|  |  |  |
| --- | --- | --- |
| **PNA-GT-02** | | |
| **Depth MD (m)** | **Age:** | **Basis of age interpretation:** |
| **2120-2175** | Late Barremian | **LOD:**   * *Cassiculosphaeridia magna* at 2120 m * *Trichodinium speetonensis* at 2120 m |
|  | **Remarks:** Isolated occurrence of *Muderongia simplex subsp. microperforata* at 2120 m is most likely a result of reworking. | |
|  | **Facies:** Near coastal marine conditions, at the base (2175 m) a more shallow/ restricted marine influence. Marine dinoflagellate cysts are recognised, of which open-marine species prevail (approximately 30 % of the total number of dinoflagellate cysts and sporomorphs). In the deepest sample the “restricted marine” character increases, which is explained to a more proximal setting. | |
| **2195-2215** | late Early Barremian, elegans Ammonite Zone, or older | **LOD:**   * *Kleithriasphaeridium cf. corrugatum* at 2195 m * *Muderongia crucis/tetracantha* at 2195 m |
|  | **Remarks:** The Early Barremian, elegans Ammonite Zone top should be below 2175 m because this sample is dated as Late Barremian. | |
|  | **Facies:** Lagoonal to restricted shallow marine, near coastal conditions. *Subtilisphaera perlucida* is dominant at 2195 m indicating a lagoonal depositional environment. Most abundant dinocysts at 2215 m are *Subtilisphaera perlucida* and open marine species *Spiniferites* spp. | |
| **2235-2275** | earliest Barremian, variabilis Ammonite Zone, or older | **LOD:**   * *Chlamydophorella membranoidea* at 2235 m * *Cribroperidinium confossum* at 2235 m |
|  | **Remarks:** The occurrence of *Cribroperidinium confossum* is generally related to the earliest Barremian *variabilis* Ammonite Zone (Duxbury 1977, Jeremiah et al., 2010). However, surprisingly Mutterlose and Harding (1987) registered the taxon as “commonly” occurring in the Hauptblätterton Beds 100/4-100/7, *Aulacoteuthis* belemnite Zone which is a time-equivalent of the *fissicostatum* Ammonite Zone. The LOD of *Chlamydophorella membranoidea* is calibrated in the earliest Barremian, *Variabilis* Ammonite Zone (Davey, 1979), this is why the sample cannot be younger as indicated. | |
|  | **Facies:**  Lagoonal conditions are confirmed in the sample at 2235 m. At larger depths the character of the samples is more terrestrial with possible marginally marine influence. *Subtilisphaera perlucida* dominates the marine part of the spectrum at 2235 m. At larger depths the percentages dinocysts is much lower (6% of the total palynomorphs). The majority of these dinocysts could be accounted to caving. Lagoonal species are rarely present. Amongst the sporomorphs the simple psilatrilites are abundant. This indicates fluvial influence. | |
| **2440- 2590** | Valanginian | **LOD:** Aequitriradites verrucosum at 2440 m |
|  | **Remarks:** *Aequitriradites verrucosum* is a good marker for the Ryazanian-Valanginian. | |
| **2600-2850** | Late Ryazanian (post base  kochi Ammonite Zone)-  Early Valanginian | **LOD:**   * *Stiphrosphaeridium dictyophorum* at 2600 m * *Canningia compta at 2620 mHystrichosphaeridium scoriaceum* at 2690 m * Low numbers of *Classopollis* in all assemblages down to sample depth 2850 m |
|  | **Remarks:** The last regular occurrence of *Stiphrosphaeridium dictyophorum* is mentioned from the Wealden 6, Early Valanginian by Strauss et al. (1993). The LOD of *Canningia compta*  is an excellent marker for the Early Valanginian (TNO standard zonation scheme for the Late  Jurassic to Early Cretaceous). *Hystrichosphaeridium scoriaceum* has a LOD in the Early Valanginian and occurs very rarely in the Late Ryazanian, *stenomphalus-icenii* zones (Heilmann-Clausen, 1987). The "climate shift" in the kochi Ammonite Zone of the Early Ryazanian is not reached. That the sporomorph genus *Classopollis* remains in very low values until end depth of the studied interval confirms this. | |
| **HON-GT-01** | | |
| **Depth MD (m)** | **Age:** | **Basis of age interpretation:** |
| **2320** | Late Barremian | **LOD*:***   * *Hystrichodinium ramoides* * *Muderongia staurota* |
| **2340-2360** | early Late Barremian | **LOD*:*** *Kleithriasphaeridium fasciatum* at 2340 m |
|  | **Remarks:** Costa and Davey (1992) describe a LOD of a non-specified Barremian interval *fissicostatum/rude* Ammonite Zone. Heilmann-Clausen (1987) more specifically indicate a LOD in the earliest Late Barremian *brunsvicensis* Ammonite Zone. | |
| **2380-2420** | late Early Barremian, elegans Ammonite Zone, or older. | **LOD*:***   * *Muderongia crucis/tetracantha* at 2380 m * *Rhynchodiniopsis cf. cladophora*  at 2380 m * *Kleithriasphaeridium corrugatum* at 2400 m * *Muderongia simplex subsp.* *microperforata* at 2400 m |
|  | **Facies:** Marine, near-coastal environment. | |
| **2560-2730** | Valanginian | **LOD*:***   * *Batioladinium cf.* sp. I (Davey (1982)at 2560 m * *Aequitriradites verruscosum* at 2640 m * *Pareodinia* sp*.* I (Davey, 1982) at 2660 m |
|  | **Remarks:** The occurrence of *Batioladinium varigranosum* at 2630 m indicates an age of (earliest) Early Hauterivian and relates to the current age dating of these samples. | |
|  | **Facies:** Mainly sporomorphs of the eco-groups ‘Upland’, ‘Lowland wet’ and ‘River’ are recognised in the samples of this interval (and deeper intervals) indicating a terrestrial environment not directly close to the coast. This is confirmed by the limited number of marine indicators. | |
| **2740** | (earliest) Early Valanginian | **LOD*:***   * *Canningia compta* * *Perisseiasphaeridium insolitum* |
| **2750-2810** | Late Ryazanian (post-*kochi* Ammonite Zone) | **LOD*:*** *Batioladinium pomum* at 2750 m |

|  |  |  |
| --- | --- | --- |
| **HON-GT-02** | | |
| **Depth MD (m)** | **Age:** | **Basis of age interpretation:** |
| **2610-2820** | Valanginian | **LOD:** *Aequitriradites verrucosus* at 2610 m |
| **2830-2860** | (earliest) Early Valanginian | **LOD:** *Stiphrosphaeridium dictyophorum* at 2830 m |
|  | **Remark:** The last regular occurrence of this taxon is present in the Wealden 6, Early Valanginian (Straus et al., 1993). See: sample at 2600 m in PNA-GT-02. | |

|  |  |  |
| --- | --- | --- |
| **VDB-GT-04** | | |
| **Depth MD (m)** | **Age:** | **Basis of age interpretation:** |
| **1890-1910** | Late Ryazanian-Early Valanginian | Presence of *Perisseiasphaeridium insolitum*, *Stiphrosphaeridium dictyophorum*, *Canningia compta*, *Hystrichosphaeridium scoriaceum* and *Oligosphaeridium diluculum*. |
|  | **Remarks:** The assemblages of these samples showed a relatively larger number of marine  indicators than the other samples after the former semi-quantitative analysis. A Late  Ryazanian-Early Valanginian age for interval 1740-2006 m was recorded. The flooding at  depth 1890 m may most likely be associated with the Paratollia MFS. | |