

## Seismic Activity Investigation

Of fundamental importance to this and future missions is an understanding of the nature of any seismic activity.

Your task is to plot and record comprehensive data representing seismic activity detected in a specified region along your route. Whilst the form of visual presentation of the data is not specified the wavelength and bandwidth of the activity must be determined, displayed at the Earth Station and included in your project Report.

The entrance to the region of seismic activity is located at a position which will be indicated in start position units on the mission data sheet distributed at the start of the mission on the planet.

### Procedure:

1. Navigate your rover to the entrance of the region and orientate its direction of travel to enter the region.
2. The seismic activity has been detected 100mm ahead of your current location; however it will be necessary to climb a slope prior to arriving at that location.
3. Once the slope has been climbed your Rover will enter the zone of seismic activity, which has been determined to be horizontal, the activity is continuous and repetitive.
4. In order to calculate the duration of the earthquake record the start and finish time of the cycle of activity, record also the time when the maximum intensity of the earthquake was recorded.
5. Pre-process and filter any seismic activity detected by the sensors on your Rover in order that it may be forwarded to your Earth Station for frequency spectrum determination.
6. It has already been determined that the earthquake is made up of 2 distinct frequencies.
7. Display the measurements you have taken on your Earth station so that the Mission Director, or his assistant can verify your readings/calculations, record your measurements and calculations for later inclusion in your project report.
8. When you have finished analysing any data drive your Rover back to the start position to complete this task.
9. Ensure that you have handed the Mission Director, or his assistant the required hard copy representations of frequency envelope and spectrum.
10. Do not start your next task until you have confirmed that the Mission Director has recorded your team's score for this task.

### Scoring:

Achievement	Score
Correctly determining and displaying on your Earth station the duration of the earthquake in seconds (+/- 1 second)	+1
Correctly determining and displaying on your Earth Station the duration expressed as a percentage of the total earthquake duration, when the start of the maximum intensity was recorded. (+/- 5%)	+1
Correctly identifying one fundamental earthquake frequency (+/- 1Hz)	+1
Correctly identifying the second fundamental earthquake frequency (+/- 1 Hz)	+1
Producing a hard copy of the earthquake frequency envelope and spectrum.	+1