

Figure D.1. Impulse response records for the 1-tree elevation scan on path 2 at the 4 meter transmitter height (no leaves).

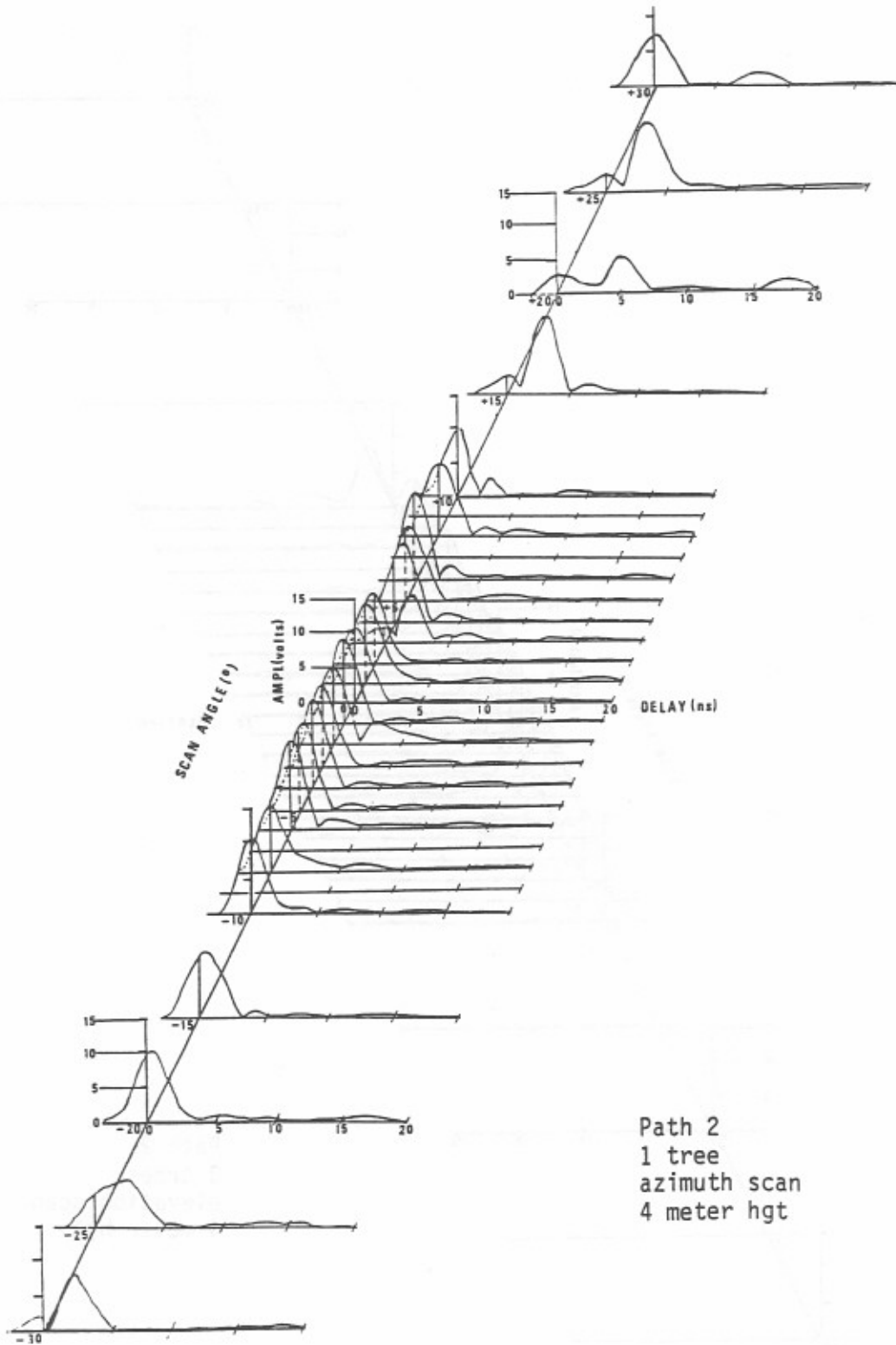


Figure D.2. Impulse response records for the 1-tree azimuth scan on Path 2 at the 4 meter transmitter height (no leaves).

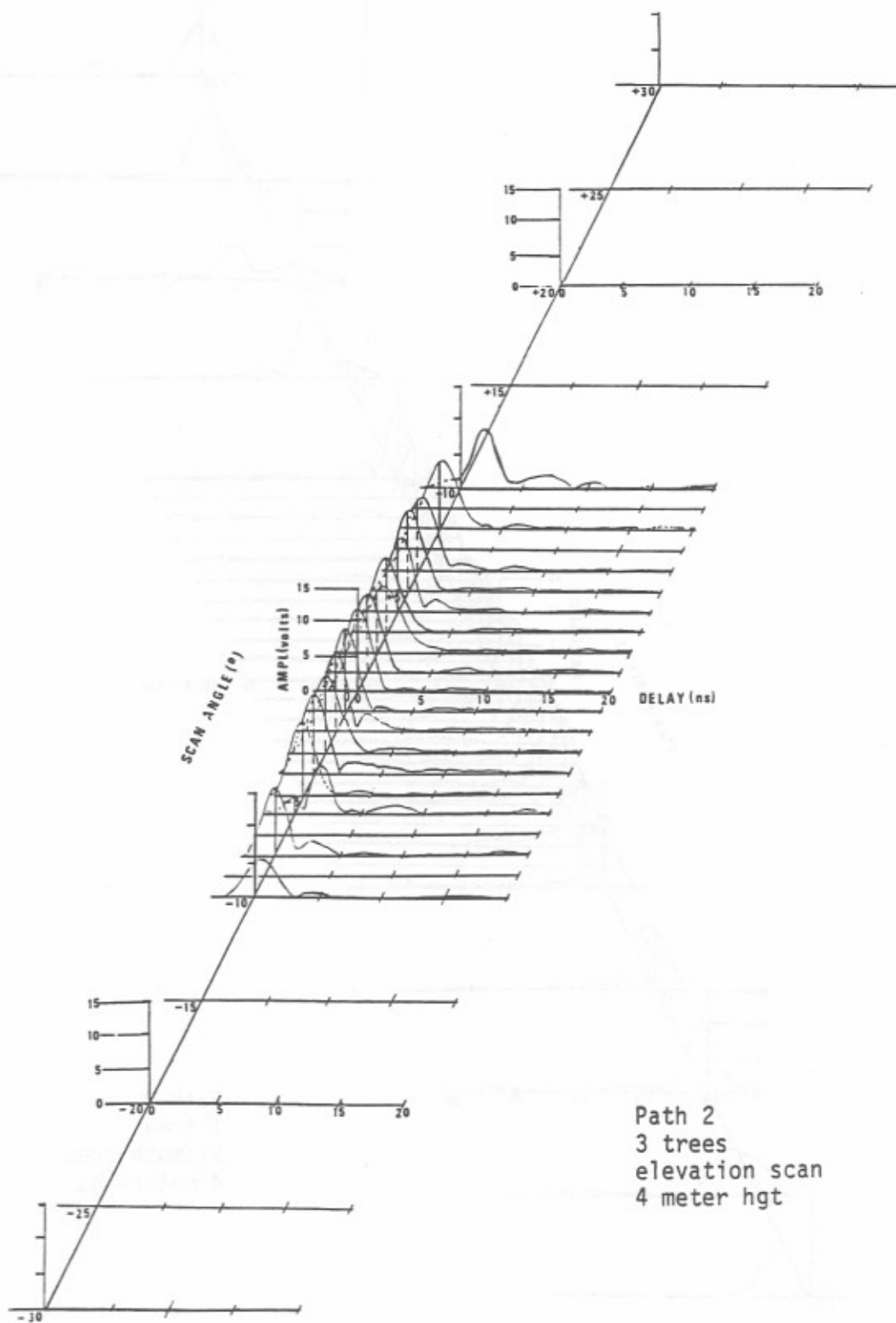


Figure D.3. Impulse response records for the 3-tree elevation scan on Path 2 at the 4 meter transmitter height (no leaves).

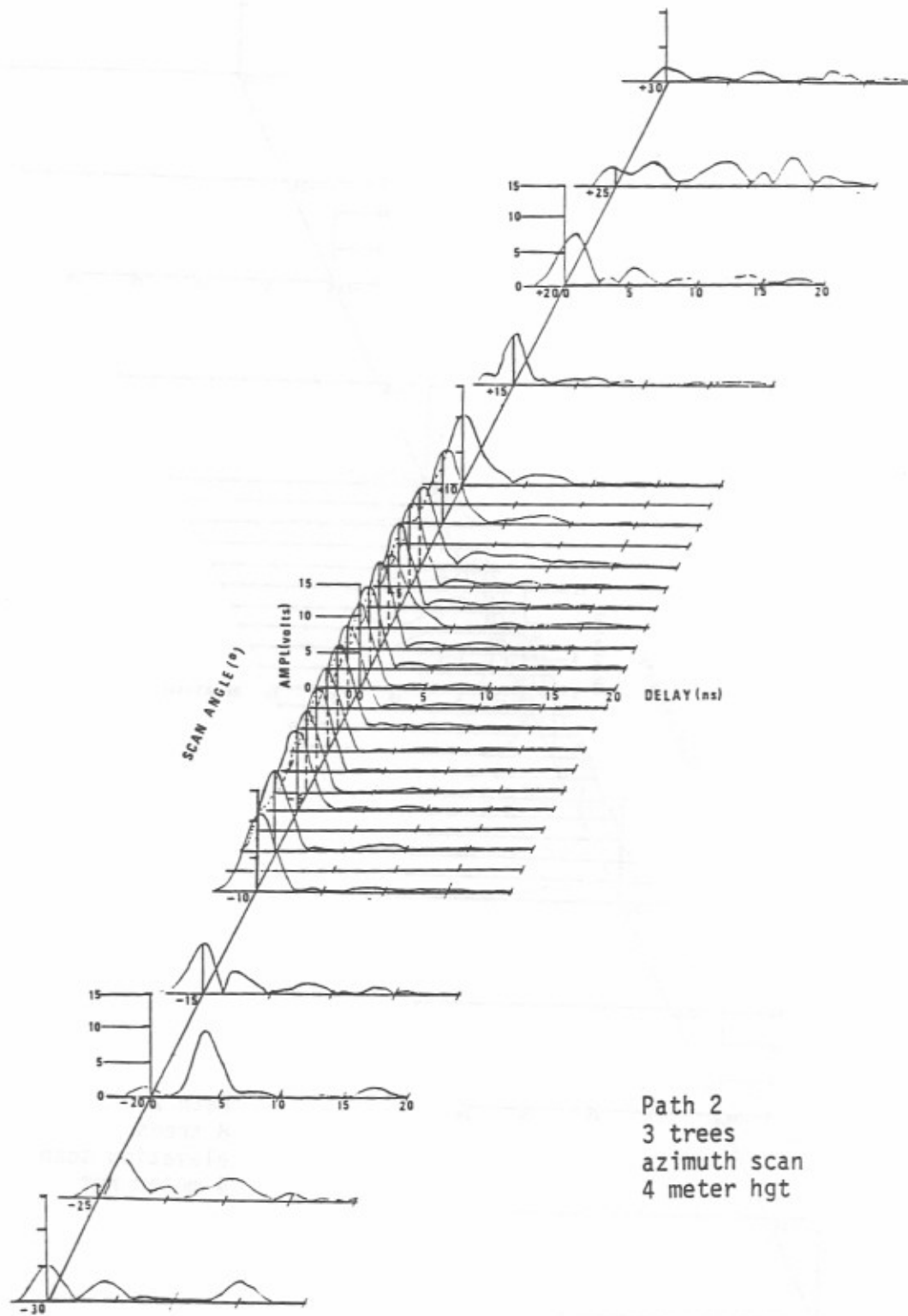


Figure D.4. Impulse response records for the 3-tree azimuth scan on Path 2 at the 4 meter transmitter height (no leaves).

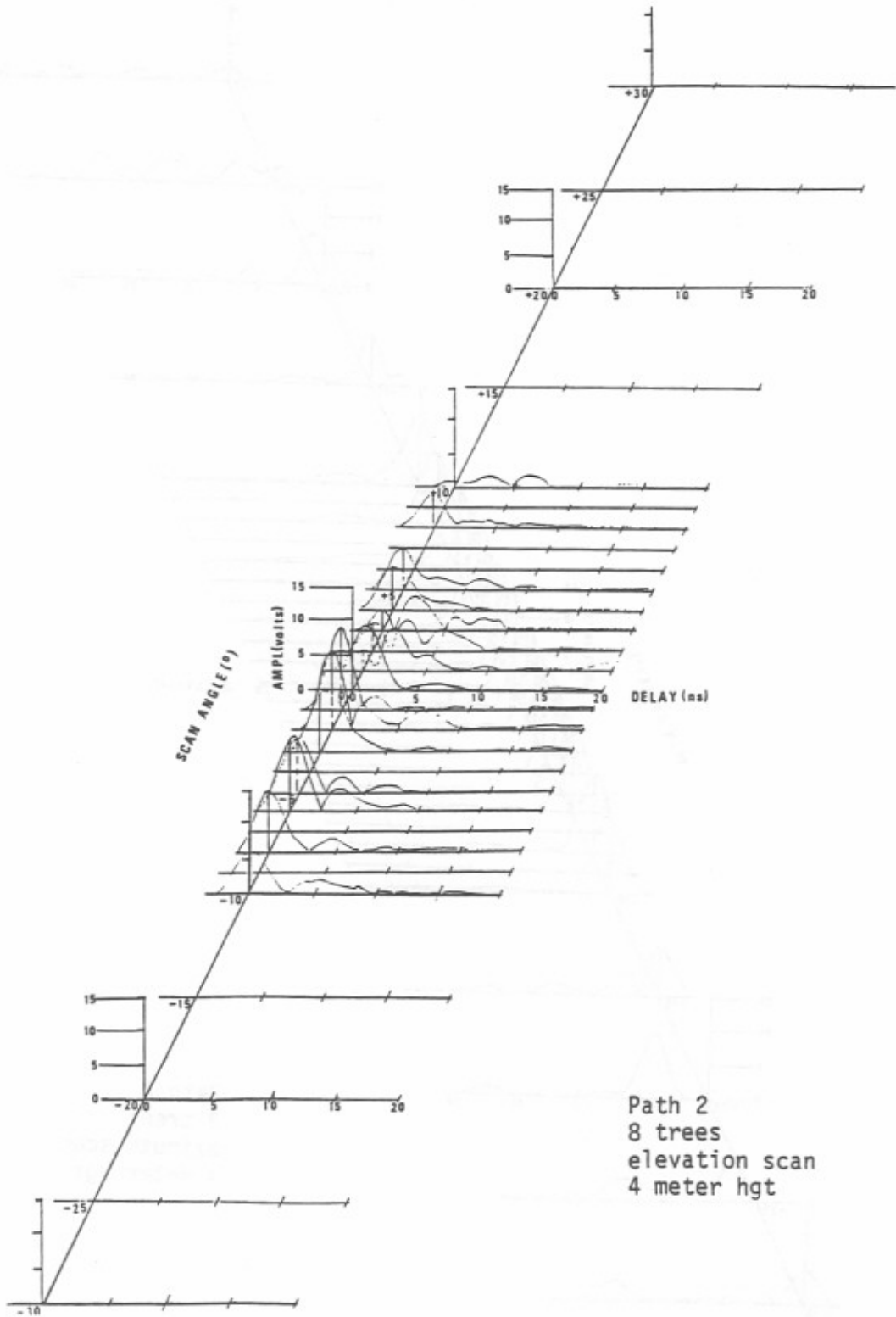


Figure D.5. Impulse response records for the 8-tree elevation scan on Path 2 at the 4 meter transmitter height (no leaves).

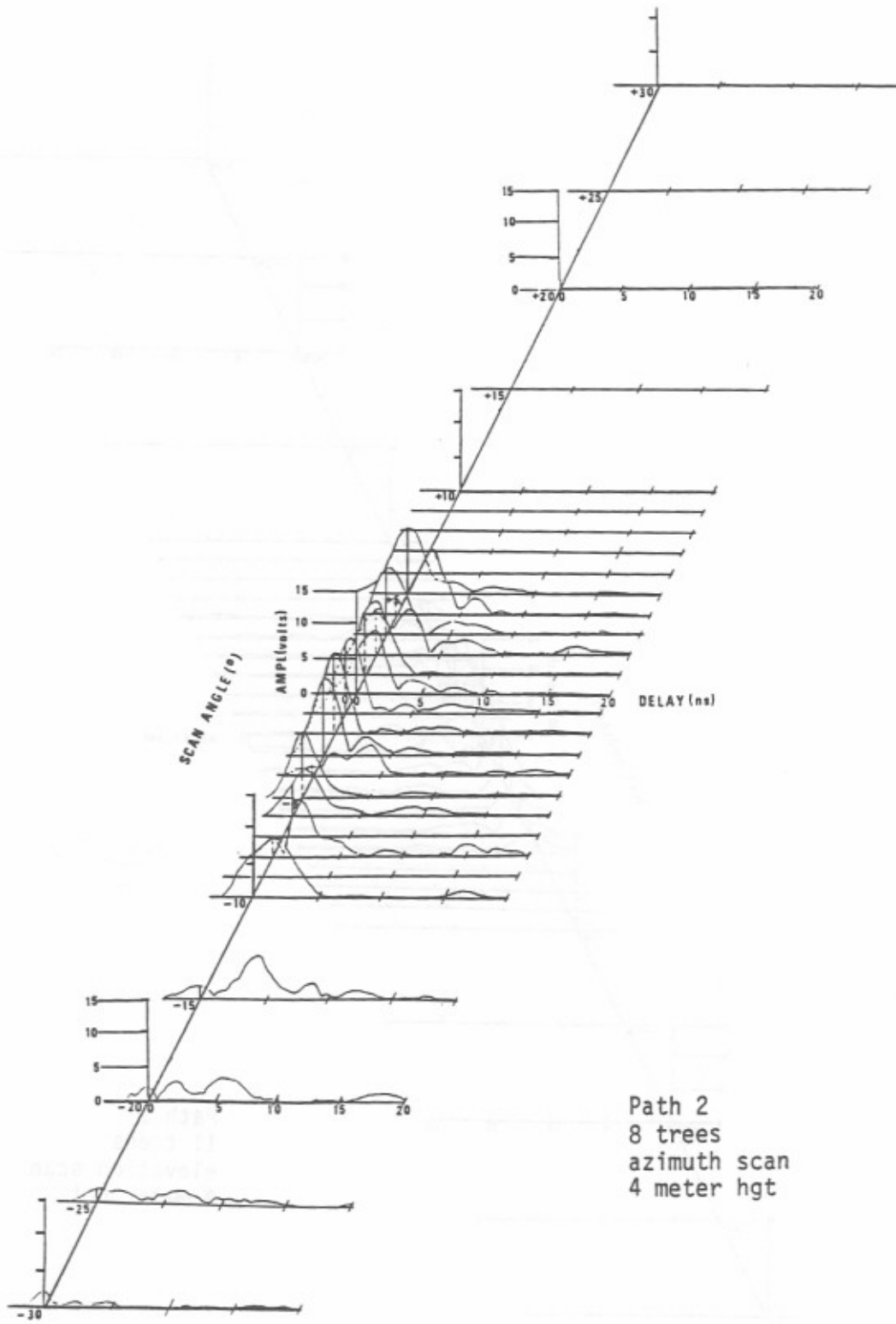


Figure D.6. Impulse response records for the 8-tree azimuth scan on Path 2 at the 4 meter transmitter height (no leaves).

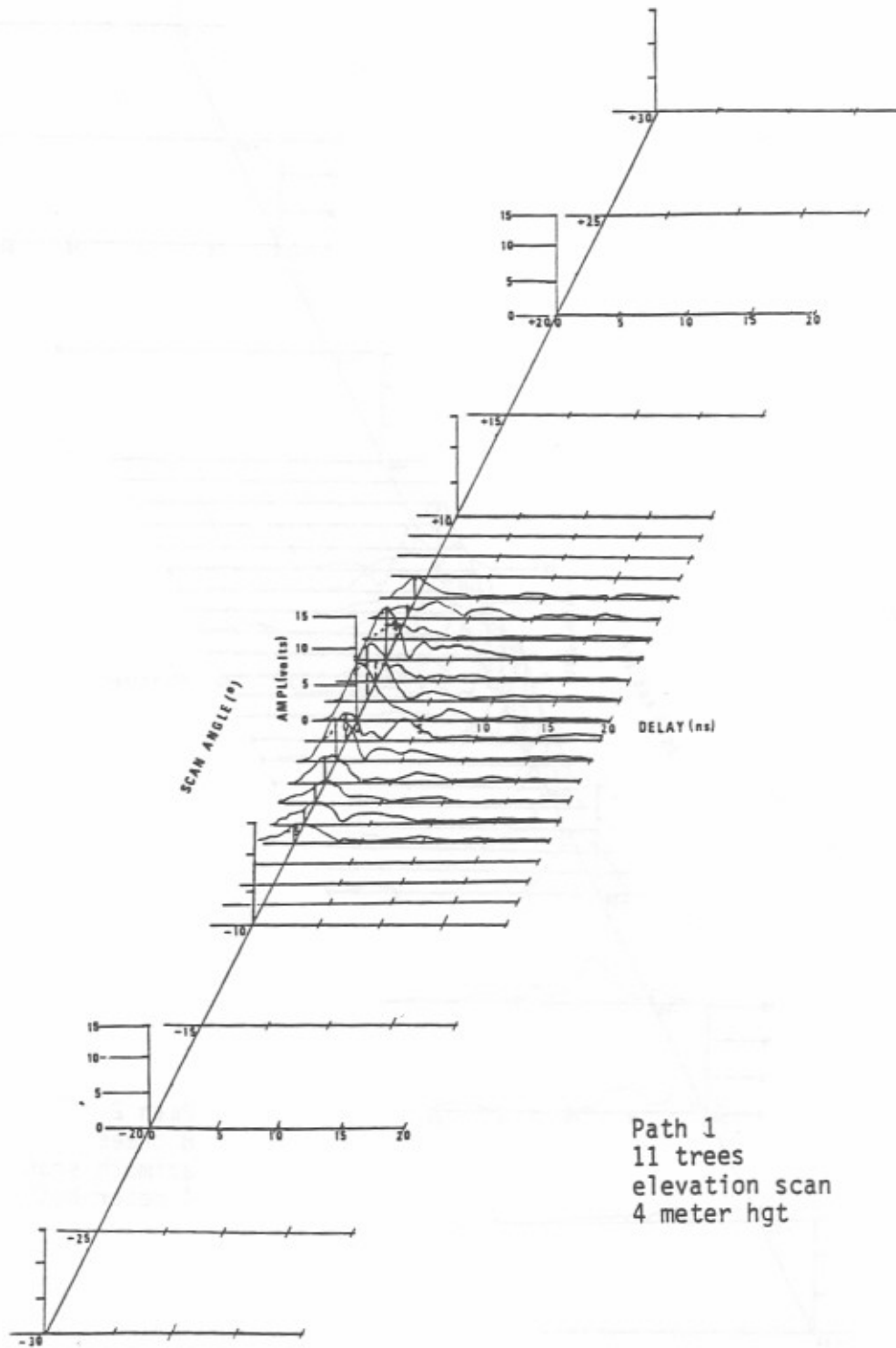


Figure D.7. Impulse response records for the 11-tree elevation scan on Path 1 at the 4 meter transmitter height (no leaves).

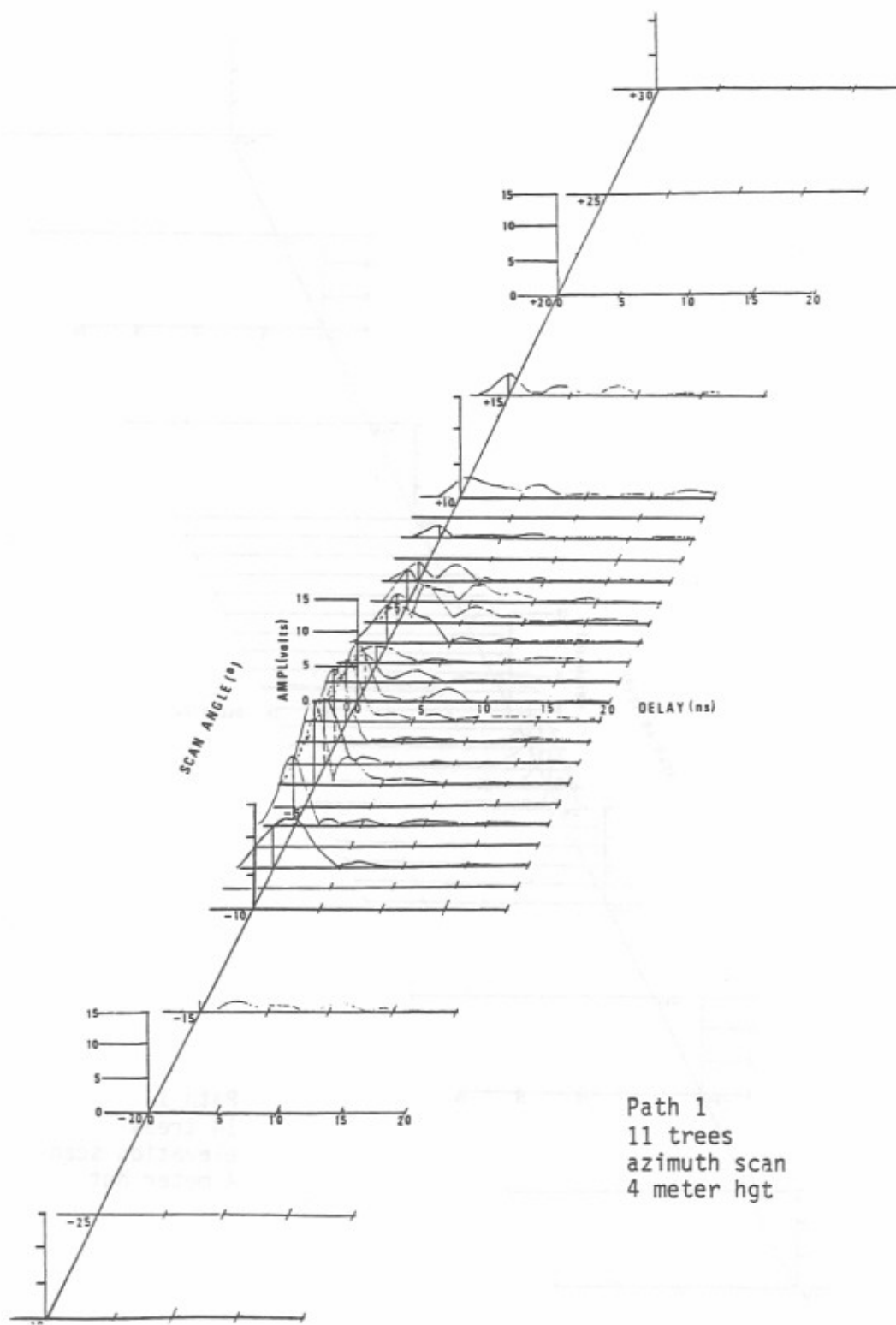


Figure D.8. Impulse response records for the 11-tree azimuth scan on Path 1 at the 4 meter transmitter height (no leaves).

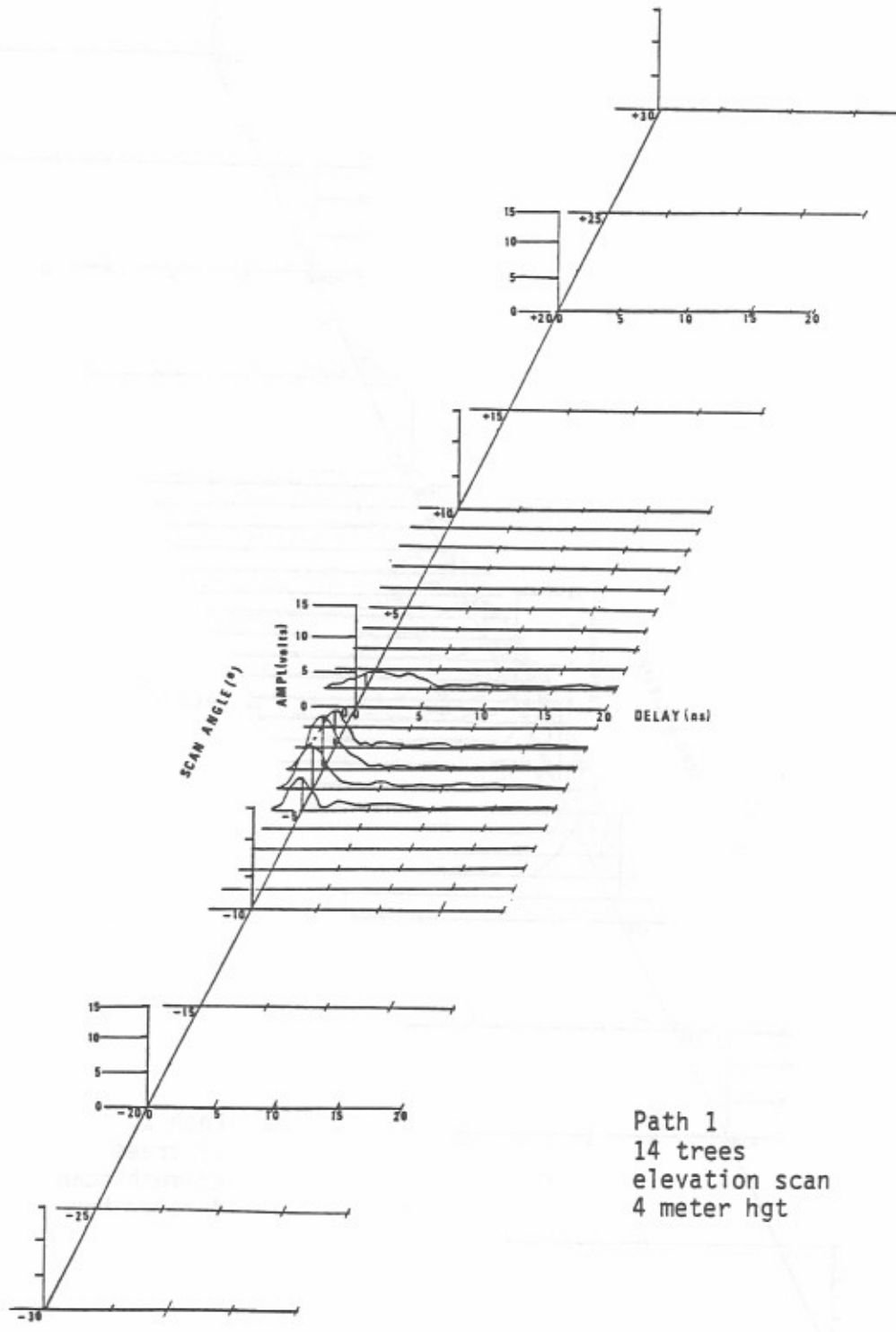


Figure D.9. Impulse response records for the 14-tree elevation scan on Path 1 at the 4 meter transmitter height (no leaves).

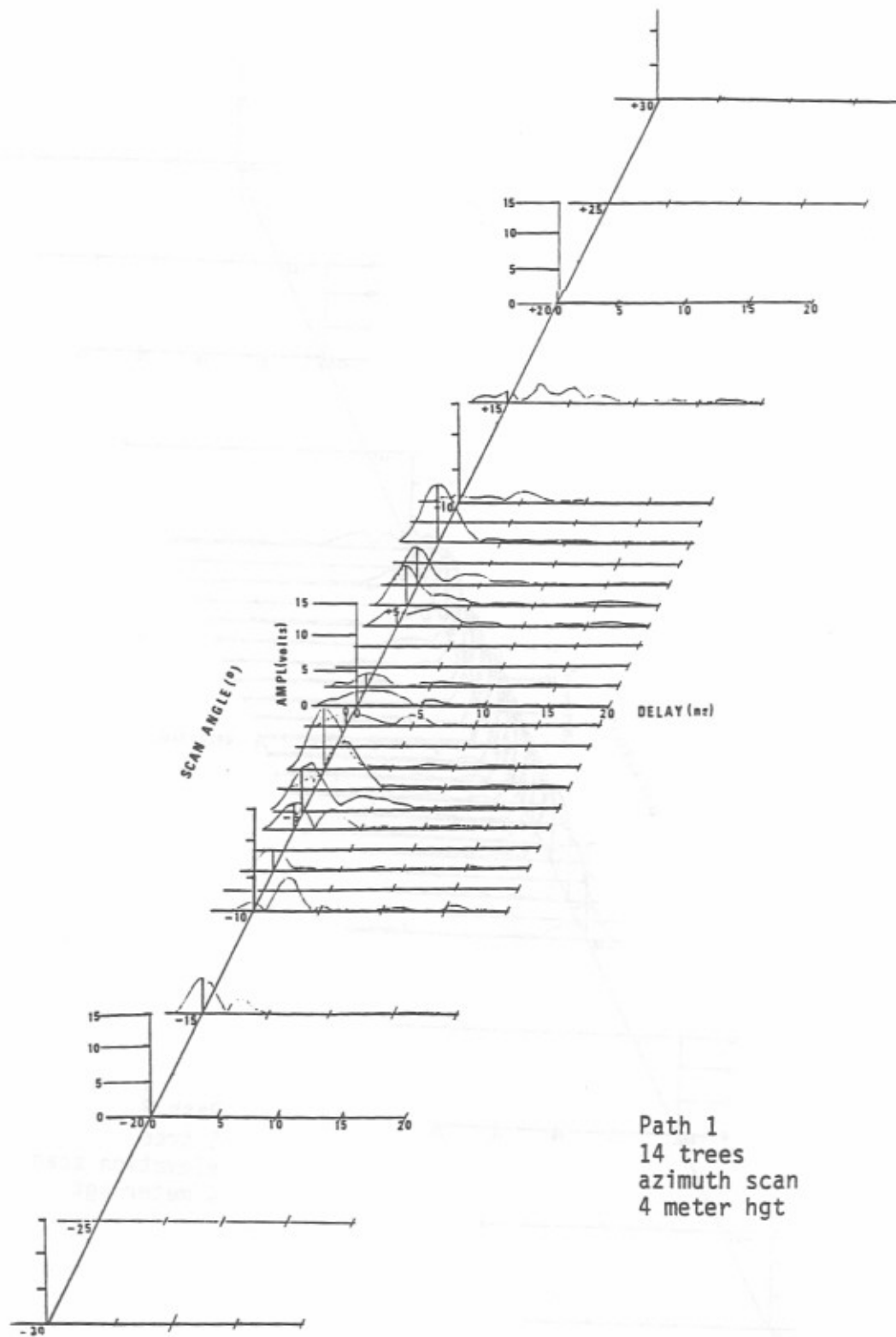
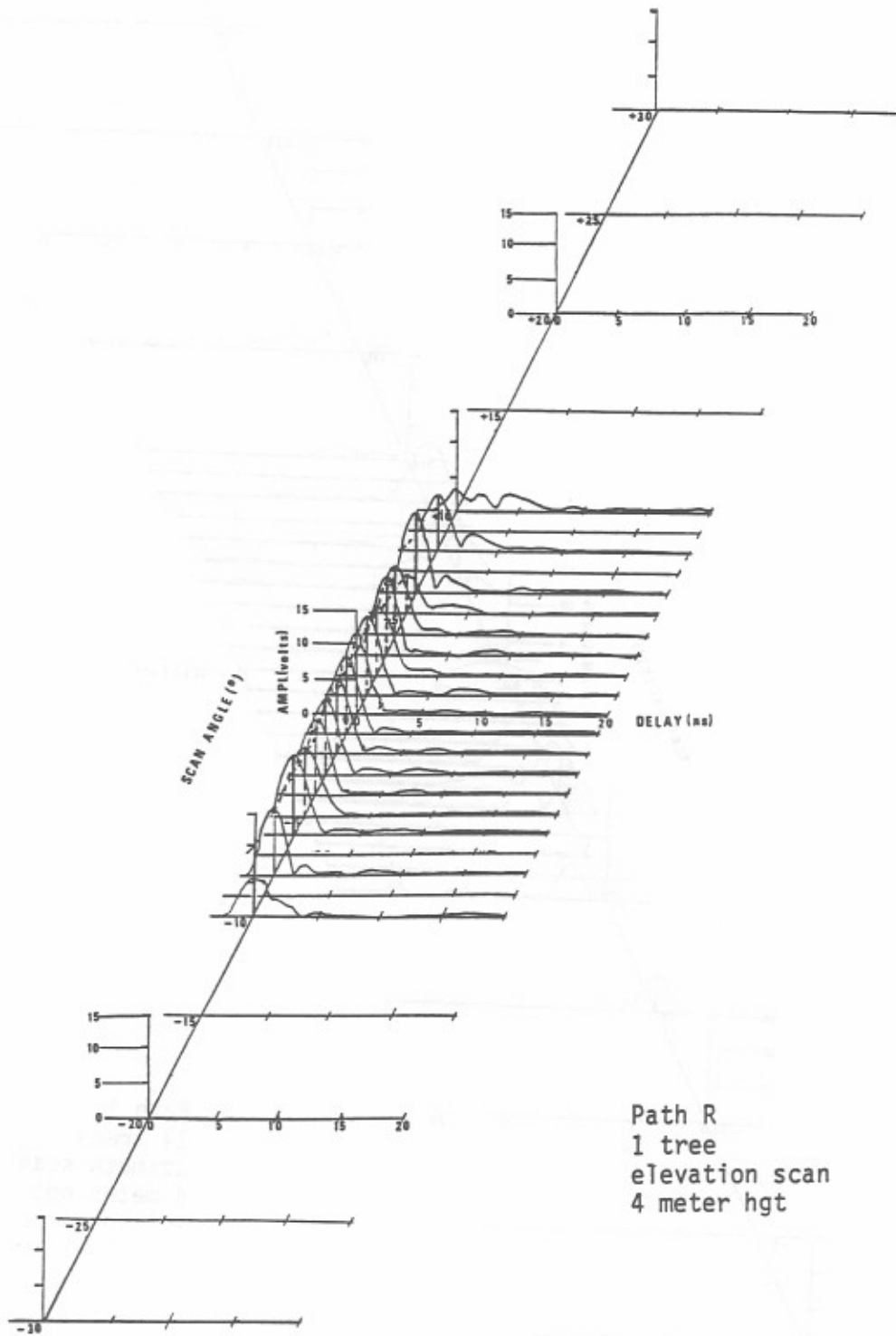
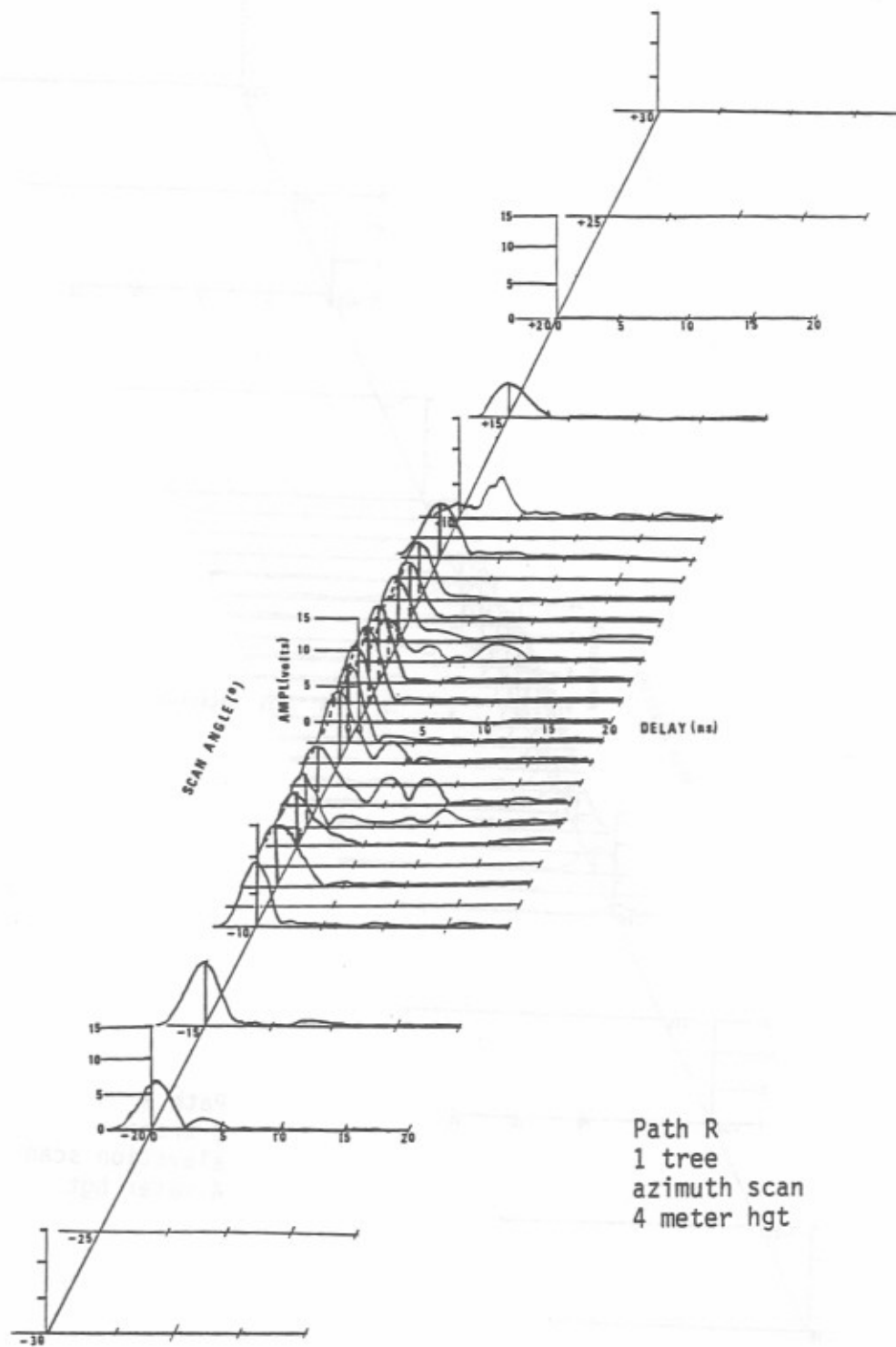


Figure D.10. Impulse response records for the 14-tree azimuth scan on Path 1 at the 4 meter transmitter height (no leaves).



Path R
 1 tree
 elevation scan
 4 meter hgt

Figure D.11. Impulse response records for the 1-tree elevation scan on Path R at the 4 meter transmitter height (no leaves).



Path R
 1 tree
 azimuth scan
 4 meter hgt

Figure D.12. Impulse response records for the 1-tree azimuth scan on Path R at the 4 meter transmitter height (no leaves).

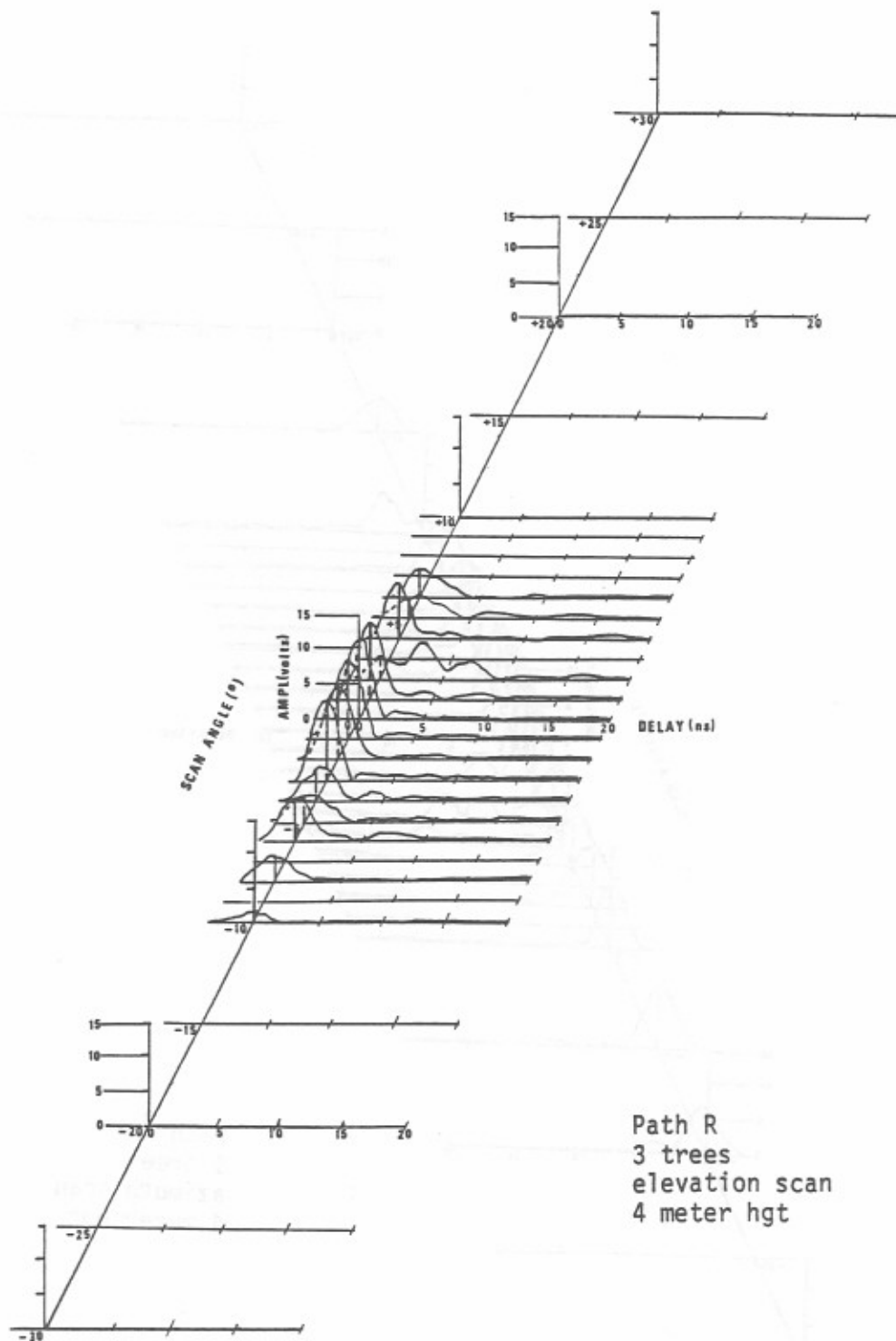


Figure D.13. Impulse response records for the 3-tree elevation scan on Path R at the 4 meter transmitter height (no leaves).

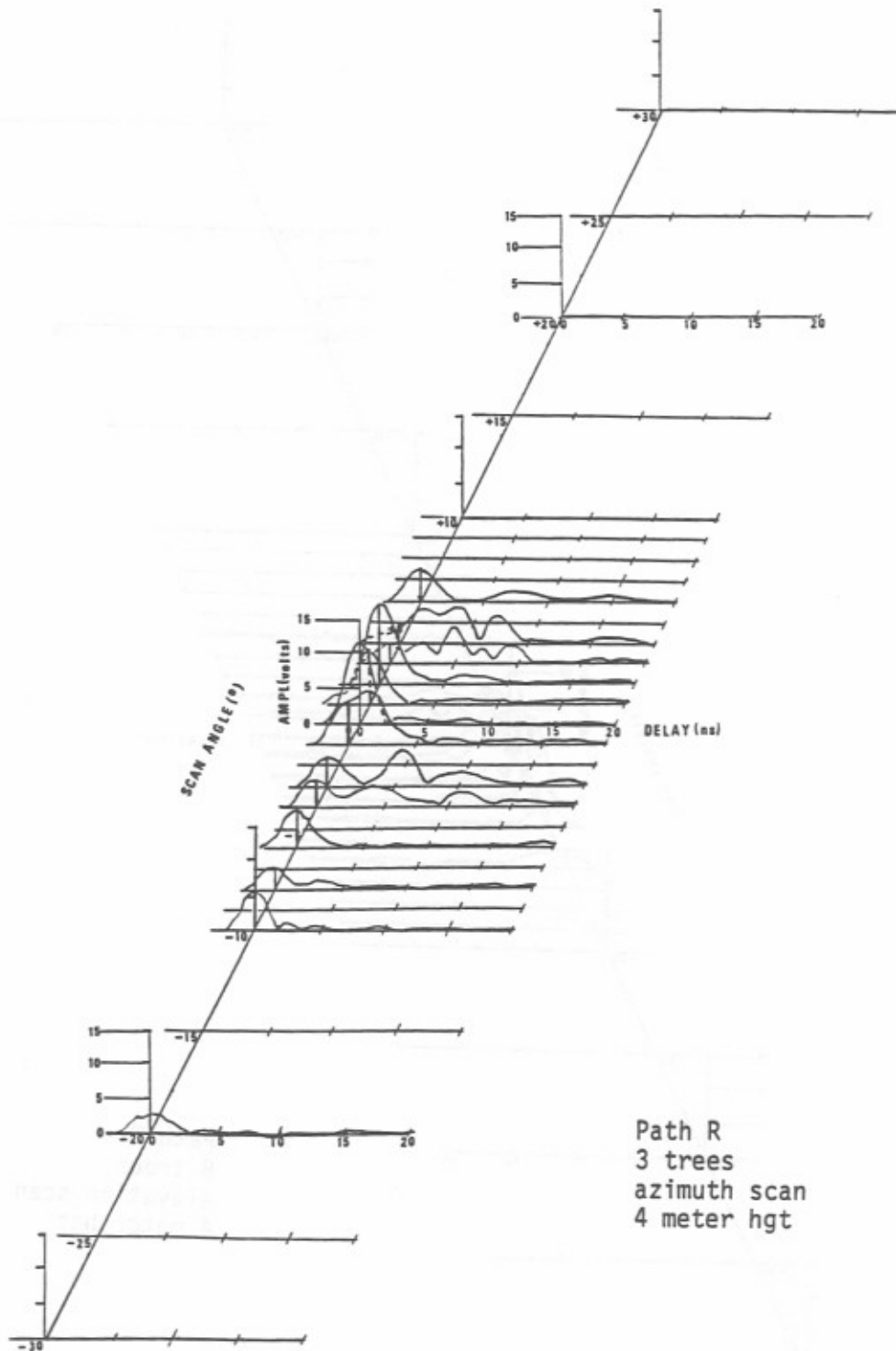


Figure D.14. Impulse response records for the 3-tree azimuth scan on Path R at the 4 meter transmitter height (no leaves).

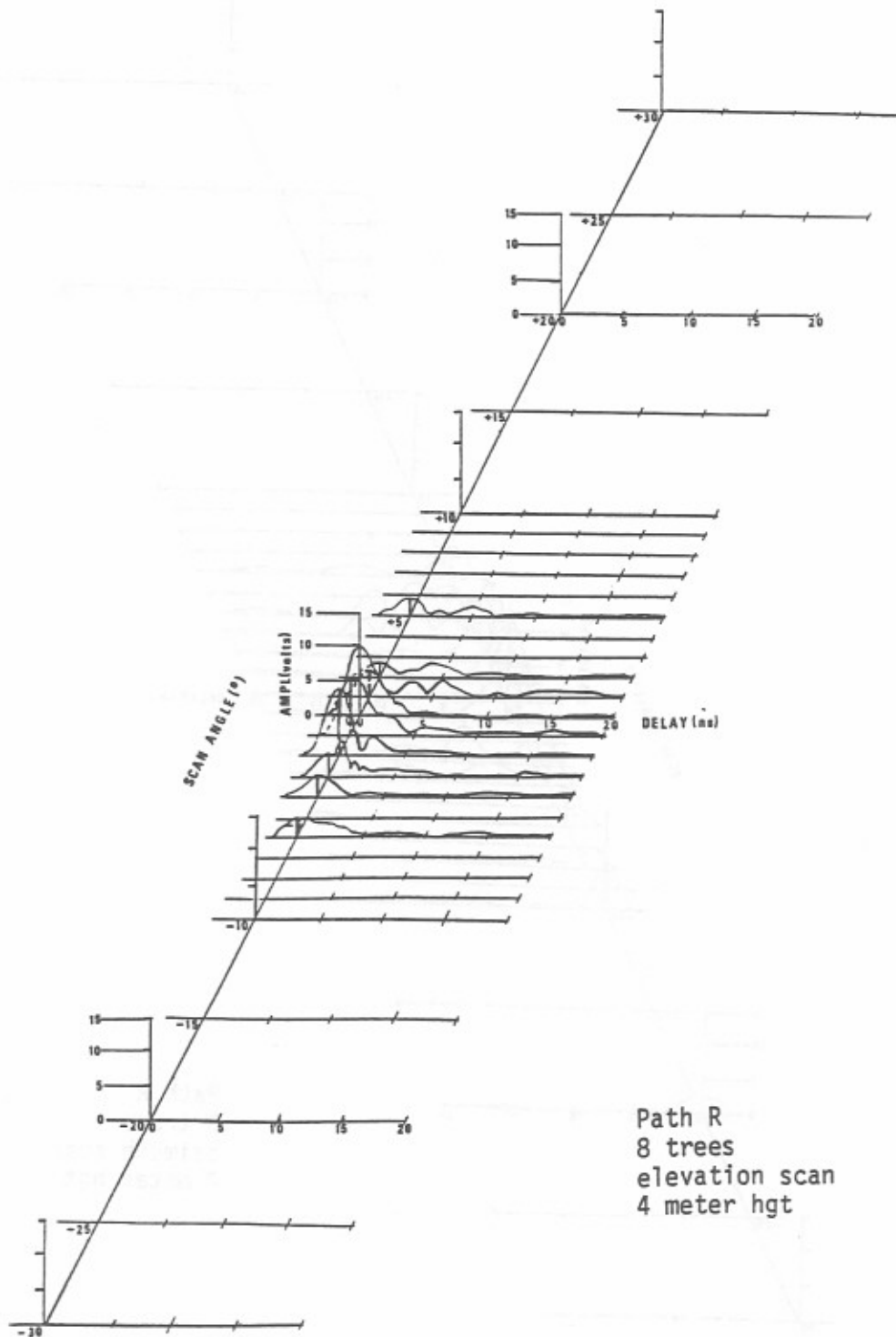


Figure D.15. Impulse response records for the 8-tree elevation scan on Path R for the 4 meter transmitter height (no leaves).

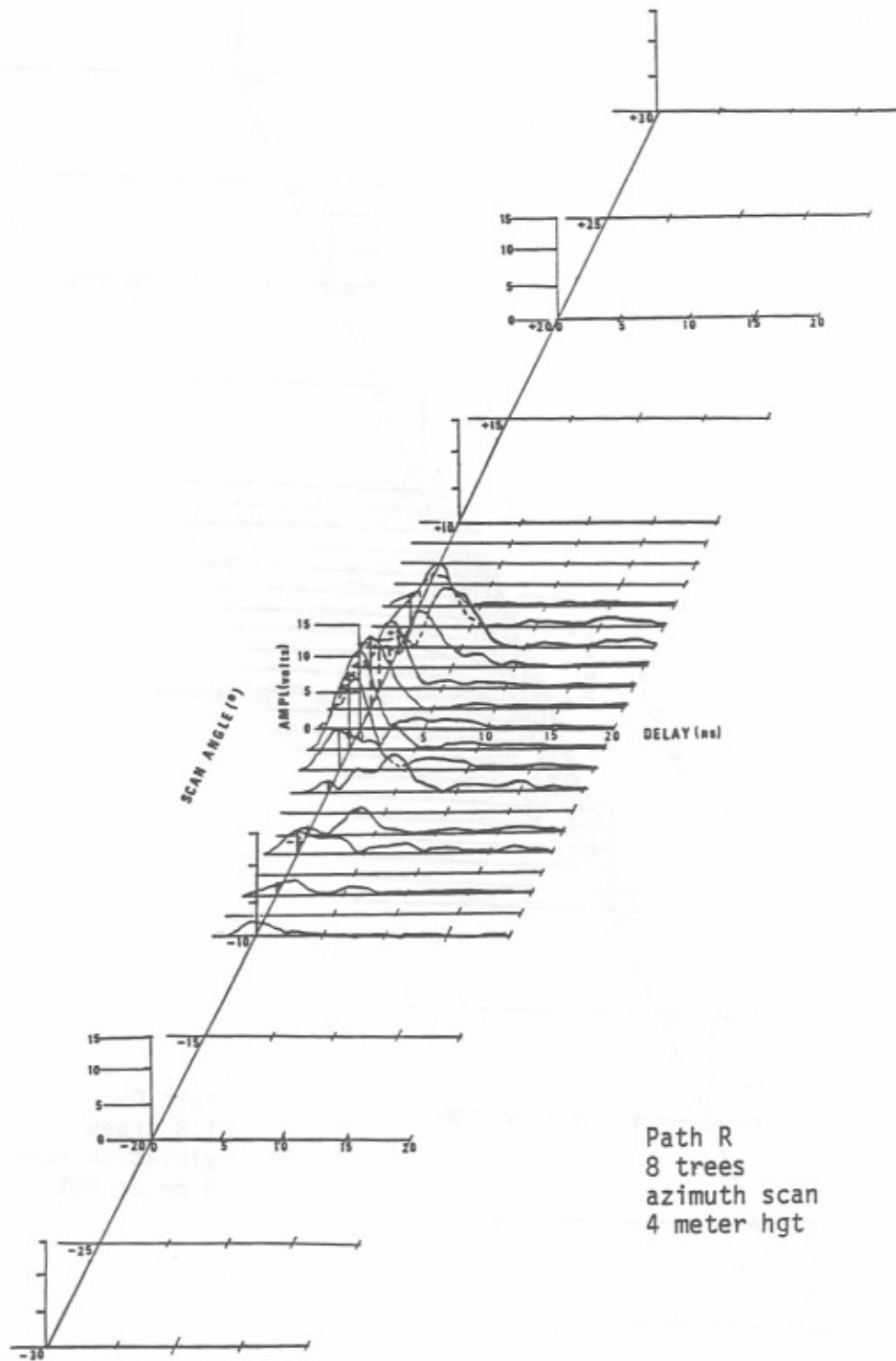
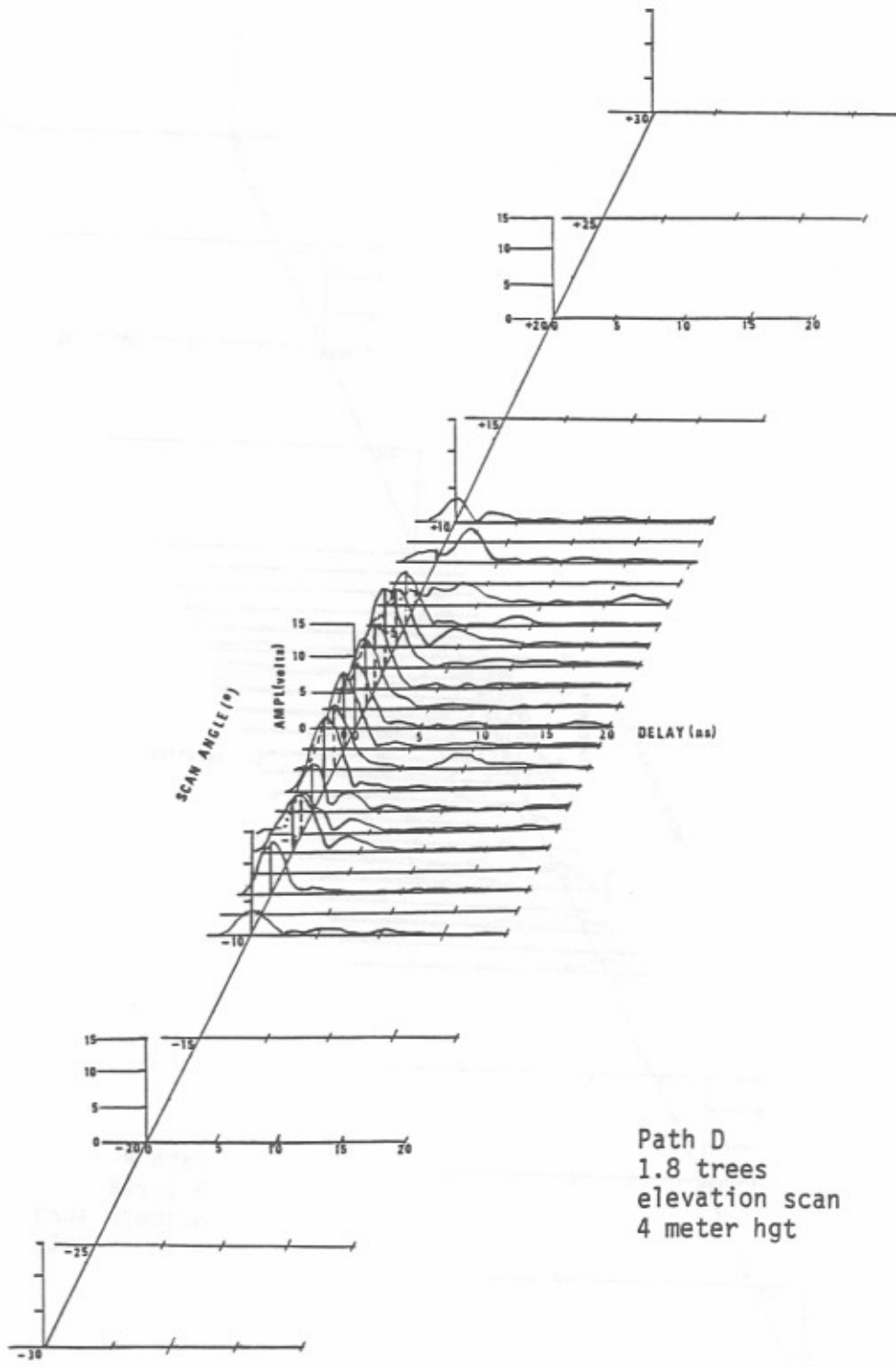
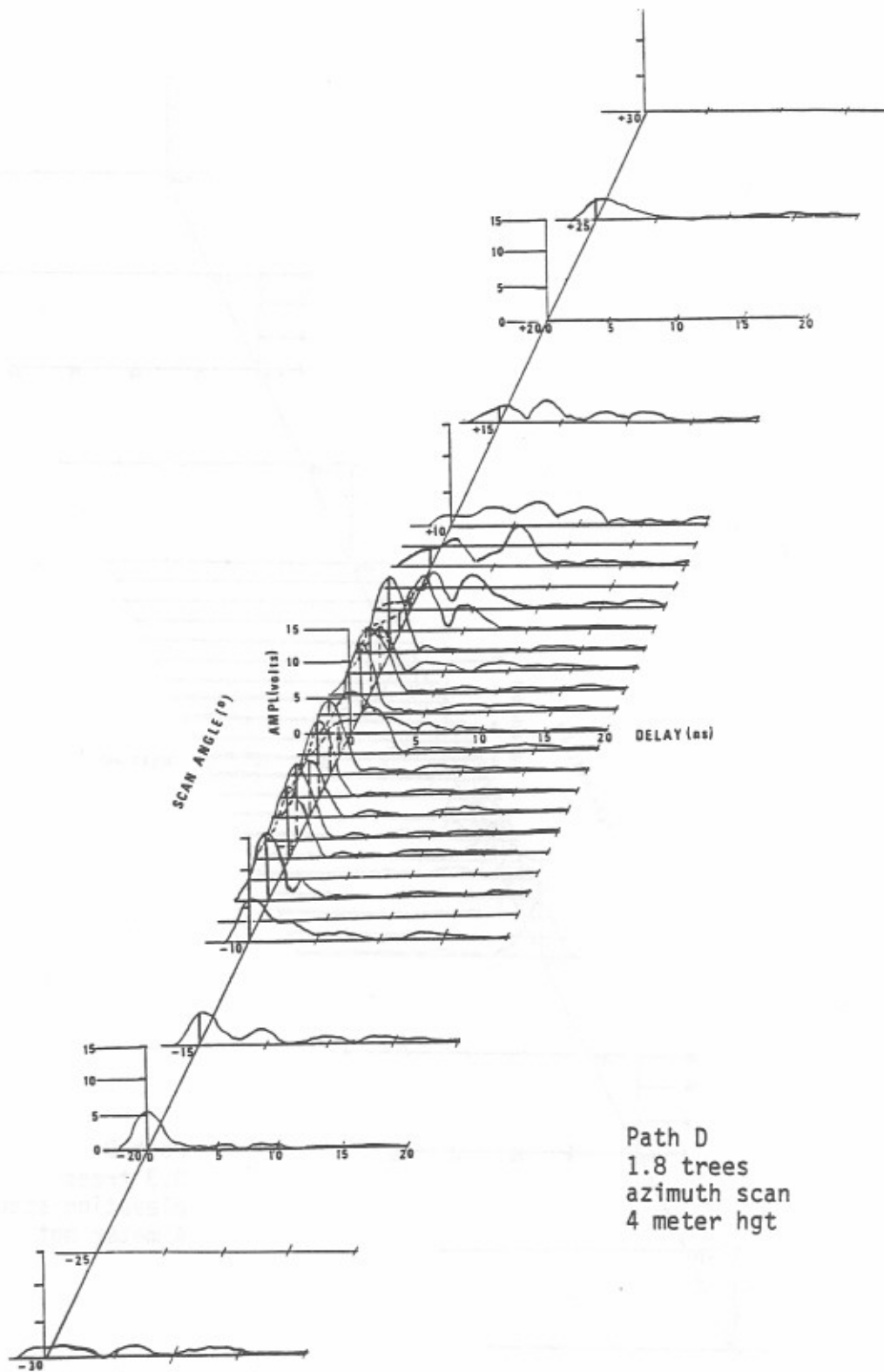


Figure D.16. Impulse response records for the 8-tree azimuth scan on Path R at the 4 meter transmitter height (no leaves).



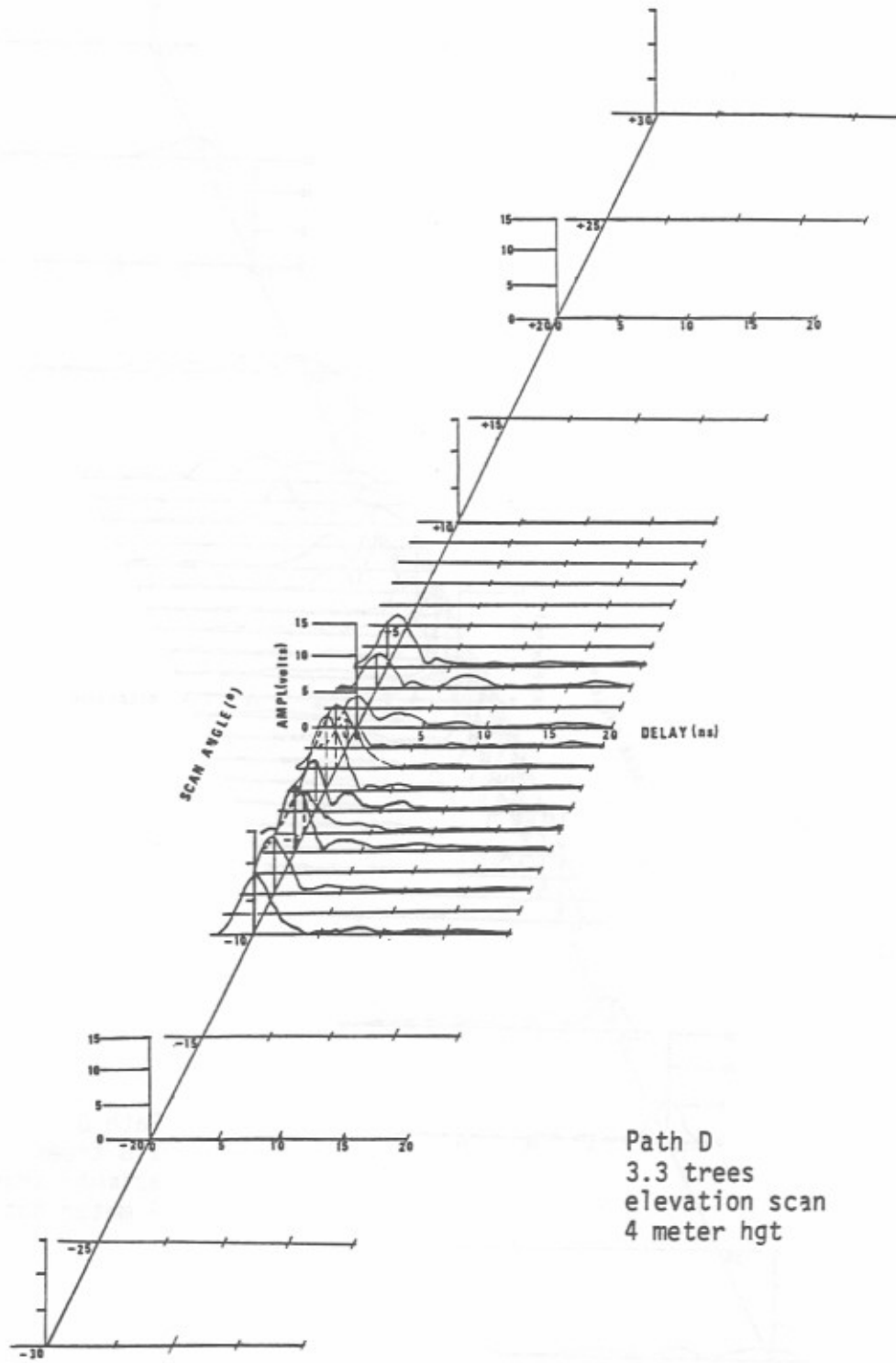
Path D
 1.8 trees
 elevation scan
 4 meter hgt

Figure D.17. Impulse response records for the 1.8-tree elevation scan on Path D at the 4 meter transmitter height (no leaves).



Path D
 1.8 trees
 azimuth scan
 4 meter hgt

Figure D.18. Impulse response records for the 1.8-tree azimuth scan on Path D at the 4 meter transmitter height (no leaves).



Path D
 3.3 trees
 elevation scan
 4 meter hgt

Figure D.19. Impulse response records for the 3.3-tree elevation scan on Path D at the 4 meter transmitter height (no leaves).

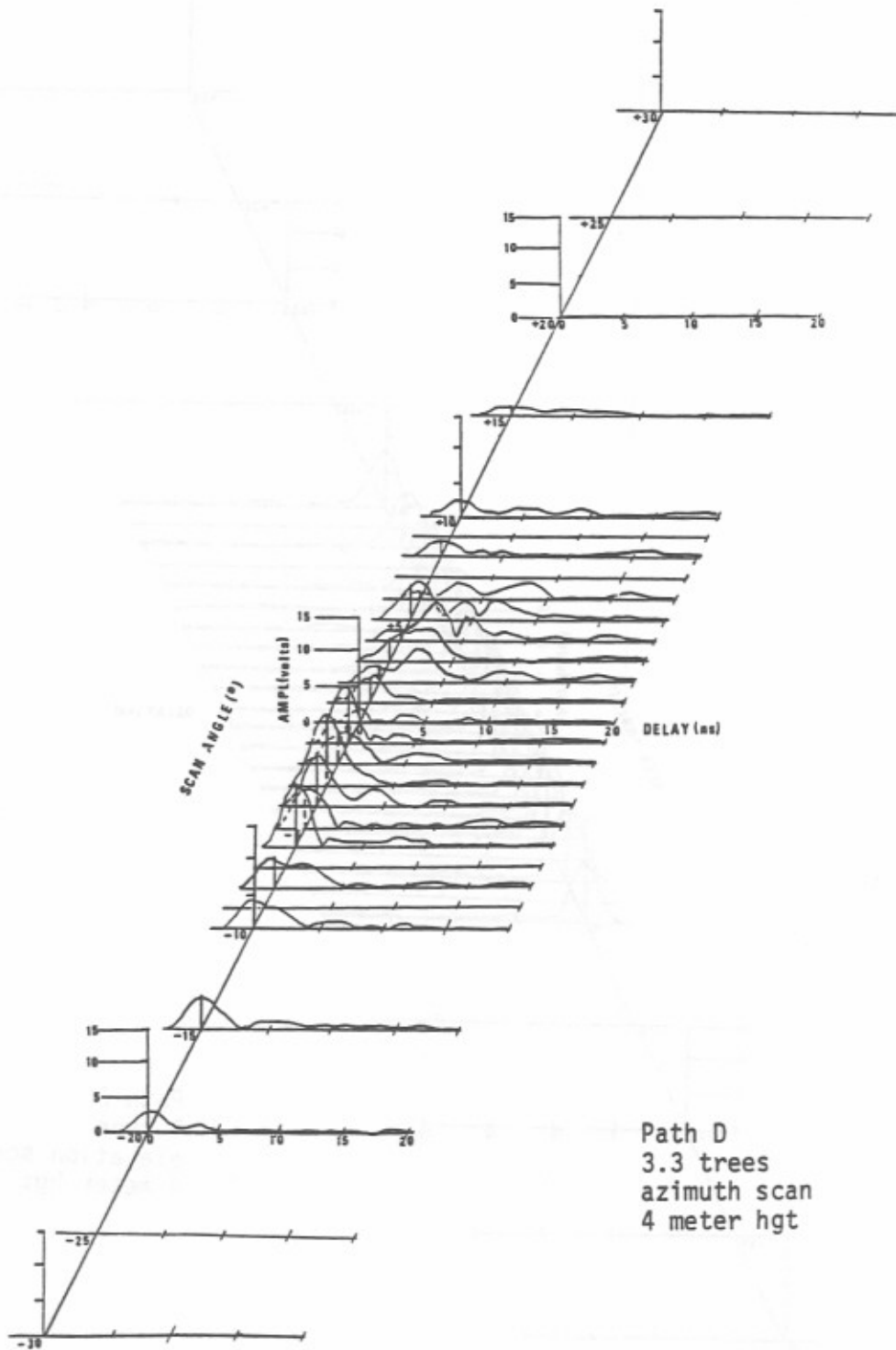


Figure D.20. Impulse response records for the 3.3-tree azimuth scan on Path D at the 4 meter transmitter height (no leaves).

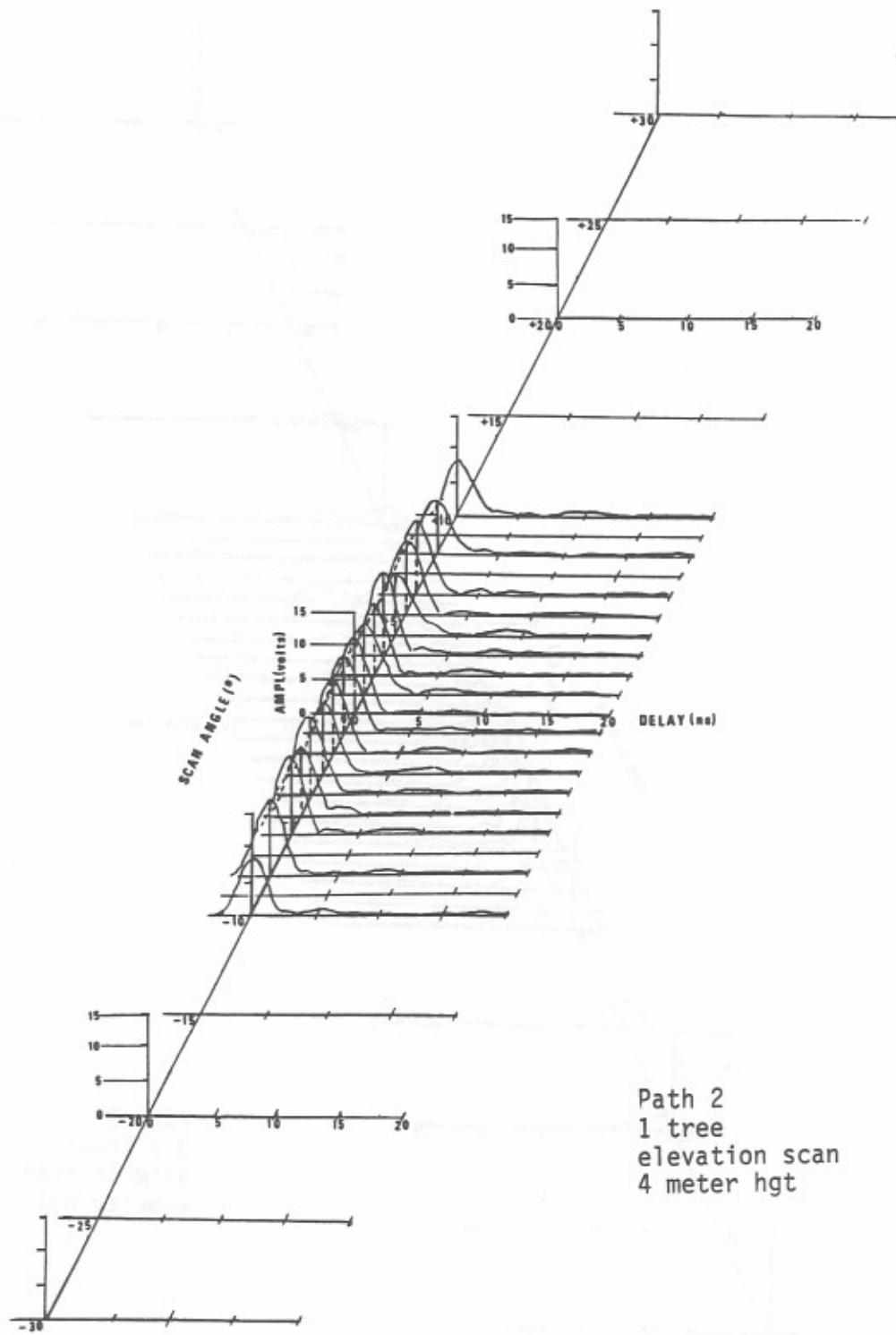


Figure D.21. Impulse response records for the 1-tree elevation scan on Path 2 at the 4 meter transmitter height (with leaves).

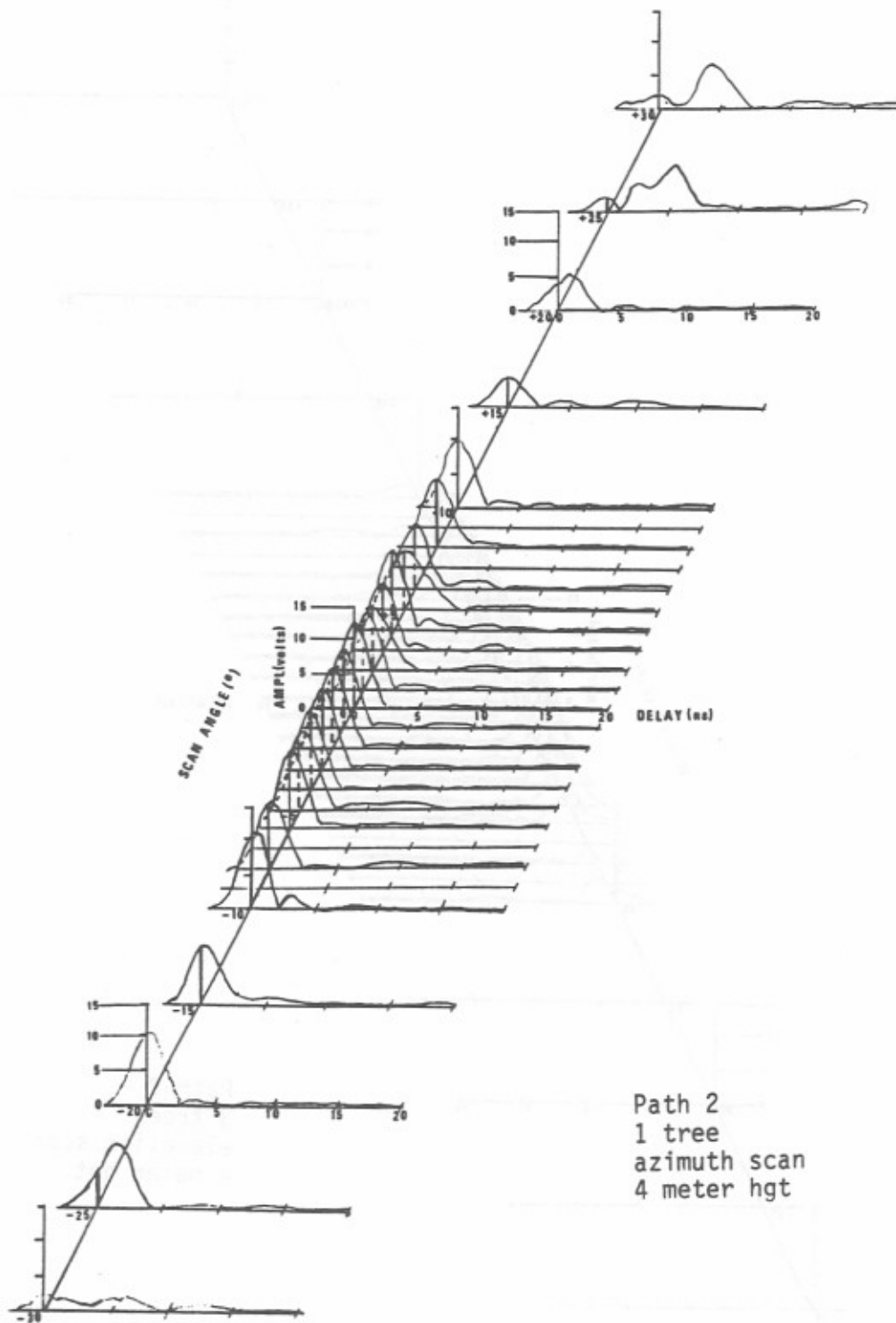


Figure D.22. Impulse response records for the 1-tree azimuth scan on Path 2 at the 4 meter transmitter height (with leaves).

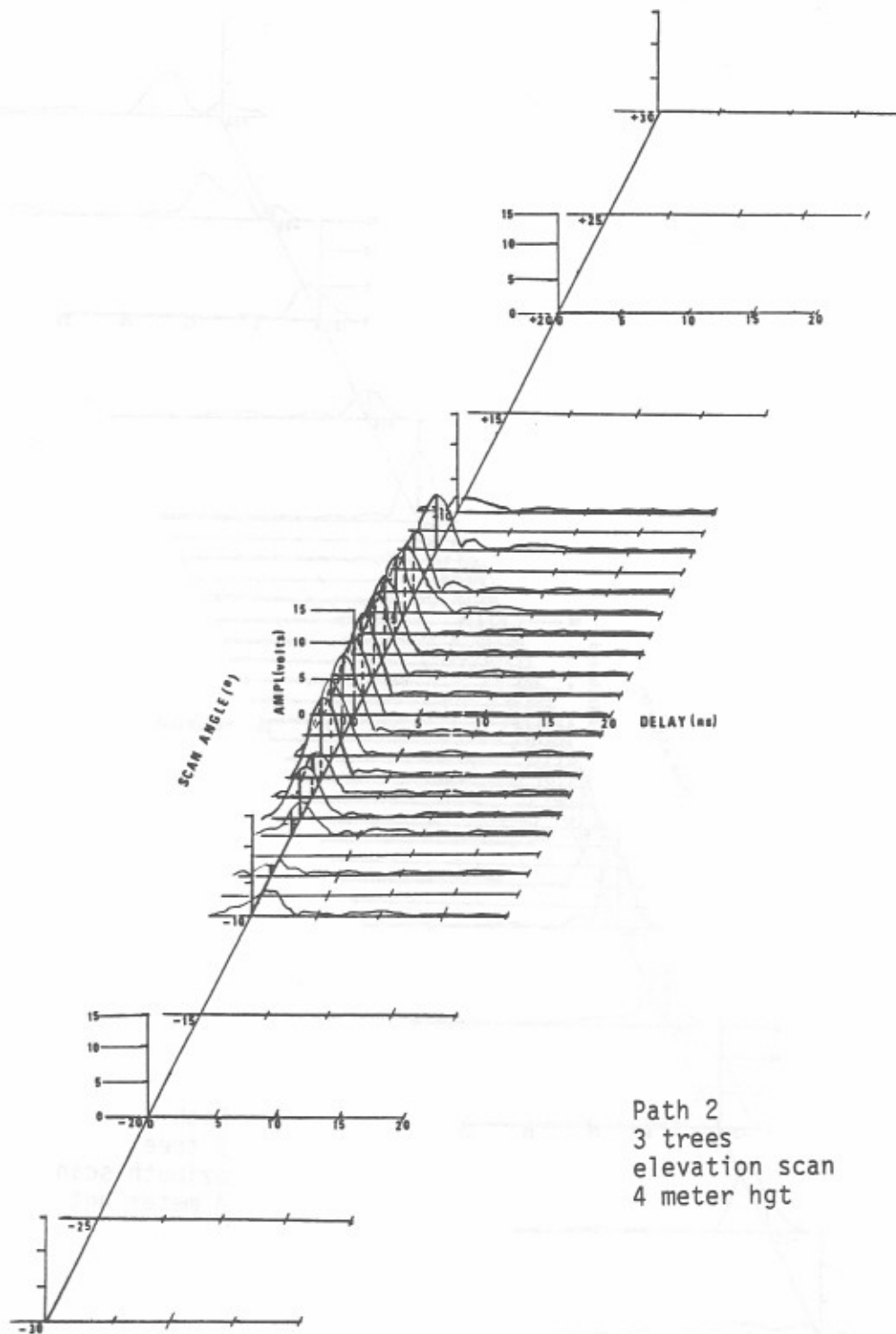


Figure D.23. Impulse response records for the 3-tree elevation scan on Path 2 at the 4 meter transmitter height (with leaves).

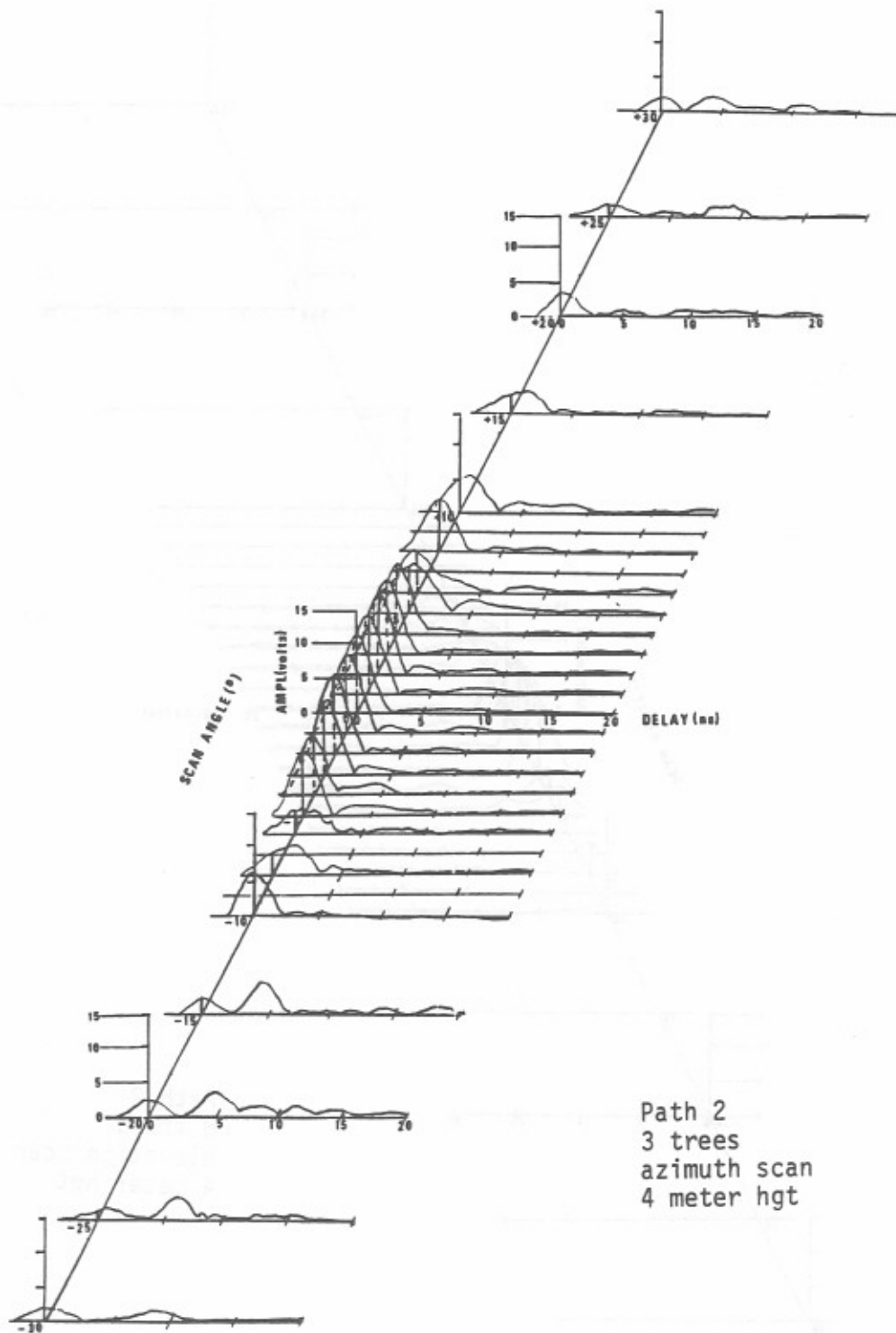


Figure D.24. Impulse response records for the 3-tree azimuth scan on Path 2 at the 4 meter transmitter height (with leaves).

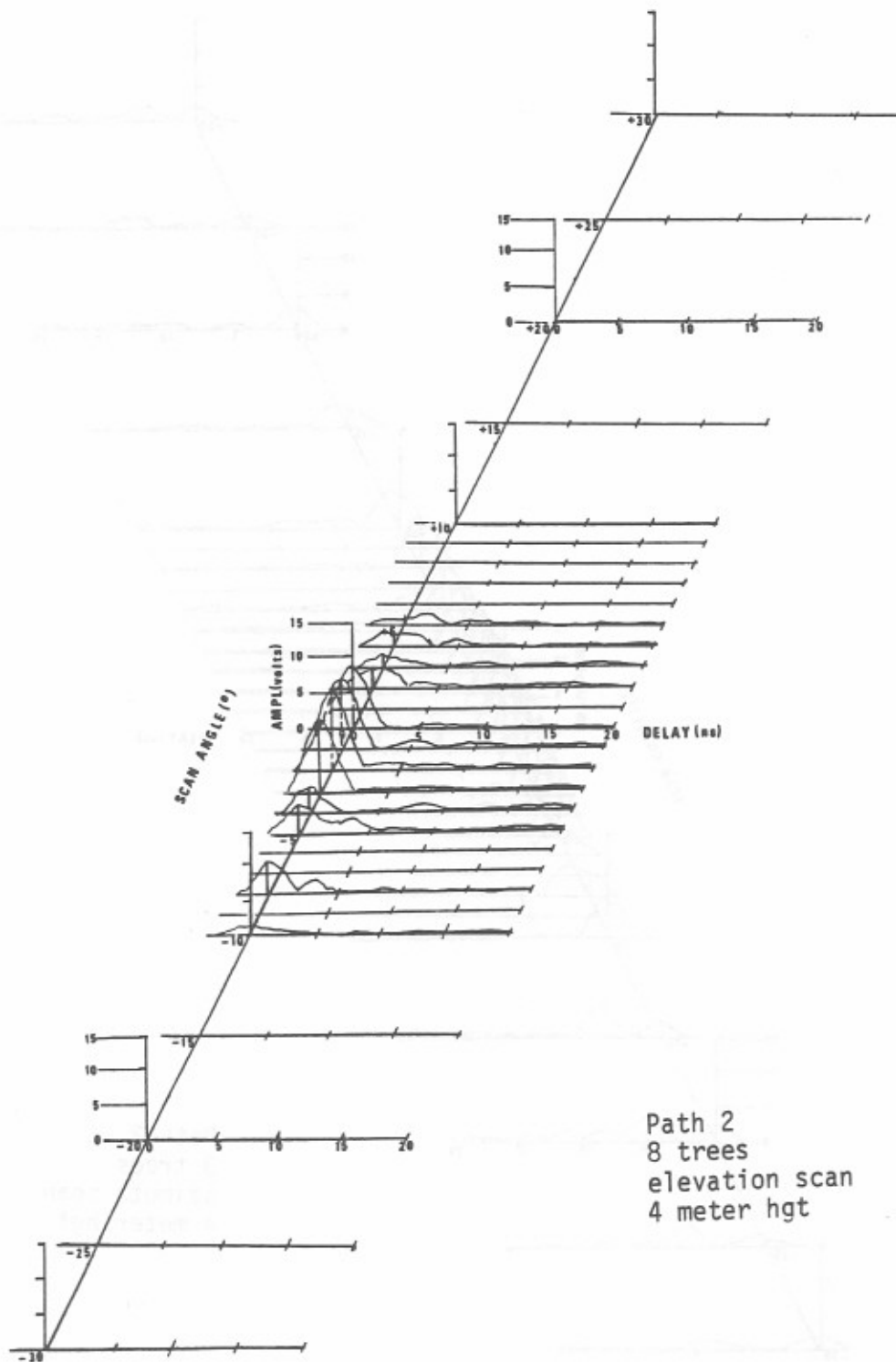


Figure D.25. Impulse response records for the 8-tree elevation scan on Path 2 at the 4 meter transmitter height (with leaves).

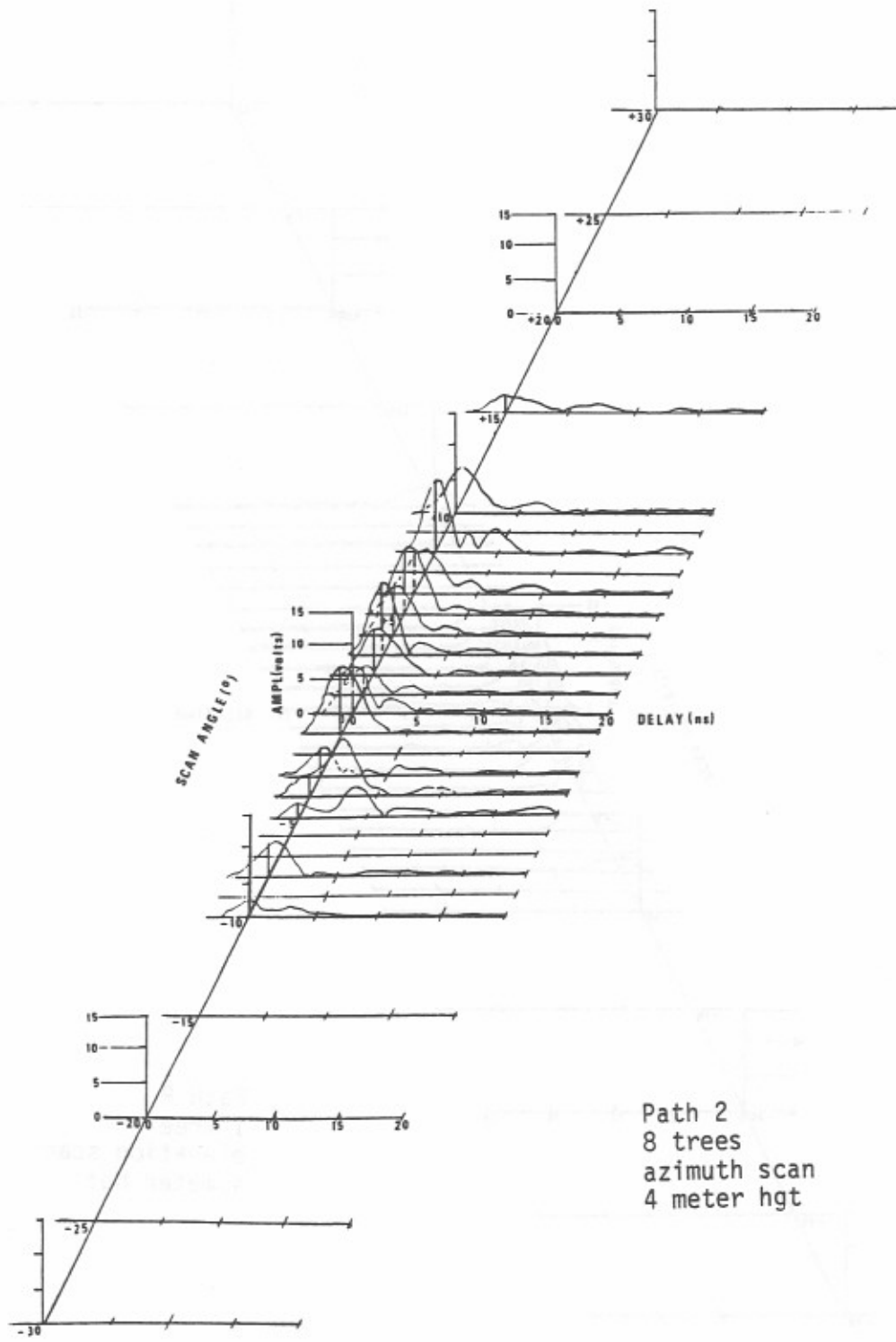


Figure D.26. Impulse response records for the 8-tree azimuth scan on Path 2 at the 4 meter transmitter height (with leaves).

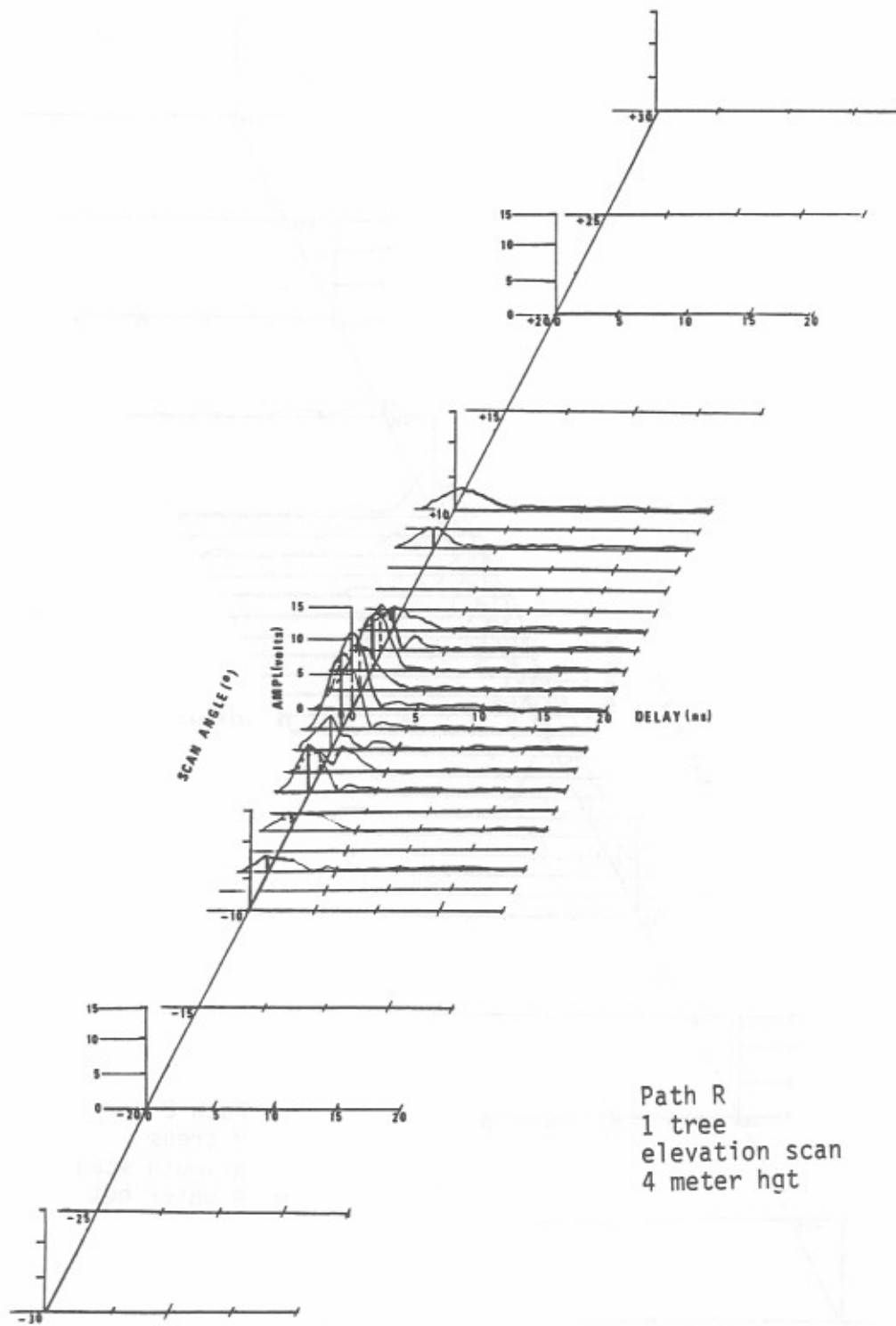


Figure D.27. Impulse response records for the 1-tree elevation scan on Path R at the 4 meter transmitter height (with leaves).

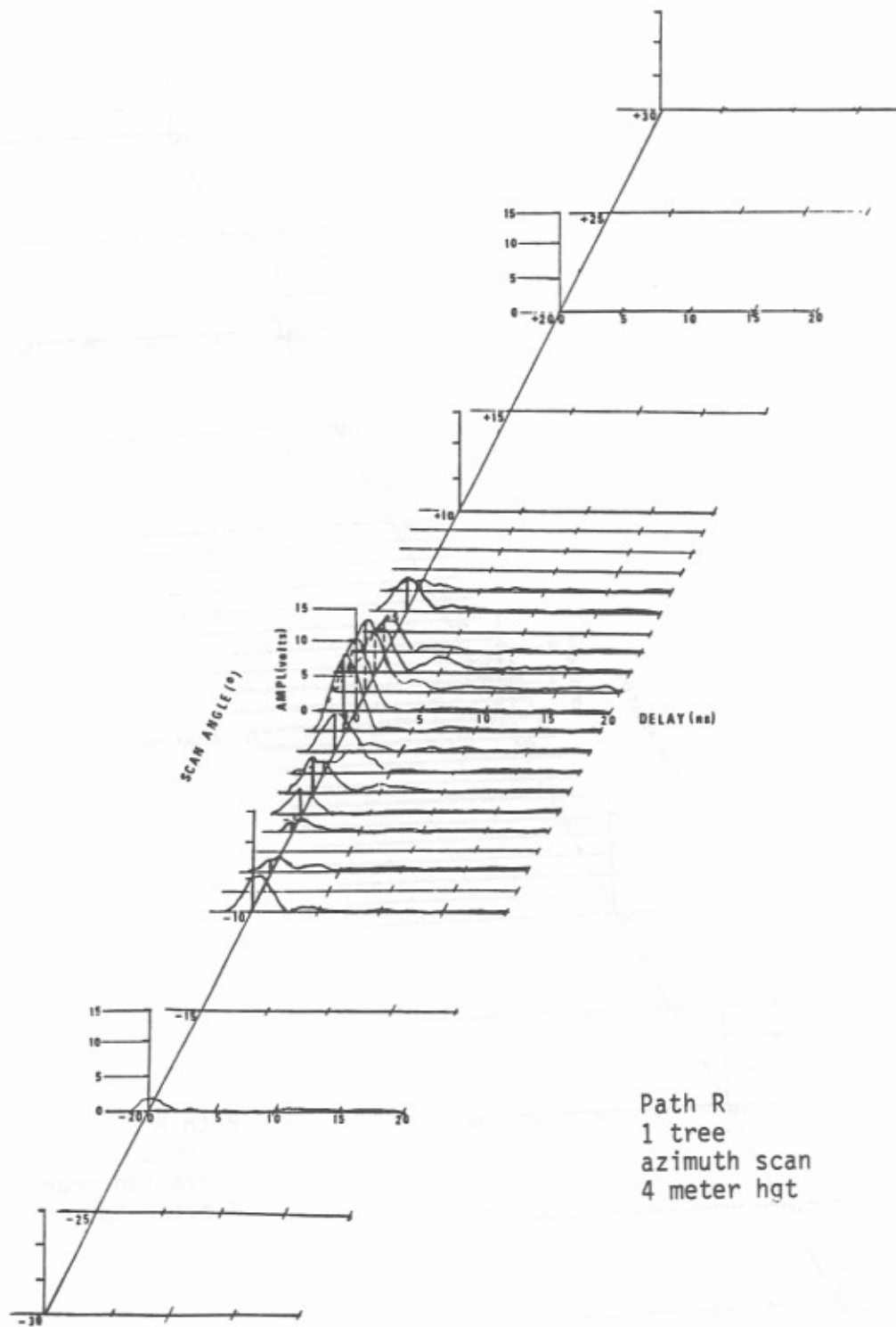


Figure D.28. Impulse response records for the 1-tree azimuth scan n Path R at the 4 meter transmitter height (with leaves).

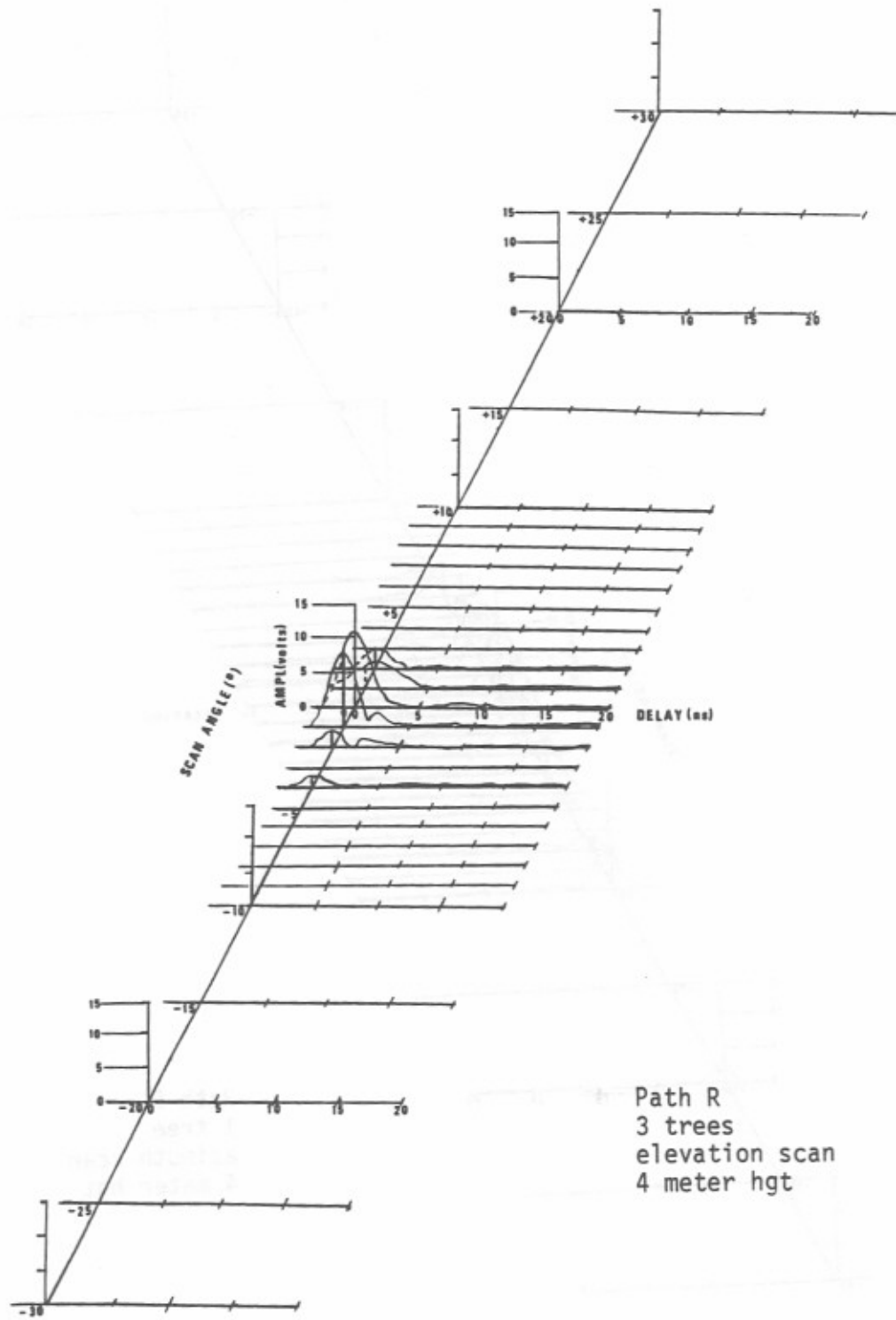


Figure D.29. Impulse response records for the 3-tree elevation scan on Path R at the 4 meter transmitter height (with leaves).

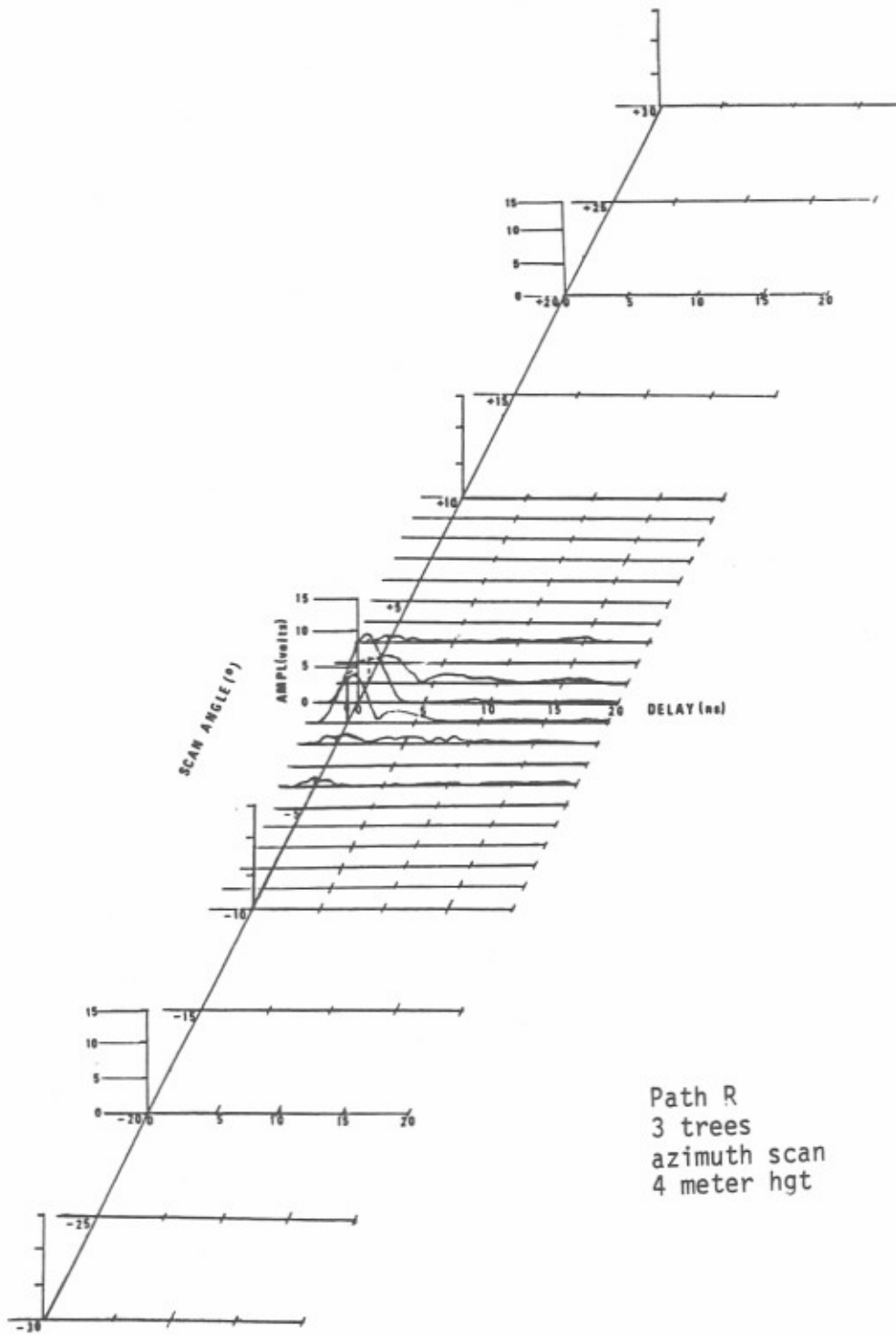


Figure D.30. Impulse response records for the 3-tree azimuth scan on Path R at the 4 meter transmitter height (with leaves).

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15. ABSTRACT (A 200-word or less factual summary of most significant information. If document includes a significant bibliography or literature survey, mention it here.) Wideband propagation measurements were made in a pecan orchard in Texas during April and August of 1990 to examine the propagation characteristics of millimeter-wave signals through vegetation. Measurements were made on tree obstructed paths with and without leaves. The study presents narrowband attenuation data at 9.6 and 28.8 GHz as well as wideband impulse response measurements at 30.3 GHz. The wideband probe (Violette et al., 1983), provides amplitude and delay of reflected and scattered signals and bit-error rate. This is accomplished using a 500 MBit/sec pseudo-random code to BPSK modulate a 28.8 GHz carrier. The channel impulse response is then extracted by cross correlating the received pseudo-random sequence with a locally generated replica.			
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