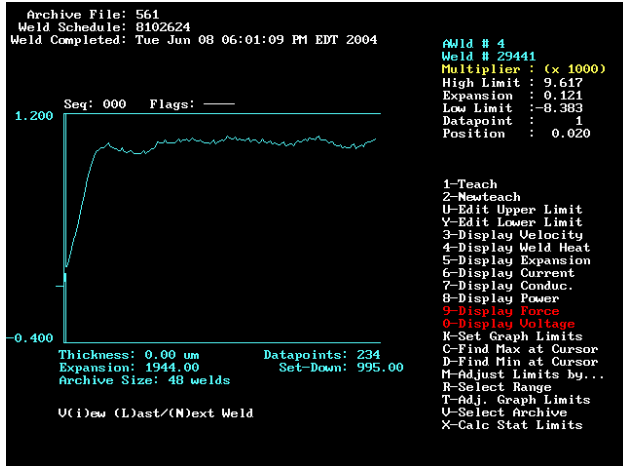


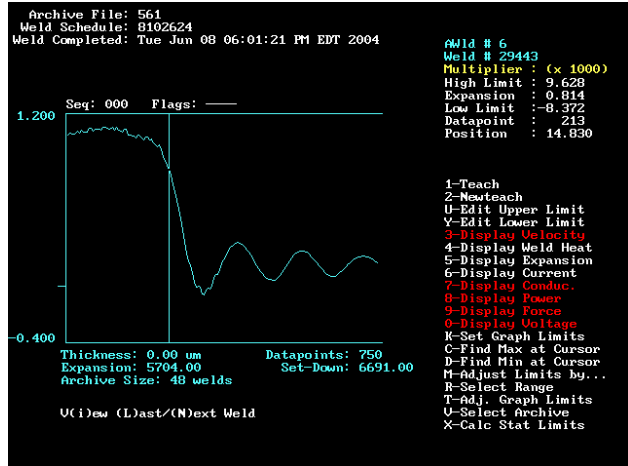


High Speed Adaptive Seam Welding

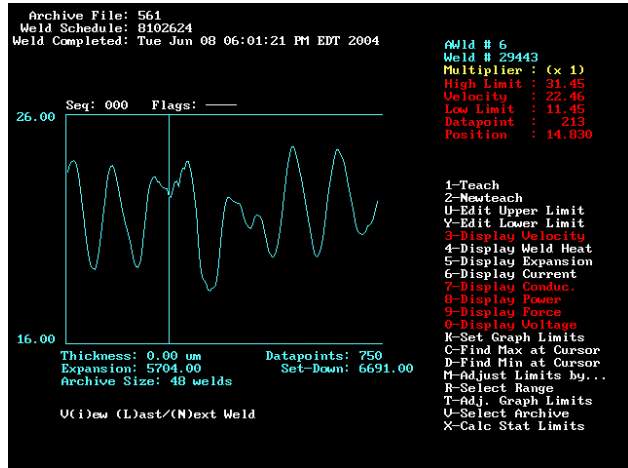
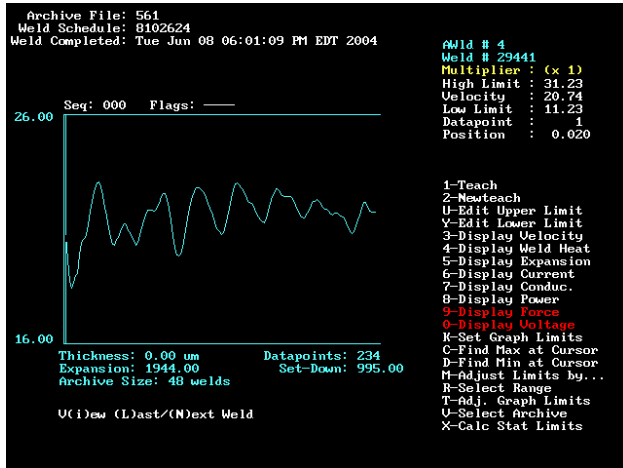
Images below show millisecond by millisecond data of an adaptive seam welding process operating at a velocity of 22.5"/sec. A separate weld is being produced every 5 milliseconds. The top images document the path of the seam welding wheel rolling up on the front of the part (left) and rolling off of the back of the part (right). The middle images document the instantaneous wheel velocity as the part is being welded. The bottom images show the adaptively adjusted heat that automatically triggers as the wheel rolls up on the front of the part, adaptively adjusts the heat every millisecond to compensate for wheel bounces and velocity variations, automatically reduces itself and shuts off as the wheel rolls off the back of the part.



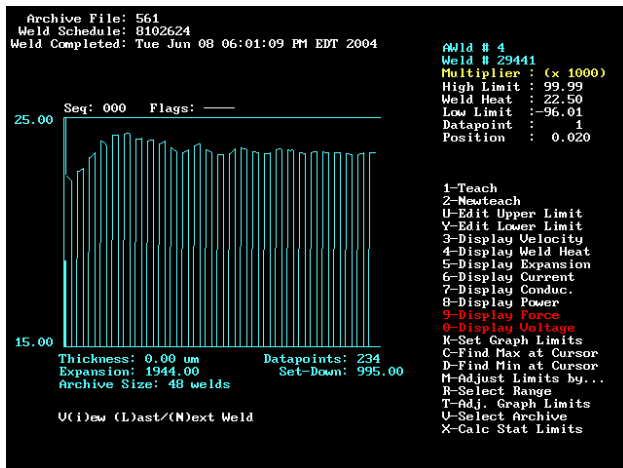
Seam wheel rolling up on front of part.



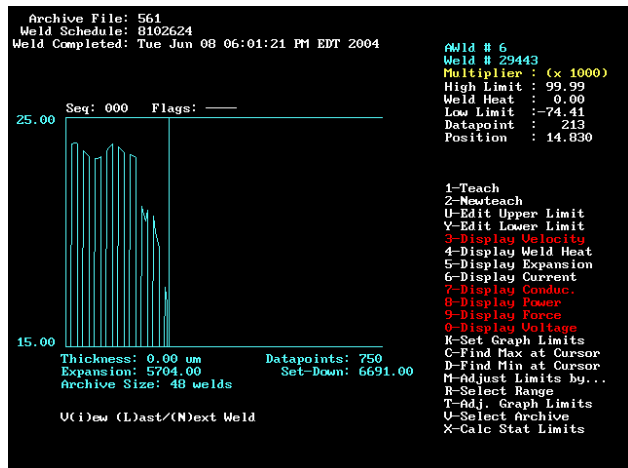
Seam wheel rolling off the back end of the part.



The heat below is automatically adjusted every millisecond as the instantaneous velocity (shown above) varies.



Heat automatically triggers as wheel rolls up on front of part.



Heat automatically reduces itself & shuts off as wheel rolls off part.