



Blast Vibration at Whatley

EPC-UK

Production Blast at Whatley



Additional Questions

→ Why are blasts are experienced differently

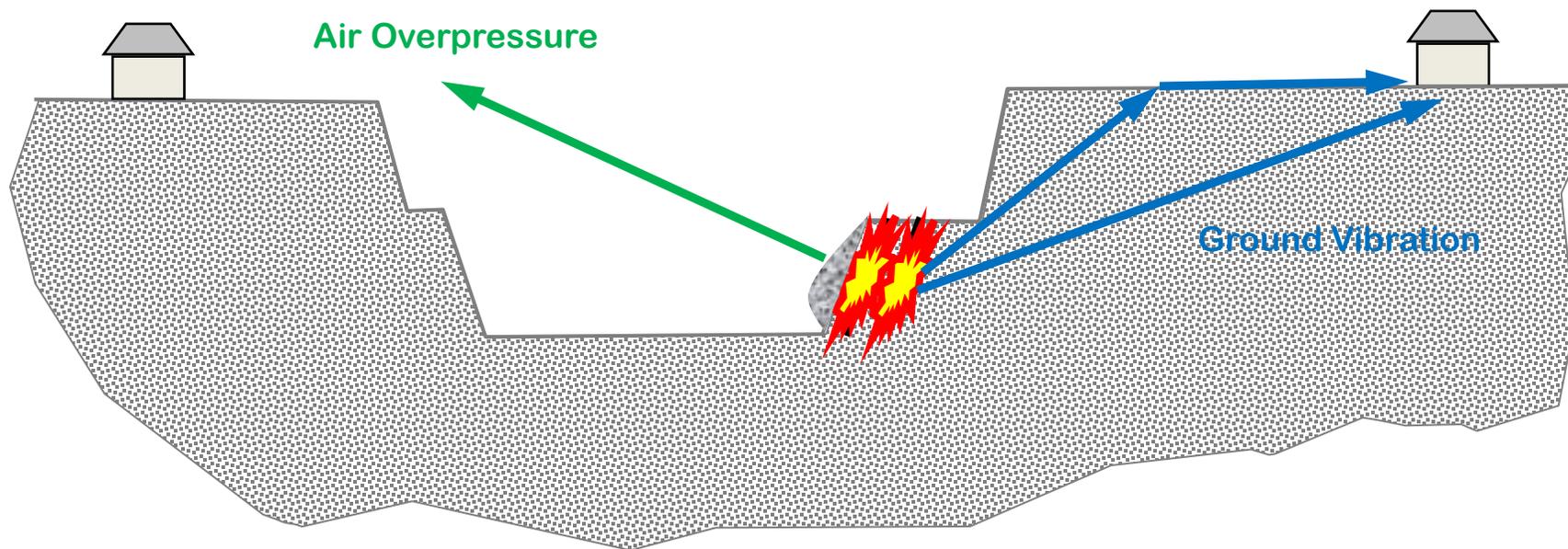
- Sometimes complaints are generated by low PPVs and not high PPVs.

Environmental impact is in two forms

Vibration through the ground and vibration through the air (air overpressure)

Vibration tends to be higher behind the blast and air overpressure in front

Both are monitored at Whatley



Additional Questions

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Frequency

Frequency of ground vibration can vary from blast to blast, with distance and with geology

Structural response also varies with frequency

Local structural response can enhance human response

e.g. If you are sat at a table and the ground vibration frequency matches the natural frequency of the table then you will find the event more noticeable

For this reason your response to a blast may also differ according to your location in the structure and blasts will be less noticeable outside of the structure

Frequency is taken into account in BS7385 – Structural Damage Criteria

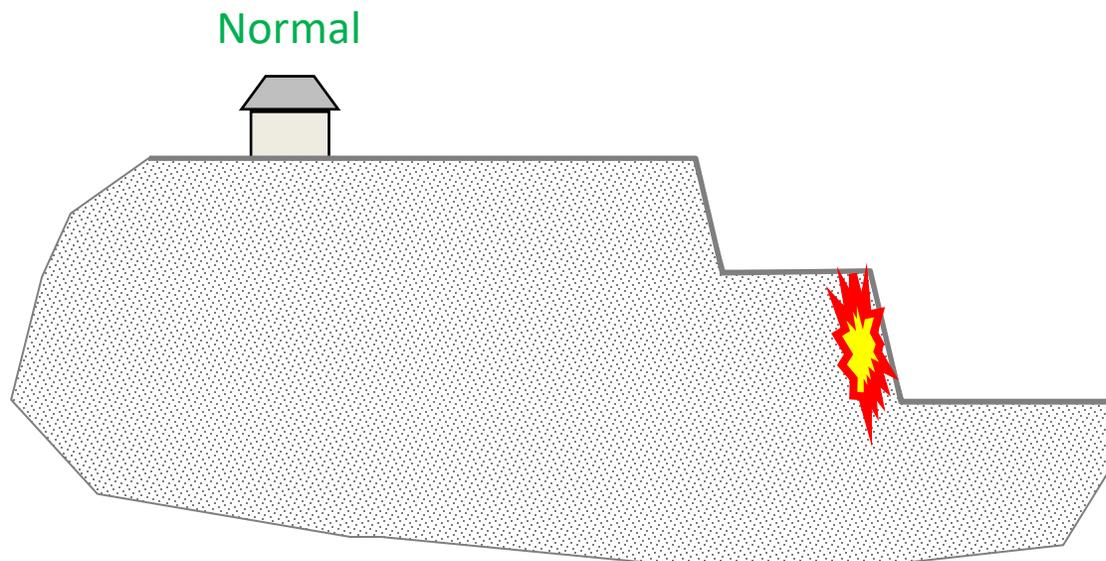
Additional Questions

→ Is there anything about the geology at Whatley that could be influencing how things are experienced

Weather conditions control the way that air overpressure is transmitted through the air

Geology controls the way that vibration is transmitted through the ground

Faults, joints and bedding planes



This is why it is important to monitor at properties as is done at Whatley

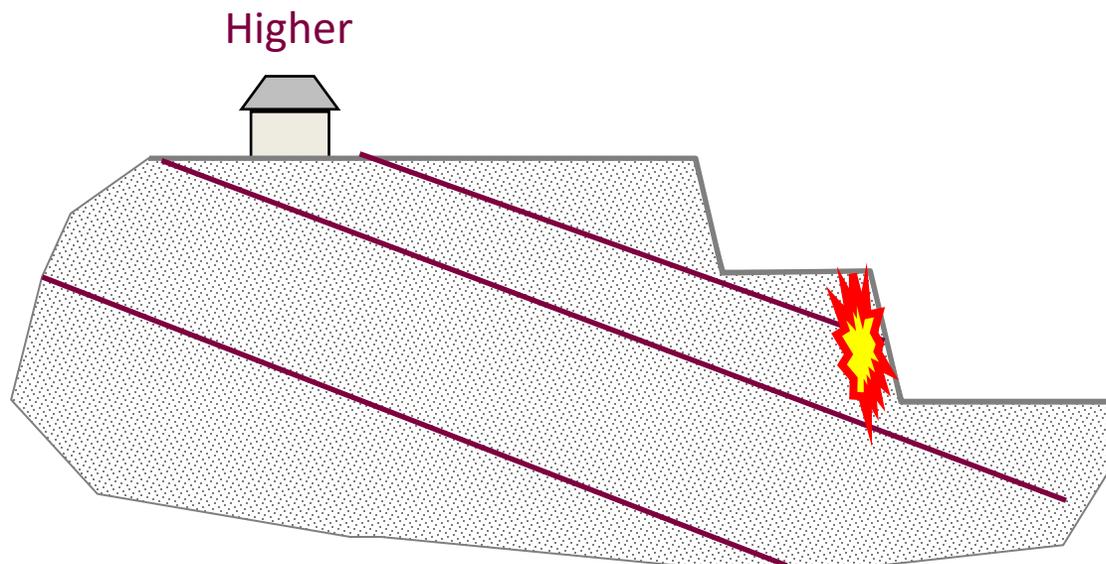
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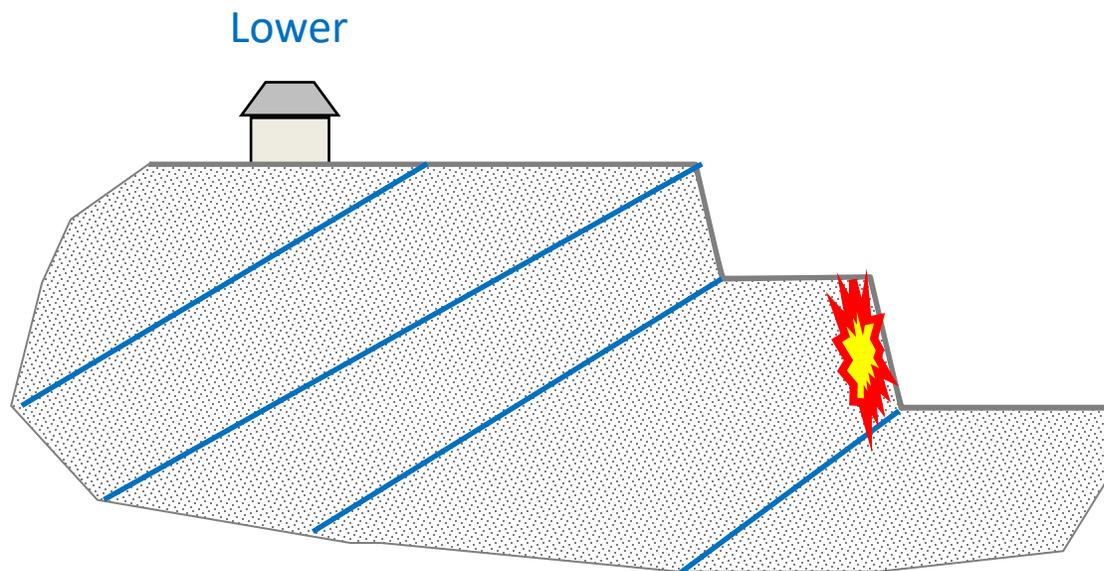
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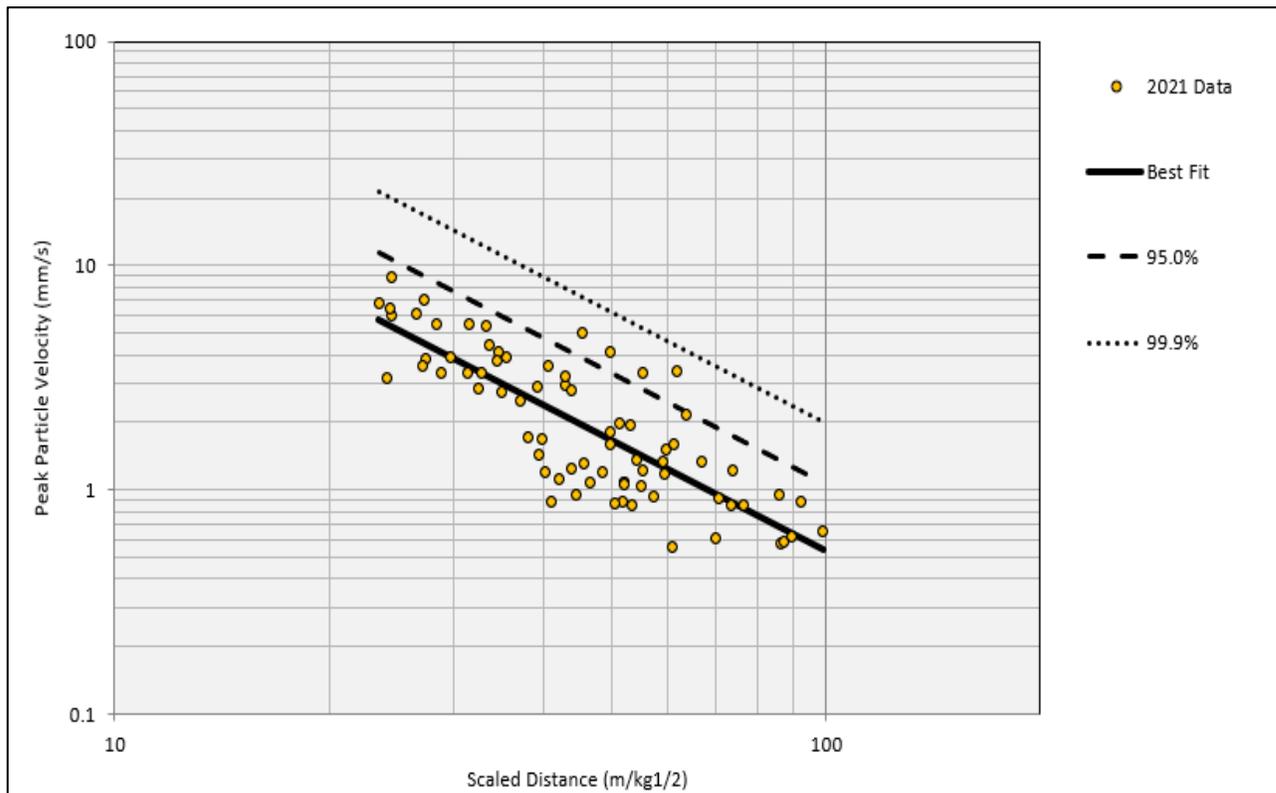


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Additional Questions

→ Why predicted PPV is not always 'achieved'

Blast prediction and control is achieved at Whatley by means of location specific regression lines
These lines relate vibration levels to blast design for each location



- There is a degree of scatter on these lines resulting in some uncertainty about the resulting vibration level
 - Due to geology and some variations in blast parameters

Additional Questions

→ Why the blasts are not at a level that could be damaging homes

There has been a large amount of research carried out over the years relating to structural damage due to ground vibration, mostly blast-induced ground vibration

This was used to generate BS7385 Part 2 – the British Standard giving guidance on such matters

Simple to apply – just don't exceed 15 mm/s at foundation level

Line on Graph	Type of Building	Peak component particle velocity in frequency range of predominant pulse	
		4 to 15 Hz	15 Hz & above
1	Reinforced or framed structures Industrial and heavy commercial buildings	50 mm/s at 4Hz and above	
2	Unreinforced or light framed structures Residential or light commercial type buildings	15 mm/s at 4 Hz increasing to 20 mm/s at 15 Hz	20 mm/s at 15 Hz increasing to 50 mm/s at 40 Hz and above
NOTE 1. Values referred to are at base of the building.			
NOTE 2. For line 2, at frequencies below 4 Hz, a maximum displacement of 0.6mm (zero to peak) should not be exceeded			



THANKS FOR LISTENING
ANY QUESTIONS