INFORMATION IN THE OTDR TRACE

They say a picture is worth a thousand words, and the OTDR picture (or "trace" as they are called) takes a lot of words to describe all the information in it! Consider the trace in Figure 4
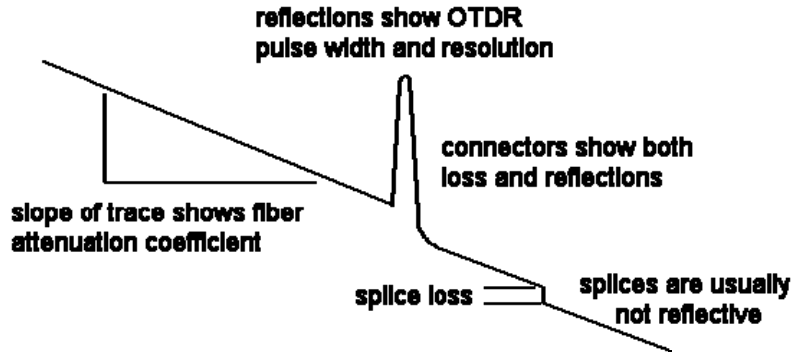

Figure 4. OTDR Trace Information

The slope of the fiber trace shows the attenuation coefficient of the fiber and is calibrated in dB/km by the OTDR. In order to measure fiber attenuation, you need a fairly long length of fiber with no distortions on either end from the OTDR resolution or overloading due to large reflections. If the fiber looks nonlinear at either end, especially near a reflective event like a connector, avoid that section when measuring loss.

Connectors and splices are called "events" in OTDR jargon. Both should show a loss, but connectors and mechanical splices will also show a reflective peak. The height of that peak will indicate the amount of reflection at the event, unless it is so large that it saturates the OTDR receiver. In this case the peak will have a flat top and tail on the far end, indicating the receiver was overloaded.

Sometimes, the loss of a good fusion splice will be too small to be seen by the OTDR. That's good for the system but can be confusing to the operator. It is very important to know the lengths of all fibers in the network, so you know where to look for events and won't get confused when unusual events show up (like ghosts, we'll describe in the next topic.).

Reflective pulses can show you the resolution of the OTDR. You cannot see two events closer than is allowed by the pulse width. Generally longer pulse widths are used to be able to see farther along the cable plant and narrower pulses are used when high resolution is needed, although it limits the distance the OTDR can see.