Logs from oil and gas boreholes

Logs are records from boreholes, where "log" has the meaning of "a record of events through time and space". In logs from boreholes, information is plotted relative to depth, so that they are typically odd-shaped documents that are much longer than they are wide. The most general distinctions between logs are as follows:

Logs

When generated:	During drilling		After drilling
Examples:	**Drill-time log Mud log**	**Logging while drilling (LWD)**	**Wireline logs (resistivity log, gamma-ray log, sonic velocity log, caliper log, etc.)**
Information recorded:	Events during drilling of hole	Properties of strata penetrated	

Wireline logs get their collective name because they are generated by tools lowered into the borehole on cables, or "wirelines". As a tool is pulled up from the bottom of the hole, responses from the rocks, or responses of the tool to the rocks, are transmitted to the surface and recorded on the log. Another *PGSG* page on "Characteristics of wireline well logs used in the petroleum industry" examines some specific logs in more detail.

Wireline logs are critical both to the explorationists who drilled the hole hoping to get petroleum from that hole and to later explorationists who will try to extend the geology of this hole to the surrounding region. For the former, the logs are indicators of rock type, of porosity and permeability of those rocks, and of the fluids present in the pores, all of which are valuable data in deciding whether and how to complete the well. For the latter, the logs are indicators of stratigraphic units, and a distinctive wiggle seen in logs of multiple wells is likely to become the key indicator of a stratum, as correlations are made over considerable distances across a sedimentary basin.