**Supplementary Material**

**Figure Captions**

**Fig.S1.** Wireline logs showing gamma ray, bulk density and bulk porosity measurements ±2 m around each sampled depth of the GGC01 borehole from Starcher et al. (2019). (**a**) GG496, (**b**) GG497, (**c**) GG498 and (**d**) GG499 with depth for each displayed at the top of each log and as solid horizontal black lines on each track. Contains NERC materials © NERC 2019.

**Fig.S2.** Wireline logs showing gamma ray, bulk density, neutron porosity and bulk porosity measurements ±2 m around each sampled depth in Sellafield BH13B (Michie and Bowden, 1994). (**a**) SF696, (**b**) SF697, (**c**) SF698 and (**d**) SF699 with depths for each displayed at the top of each log and as solid horizontal black lines on each track.

**Fig.S3.** Wireline logs showing gamma ray, bulk density, neutron porosity and bulk porosity measurements ±2 m around each sampled depth in Sellafield BH13B (Michie and Bowden, 1994). (**a**) SF700, (**b**) SF701 and (**c**) SF702 with depths for each displayed at the top of each log and as solid horizontal black lines on each track.

**Tables**

**Table S1.** A summary of the supplemental data plotted as grey circles throughout this work.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Study | Sample\* |  |  | Permeability (mD) |
| Thomson et al. (2018) | Fontainebleau (sst) | 0.038 | 0.03 | 15.8 |
| Thomson et al. (2018) | Berea (sst) | 0.199 | 0.196 | 152 |
| Thomson et al. (2019) | Doddington (sst) | 0.186 | 0.185 | 3725 |
| Thomson et al. (2019) | Wilcox (sst) | 0.071 | 0 | 0 |
| Thomson et al. (2019) | Knoringfjellet (sst) | 0.077 | 0.061 | 60 |
| Thomson et al. (2019) | Estillades (cbt) | 0.19 | 0.184 | 601 |
| Thomson et al. (2019) | Massangis Jaune (cbt) | 0.161 | 0.15 | 612 |
| Thomson et al. (2019) | Savonnières (cbt) | 0.325 | 0.288 | 3990 |
| Thomson et al. (2020a) | BFS1 (sst) | 0.072 | 0.058 | 91.24 |
| Thomson et al. (2020a) | BFS2 (sst) | 0.071 | 0.057 | 86.27 |
| Thomson et al. (2020a) | BFS3 (sst) | 0.08 | 0.064 | 7.62 |
| Thomson et al. (2020a) | BFS4 (sst) | 0.096 | 0.091 | 104.15 |
| Thomson et al. (2020a) | BFS5 (sst) | 0.078 | 0.051 | 6.7 |
| Thomson et al. (2020a) | BFS6 (sst) | 0.049 | 0 | 0 |
| Thomson et al. (2020a) | BFS8 (sst) | 0.152 | 0.148 | 795.1 |

\* The type of sedimentary material is given in parentheses where (cbt) = carbonate and (sst) = sandstone

**Table S2.** Information about the boreholes from which material studied in this work were collected

|  |  |  |
| --- | --- | --- |
| Name | GGC01 | Sellafield BH13B |
| Location | Glasgow, UK | Sellafield, UK |
| Latitude | 55.841148 | 54.38781556 |
| Longitude | -4.2213957 | -3.47180750 |
| Top Depth (m) | 0 | 19.6596 |
| Bottom Depth (m) | 198.856 | 299.6184 |
| Cored Length (m) | 166.45 | 259.87 |