# NOTE ON MAJOR FAULTING ON LUNDY, BRISTOL CHANNEL AND POTENTIAL FOR SEISMICITY

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At 3:30 a.m. on 10 February 2009 several islanders noted a vibration and a deep rumbling noise described as a 'boom'. The following day, collapsed dry stone walling was noted at two locations. The possibility of a seismic event has been considered.

Small scale seismic events are common in the United Kingdom along Tertiary age faults. British Geological Survey seismographs at Hartland Point, Exmoor and in South Wales have recorded minor tremors in the region over the past few years. This common seismic activity is normally of magnitudes not normally discernable by humans.

A major fault zone known as the great Sticklepath-Lustleigh fault zone is located to the east of Lundy (Figure 1). A fault zone comprises a significant number of parallel faults within a defined band and usually associated with, as the Sticklepath-Lustleigh fault is, multi-phase movements.

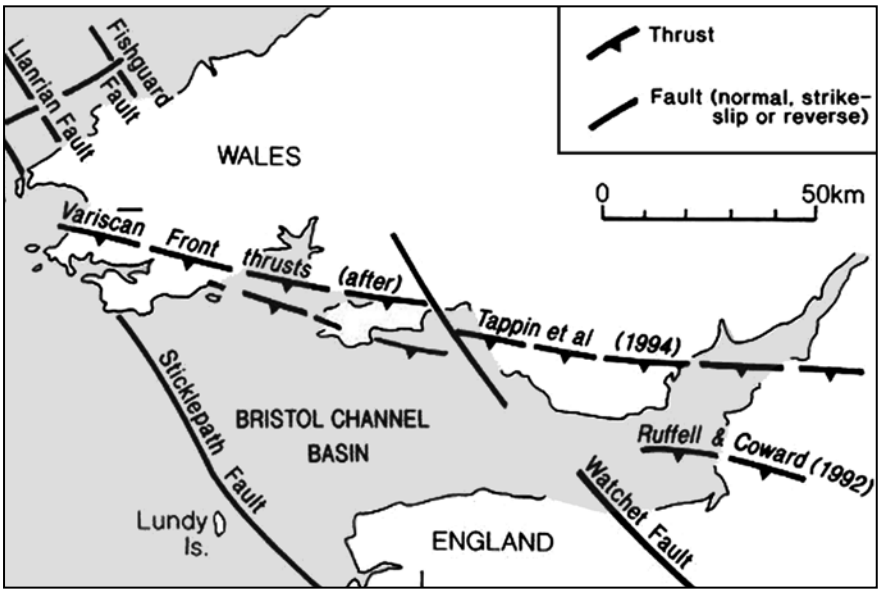


**Figure 1**: Map of the Bristol Channel showing major faults

The Sticklepath-Lustleigh fault zone extends across the Bristol Channel through Bovey Tracey and Newton Abbot, Devon. The fault zone was active from post-Permian through into Tertiary times. Interestingly, although the Sticklepath Fault is mainly dextral in movement, the presence of the Morte Slates on Lundy suggests a major sinistral fault-zone off-shore trending north-northeast (Note: If you stand on one side of the fault looking over the fault to the other side; if the opposite side has moved to the right movement is known as dextral, whereas to the left it is sinistral). A number of other north-northeast trending faults are apparent on Lundy including the faulted contact between the Morte Slates and granites (Figure 2).

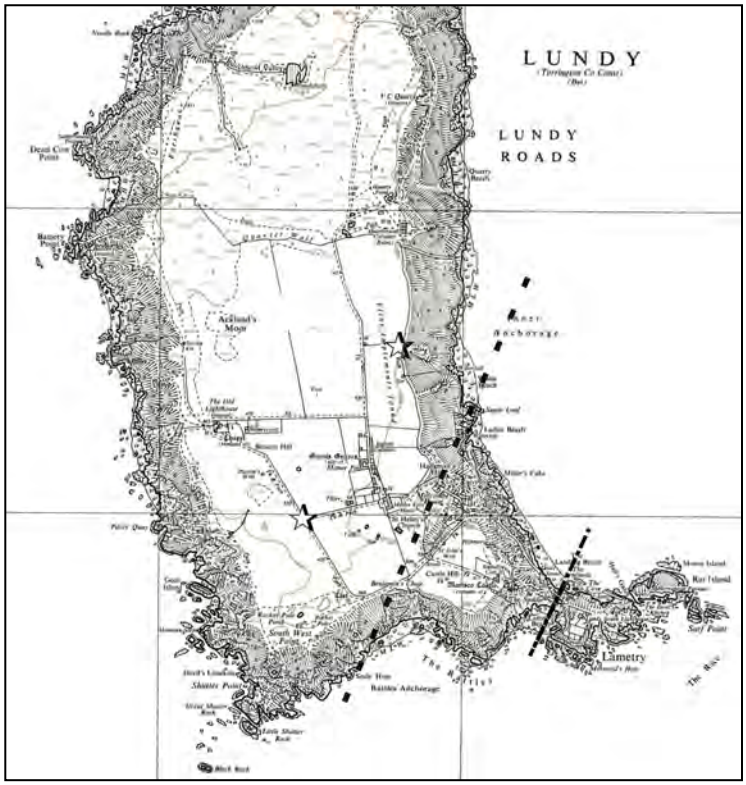


**Figure 2**: Map of the southern part of Lundy showing the faulted contact between the Morte Slates (to the east) and the Granite, the thrust fault at The Saddle, as well as the locations of collapsed dry stone walls (☆)

The area to the rear of the Landing Beach known as The Saddle shows a complex series of faulting. Thrust faulting (Figure 3) at approximately 45° of possibly Permo-Triassic age (concurrent with the emplacement of the granites) has been truncated by Tertiary south-southwest trending north-northeast faulting (Figure 4). It also appears that some re-activation of the thrust fault occurred during Tertiary times. Small scale seismic activity along these faults cannot be ruled out.

**Figure 3**: The north-east flank of The Saddle where complex multi-stage faulting is evident (SS14345 43742)

The dry stone walls are of a bank-like construction with stone facing and cobble-sized loose infill. It is considered that this type of construction would be highly susceptible to seismic events. The plotted position of the two dry stone wall collapses could be joined by a line that was approximately parallel to the north-northeast faults in the southern part of the island.

**Figure 4**: Close-up view of the rock fabric at The Saddle close to the thrust fault

The British Geological Survey (BGS), who record all seismic events within the United Kingdom from seismographs placed throughout the country, was asked to check their seismic records for one hour either side of the event. The BGS seismograph at Hartland Point did not register any seismic disturbances associated with the dates and times indicated. It is probable that the vibrations and noise were the result of a sonic boom; however, the collapse of the walls is unexplained. On further questioning of islanders, it became apparent that the collapses may not have been concurrent with each other or even the reported trembling.

Although we can conclude that the event in February 2009 was not a seismic event, there are a number of late faults on the island along which such seismic activity might occur.