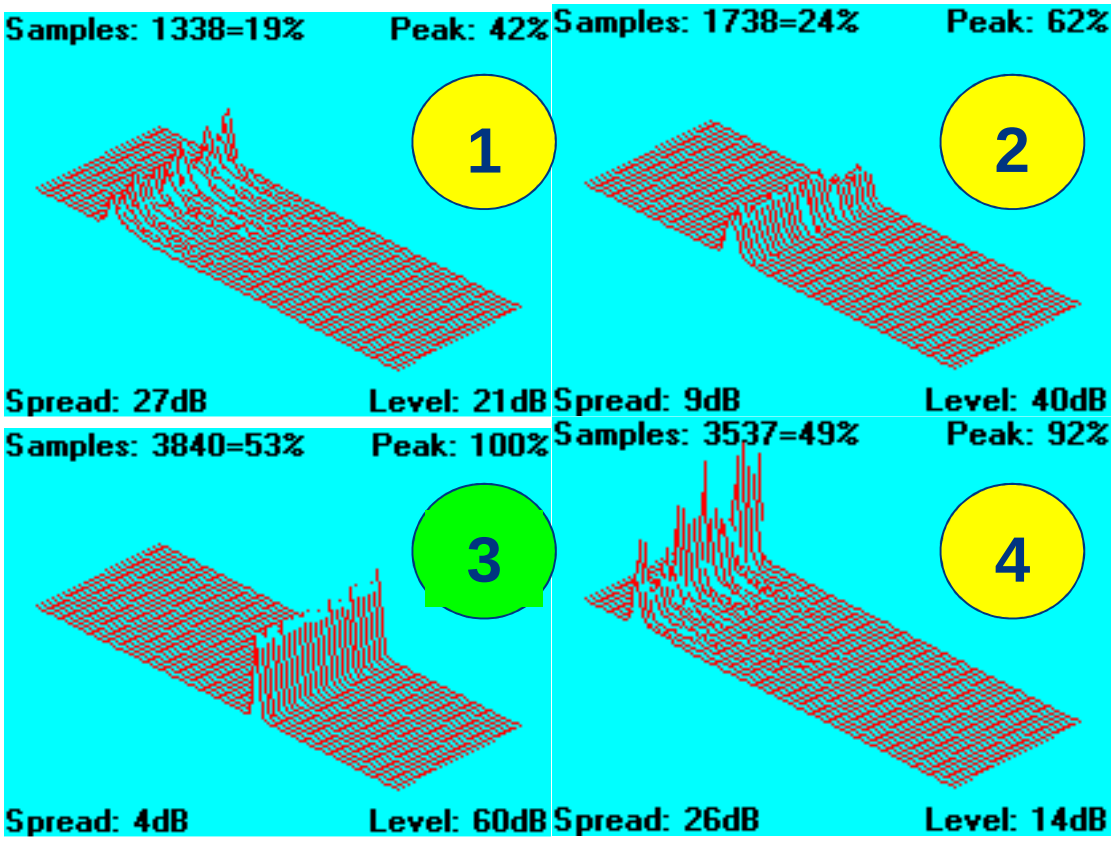
In the below example of a 'good leak indication,' the number of noise samples within a spread of 5dB is 3684 which is 51% of the total sample. With a mean (level) of 58dB and 88% of the 3684 samples at the peak. (high repeatability of the leak noise)



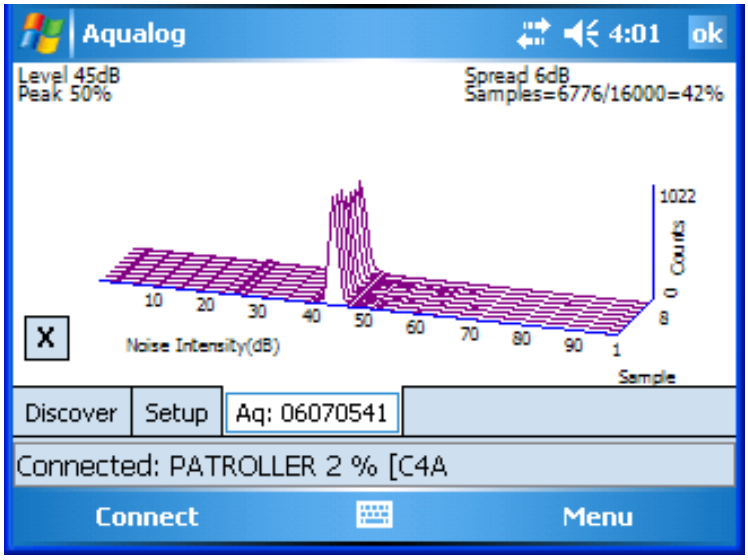
In the below example of a 'poor leak indication' the number of noise samples within a spread of 27dB is 1338 which is only 19% of the sample. With a mean (level) of 21dB and only 42% of the 1338 samples at the peak (poor repeatability of the leak noise)



In the below examples the strongest leak indication is No3 – a narrow spread (5dB) with 53% of the samples in it, and a strong level (60dB) at 100% The others do not offer good indications of leaks No1 big spread / poorly defined peak , No2 good spread but poor peak, No4 big spread/ inconsistent peak.



The following is a good leak indication from an Aqualog screen -again the nomenclature is the same – Level is the mean of the peak at 45dB, 6dB is the spread, number of samples within the spread is 42% of the sample (6676 samples out of 16000 in the study)



In summary –
The best indication of a leak is with the highest consistent peak (noise) with the narrowest spread and the highest number of samples in it.

Document History:

Edition	Date of Issue	Modification	Notes
1st		Release	
2nd	17/09/15	Format update	